

# **AUTOPRIME™ Liquid Ends**

## **Instruction Sheet**

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## OPERATION

LMI's AUTOPRIME™ Liquid Ends allow for the constant removal of vapors and gasses inherent with Sodium Hypochlorite, Hydrogen Peroxide, and other off-gassing liquids. This advanced design keeps the pump primed automatically. With every stroke a controlled amount of the process fluid, along with any trapped vapor, is recycled back to the chemical supply. The result is trouble free performance and accurate chemical dosing delivered to the process. The picture on the cover depicts a ROYTRONIC® Series A metering pump with an optional AUTOPRIME™ liquid end and 4-Function Valve. The optional 4-Function Valve is mounted on the discharge port, which is located on the front of the liquid end.

### OPERATION

The AUTOPRIME™ liquid end consists of 5 functional elements. They are the Head (1), Diaphragm (2), Suction Check Valve (3), Discharge Check Valve (4) and Autoprime Valve (5).

As the diaphragm (2) flexes backwards, chemical is pulled into the head (1) through the suction check valve (3). Any gas or air in the suction line will enter the head with the process fluid. When the diaphragm (2) is flexed forward by the pump drive, entrapped gas would normally act as a cushion and compress with each pump stroke, thus binding the pump. Instead, the AUTOPRIME™ liquid end allows the gas to rise to the top and vent through the AUTOPRIME™ valve (5). This AUTOPRIME™ valve (5) eliminates all the gas while only allowing very small amounts of process fluid to be recycled on every pump stroke. The gas is vented quickly and the pump continues to pump accurately through the discharge valve (4) to the process.

The AUTOPRIME™ valve allows the pump to prime during pump start-up, when gas or air binding is a greater risk. It also continuously vents gas that may form during normal pump operation. For proper functioning, be sure to attach ½" OD polyethylene tubing to the AUTOPRIME™ valve which is mounted on the top of the AUTOPRIME™ liquid end.

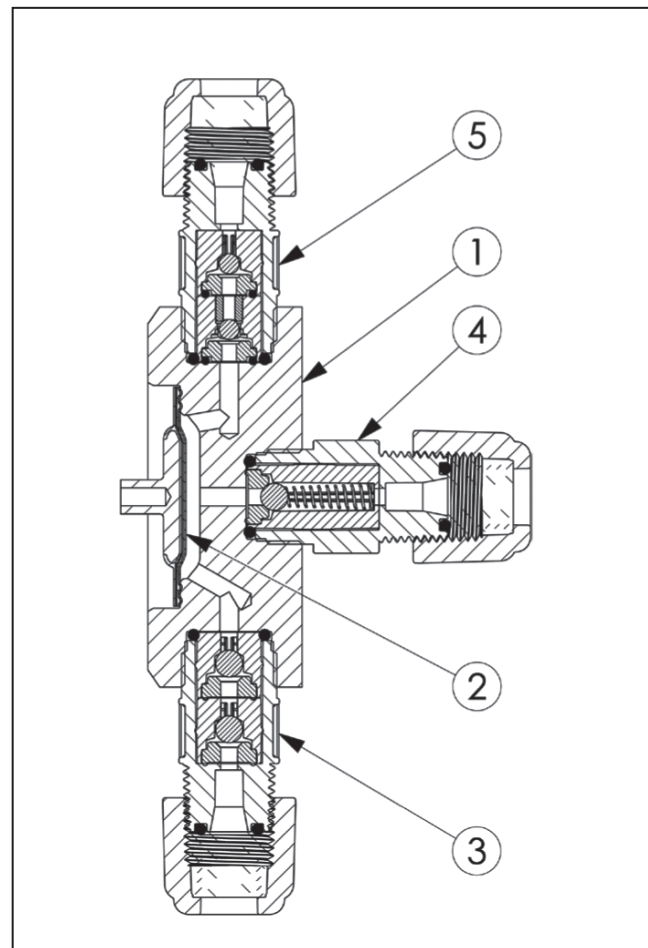


Figure 1

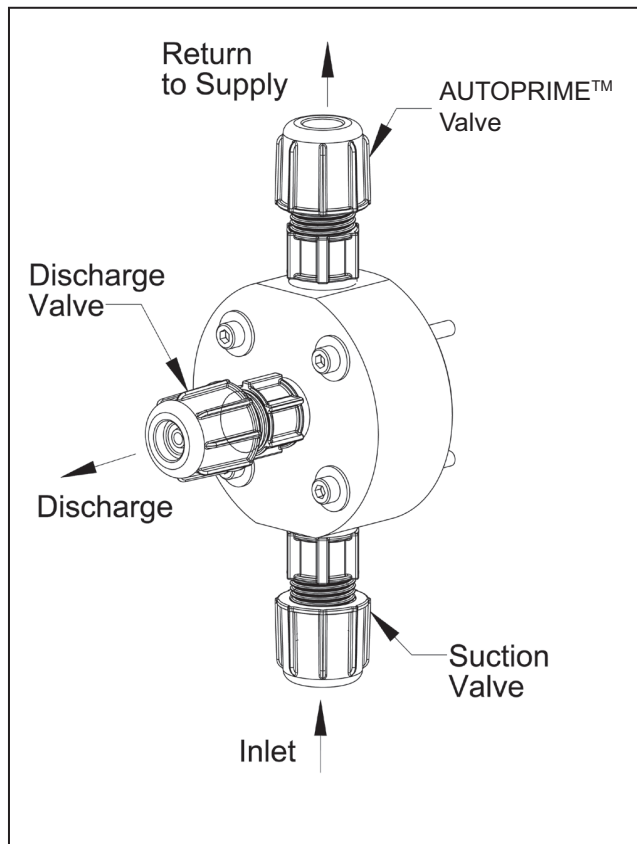


Figure 2

## INSTALLATION

### Without 4-Function Valve:

The AUTOPRIME™ liquid end is supplied complete from the factory. The AUTOPRIME™ head will work with either suction lift or flooded suction installation\*. Be sure to connect as shown in the diagram above since connections are very different from standard liquid ends.

### With 4-Function Valve

The connection for the 4-Function Valve is attached to the discharge connection (front) when shipped from the factory. Mount the 4-Function Valve per the directions on the 4-Function Valve Instruction Sheet.

All metering pumps with a continuous bleed function (like the AUTOPRIME™ feature) operate best when the stroke length is at its maximum. The recommended minimum stroke length setting for pumps with AUTOPRIME™ liquid ends is 50%. For optimum AUTOPRIME™ performance, setting the stroke length at 100% and using the pump speed adjustment to vary flow is recommended.

If pump is operating within 10 psi of the maximum rated pressure, it may be necessary to remove the spring in the injection check valve. When doing this, please be sure to mount the injection valve vertically.

\* For flooded suction applications fluid level in supply should not exceed 3 feet above suction check valve.

### Note:

*AUTOPRIME™ liquid ends will recirculate a percentage of discharge material back to supply. Depending on application, output may be reduced up to 50%. Variables include piping, stroke length and speed setting. LMI® pumps with AUTOPRIME™ liquid ends can reach pressure ratings up to 250 psi depending on the relevant pump model. For additional information, refer to the Data Sheet for your specific pump.*

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