



# INSTALLATION OPERATION & MAINTENANCE



## NEPTUNE SERIES 500/5000 PUMPS

### Model 500/5000

500-A, 500-D, 500-E,  
500-S and 500-VS



NEP-ZL105638

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# WARNING

LOCKOUTS ARE REQUIRED BEFORE  
SERVICING THIS EQUIPMENT.

## SAFETY INSTRUCTIONS:

Shut off/Lockout pump Power before Servicing.

Be certain pump isolation valves are  
Closed and chemical is shut off.

Bleed pressure before servicing.

In case of emergency, shut pump down completely  
by disconnecting motor power supply.

To prevent unexpected start-up, disconnect motor  
from power supply when power outage happens.

## WARNING

### Please read thoroughly before installation, operation or maintenance of any Neptune pump

#### **EQUIPMENT MISUSE HAZARD**

Equipment misuse can cause the equipment to rupture, malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended use.
- Do not alter or modify this equipment.
- Be certain all operators of this equipment have been trained for safe working practices, understand its limitations, and wear safety goggles and or equipment when required.
- Do not exceed the maximum working pressure of the system as mentioned on the pump tag.
- Do not use the pump head or the suction or discharge piping to pull the equipment.
- Do not move pressurized pump.
- Use fluids or cleaning agents for cleaning that are compatible with the pump parts. Read the fluid and cleaning agent manufactures warnings and also refer to the material compatibility chart
- Comply with all applicable local, state and national safety regulations.
- Do not allow pump to run dry.

#### **PRESSURIZED EQUIPMENT HAZARD**

Spray from leaks or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Shut off the pump and depressurize before performing any maintenance.
- Do not tamper with or perform unspecified alteration of this device.
- Operate only at rated pressure. Excessive pressure during normal operation can cause leakage and rupture to the pump head joint and/or pipes. Rated pressure can be found on pump name tag.
- Use only pipe, hose, and hose fittings rated for maximum rated pressure of the pump or the pressure at which the pressure relief valve is set at.
- Always wear protective clothing, face shield, safety glasses and gloves when working on or near your metering pump.
- Additional precautions should be taken depending on the solution being pumped. Refer to SDS precautions from your solution supplier.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Tighten all fluid connections before operating the equipment.
- Replace worn, damaged, or loose parts immediately.
- Before performing any maintenance requiring pump head and or valve (wetted parts) disassembly, be sure to relieve pressure from the piping system and where hazardous process chemicals are present.
- Make the pump safe to handle for the personal and the environment by cleaning and chemically neutralizing the pump as appropriate.
- Wear protective clothing and use proper tools as appropriate to avoid any injury.
- If the diaphragm has failed, process chemical may have contaminated the pump hydraulic oil. Handle with appropriate care. Clean the pump and replace oil as necessary. Discard the contaminated oil as per the local code.
- If the diaphragm fails in a double diaphragm pump, pressurized process chemical can be present in the Neptune leak detection vacuum system. Take proper care to clean and handle them.

#### **FIRE AND EXPLOSION HAZARD**

Improper grounding, poor air ventilation, open flames, or sparks can cause a hazardous condition and result in fire or explosion and serious injury.

- Ground the equipment. See motor installation instruction for grounding procedure.
- Do not pump non recommended flammable or explosive fluids.
- Static electricity may generate by fluid moving through pipes and hoses. A static spark could be produced by high fluid flow rate. Earthing of the pump is a must.
- Provide fresh air ventilation to avoid the possible buildup of flammable fumes from the process chemicals.
- Keep the pump area free of debris, including cleaning agent, rags, and any flammable material.
- Follow the cleaning agent and other cleaning recommendations as mentioned in the operation and instruction manuals.
- Use cleaning agent with the highest possible flash point to clean the pump parts if needed.
- If there is any static sparking while using the equipment, stop operation at once. Identify and correct the problem before starting up the pump.

#### **TOXIC FLUID HAZARD**

Hazardous fluids or toxic fumes can cause serious injury or death if splashed in eyes or on the skin, swallowed, or inhaled.

- Know the specific hazards of the fluid you are using. Read the fluid manufactures warnings.
- Consider chemical compatibility when selecting pump material. Reference Neptune chemical resistance guide in: <https://www.psgdover.com/neptune/download-library/guides> or contact Neptune Sales for recommendation.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Wear the appropriate protective clothing, gloves, eyewear and respirator.
- Pipe and dispose of the exhaust air safely. If diaphragm fails, the fluid may be exhausted along with the air in mechanical diaphragm pump. Also oil vapor may breathe out of the air breather installed on the gear box.

#### **SOUND HAZARD**

The sound pressure level of the pump may exceed 80dBA in some of the pumps.

- Observe all safety precautions when operating the pump within close proximity for extended periods by wearing hearing protectors.
- Extended exposure to elevated sound levels will result in permanent loss of hearing acuteness, tinnitus, tiredness, stress, and other effects such as loss of balance and awareness.

#### **MECHANICAL HAZARD**

The pump may shake or vibrate during operation.

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## SECTION I GENERAL DESCRIPTION

The Neptune Series 500 “dia-PUMP” is a reliable metering pump of the high-pressure diaphragm type. Under constant conditions of temperature, pressure, and capacity adjustment settings, a +/-1% metered discharge volume is maintained.

A plunger reciprocating at a fixed stroke displaces hydraulic fluid, which actuates a flexible, chemically inert, Teflon® diaphragm to create pumping action. The capacity of the pump is regulated by controlling the volume of hydraulic fluid, which bypasses the diaphragm cavity.

Capacity adjustment can be made manually or automatically by instrument signal.

Metering accuracy is maintained by a control rod, which allows hydraulic fluid replacement and air venting automatically with each stroke, while also taking into account temperature changes of the hydraulic fluid. Metering accuracy is also insured by the use of double ball check valves on the suction and discharge of the pump.

**PLEASE READ THE INSTRUCTION MANUAL COMPLETELY BEFORE INSTALLING THE PUMP.**



SERIES 500 “dia” PUMP  
WITH INTEGRAL TEFC MOTOR



SERIES 500-A “dia” PUMP  
WITH INTEGRAL TEFC MOTOR



SERIES 500-E “dia” PUMP  
WITH INTEGRAL TEFC MOTOR

The text and illustrations in the main body of this manual are based upon the Series 500 pump, shown at left above. The Series 500-A and 500-E pumps are very similar to the Series 500 pump. The liquid ends are interchangeable.

Please refer to Appendix for all Models other than 500-S or 500-D.

Models 500-A, 500-E, 500-E-AR, 500-VS, 5003, 5005 and the Double Diaphragm Option are described in the Appendix.

**SECTION I  
NEPTUNE CHEMICAL PUMP COMPANY  
LIMITED WARRANTY**

All Neptune Pumps are tested at the factory prior to shipment. Each part used in their construction has been carefully checked for workmanship.

If the pump is installed properly, Neptune Chemical Pump Company warrants to the purchaser of this product for a period of three years from the date of shipment, this product shall be free of defects in material and/or workmanship, as follows:

1. Neptune Chemical Pump Company will replace, at no charge, any part that fails due to a defect in material and/or workmanship during the warranty period, FOB our factory, North Wales, Pennsylvania. To obtain warranty service, you must forward the defective parts to the factory for examination, freight pre-paid.<sup>1</sup>
2. This warranty period does not cover any product or product part, which has been subject to accident, misuse, abuse or negligence. Neptune Chemical Pump Company shall only be liable under this warranty if the product is used in the manner intended by the manufacturer as specified in the written instructions furnished with this product.

Any express warranty not provided in this warranty document, and any remedy for breach of contract that, but for this provision, might arise by implication or operation of law, is hereby excluded and disclaimed. Under no circumstances shall Neptune Chemical Pump Company be liable to purchaser or any other person for any charge for labor, repairs, or parts, performed or furnished by others, nor for any incidental consequential damages, whether arising out of breach of warranty, express or implied, a breach of contract or otherwise. Except to the extent prohibited by applicable law, any implied warranty of merchantability and fitness for a particular purpose are expressly limited in duration to the duration of this limited warranty.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long any implied warranty lasts, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which may vary from state to state.

**IMPORTANT**

SHOULD IT BE NECESSARY TO SEND THE PUMP TO THE FACTORY FOR REPAIR OR MAINTENANCE REBUILDING; DRAIN ALL OIL AND CHEMICAL FROM PUMP BEFORE SHIPPING. FAILURE TO DO SO CAN CAUSE EXTENSIVE DAMAGE TO THE MOTOR.

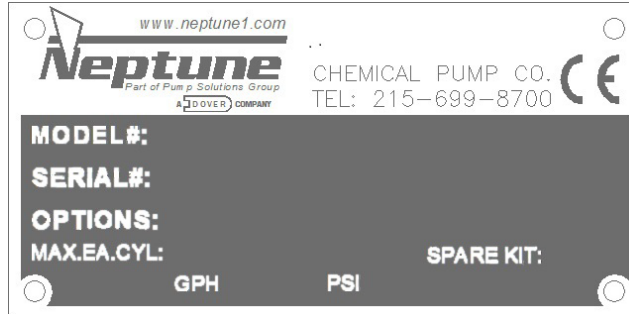
<sup>1</sup>SEE IMPORTANT NOTICE -RETURN GOODS AUTHORIZATION

**IMPORTANT NOTICE  
RETURN GOODS AUTHORIZATION**

- (1) All equipment returned to Neptune Chemical Pump Company, Inc. requires proper Returned Goods Authorization Number (RGA) and tags.
- (2) All equipment returned to the factory for repair or service must first be thoroughly flushed and have all chemical contact areas neutralized.
- (3) All equipment, which has been in contact with chemicals, must be accompanied by a copy of the chemical product material Safety Data Sheet (SDS).
- (4) Failure to comply with the above instructions will result in equipment being returned to sender, freight collect, without service.

## PARTS ORDERING INSTRUCTIONS

The complete model number and serial number of the pump must be furnished to insure prompt and accurate parts service. These numbers are found on the name plate (sample below) located on the side of the pump. Refer to **Section VII** for complete parts lists.



**Send all orders or inquiries for parts to:**

Email: [order.neptune@psgdover.com](mailto:order.neptune@psgdover.com)

Website: [www.psgdover.com/neptune.com](http://www.psgdover.com/neptune.com)

**NOTE:** PLEASE SUPPLY BOTH MODEL AND SERIAL NUMBERS.

## SECTION II

### INSTALLATION INSTRUCTIONS

#### 1.0 GENERAL

- 1.0.1 When unpacking a pump or chemical feed system, be certain that no parts are thrown away. Examine the equipment for possible damage. If damage has occurred, file claim with the common carrier within 24 hours. Neptune will assist in estimating the repair costs.
- 1.0.2 The “dia-PUMP” should be located so as to avoid an ambient temperature above 120°F, 50°C. Free air circulation is important when considering the location of the pump.
- 1.0.3 The “dia-PUMP” should be located on a level surface. Three mounting holes are provided to anchor the pump securely to the mounting surface. PVC head pumps must be mounted on three, one-inch spacers provided.
- 1.0.4 Neptune recommends a 4” to 6” inch clearance above mounting surface (on most models) to allow access to the Suction Valve. Please refer to model and valve location prior to installation.
- 1.0.5 All piping to the pump should be supported to prevent stress on the pump input and output fittings.
- 1.0.6 All fittings and connections must be airtight. Otherwise, pump suction capability will be reduced or lost.
- 1.0.7 Before connecting the pump, make sure that all fittings are completely clean by flushing thoroughly. Any foreign matter entering the pump can damage the internal parts and severely limit the life of the pump.
- 1.0.8 A “Y” STRAINER MUST BE INSTALLED IN THE SUCTION LINE OF THE PUMP TO INSURE AGAINST FOREIGN MATTER ENTERING THE PUMP. ALL SUCTION LIFT APPLICATIONS REQUIRE A FOOT VALVE STRAINER TO PREVENT LOSS OF PRIME, AND TO PREVENT FOREIGN MATERIAL FROM ENTERING THE PUMP.
- 1.0.9 Shut-off valves and unions should be placed in the suction and discharge lines to facilitate servicing the pump.
- 1.0.10 Care should be exercised when piping to PVC head pumps. In cases where vibration or stress is unavoidable, flexible connections should be used.
- 1.0.11 The electrical supply to the pump must match the motor name plate characteristics. The motor rotation is counter clockwise when viewed from the top of the motor, looking down on the pump. (See Figure 1).
- 1.0.12 Discharge Piping should be the same size or larger than the discharge connection. Suction Piping should be one size larger than the suction connection (1/2” pipe minimum). Limit the total length of the suction line to 3-4 feet suction lift or 6-7 feet flooded suction. Minimum bends, elbows, or other restrictions.

#### **Important**

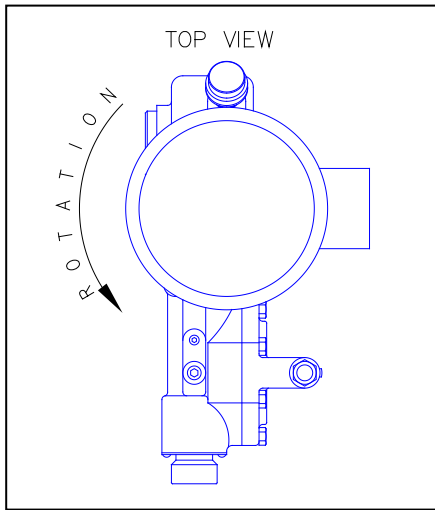
On single phase integral motors, the rotation is set at the factory and must not be changed.  
On three phase integral motors, rotation is determined by noting the fan rotation.  
Pump body is grounded to earth. Ground connection MUST penetrate to bare metal. Ground to be clearly marked.  
Check external pressure relief valve setting.

**On some flange mounted motors, the motor rotation may be viewed by removing the cap on the side of the flange. There is no viewing port or coupling access on the close coupled flange mount motors. Rotation is checked by removing the oil fill plug and observing the gear. Correct rotation is indicated by the gear teeth moving downward away from the oil fill hole.**

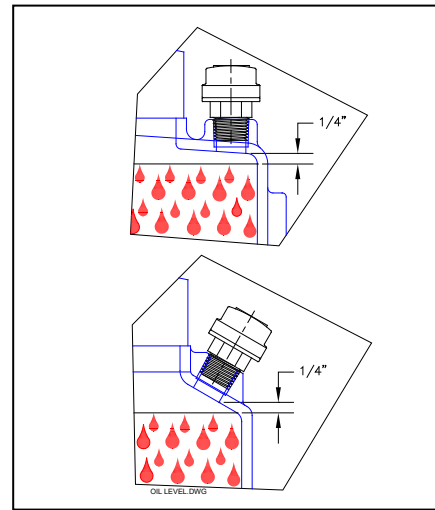
**Please note Figure 1, indicating the correct rotation. (An arrow on the gear box also indicates proper rotation.) Operation with the incorrect rotation will damage the pump and motor.**

Models 5003 and 5005 must be installed with a flooded suction. These models will not operate with suction lift.





**FIGURE 1**



**FIGURE 1A**

1.0.12 Set capacity knob to zero and remove Air Bleed Plug from the top of Oil Chamber, refer to drawings HP-1102 (page 22) for Series 500 and drawing 5024 (page 28) for Series 500-A and 500-E for location of plug. Fill gear box and pump by pouring the hydraulic fluid supplied through the fill opening at the rear of the pump. Pour fluid in slowly until it has reached the correct level per Figure 1A. Do not over fill as this can cause damage to the motor.

Allow a few minutes for the hydraulic fluid work through the oil head and appear at the oil bleed plug. Recheck oil level. When air is purged, reinstall the Air Bleed Plug.

The hydraulic fluid supplied by Neptune is:

EP 68 Gear Oil, consult the parts listing in the back of this manual for the Neptune part number.

Heavier hydraulic fluid is supplied by Neptune for Hi Pressure Systems is EP SAE 90.

| Alternate Oils For Standard                | Mfg.      | Alternate High Pressure Oils |
|--|-----------|------------------------------|
| Mobil Gear #626                            | Mobil Oil | Mobil Gear #629              |
| Sun EP #68                                 | Sun Oil   | Sun Oil #220                 |
| Meropa #68                                 | Texaco    | Meropa #220                  |
| Mobil 1 0W30/5W30 for 5003/5005 Pumps only | Mobil Oil |                              |

The 90 weight gear oil is used for high-pressure pumps using 1/2 horsepower motors or larger and rated for operation over 1000 PSI except 5003 and 5005 pumps which uses Mobil 0W30 synthetic oil.

The 90-weight gear oil is also provided for the 500 pump models at all pressures.

## 2.0 SUCTION PIPING

2.0.1 The suction piping to the pump must be absolutely air tight. It is suggested that the suction piping be tested with low air pressure and a soap solution to assure that no leaks exist.

2.0.2 NEPTUNE RECOMMENDS THAT THE "dia-PUMP" BE OPERATED WITH A FLOODED SUCTION, AS THIS WILL FACILITATE START UP AND INCREASE THE SERVICE LIFE OF THE PUMP. It is, however, possible to operate the "dia-PUMP" with a suction lift of up to 5 feet, if absolutely necessary. A FOOT VALVE STRAINER must be used on this type of application. Model 5003 and 5005 require a flooded suction.

2.0.3 It is highly recommended that all solution tanks be furnished with a low level cut off switch or low level alarm and cut off switch to prevent the pump from running dry. OPERATION AGAINST A DRY SYSTEM WILL CAUSE DAMAGE TO THE PUMP DIAPHRAGM AND REDUCE THE OPERATING LIFE OF THE PUMP.

2.0.4 The single, safest rule of thumb for selecting suction pipe size is to use the same size or one size **larger** than the pump suction connection (1/2" pipe minimum).

### 3.0 DISCHARGE PIPING

3.0.1 It is recommended that the “dia-PUMP” operate against a minimum discharge pressure of 50 psig. A back pressure spring is supplied loose with the pump. If 50 psig back pressure is not provided by the application, the back pressure spring should be installed on the pin under the discharge valve cap. Installation of the back pressure spring artificially creates a discharge head. (Refer to Figures II and III.) Note: Spring is not provided in 500-E Series.

3.0.2 Take care to use piping suitable for the discharge pressure.

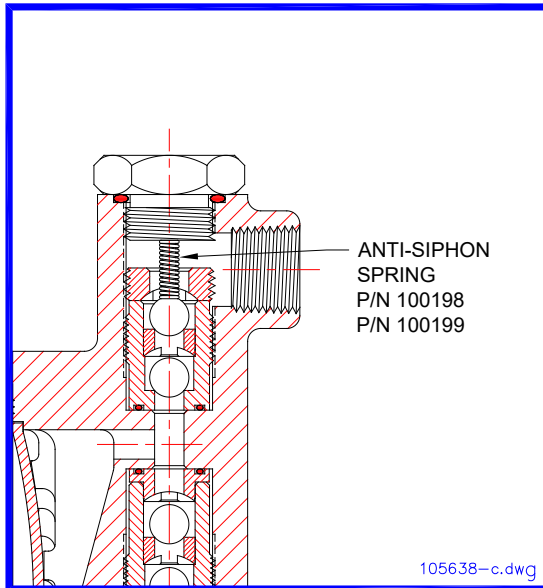


FIGURE II  
IN METAL HEAD PUMP

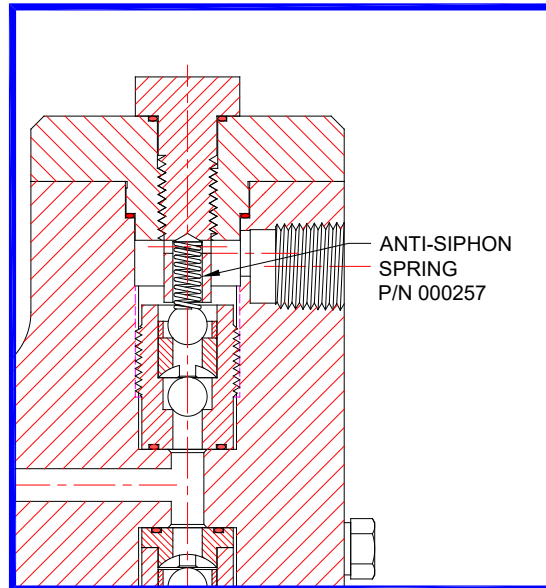


FIGURE III  
IN PVC HEAD PUMP

### 4.0 ADJUSTMENT OF INTERNAL RELIEF VALVE

4.0.1 All Neptune Series 500/5000 dia-PUMPs are supplied with an internal relief valve preset to 200 psi.

The internal relief valve is designed to protect the pump itself should a discharge pressure beyond the relief valve setting occur.

If a customer order specifies a relief valve setting above those indicated above, the specified setting will be set at the factory. All pumps are tagged with the relief valve setting used by the factory.

4.0.1 (Continued)

To protect the external piping system, it is recommended that a relief valve as manufactured by Neptune Chemical Pump Company, or equal, be placed in the discharge line of the pump. It is further recommended that this relief valve be piped into return of the tank with clear PVC tubing so that it can be determined if the solution is by-passing through the valve and returning to the tank, indicating a line blockage.

Drawing HP-1102 (page 22) illustrates the location of the Internal Relief Valve for Series 500 (FIG. #527 through #530). See drawing 5024 (page 28) for Series 500-A and 500-E.

The drawing shows a passage connecting the hydraulic fluid reservoir with the hydraulic fluid side of the diaphragm.

The passage is interrupted by the Relief Valve Poppet (FIG. #527) which is backed up by a Relief Valve Spring (FIG. #528).

If, during the pump operation, the pressure on the hydraulic fluid side of the pump exceeds the set pressure of the internal relief valve, the poppet is forced from its seat allowing the hydraulic fluid to flow back to the reservoir.

4.0.2 To reset the relief valve to a higher pressure, (the relief valve setting cannot be reduced because of design considerations) instructions are as follows:

4.0.21 Connect a test set-up as shown in Figure IV below.

4.0.22 Start and run the pump until all air is relieved from the discharge liquid (hand valve open).

4.0.23 Remove Relief Valve Plug (Fig. #530).

4.0.24 Close hand valve; pressure gauge will read the internal relief valve setting which should agree with the pressure setting on the tag if the pump is new. The desired setting is 100 psi above the operating pressure of the system into which the pump is injecting. Do not adjust lower than 200 psi.

4.0.25 To change the relief valve pressure setting, use the 3/16" Allen Wrench to adjust spring tension by turning Relief Valve Adjusting Screw (FIG. #529).

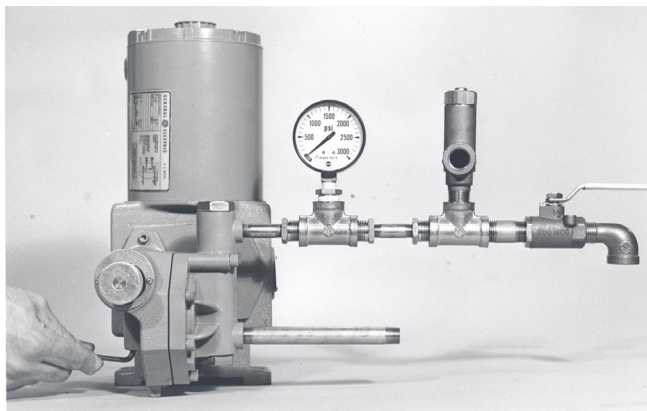
- (1) To increase pressure, turn Relief Valve Adjusting Screw (Fig. #529) in.
- (2) To decrease pressure, turn Relief Valve Adjusting Screw (Fig. #529) out.

4.0.26 After resetting or adjusting pressure, replace Relief Valve Plug (Fig. #530).

**CAUTION**

Never turn Relief Valve Adjusting Screw (Fig. #529) completely in.

Do not attempt to set the internal relief valve more than 200psi in excess of name plate rating.



**FIGURE IV**

#### 4.0.3 Parts required to test or adjust Relief Valve Pressure.

|        |  |
|--------|--|
| 1 Pc.  | 1/2" Pipe Nipple 6" Long                             |
| 2 Pcs. | 1/2" Pipe Nipple 2" Long                             |
| 1 Pc.  | 1/2" Hand Valve                                      |
| 2 Pcs. | 1/2" Tee   |
| 1 Pc.  | 1/2" NPT X 1/2" Hose (Fitting)                       |
| 1 Pc.  | 1/2" Hose, As Required                               |
| 1 Pc.  | 1/2" Pressure Gauge (Minimum Gauge Pressure 500 psi) |
| 1 Pc.  | Allen Wrench 3/16"                                   |
| 1 Pc.  | External Relief Valve (optional)                     |

#### **NOTE**

**The above parts must have a working pressure rating above the required set pressure.**

### **5.0 INSTALLATION OUTDOORS**

The "dia-PUMP" is a totally enclosed pump which can be used outdoors or indoors. When installed outdoors, make sure that the pump is protected against extremes of nature as follows:

- 5.0.1. Running of the pump when exposed to tropical sunshine, with ambient temperature above 100°F, 38°C would cause excessive oil and motor temperatures. The pump should be shaded and located in such a way as to permit a high degree of air circulation.
- 5.0.2 Under cold conditions, the pump should be insulated and a heater should be supplied in order to maintain the hydraulic fluid at an ambient temperature above 30°F, -1°C. Heat may be provided by a 100 watt bulb or a heater tape, etc.

### **6.0 START-UP PROCEDURE (FLOODED SUCTION)**

The following start-up procedure is complete and does repeat instructions on filling the gear box and pump.

- 6.0.1 The gear box should be filled with hydraulic fluid per the instructions in paragraph 1.0.12. Let the pump stand for 30 minutes and then recheck fluid level. Be certain that pump discharge lines are open.
- 6.0.2 Confirm that the liquid head is flooded and no air remains per the following paragraphs. Pumps should **not** be running. Wear appropriate protective gear when performing any step that involves contact with the chemical.

#### 6.0.2.1 SERIES 500 and 500-A METAL HEAD

Make certain that pumping chamber is flooded and air is purged by loosening Discharge Valve Cap (FIG. #536 on page 22) approximately 2 to 3 turns and allowing solution to appear. Then, tighten discharge valve cap. This procedure will also allow air to vent from pumping chamber. THE "dia-PUMP" WILL NOT FUNCTION IF AIR IS TRAPPED IN THE HYDRAULIC FLUID OR LIQUID PUMP CHAMBERS.

#### 6.0.2.2 SERIES 500 AND 500-A PVC HEAD

PVC Head Pumps –Discharge Valve Cap (P/N 000256 on page 23) is loosened by loosening Valve Cap Screws (P/N 100250).

#### 6.0.2.3 SERIES 500-E (See page 26)

#### 6.0.3 Follow the procedure below:

1. Make certain that the suction line, liquid end and discharge cartridge chamber are filled with water or system fluid.
2. Set the capacity control knob to approximately 30-40% of maximum capacity.
3. On initial start-ups: Check for proper motor rotation (Refer to Paragraph 1.0.11). Run the pump for 10-20 seconds, then stop for 20-30 seconds. Repeat a few times. During these short runs, listen for any abnormal motor or crank noises, and if present, refer to Trouble Shooting Chart.

4. On initial gearbox fill or after replacing hydraulic fluid, run pump for one-half to one hour to warm up oil and allow air bubbles to dissipate. Check discharge line for indication of flow.
5. Once discharge flow is observed proceed to paragraph number 6; if no flow, repeat steps 3 and 4.
6. Increase capacity adjustment setting to 70% of maximum capacity and operate for 10-20 minutes.
7. Reduce capacity adjustment setting to 30-40% of maximum capacity and operate for several minutes, then increase capacity adjustment back to 100% for approximately 10 minutes. Repeat several times to insure that the air is bled from the hydraulic fluid side and the liquid side.

6.0.4 The pump is now ready for “on line” service. Calculate what the desired capacity as a percentage of either the maximum capacity rating on the pump data plate, or the nominal capacity at the required system pressure.

## **7.0 START-UP PROCEDURE (SUCTION LIFT) SERIES 500 AND 500-A.**

(See page 26 for SERIES 500-E) MODELS 5003, 5005 AND 510 REQUIRE A FLOODED SUCTION.

7.0.1 If the “dia-PUMP” is to be used where suction lift is required, A FOOT VALVE STRAINER MUST BE INSTALLED on the end of the suction line. A pipe tee is installed on the top end of the suction line with one leg to the pump suction, one leg to the suction line and one leg pointing straight up and plugged. Remove plug and fill piping assembly with liquid. Replace plug. Start pump and follow procedure per Paragraph 6.0.3.

Use the following procedure only if required:

7.0.2 Remove Discharge Valve Cap (FIG. #536). Then, using Allen wrench provided, remove Discharge Valve Nut (FIG. #543). The Discharge Valve Nut (FIG. #543) is stamped with the letter “T” to indicate the face which should be installed toward the top on reassembly. Finally, remove Discharge Valve Cartridge (FIG. #539) using special blade provided. Fill the pumping chamber with liquid to check operation of the suction valve. Reinstall / replace parts and then follow instructions per Section II, Paragraph 6.0.3. Repeat entire procedure if pump loses prime or runs dry. (See Figures VI and VII.)

### **NOTE**

PVC Head Pumps (Refer to page #23) – Remove Discharge Valve Cap (P/N 000256) by removing Valve Cap Screws (P/N 100250). Next, remove Discharge Valve Cartridge (P/N 000259) using special round lug tool provided. Fill pumping chamber with liquid to check operation of the suction valve. Reinstall / replace parts and then follow instructions per Section II Paragraph 6.0.3. (Refer to Figure VII.)

### **CAUTION**

Do not over tighten PVC valves as the PVC material is not able to withstand excessive force and can fail. Teflon® paste is an excellent thread lubricant and may be applied.

## **8.0 START-UP AFTER SUCTION HAS RUN DRY**

In applications where the suction tank does not have a low level cut-off interconnected into the pump motor circuit, the pump may occasionally run dry. THIS MUST BE AVOIDED BECAUSE DAMAGE TO THE PUMP CAN RESULT AND THE SERVICE LIFE WILL BE SIGNIFICANTLY REDUCED WHEN THE PUMP IS ALLOWED TO RUN WITH A DRY LIQUID END.

Before restarting a pump that has run dry and which has not damaged itself, follow the procedure in Paragraph 6.0 through 6.0.3 of Section II, except it is not necessary to warm up the oil.

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## SECTION III

### NORMAL MAINTENANCE AND DISASSEMBLY INSTRUCTIONS

#### 9.0 MAINTENANCE

CAUTION - Ensure all operators are properly trained and employ safe operating and maintenance practices. Operator error may cause process liquid to expel through the head joints and/ or piping.

Under normal conditions, the “dia-PUMP” does not require any significant amount of maintenance. It is advised that periodic visual observations be made of the oil level. See Page 5 (Figure 1A) for correct oil level. The liquid end of the pump should also be inspected for leakage. These observations should be made regularly, at least every 48 hours.

| <b>Recommended Maintenance Schedule</b>   |
|---|
| <b>Weekly Interval</b>  |
| <ul style="list-style-type: none"><li>• Check oil level</li></ul>   |
| <ul style="list-style-type: none"><li>• Check for leaks</li></ul>   |
| <ul style="list-style-type: none"><li>• Check ground connection for corrosion</li></ul>   |
| <ul style="list-style-type: none"><li>• Clean pump surfaces and surrounding area of dust and debris</li></ul>                                   |
|   |
| <b>First 250 hours of operation</b>   |
| <ul style="list-style-type: none"><li>• Change oil</li></ul>  |
|   |
| <b>Every 4000 hours or six months</b>   |
| <ul style="list-style-type: none"><li>• Change oil</li></ul>  |
| <ul style="list-style-type: none"><li>• Clean inlet piping strainer &amp; check external pressure relief valve</li></ul>                        |
| <ul style="list-style-type: none"><li>• Replace worm shaft oil seal</li></ul>   |
| <ul style="list-style-type: none"><li>• If equipped, check coupling insert. Replace if necessary.</li></ul>                                     |
| <ul style="list-style-type: none"><li>• Tighten all fasteners</li></ul>   |
|   |
| <b>Annual</b>   |
| <ul style="list-style-type: none"><li>• Clean check valves. Replace O-rings.</li></ul>  |
| <ul style="list-style-type: none"><li>• Replace diaphragm</li></ul>   |
| <ul style="list-style-type: none"><li>• If equipped, replace coupling insert.</li></ul>   |
| <ul style="list-style-type: none"><li>• Replace rolling element bearings</li></ul>  |
| <ul style="list-style-type: none"><li>• Replace O-rings</li></ul>   |
| <ul style="list-style-type: none"><li>• Replace check valves</li></ul>  |
| <ul style="list-style-type: none"><li>• For Low Profile Flange style (-FALP), Apply Anti-seize at motor shaft and gear shaft adapter.</li></ul> |

## **10.0 REMOVAL OF VALVE CARTRIDGES (See page 26 for SERIES 500-E; Page 29 for 500-VS)**

The “dia-PUMP” incorporates a unique check valve design whereas the discharge and suction piping NEED NOT be disturbed in order to service the valve cartridges.

Should the valves need cleaning, remove as follows:

- 10.0.1 Suction Valve: Remove Suction Valve Cap (FIG. #550) and using Allen Wrench provided, remove Suction Valve Cartridge (FIG. #544).

### **NOTE for PVC Head Pumps**

Remove Suction Valve Cap (P/N 000256) by removing the Valve Cap Screws (P/N 100250) and remove Suction Valve Cartridge (P/N 000259) using the special round lug tool provided. Caution: PVC is fragile – do not use excessive force.

- 10.0.2 For removal of discharge valve, refer to instruction in Section II, Paragraph 7.0.2.

- 10.0.3 Please refer to Figures VI and VII showing valve cartridge removal.

## **11.0 CLEANING OF VALVE CARTRIDGES**

- 11.0.1 The valve cartridge is a complete and integral unit and should not be disassembled for cleaning. If the valves are found to be worn and in need of replacement, an entire valve cartridge, either suction or discharge, should be ordered. The suction valve is the longer of the two valve cartridges.

- 11.0.2 To clean the valve cartridges, soak in strong detergent and then blow dry with compressed air.

## **12.0 REPLACING OF VALVE CARTRIDGES (See page 25 for SERIES 500-ER)**

- 12.0.1 Be certain that the Valve Seat O-Ring (FIG. #549 for Metal Head Pumps, P/N 100185 for PVC Head Pumps) is removed with the valve and that no other foreign matter is in the valve cavity. Use a small amount of grease to hold the o-ring in the groove in the end of the valve cartridge on reassembly.

Reverse the procedure used to remove the valve cartridge. Do not over-tighten valve cartridge. Firm tightening is enough to cause the O-Ring to seal.

## 12.0 REPLACING OF VALVE CARTRIDGES (Continued)

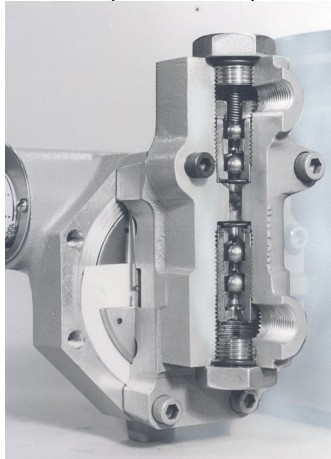


FIGURE V  
CUT-AWAY VIEW OF VALVE SECTION, METAL HEAD PUMP

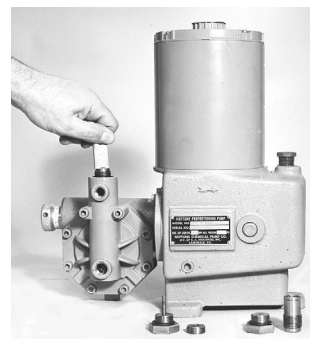
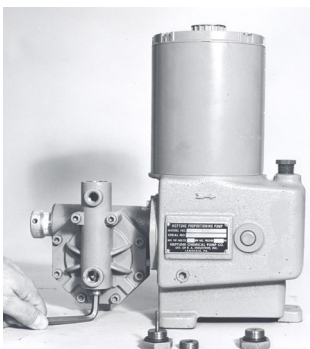
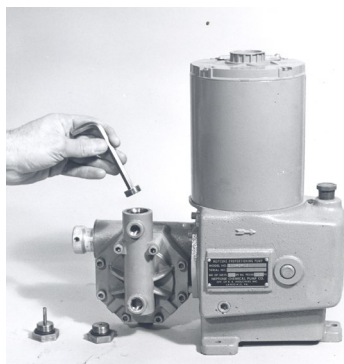


FIGURE VI  
VALVE CARTRIDGE REMOVAL, METAL HEAD PUMP

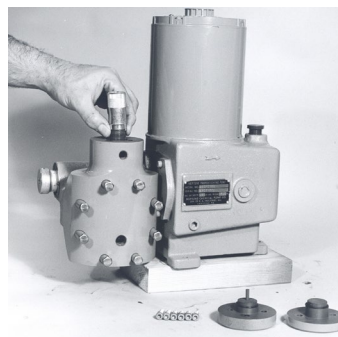
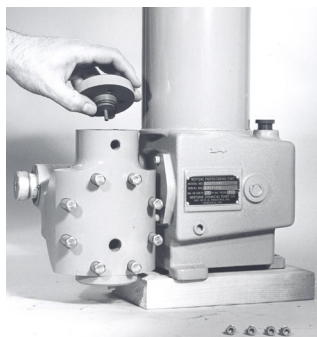
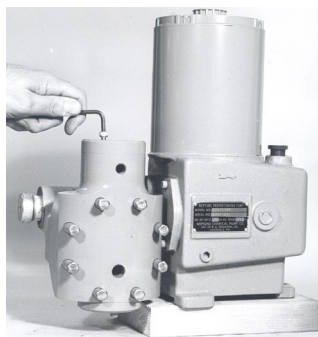


FIGURE VII  
VALVE CARTRIDGE REMOVAL, PVC HEAD PUMP

## 13.0 PROCEDURE FOR REPLACING CONTROL ROD O-RING (fig. #517) AND SEALING PLATE O-RING (FIG. #516).

Refer to Figure VIII

1. Remove Drain Plug (FIG. #510) and drain hydraulic fluid.
2. Remove Indicator Plate (FIG. #520) by removing two holding screws.
3. Remove control rod assembly with Control Rod (FIG. #'s 515, 523,524) attached, by turning counter clockwise and pulling out.
4. Insert 11/16" Hex Socket onto the Sealing Nut (FIG. #526) and screw out of pump in a counter clockwise direction. Then, remove Sealing Plate (FIG. #518) using a small brass hook to pull loose.



5. Replace Control Rod O-Ring (FIG. #517) and Sealing Plate O-Ring (FIG. #516).
6. Take care when replacing Sealing Plate, (FIG. #518) so as to not damage the Sealing Plate O-Ring (FIG. #516).
7. Replace all parts and fill pump with hydraulic fluid per previous instructions.
8. Follow start-up procedure as if starting a new pump.

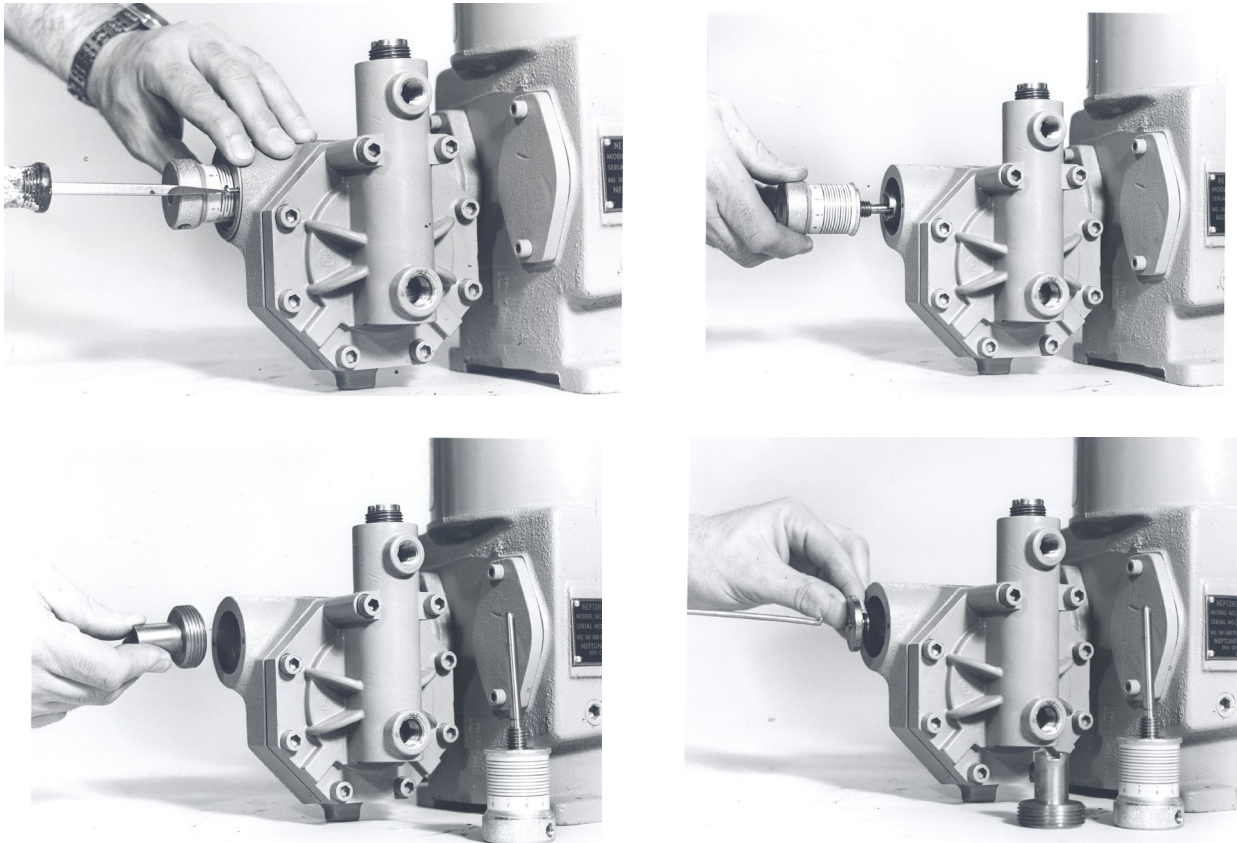


FIGURE VIII  
REMOVAL OF CONTROL ROD ASSEMBLY

#### 14.0 REMOVAL OF PUMP HEAD AND REPLACEMENT OF DIAPHRAGM (REFER TO FIGURES IX AND X)

- 14.0.1 Remove Drain Plug (FIG. #510), and drain hydraulic fluid.
- 14.0.2 Remove Long and Short Pump Head Bolts [(FIG. #'s 551 and 552) or (P/N 101135 and P/N 101136) on PVC pumps.] Lift Pump Head [(FIG. #535) or (P/N 000255, P/N 000258) on PVC pump] away from pump.
- 14.0.3 Remove and examine Teflon Diaphragm (FIG. #533). Remove and examine the Liquid Side Diaphragm Backup Place [(FIG. #532) or (P/N 000254, 100245) on PVC pumps.] Replace with new part, if required. When replacing the Teflon diaphragm, be certain to line it up properly with the sealing grooves.
- 14.0.4 To reassemble, reverse the above procedure. Reassembly is facilitated by laying the pump on its side. Be certain to tighten all bolts evenly. Tighten to 25 ft. lbs. (15ft. lbs. On PVC pump).
- 14.0.5 Start up pump by following Start-Up Procedure per Section II Paragraph 1.0.12 and 6.0.3.

## 14.0 REMOVAL OF PUMP HEAD AND REPLACEMENT OF DIAPHRAGM (Continued)

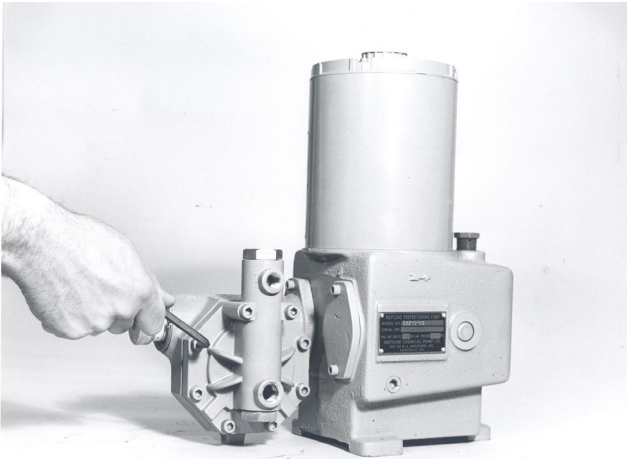


FIGURE IX

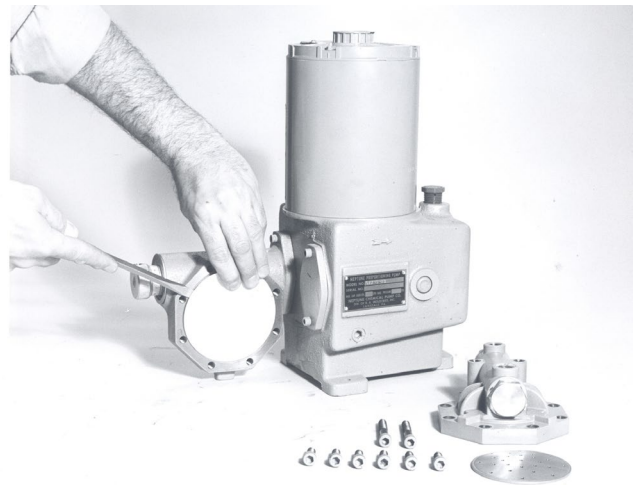


FIGURE X

### 15.0 REMOVAL OF MOTOR FROM STANDARD "dia-PUMP" (REFER TO FIGURE XI)

15.0.1 Disconnect all wires leading to the motor.

15.0.2 Remove Drain Plug (FIG. #510) and drain hydraulic fluid from pump.

15.0.3 Remove the fan cover and fan if the motor is a TEFC type. Remove retaining bolts from the top of the motor. These bolts are threaded directly into the Pump Gear Box (FIG. #500).

15.0.4 Turn case of motor gently to break silicone seal between motor casing and Pump Gear Box (FIG. #500). Tilt motor slightly forward and remove housing and remove internal part.

15.0.5 To replace motor, clean machined surface at top of Gear Box (FIG. #500) and apply silicone sealer. Place motor back in position generally reversing the disassembly procedure.

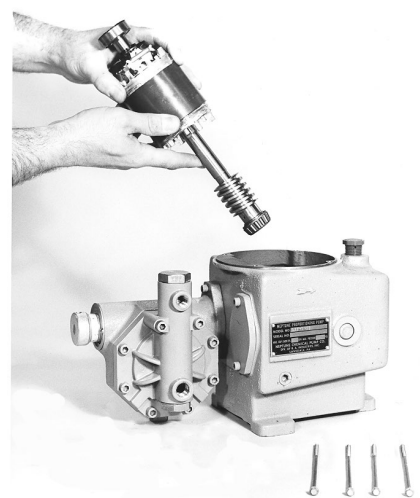
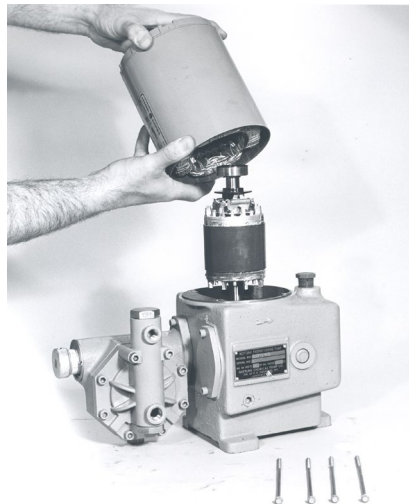
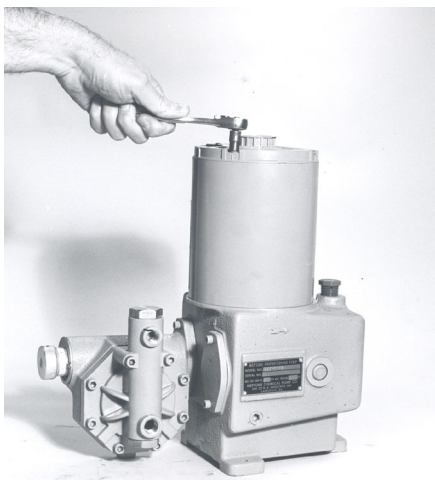


FIGURE XI

## SECTION IV

### MOTOR OPERATING CONDITIONS

- 16.0 The Standard Series 500/5000 “dia-PUMP” is supplied with a 1/3 HP or 1/2 HP/single phase/totally enclosed fan cooled motor as an integral part of the pump itself.

The normal temperature rise for this motor is 40°C above ambient temperature and thus, it might appear that the motor is operating at a higher than normal temperature. This situation is normal and should not cause concern.

Due to the high motor surface temperature (80°C), as a precaution to avoid burning skin, it is recommended to avoid touching the pump during operation. After shutting off pump, let the pump rest for 5 minutes before touching the motor.

As a precaution against motor overheating, it is recommended that the pump be located where adequate ventilation is available. It is also highly RECOMMENDED THAT A MOTOR STARTER WITH THE PROPER OVERLOAD PROTECTION BE SUPPLIED AS AN ADDITIONAL SAFETY DEVICE.

The Standard Series 500/5000 “dia-PUMP” (1/3HP/1/115V/60C/TEFC) motor is supplied with built-in thermal protection. Automatic overload is provided on all pumps with standard motor with serial numbers higher than 9600-78D.

Should an overload occur on a standard motor unit which is not protected by a motor starter or on such a unit where the starter has failed, the motor will shut down automatically. It will take approximately ½ hour for the automatic thermal overload switch to reset itself.

## SECTION V TROUBLESHOOTING CHART

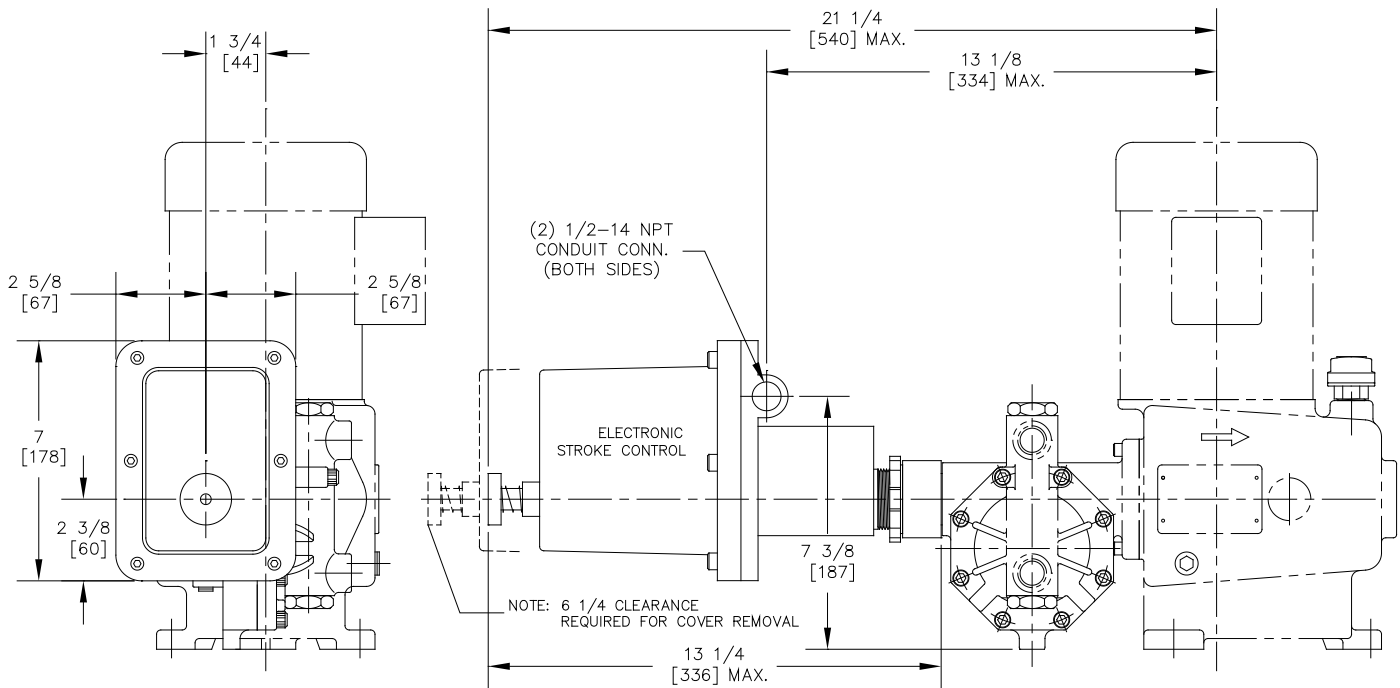
| SYMPTOMS                                 | CAUSES   | REMEDIES  |
|--|--|---|
| 1. Pump Motor Will Not Operate.          | A. Blown Fuse.   | A. Check for short circuit or overload.   |
|  | B. Open thermal overload device in starter or motor.                           | B. Reset.   |
|  | C. Low liquid level in tank (where low level cut-off is used).                 | C. Fill tank.   |
|  | D. Broken wire.  | D. Locate and repair.   |
|  | E. Low voltage.  | E. Check for too light wiring.  |
|  | F. Oil "frozen" in pump.   | F. Thaw out.  |
| *2. Pump Does Not Deliver Rated Capacity | A. Starved suction.  | A. Replace suction piping with larger size, or increase suction head.   |
|  | B. Leaky suction piping.   | B. Pressure test, repair or replace defective piping.   |
|  | C. Excessive suction lift.   | C. Rearrange equipment location to reduce suction lift.   |
|  | D. Liquid too close to boiling point.  | D. Lower temperature or increase suction head pressure.   |
|  | E. Air or gas trapped in oil or pumpage.                                       | E. Decrease capacity to 20% for 5 mins., then increase to 100% for 5 mins.  |
|  | F. Worn or dirty valves or seats, or both.                                     | F. Clean or replace.  |
|  | G. Viscosity of liquid too high (CPS).   | G. (1) Reduce viscosity by heating or other means;<br>(2) Increase size of suction piping;<br>(3) Increase suction pressure                   |
|  | H. Insoluble materials settling out, or crystallization of saturated solution. | H. Check solution strength.<br>Flush and clean solution tank periodically. Suction connection should be 2 to 4" from bottom of solution tank. |
|  | I. Low discharge pressure.   | I. A minimum discharge pressure of 50 psi is required to insure proper capacity control.  |
|  | J. Capacity adjustment set above 100% capacity mark.                           | J. Reposition adjustment knob to 100% mark.   |
|  | K. Air in hydraulic or chemical systems.                                       | K. Bleed system.  |

| <b>SYMPTOMS</b>                               | <b>CAUSES</b>  | <b>REMEDIES</b>  |
|---|--|--|
|   | L. No foot valve strainer.   | L. Install one.  |
| *3. Pump delivers erratically.                | A. Leaky suction line.<br>B. Worn or dirty valves or seats, or both.<br>C. Excessive excursion of ball from valve seats (indicated by ball chatter).<br>D. Liquid too close to boiling point.<br>E. Leaky internal or external relief valve. | A. Repair or replace piping.<br>B. Clean or replace cartridges.<br>C. Replace cartridges.<br>D. Reduce temperature or raise suction pressure.<br>E. Repair or replace relief valve.  |
| 4. Motor Overheats Thermal Overload Activates | A. Overload caused by operating pump beyond rated capacity.  | A. Check operating pressure against pump manufacturer's data plate maximum rating.   |
| 5. Noisy Operation<br>(1) In Pump             | A. Pump Valves.  | A. Valves must move to open and close, and they will make a clicking noise as they operate. These noises are sometimes amplified by natural resonances in piping system. They are usually indications of normal valve functioning. |
| (2) In Gear Reducer                           | A. Pounding noise at high discharge pressure.  | A. Fluid compressibility causes reversal of load on gears at end of pressure stroke. Not considered detrimental.   |
| 6. Improper Oil Level in Reservoir.           | A. Increases and overflows.  | A. Flexible diaphragm punctured by foreign material – replace diaphragm. Clean and flush hydraulic system at once.   |
| 7. Pump Delivery is Not Adjustable            | A. System pressure too low.  | A. Install back-pressure spring, provided, into discharge cartridge.<br>B. Install Back-pressure valve.  |
| 8. Pump Does Not Develop Required Pressure    | A. Internal relief valve leaking.<br>B. Internal relief valve being actuated.  | A. Check setting as per pressure change procedure, Paragraph 4.0.<br>B. System pressure exceeds relief valve set pressure. Refer to Paragraph 4.0 for adjustment procedure.  |

\* Symptoms 2 and 3 ---- A Diaphragm may need replacing.

**SECTION VI**  
**SEE ELECTRIC STROKE CONTROL INSTRUCTION MANUAL P/N ZL106738**  
**FOR PUMPS FURNISHED WITH OPTIONAL ELECTRIC STROKE CONTROL.**

17.0 Typical Drawing of the Neptune dia-PUMP with Electric Stroke Control shown below.



**SECTION VII PARTS LIST  
SERIES 500 AND 500-A PUMP PARTS**

| FIG. NO. | DESCRIPTION                    | QTY. | PART NO. |
|----------|--------------------------------|------|----------|
| 500      | Gear Box*                      | 1    | 000162   |
| 5005     | Worm Gear 37 SPM*              | 1    | 000164   |
|          | Worm Gear 72 SPM*              | 1    | 000166   |
|          | Worm Gear 117 SPM*             | 1    | 000163   |
|          | Worm Gear 144 SPM*             | 1    | 002818   |
|          | Worm Gear 175 SPM*             | 1    | 000165   |
| 502      | Connecting Rod                 | 1    | 000167   |
| 503      | Gear Shaft*                    | 1    | 106305   |
| 506      | Worm 37 SPM                    | 1    | 000170   |
|          | Worm 72 SPM                    | 1    | 000172   |
|          | Worm 117 SPM                   | 1    | 000169   |
|          | Worm 144 SPM                   | 1    | 002817   |
|          | Worm 175 SPM                   | 1    | 000171   |
| 507      | Bearing Cup                    | 1    | 100179   |
| 508      | Bearing Cone                   | 1    | 100180   |
| 509      | Worm Spring Pin                | 1    | 100181   |
| 510      | Drain Plug                     | 1    | 100182   |
| 511      | Connecting Rod Pin             | 1    | 100183   |
| 512      | Fill Plug                      | 1    | 000191   |
| 513      | Pump Body, Right Hand          |      |          |
|          | 1/2" Small Cavity††            | 1    | 000180   |
|          | 1/2" Standard Cavity††         | 1    | 000178   |
|          | 11/16" Standard Cavity††       | 1    | 000177   |
|          | 1-1/16" Standard Cavity††      | 1    | 000176   |
|          | 1-3/16" Standard Cavity††      | 1    | 003232   |
|          | Pump Body, Left Hand           |      |          |
|          | 1/2" Small Cavity††            | 1    | 000179   |
|          | 1/2" Standard Cavity††         | 1    | 000175   |
|          | 11/16" Standard Cavity††       | 1    | 000174   |
|          | 1-1/16" Standard Cavity††      | 1    | 000173   |
|          | 1-3/16" Standard Cavity††      | 1    | 003235   |
| 514      | Piston 1/2"                    | 1    | 000181   |
|          | Piston 11/16"                  | 1    | 000182   |
|          | Piston 1-1/16"                 | 1    | 000183   |
|          | Piston 1-3/16"                 | 1    | 003234   |
| 515      | Control Rod                    | 1    | 000184   |
| 516      | Sealing Plate O-Ring 1/2"      | 1    | 100184   |
|          | Sealing Plate O-Ring 11/16"    | 1    | 100185   |
|          | Sealing Plate O-Ring 1-1/16"   | 1    | 100186   |
|          | Sealing Plate O-Ring 1-3/16"   | 1    | 100244   |
| 517      | Control Rod O-Ring             | 1    | 100188   |
| 518      | Sealing Plate 1/2"             | 1    | 000185   |
|          | Sealing Plate 11/16"           | 1    | 000186   |
|          | Sealing Plate 1-1/16"          | 1    | 000187   |
|          | Sealing Plate 1-3/16"          | 1    | 003233   |
|          | Capacity indicating scale      | 1    | 100192   |
|          | Capacity indicating scale 5003 | 1    | 104802   |
|          | Capacity indicating scale 5005 | 1    | 104799   |

| FIG. NO. | DESCRIPTION  | QTY. | PART NO. |
|----------|--|------|----------|
| 519      | Control Rod Spring Pin   | 1    | 100189   |
| 520      | Indicator Plate  | 1    | 000188   |
| 521      | Indicator Plate Screws   | 2    | 100190   |
| 522      | Control Knob Set Screw   | 1    | 100191   |
| 523      | Control Rod Positioner   | 1    | 000189   |
|          | Control Rod Positioner 5003  | 1    | 004839   |
|          | Control Rod Positioner 5005  | 1    | 004834   |
| 524      | Control Knob   | 1    | 002071   |
|          | Control Knob for 5003  | 1    | 004841   |
|          | Control Knob for 5005  | 1    | 004836   |
| 526      | Sealing Nut  | 1    | 002069   |
|          | Sealing Nut for 5003   | 1    | 004840   |
|          | Sealing Nut for 5005   | 1    | 004835   |
| 527      | Relief Valve Poppet Except Model 547   | 1    | 000193   |
|          | Relief Valve Poppet Model 547 Only   | 1    | 003531   |
| 528      | Relief Valve Spring  | 1    | 100193   |
|          | Relief Valve Spring-High Pressure Denoted by "HP" in Model No. After Material Code-Example: 515-S-N3HP | 1    | 106319   |
| 529      | Relief Valve Adjusting Screw   | 1    | 105164   |
| 530      | Relief Valve Plug  | 1    | 108043   |
| 531      | Oil Side Backup Plate  |      |          |
|          | Small Diameter Models 500, 5003, 5005††  | 1    | 000197   |
|          | Standard Diameter Except Models 53X and 54X††  | 1    | 000194   |
|          | Standard Diameter Models 53X and 54X††   | 1    | 003946   |
| 533      | Teflon Diaphragm   |      |          |
|          | Small Cavity ††  | 1    | 000231   |
|          | Standard Cavity ††   | 1    | 000200   |
| 534      | Pump Body Cap Screws   | 2    | 100293   |
| 538      | Valve Cap O-Rings  | 2    | 100200   |
|          | Valve Cap O-Rings-Teflon   | 2    | 100213   |
| 549      | Valve Seat O-Rings   | 2    | 100204   |
|          | Valve Seat O-Rings-Teflon  | 2    | 100203   |
| 553      | Pipe Plug  | 1    | 100210   |
| 554      | Cover Plate  | 1    | 000229   |
| 555      | Cover Plate Screws   | 2    | 100211   |
| 556      | Std. Motor Assembly 18 SPM**   | 1    | 003618   |
|          | Std. Motor Assembly 37 SPM**   | 1    | 002400   |
|          | Std. Motor Assembly 72 SPM**   | 1    | 002401   |
|          | Std. Motor Assembly 117 SPM**  | 1    | 002402   |
|          | Std. Motor Assembly 144 SPM**  | 1    | 002836   |
|          | Std. Motor Assembly 175 SPM**  | 1    | 002407   |
| 557      | Hydraulic Fluid (2 qts.) ISO68   | 1    | 003089   |
|          | Hydraulic Fluid (2 qts.) SAE90   | 1    | 002372   |
|          | Hydraulic Fluid (1 qt.) SAE 0W30 Synthetic   | 1    | 104807   |
| 590      | Gasket or Sealer   | 1    | 106290   |
| 591      | Gasket or Sealer   | 2    | 106291   |
| 5002     | Shaft Retainer Assembly*   | 1    | 002722   |
| 5004     | Thrust Washers   | 3-4  | 100252   |
| 5025     | Shaft Retainer Screws  | 3    | 100254   |
| 5699     | Knob Friction O-Ring   | 1    | 100417   |

STD motor assemblies include figure numbers 506, 508, 509.

††Models 5003, 5005, 500 are small cavity. All others are standard cavity. Right hand pump body is standard on all Simplex Pumps.

\* Items not to be used on 500-A pumps (page 2)

\*\* Includes Part Nos. 506, 508 and 509.

1/3-1-115-60-TEFC-CAP-48Y.

**PARTS FOR PUMP WITH METAL HEADS**

| FIG NO. | DESCRIPTION   | QTY. | N3 PART NO. | N4 PART NO. |
|---------|---|------|-------------|-------------|
| 532     | Diaphragm Back Up Plate Liquid Side (Standard Cavity) | 1    | 000195      | 000196      |
|         | Diaphragm Back Up Plate Liquid Side (Small Cavity)    | 1    | 000198      | 000199      |
| 535     | Liquid Head (Standard Cavity)                         | 1    | 000202      | 000203      |
|         | Liquid Head (Small Cavity)                            | 1    | 000205      | 000206      |
| 536     | Discharge Valve Cap                                   | 1    | 002073      | 002072      |
| 537     | Anti-Siphon Spring 18, 37, 72 or 117 SPM Pumps        | 1    | 100198      | 100199      |
| 539     | Discharge Valve Cartridge                             | 1    | 000209      | 000210      |
| 543     | Discharge Valve Nut                                   | 1    | 000215      | 000216      |
| 544     | Suction Valve Cartridge                               | 1    | 000217      | 000218      |
| 550     | Suction Valve Cap                                     | 1    | 000207      | 000208      |
| 551     | Short Pump Head Bolts                                 | 6    | 100206      | 100206      |
| 552     | Long Pump Head Bolts                                  | 2    | 106184      | 106184      |

**SPARE PARTS KIT (N3 CONSTRUCTION) MODELS 500 THROUGH 547, 5003 & 5005**

| FIG. NO. | DESCRIPTION                                       | QTY. | PART NUMBER |  |
|----------|---|------|-------------|--|
| 539      | Discharge Valve Cartridge                         | 1    | 000209      | <p><b>KIT NUMBER 002712</b></p> <p>DUPLEX PUMPS<br/>REQUIRE 2 KITS</p> |
| 544      | Suction Valve Cartridge                           | 1    | 000217      |  |
| 549      | Valve Seat O-Ring                                 | 4    | 100204      |  |
| 538      | Valve Cap O-Ring                                  | 4    | 100200      |  |
| 533      | Diaphragm (Models 500, 5003 & 5005 Only)          | 1    | 000231      |  |
| 533      | Diaphragm (All Other Models)                      | 1    | 000200      |  |
| 517      | Control Rod O-Ring                                | 2    | 100188      |  |
| 516      | Sealing Plate O-Ring (Models 500/5005/510/515)    | 2    | 100184      |  |
| 516      | Sealing Plate O-Ring (Models 520/522/525/527)     | 2    | 100185      |  |
| 516      | Sealing Plate O-Ring (Models 530/532/535/537/538) | 2    | 100186      |  |
| 516      | Sealing Plate O-Ring (Models 547)                 | 2    | 100244      |  |

**SPARE PARTS KIT (N4 CONSTRUCTION) MODELS 500 THROUGH 547, 5003 & 5005**

| FIG. NO. | DESCRIPTION                                       | QTY. | PART NUMBER |  |
|----------|---|------|-------------|--|
| 539      | Discharge Valve Cartridge                         | 1    | 000210      | <p><b>KIT NUMBER 002713</b></p> <p>DUPLEX PUMPS<br/>REQUIRE 2 KITS</p> |
| 544      | Suction Valve Cartridge                           | 1    | 000218      |  |
| 549      | Valve Seat O-Ring                                 | 4    | 100204      |  |
| 538      | Valve Cap O-Ring                                  | 4    | 100200      |  |
| 533      | Diaphragm (Models 500, 5003 & 5005 Only)          | 1    | 000231      |  |
| 533      | Diaphragm (All Other Models)                      | 1    | 000200      |  |
| 517      | Control Rod O-Ring                                | 2    | 100188      |  |
| 516      | Sealing Plate O-Ring (Models 500/5005/510/515)    | 2    | 100184      |  |
| 516      | Sealing Plate O-Ring (Models 520/522/525/527)     | 2    | 100185      |  |
| 516      | Sealing Plate O-Ring (Models 530/532/535/537/538) | 2    | 100186      |  |
| 516      | Sealing Plate O-Ring (Models 547)                 | 2    | 100244      |  |

**SPARE PARTS KIT (N5 CONSTRUCTION) MODELS 500 THROUGH 547, 5003 & 5005**

| FIG. NO. | DESCRIPTION                                       | QTY. | PART NUMBER |  |
|----------|---|------|-------------|--|
| P-539-C  | Discharge Valve Cartridge                         | 1    | 000259      | <p><b>KIT NUMBER 002714</b></p> <p>DUPLEX PUMPS<br/>REQUIRE 2 KITS</p> |
| P-544-C  | Suction Valve Cartridge                           | 1    | 000262      |  |
| P-549-C  | Valve Seat O-Ring                                 | 4    | 100185      |  |
| P-538-C  | Valve Cap O-Ring                                  | 4    | 100244      |  |
| 533      | Diaphragm (Models 500, 5003 & 5005 Only)          | 1    | 000231      |  |
| 533      | Diaphragm (All Other Models)                      | 1    | 000200      |  |
| 517      | Control Rod O-Ring                                | 2    | 100188      |  |
| 516      | Sealing Plate O-Ring (Models 500/5005/510/515)    | 2    | 100184      |  |
| 516      | Sealing Plate O-Ring (Models 520/522/525/527)     | 2    | 100185      |  |
| 516      | Sealing Plate O-Ring (Models 530/532/535/537/538) | 2    | 100186      |  |
| 516      | Sealing Plate O-Ring (Models 547)                 | 2    | 100244      |  |
| P-571-C  | Vent Plug O-Ring                                  | 2    | 100080      |  |



**PARTS FOR PUMPS WITH MOTOR FLANGE ADAPTER, (REFER TO PARTS DRAWING 000911 ON PAGE 24)**

| <b>FIG. NO.</b> | <b>DESCRIPTION</b>                                     | <b>QTY.</b> | <b>PART NUMBER</b> |
|-----------------|--|-------------|--------------------|
| 507             | Bearing Cup  | 1           | 100179             |
| 508             | Bearing Cone   | 2           | 100180             |
| 558             | Motor Flange Adapter                                   | 1           | 000227             |
| 559             | Worm Shaft with Retaining Ring attached (Part #107952) | 1           | 000228             |
| 560             | Lovejoy Coupling                                       | 1           | 100053             |
| 561             | Oil Seal   | 1           | 100214             |
| 562             | Adapter to Gear Box Bolts                              | 4           | 100215             |
| 563             | Adapter to Motor Bolts                                 | 4           | 100216             |
| 564             | Lock Washer  | 4           | 100217             |
| 565             | Coupling Key   | 2           | 100218             |
| 566             | Lock Washers   | 4           | 100219             |
| 509             | Spring Pin   | 1           | 100181             |

**PARTS UNIQUE TO PUMPS SUPPLIED WITH NEPTUNE PNEUMATIC STROKE CONTROL**

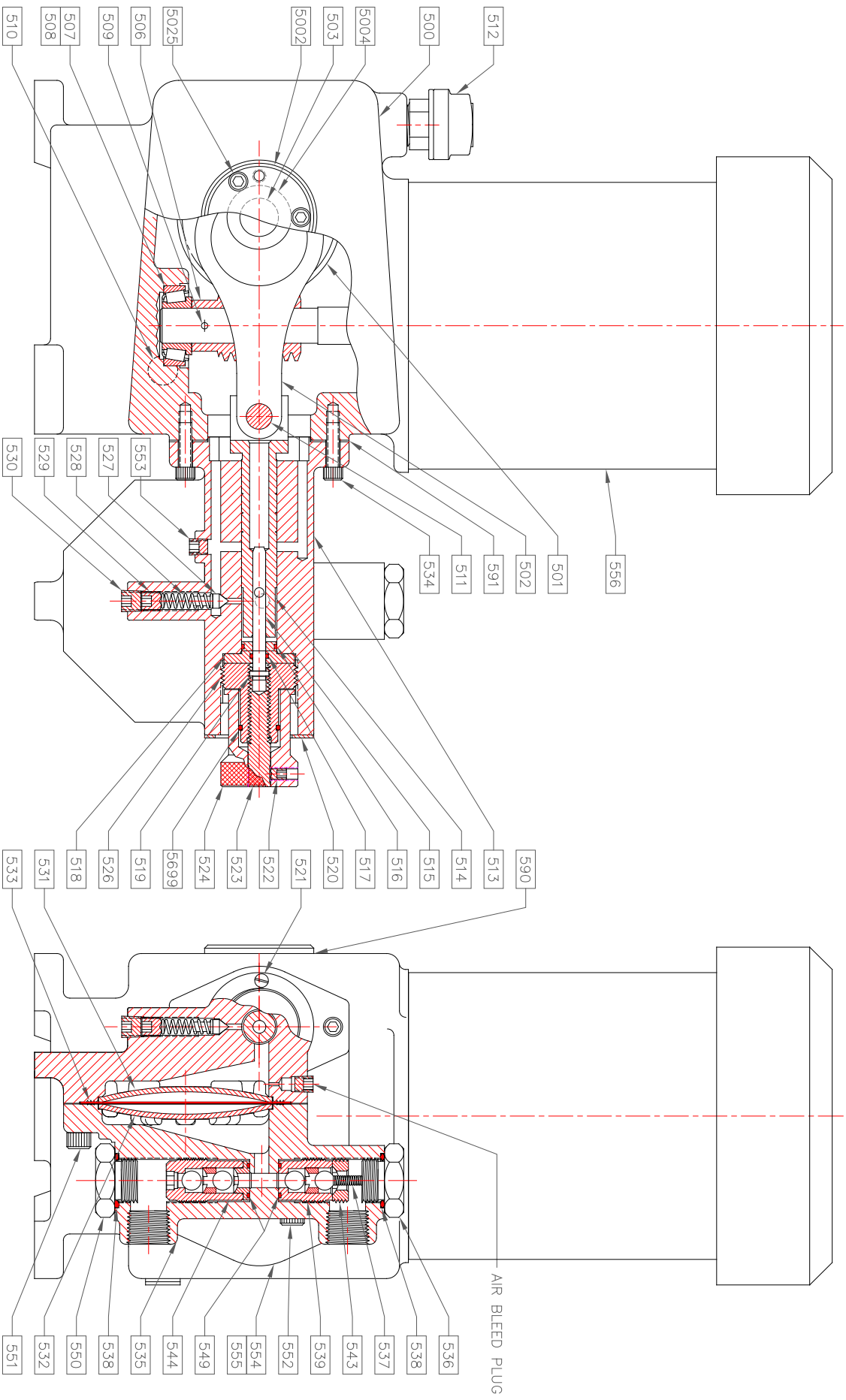
| <b>FIG. NO.</b> | <b>DESCRIPTION</b>                           | <b>QTY.</b> | <b>PART NUMBER</b> |
|-----------------|--|-------------|--------------------|
| 570             | Control Rod "P"                              | 1           | 000273             |
| 571             | Control Mount                                | 1           | 000274             |
| 572             | Short Mounting Bolt                          | 3           | 100259             |
| 573             | Plexiglass Shell                             | 1           | 000275             |
| 576             | Piston                                       | 1           | 000276             |
| 578             | Range Spring, 3-15 psi (9 psi Span) Standard | 1           | 100260             |
| 578             | Range Spring, 3-9 or 9-15 psi (6 psi Span)   | 1           | 100261             |
| 578             | Range Spring, 5-25 psi (20 psi Span)         | 1           | 100262             |
| 578             | Range Spring, 3-27 psi (24 psi Span)         | 1           | 100263             |
| 579             | Housing                                      | 1           | 000277             |
| 580A            | Moore 73N Control Valve – Forward Acting     | 1           | 100265             |
| 580B            | Moore 73N Control Valve – Reverse Acting     | 1           | 100266             |
| 581             | Retainer Bolt                                | 1           | 100267             |
| 583             | Pneumatic Diaphragm                          | 1           | 100268             |
| 584             | Control Rod Adapter                          | 1           | 000280             |
| 585             | Control Spring Pin                           | 1           | 100269             |
| 586             | Long Mounting Bolt                           | 3           | 100270             |
| 587             | Operating Spring                             | 1           | 100271             |
| 589             | Retaining Plate and Stop Bushing             | 1           | 000281             |

**PARTS UNIQUE TO PUMPS SUPPLIED WITH "FALP" (REFER TO PARTS DRAWING FALP ON PAGE 24)**

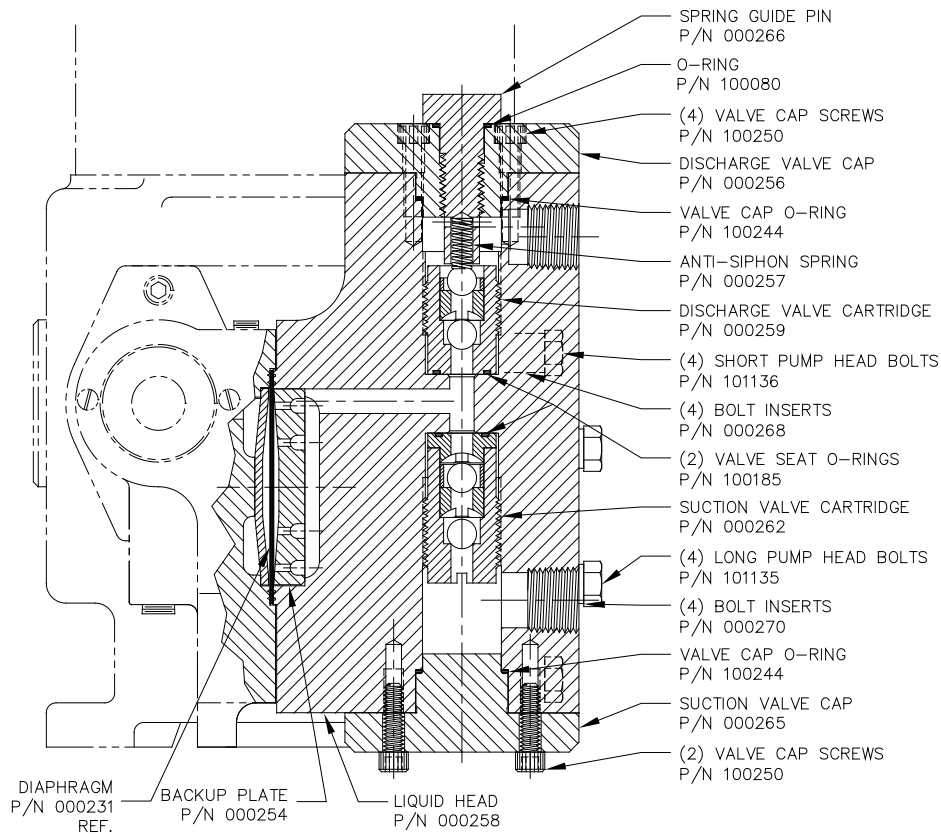
| <b>FIG. NO.</b> | <b>DESCRIPTION</b>       | <b>QTY.</b> | <b>PART NUMBER</b> |
|-----------------|--------------------------|-------------|--------------------|
| 562             | Adapter to Gearbox Bolts | 4           | 100215             |
| 563             | Adapter to Motor Bolts   | 4           | 100216             |
| 564             | Lock Washers             | 4           | 100217             |
| 566             | Lock Washers             | 4           | 100219             |
| 611             | Motor Flange Adapter     | 1           | 004157             |
| 612             | Motor Worm Shaft         | 1           | 004156             |
| 613             | Wave Spring              | 1           | 107599             |
| 614             | Bearing                  | 1           | 106180             |
| 615             | Retaining Ring           | 1           | 106593             |

## SECTION VII PARTS ORDERING INSTRUCTIONS

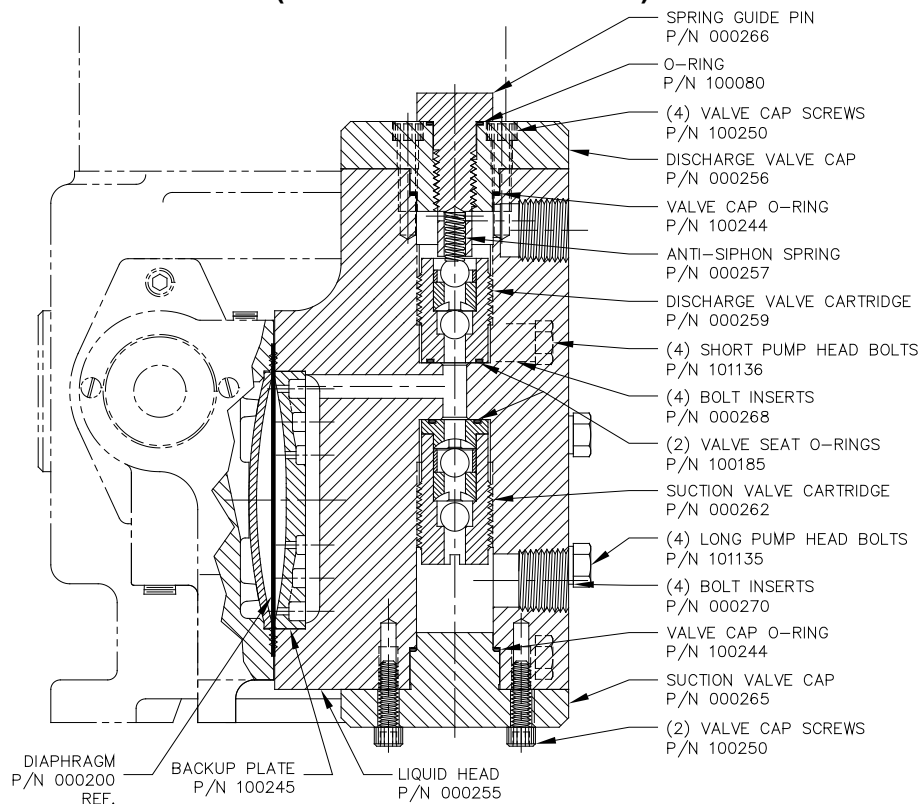
Note: For Prompt entry of parts orders; your order must include both model number and serial number.



Drawing HP-1102

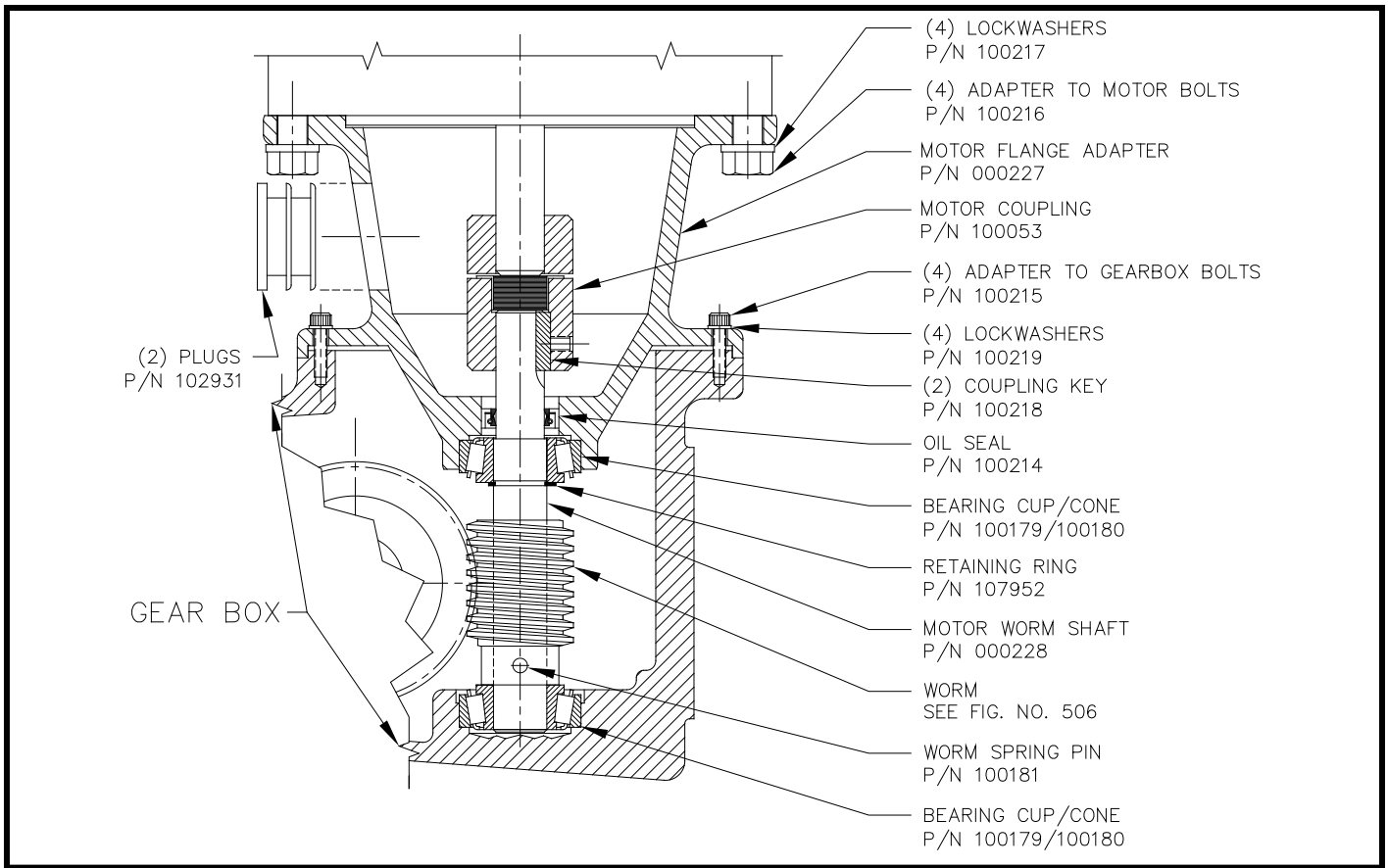


**SERIES 500 PVC HEAD ASSEMBLY WITH SMALL CAVITY  
 (ASSEMBLY P/N 002074)**

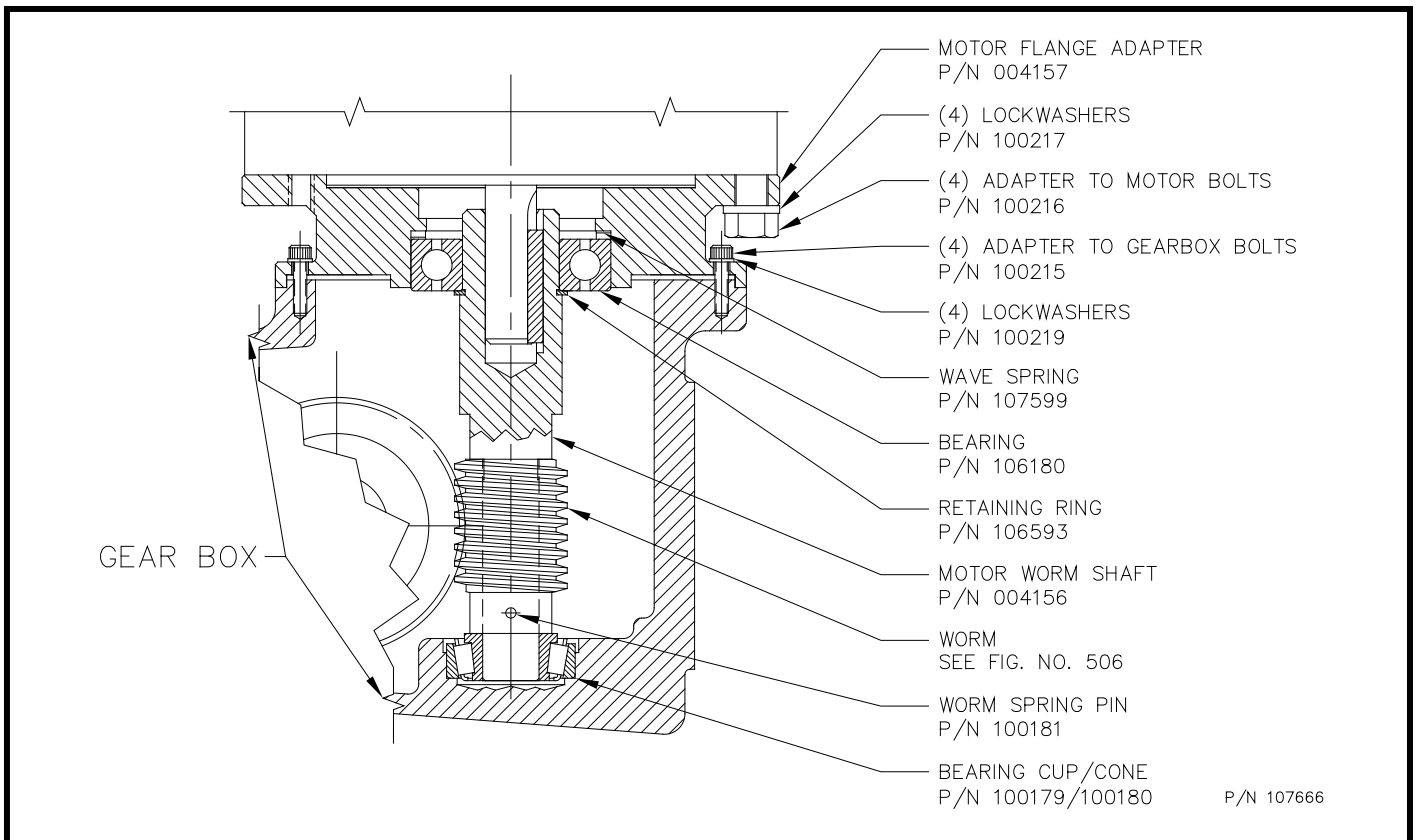


**SERIES 500 PVC HEAD ASSEMBLY WITH STANDARD CAVITY  
 (ASSEMBLY P/N 002075)**

Kynar liquid end material code [N8] is available in the style used for Series 500-E only. See Page 26.



DRAWING #000911



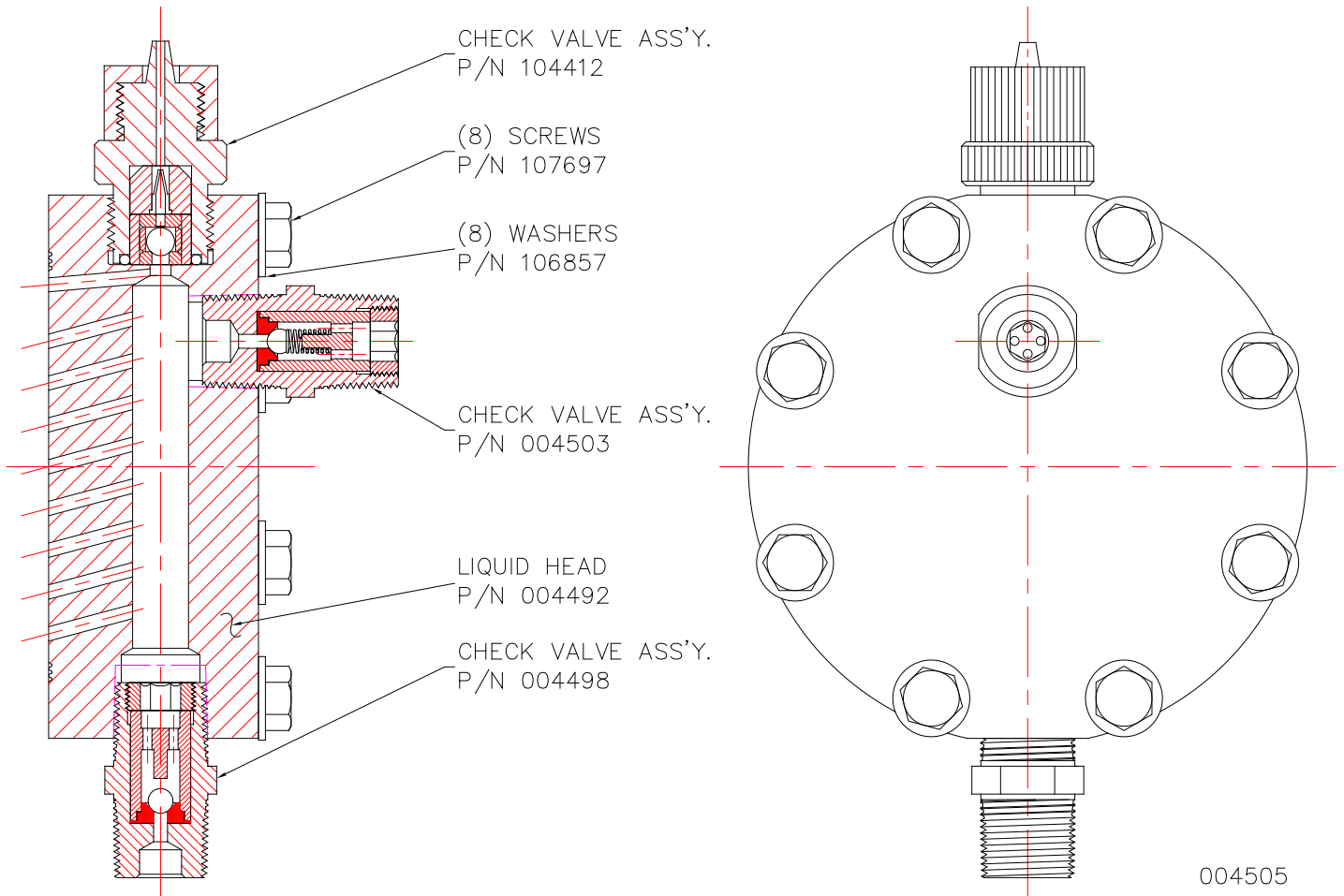
DRAWING # FALP

Addendum to Operating and Instruction Manual for the 500 dia-PUMP and 500-A dia-PUMP

This sheet describes the differences in liquid head design of the Series 500-E-AR “dia-PUMP”. This sheet is intended to be used with the Operating and Instruction Manual for Neptune Series 500 and 500-A “Dia-pumps”.

The Series 500-E-AR Pumps are identical to the Series 500-A except for an economy liquid head. All parts of the instruction manual relating to Series 500-A are applicable to 500-E except for liquid head parts and valve instructions. The 500-E-AR consists of: (1) liquid head casting, (1) suction valve (P/N: 004498), (1) discharge valve (P/N: 004503) and (1) air release valve (P/N: 104412).

Installation: Refer to installation instructions of the 500, 500-A and 500 E for proper set up of pump. The unique design of the "AR" liquid head allows you to vent off gases that may accumulate in the pump head from the air release valve (P/N: 104412). You must connect tubing (3/16" ID X 5/16" OD) to the connection on the air release valve and return it back to the supply tank or drain.



004586---- Complete Spare Parts Kit\*

\*Includes suction and discharge valve cartridges, diaphragm and all O-rings.

Addendum to Operating and Instruction Manual for the 500 dia-PUMP and 500-A dia-PUMP

This sheet describes the differences in liquid head design of the Series 500-E “dia-PUMP”. This sheet is intended to be used with the Operating and Instruction Manual for Neptune Series 500 and 500-A “dia-PUMP”.

The Series 500-E Pumps are identical to the Series 500-A except for an economy liquid head. All parts of the instruction manual relating to Series 500-A are applicable to 500-E except for liquid head parts and valve instructions. The 500-E liquid head consists of: (1) liquid head casting, (1) back-up plate (on metal head models only), and (2) valve cartridges. The valve cartridges are replaced as a unit; they cannot be disassembled.

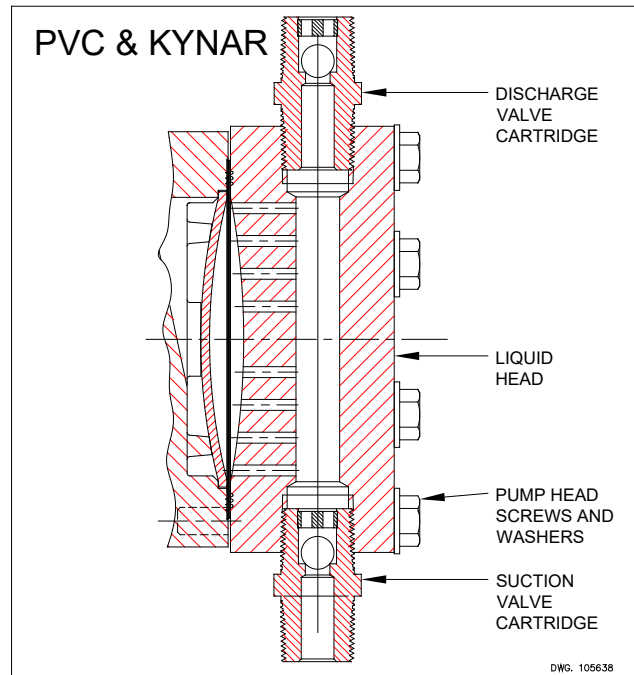
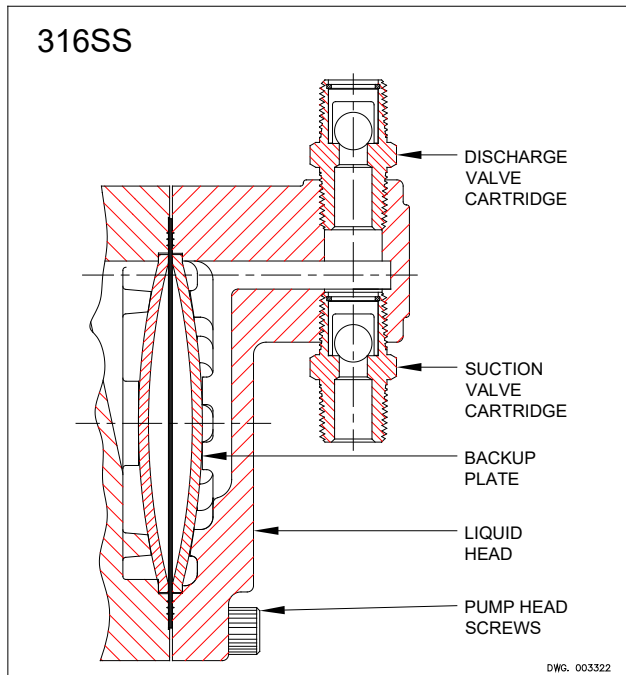
The following parts are unique to Series 500-E Models:

| DESCRIPTION               | QTY. | CODE N3<br>316SS<br>Part # | CODE N5<br>PVC<br>Part # | CODE N8<br>KYNAR<br>Part # |
|---------------------------|------|----------------------------|--------------------------|----------------------------|
| Pump Head                 | 1    | 003276                     | 003278                   | 003326                     |
| Valve Cartridge Suction   | 1    | 003321                     | 003279                   | 003332                     |
| Back-Up Plate             | 1    | 000195                     | NA                       | NA                         |
| Valve Cartridge Discharge | 1    | 003321                     | 003279                   | 003332                     |
| Pump Head 5/16-18 Screws  | 8    | 100205                     | 107697                   | 107697                     |
| Pump Head 5/16 Washers    | 8    | NA                         | 106857                   | 106857                     |
| Complete Spare Parts Kit* | 1    | 003385                     | 003386                   | 003387                     |

\*Includes suction and discharge valve cartridges, diaphragm and all O-rings.

**NOTE: PRIMING PROCEDURE**

Series 500-E pumps have no anti-siphon spring to defeat when priming, they also do not have a valve cap to vent and bleed air. To bleed air on initial start-up it will be necessary to open a valve to the atmosphere in the discharge line before the first isolation valve. If there is no valve in the particular installation, then breaking the piping connection at tubing joint or union will allow the air to escape while the pump is primed. This is only required when first starting a new installation. Since there is no anti-siphon spring, it is necessary to install a backpressure valve in the line when pumping to atmospheric or low-pressure injection points.



Valve cartridges remove as one piece. Apply pipe dope or Teflon paste to threads to reinstall.

**THE FOLLOWING CHANGES IN TEXT MUST BE CONSIDERED WHEN USING THIS MANUAL FOR THE SERIES 500-A “dia-PUMP”. EXCEPT FOR THE DIFFERENCES LISTED BELOW, THIS INSTRUCTION MANUAL APPLIES COMPLETELY TO BOTH THE SERIES 500 AND SERIES 500-A “dia-PUMP”.**

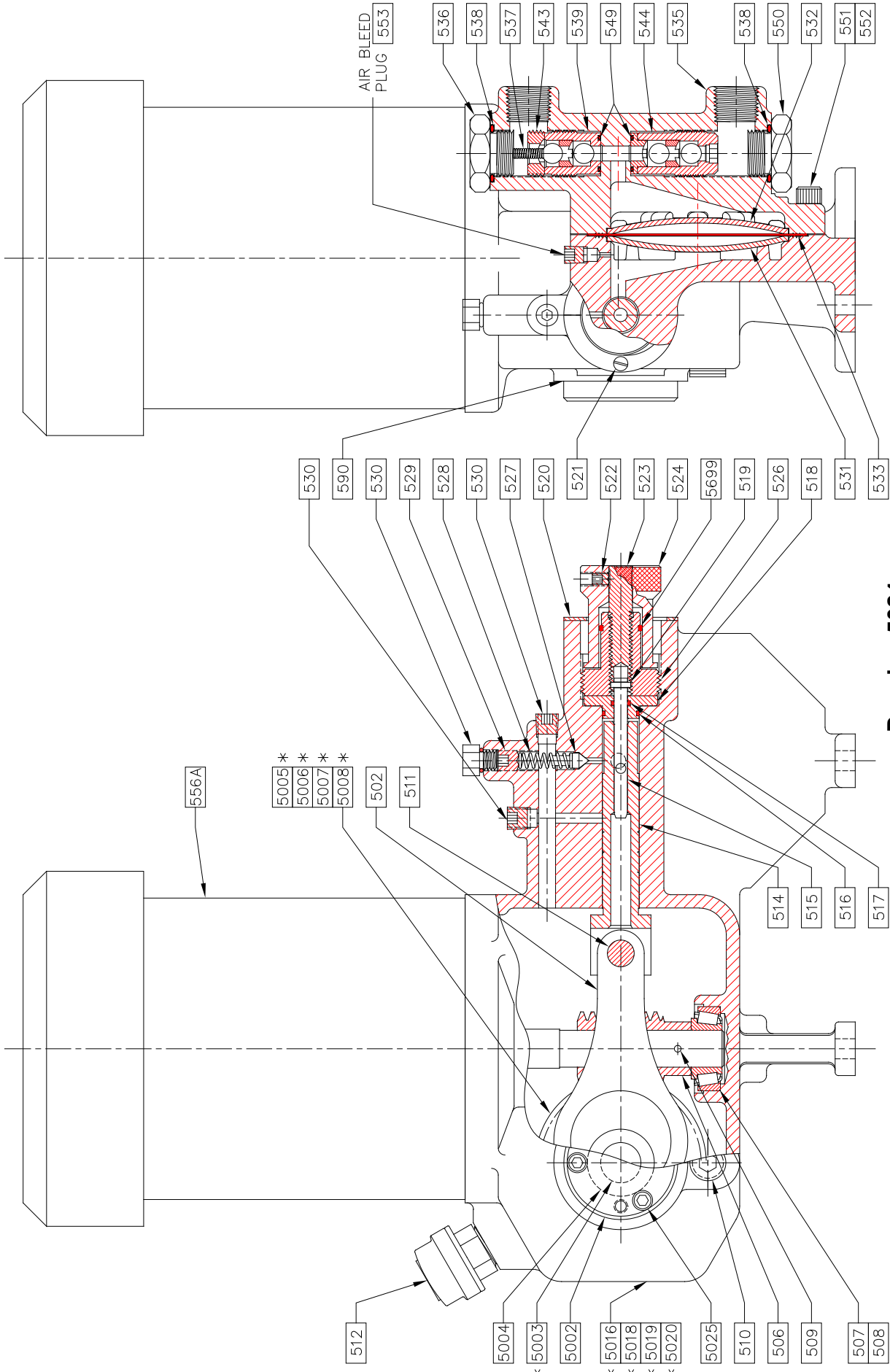
| <b>PAGE</b> | <b>SECTION</b> | <b>PARAGRAPH</b> |   |
|-------------|----------------|------------------|---|
| 7           | 4.0.1          | 2                | Drawing number 5024 illustrates the location of the internal relief valve (FIG. #527 thru #530).          |
| 7           | 4.0.21         |                  | Location of 500-A “dia-PUMP” Internal Relief Valve is on top of the Pump Body, not as shown in Figure IV. |
| 13          | 15.0.3         |                  | Remove retaining bolts ... (FIG. #5016, 5018, 5019, 5020)   |
| 13          | 15.0.4         |                  | Turn Case (FIG. #5016, 5018, 5019, 5020)  |
| 13          | 15.0.5         |                  | To replace motor ... (FIG. #5016, 5018, 5019, 5020)   |

**Parts for Series 500-A “dia-PUMP” not common to Series 500 “dia-PUMP”. Refer to Drawing 5024**

| <b>FIG. NO.</b> | <b>DESCRIPTION</b>                    | <b>QTY.</b> | <b>PART NUMBER</b> |
|-----------------|---------------------------------------|-------------|--------------------|
| 5002            | Shaft Retainer Assembly               | 1           | 000242             |
| 5003            | Gear Shaft                            | 1           | 100251             |
| 5005            | Worm Gear 37 SPM                      | 1           | 000292             |
| 5006            | Worm Gear 72 SPM                      | 1           | 000293             |
| 5007            | Worm Gear 117 SPM                     | 1           | 000291             |
| 5008            | Worm Gear 175 SPM                     | 1           | 000294             |
| 5016            | Gear Box (Model 500 Only)             | 1           | 000288             |
| 5018            | Gear Box (Model 510/515 Only)         | 1           | 000282             |
| 5019            | Gear Box (Model 520/522/525 Only)     | 1           | 000283             |
| 5020            | Gear Box (Model 530/532/535/538 Only) | 1           | 000284             |

**RECOMMENDED SPARE PARTS**

**The Spare Parts Kits listed on page 20 of this manual comprise the recommended spare parts for all Series 500 dia-PUMPS.**



**Drawing 5024**



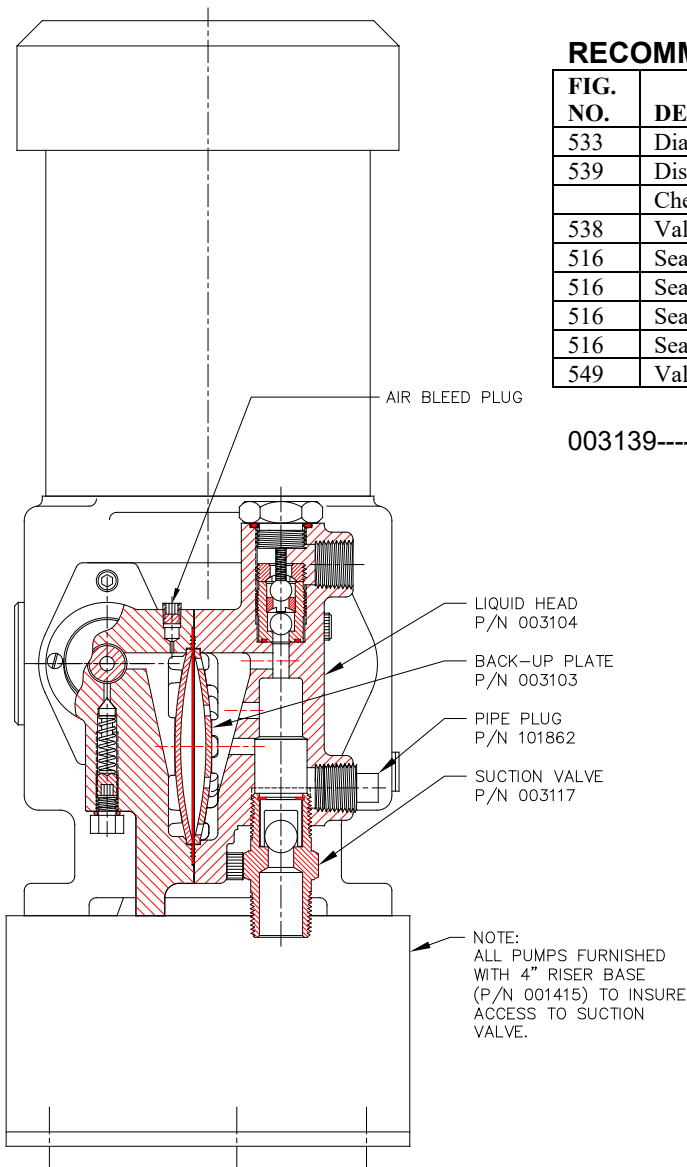
**INTRODUCTION**

The Neptune Series 500 “dia-PUMP” is available with a special liquid end to handle higher viscosity liquids. Model numbers of pumps are for example 515-VS-N3 or 535-VS-N3.

This liquid end, which is only available in 316SS, is different than the standard liquid end as the suction valve, back up plate, and liquid head are modified to allow oversized porting to enable thick liquids to be drawn into the pump on the suction stroke. All other parts of the pump are identical to the standard pump.

Note, the suction connection is directly up from below and the normal suction connection is plugged. The pump must be elevated as the inlet connection is plugged. The pump must be elevated as the inlet connection extends below the plane of the gear box seat.

Maintenance instructions are identical to the standard pump. The four parts which are different from the standard unit are shown below.



**RECOMMENDED SPARE PARTS**

| FIG. NO. | DESCRIPTION                                      | QTY. | PART NUMBER |
|----------|--|------|-------------|
| 533      | Diaphragm  | 1    | 000200      |
| 539      | Discharge Valve Assembly                         | 1    | 000209      |
|          | Check Valve Assembly                             | 1    | 003117      |
| 538      | Valve Cap O-Ring                                 | 2    | 100200      |
| 516      | Sealing Plate O-Ring (Model 515)                 | 2    | 100184      |
| 516      | Sealing Plate O-Ring (Models 520, 522, 525)      | 2    | 100185      |
| 516      | Sealing Plate O-Ring (Models 530, 532, 535, 537) | 2    | 100186      |
| 516      | Sealing Plate O-Ring (Model 547)                 | 2    | 100244      |
| 549      | Valve Seat O-Ring                                | 2    | 100204      |

003139----Complete Spare Parts Kit, Includes Diaphragm and all O-Rings.

**Series 500VS (High Viscosity)  
Head Parts Drawing  
C-003105**

**INTRODUCTION**

A special version of the Neptune Series 500 Pump is the Model 5003 and 5005. This pump is different than the standard pump due to the unique Low-Flow design and uses a Metering Device with extremely close tolerances. (Correct installation is critical for proper pump operation). Refer to Parts Drawing S00126 for cross-sectional details. This drawing also indicates each part of the Model 5003 and 5005 that is not common to the other pumps within the Series 500.

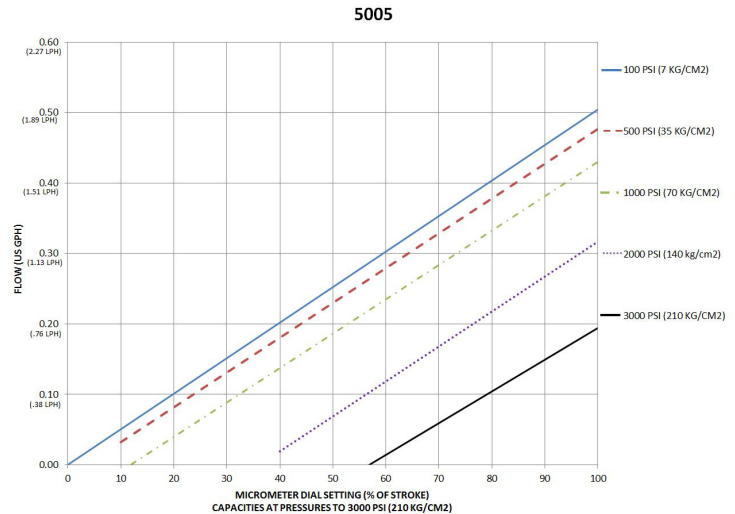
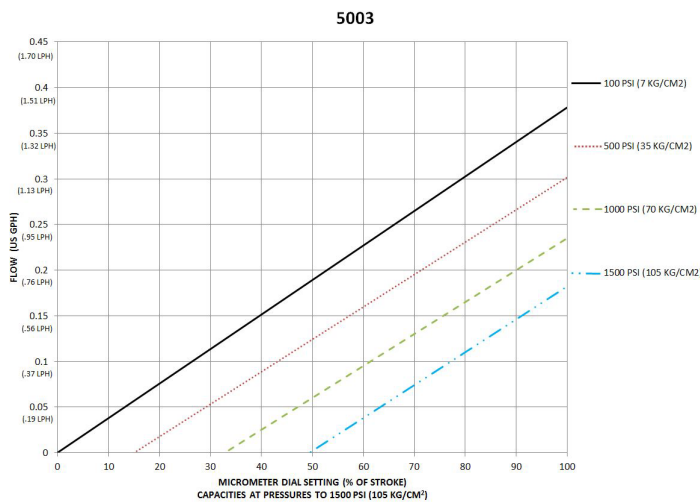
Generally, the maintenance and repair procedures for the Model 5003 and 5005 are the same as those shown in the Operating and Instruction Manual for the Series 500 and 500-A Pumps. Failure to follow these instructions could cause pump output to become erratic, or stop altogether.

**PUMP CALIBRATION**

Each pump is tested at the factory prior to shipment to assure proper operation without leakage at the maximum capacity and discharge pressure specified, with a constant flooded suction of 2 feet of water. For precise capacity control in the field, a calibration test under actual operating conditions with the actual piping arrangements is frequently desirable. Use a calibration drawdown cylinder in the suction line.

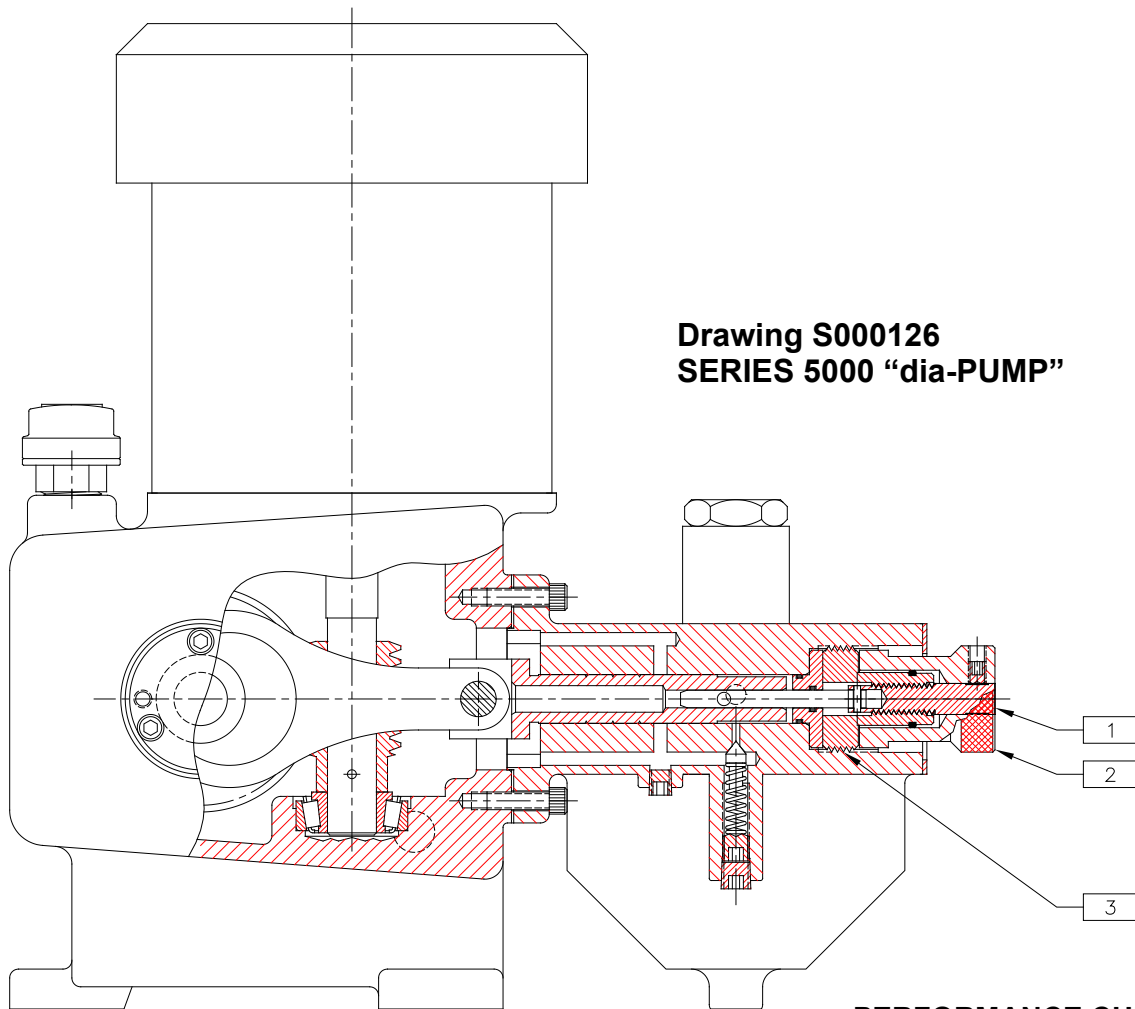
After the suction and discharge lines are piped with a convenient sampling point in the suction line, and the pump has been suitably primed, test samples are collected at 25%, 50% 75% and 100% capacity settings. A straight line results when these points are plotted on graph paper. This graph can be used as a calibration curve for an intermediate setting as long as suction and discharge conditions remain constant.

It is important to realize that the sample at 50% will not necessarily be 1/2 that of 100%, nor will any other sample points be to a specific percentage of the 100% value, but the pump will give repetitive samples at the same setting. This is due to the extremely low volume of the pump which results in a shifting zero flow point as pressure increases and can be seen in the curve below.



**THIS MODEL MUST BE INSTALLED WITH FLOODED SUCTION.**

The hydraulic fluid for “5003” and “5005” Pump supplied by Neptune is Mobil Synthetic Oil 0W30. Common sources for hydraulic fluid are listed on page 5.



**Drawing S000126  
SERIES 5000 "dia-PUMP"**

**PERFORMANCE CURVE**

**Parts for Series 5000 "dia-PUMP" not common to Series 500 "dia-PUMP".  
Refer to Drawing S00126**

| <b>FIG. NO.</b> | <b>DESCRIPTION</b>              | <b>QTY.</b> | <b>PART NUMBER</b> |
|-----------------|---------------------------------|-------------|--------------------|
| 1               | Control Rod Positioner for 5003 | 1           | 004839             |
|                 | Control Rod Positioner for 5005 | 1           | 004834             |
| 2               | Control Knob Assembly for 5003  | 1           | 004845             |
|                 | Control Knob Assembly for 5005  | 1           | 004844             |
| 3               | Sealing Nut for 5003            | 1           | 004840             |
|                 | Sealing Nut for 5005            | 1           | 004835             |

**RECOMMENDED SPARE PARTS – same as 500 Series, see page 20**

**PARTS ORDERING INSTRUCTIONS**

**Note: For prompt entry of parts orders; your order must include model number and serial number.**

## 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.

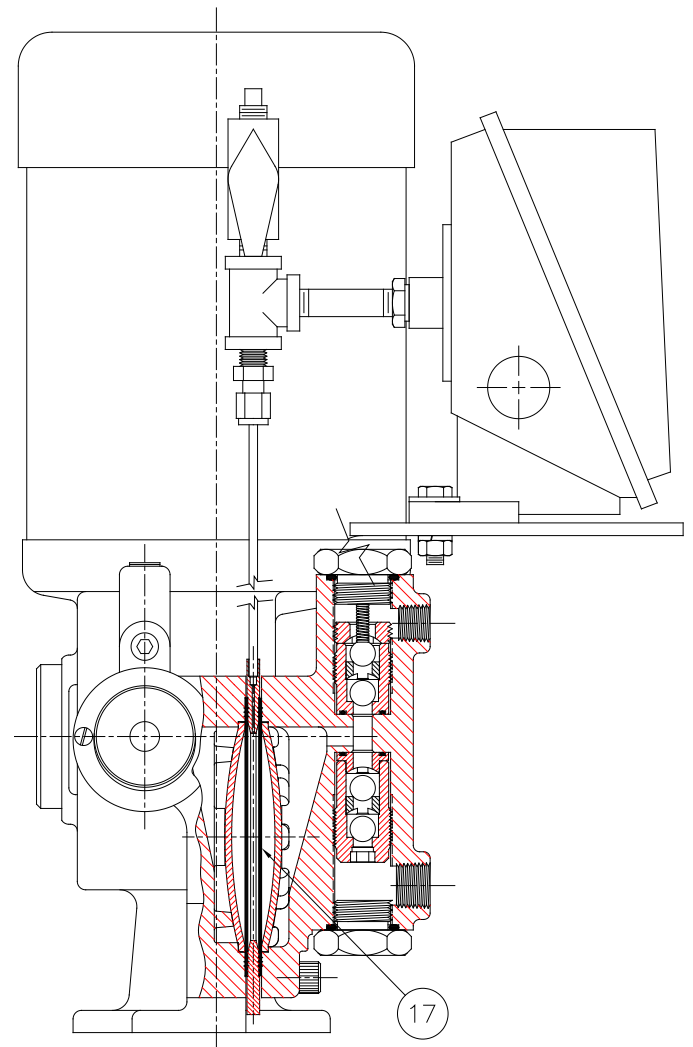
**Figure 1** illustrates a Double Diaphragm Assembly. An intermediate plate is located between the oil and liquid heads with one diaphragm on each side of the intermediate plate. The Intermediate Plate is connected to a rupture alarm or pressure switch via a capillary system. The area between the diaphragms 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.

### 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 2**) and pump **until resistance is felt**, for normal operating conditions.



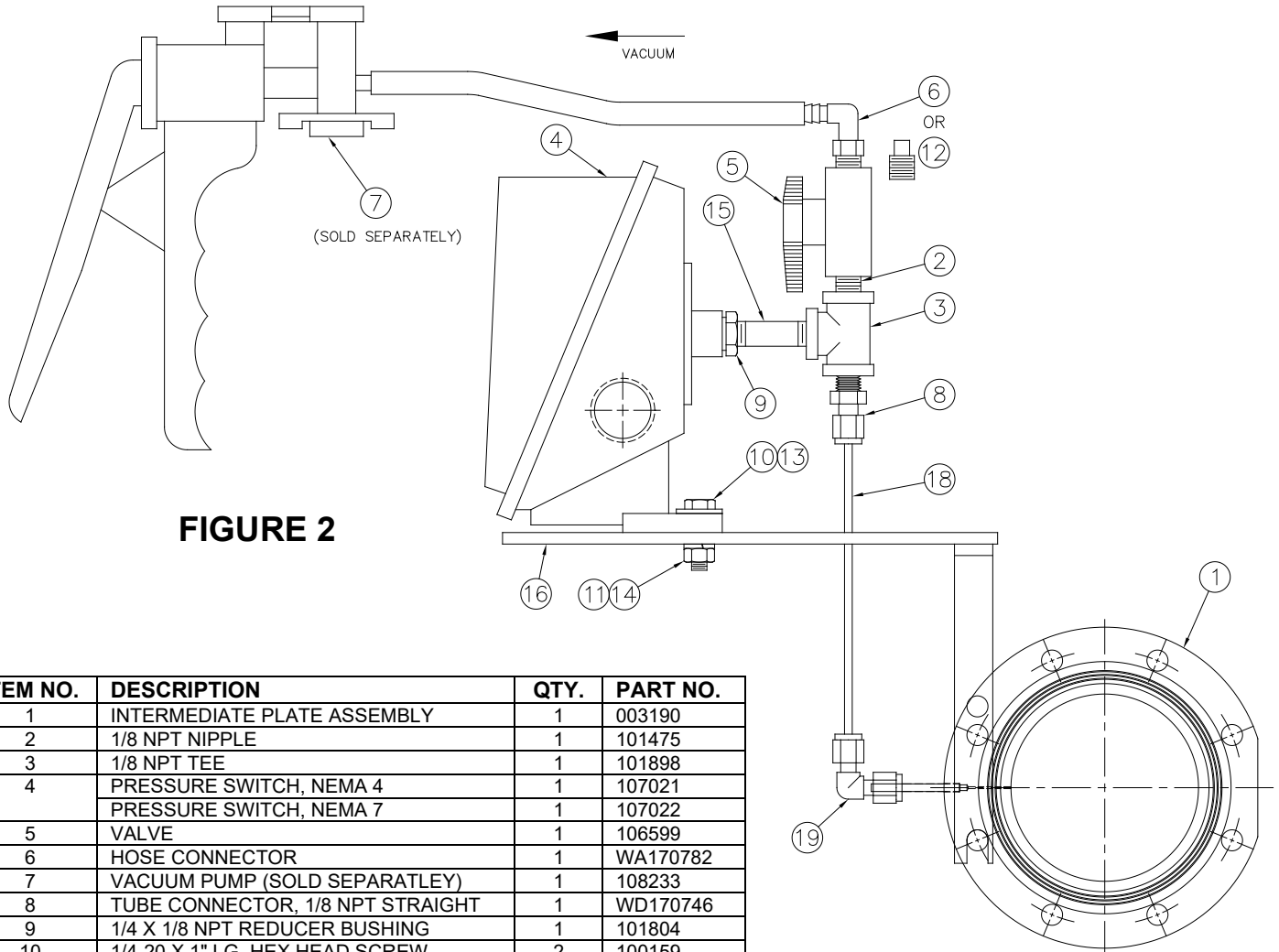
**FIGURE 1**

# APPENDIX

# DOUBLE DIAPHRAGM OPTION

ADDENDUM: Special instructions for Series 500, 500-A & 560 “dia-PUMPS” with Double Diaphragm

- 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 SEPARATELY)      | 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<sup>®</sup> vacuum pump from Mityvac<sup>®</sup> No. 6810 automotive test kit available at many automotive parts stores. (Unit furnished by Neptune is less gauge and automotive adapters)



## EC Declarations for Diaphragm Metering Pumps

---

**Manufacturer:**

PSG California

22069 Van Buren Street

Grand Terrace, CA 92313 USA

Director of Engineering: Chris Distaso

Signature:

Representative authorized to compile technical files in the European Community:

ALMATEC Maschinenbau GmbH

Carl-Friedrich-Gauß-Straße 5

D - 47475 Kamp-Lintfort Germany

General Manager: Rainer Wulf

Signature:

---

Product: Neptune Diaphragm Metering Pump Models Series 400, 500, 600, 6000, 7000

Date: 05/22/2019

Serial Number: As Applicable

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**DECLARATION OF INCORPORATION** (Valid for pumps supplied without a motor)

Neptune declares that the products listed above comply with the essential health and safety requirements relevant to the specific product as follows: All Neptune products listed above conform to the Machinery Directive 2006/42/EC: Part 1 of Annex I and comply with the relevant requirements of EN ISO 12100 Safety of Machinery - General Principles for Design - Risk Assessment and Risk Reduction, and DIN EN 809 Pumps and Pump Units for Liquids - Common Safety Requirements.

This subassembly is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of Directive 2006/42/EC ("The Machinery Directive") and any other applicable Directives.

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**DECLARATION OF CONFORMITY** (Valid for pumps supplied with a motor)

Neptune declares that the products listed above comply with the essential health and safety requirements relevant to the specific product as follows: All Neptune products listed above conform to the Machinery Directive 2006/42/EC: Part 1 of Annex I and comply with the relevant requirements of EN ISO 12100 Safety of Machinery - General Principles for Design - Risk Assessment and Risk Reduction, DIN EN 809 Pumps and Pump Units for Liquids - Common Safety Requirements, and DIN EN ISO 4871 - Declaration and Verification of Noise Emission Values of Machinery and Equipment. The supplied motor conforms to the 2014/35/EU - The Low Voltage Directive (compliance exists from the motor manufacturer).

This product **may not be used** in an explosive environment.

# MAINTENANCE LOG

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Pump Model \_\_\_\_\_

Serial # \_\_\_\_\_

Strokes Per Minute \_\_\_\_\_

Maximum Flow \_\_\_\_\_

Piston Diameter \_\_\_\_\_

Maximum Pressure \_\_\_\_\_

Spare Parts Kit # \_\_\_\_\_

**NEPTUNE CHEMICAL PUMP CO., INC.** Tel.: 215-699-8700 • FAX: 215-699-0370

| DATE | SERVICED BY | MAINTENANCE PERFORMED |
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Revised 2-13-2013  
Rev 5, Revised 6-16-2014  
Rev 6, Revised 5/18/2015  
Rev 7, Revised 03/15/2018