

**CAREFULLY READ AND FOLLOW THESE INSTRUCTIONS BEFORE OPERATING YOUR UDOR PUMP.
FAILURE TO FOLLOW THESE INSTRUCTIONS MAY DAMAGE PUMP AND VOID WARRANTY.**

WARNING!: UDOR Diaphragm Pumps are positive displacement pumps, therefore a properly designed pressure relief valve or pressure regulating valve must be installed on the pump or in the discharge plumbing. A secondary safety relief valve is also recommended. Failure to install a pressure relief valve or pressure regulating valve could result in personal injury, property damage or damage to the pump or system and void any warranty. In no way does UDOR USA assume any liability or responsibility for the construction or operation of a customer's or potential customer's high pressure system.

**REFER TO THE PROPER PUMP BREAKDOWN AND DIAPHRAGM PUMP SERVICE GUIDE
BEFORE PERFORMING ANY MAINTENANCE OR SERVICING OF THE PUMP. www.udorusa.com**

1. HOW THE PUMP WORKS (The diaphragm is what separates the pump oil from the spray material.)

Each piston DOWNSTROKE lowers the piston-attached diaphragm, drawing spray material into pump head. As the piston passes below cylinder sleeve side openings, oil is pulled into lower diaphragm cavity. During each piston UPSTROKE the cushion of oil between the piston and the diaphragm hydraulically pushes and cushions the diaphragm as the piston tops out. This discharges the fluid in the pump head. The lower diaphragm cavity oil cushion also lubricates the diaphragm and piston ensuring minimal mechanical wear. **REMEMBER:** low oil level causes excessive mechanical wear on diaphragms and internal components. The transparent oil sight gauge makes oil checks easy. Keep filled to mark on sight gauge.

2. PRESSURE REGULATING VALVE

A proper pressure regulating valve directs the fluid in your system and also provides a by-pass or return feature for the fluid to travel when the discharge flow of the pump is shut off. Never run any UDOR Diaphragm Pump without a pressure regulating valve installed on the pump or in the discharge plumbing. Always start the pump with the pressure regulating valve in full by-pass or with minimal spring tension on the pressure adjustment knob or handle.

3. BEFORE OPERATING SYSTEM

Open suction valve and check tightness of suction lines, fittings and filter.

4. DO NOT RUN PUMP WITH A STARVED SUCTION

The diaphragm pump will not suffer if run dry due to an empty tank. However, a "starved" suction due to a clogged strainer or a closed suction valve will cause premature failure of the pump diaphragms. **NOTE:** Only use filter screens that are between 10 & 20 mesh. Never use a fine filter screen on the inlet side of a diaphragm pump.

5. SUCTION VALVE (To prevent pump damage, shut down system before closing suction valve.)

This valve is in the system to close off tank flow for emergency system repair or if strainer screen requires unexpected cleaning after a tank refill. (Strainer screen should be cleaned just before each tank refill.)

6. MAINTAIN PROPER OIL LEVEL

The crankcase oil plays a dual role. It lubricates all moving parts and is hydraulically functional in the pumping capacity. Oil supports the diaphragm during each pressure stroke. It is important to maintain the recommended oil level, marked on the oil sight gauge. Only use UDOR LUBE premium pump oil. For any pump with a gear reduction, make sure the gear box is filled to the center of the sight glass or to the level plug with 90 wt. gear lube before operating.

7. PUMP VALVES OR CHECK VALVES

Every UDOR Diaphragm Pump has two valves per cylinder or head assembly. One valve lets fluid "IN" each head assembly (suction) and the other valve lets fluid "OUT" of each head assembly (discharge). Pay very close attention to valve placement when reinstalling the head assemblies during diaphragm replacements, pump maintenance or when servicing the pump.

8. PRESSURE GAUGE

Install pressure gauge as close as possible to the outlet or discharge of the pump, or on the high pressure manifold. This is extremely important for adjusting pressure regulating devices and for proper sizing of nozzle or restricting orifice. The pump is rated for a maximum pressure, which should be read at the pump only, not at the gun or nozzle.

9. DO NOT OVER SPEED PUMP

UDOR diaphragm pumps are designed to operate at or below a specific RPM. Over speeding will cause valves and diaphragms to prematurely fail and could cause other internal damage. Refer to the performance chart of your specific pump for maximum operating RPM. Most UDOR Diaphragm Pumps are rated at 540 RPM max.

10. PULSATION DAMPENER INTRODUCTION

It is the nature of diaphragm pumps to have some pulsation. This is caused by sudden changes in piston direction. The pulsation dampener has one function in the pumping system: to reduce pulsation by providing a cushion of air to bump against. The UDOR pulsation dampener uses a rubber bladder to separate the air cushion from the solution being pumped.

11. PULSATION DAMPENER SETTING

The basic rule is to fill the pulsation dampener to twenty percent (20%) of the system working pressure. If you have your spraying pressure set at 100 psi, the setting for the pulsation dampener should be 20 psi. Always shut down the pump before adding air to the pulsation dampener or checking its pressure. Air supply can be from a compressor or a manual type pump. The dome containing air is small. Take care to apply the pressure gauge evenly on the air valve to prevent air from leaking out of the pulsation dampener. It is not uncommon to lose 5-10 psi when checking pulsation dampener pressure. **NOTE:** 2-cylinder diaphragm pumps may require more air than 20% of operating pressure. 20 psi is the minimum pulsation dampener pressure. **DO NOT RUN PUMP WITH LESS THAN 20 PSI IN THE PULSATION DAMPENER.**

WARNING!: DO NOT PUMP OR FLUSH PUMP WITH ANY FLAMMABLE, EXPLOSIVE, CAUSTIC OR CORROSIVE FLUIDS. DO NOT USE ANY OF THESE PRODUCTS IN AN EXPLOSIVE ATMOSPHERE. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID ANY AND ALL WARRANTIES.

PUMP OPERATIONS UDOR DIAPHRAGM PUMPS