

- ❖ Turn pump off and remove all pressure from system prior to installation.
- ❖ Remove all pressure from calibration column AND pumping system before disassembly, removal or maintenance.
- ❖ **DO NOT exceed 15 psi maximum allowable working pressure (MAWP).**
- ❖ Always wear safety glasses and other appropriate safety equipment when installing, filling, operating or repairing.
- ❖ Read and observe all safety warnings and instructions before installation, operation or repair.

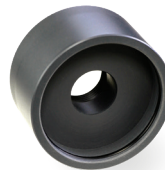
PVC Calibration Columns

PVC calibration column models feature three top end cap options. Sealed and removable cap models have a permanent vent connection and are used in applications where there is positive suction head. The sealed cap is glued to the cylinder. The removable cap is sealed with an O-ring so that the cap can be easily removed for cleaning. Loose cap models are used in applications where there is no positive suction head. The loose cap is a dust cover only and the cylinder is manually filled from the top.

Sealed cap glued to cylinder.



Removable cap O-ring seal.



Loose cap dust cover.



Glass Calibration Columns

Glass calibration columns have threaded end caps offered in a variety of materials, and a shield to protect the inner glass tube and calibration scale label. Each sealed end cap utilizes two (2) elastomer O-rings.



Installation

Install the calibration column in the suction line of the pump. The top of the calibration column should be vented back to the supply tank or drain. Install two isolation valves (not included) in the suction line as shown in Figure 1.

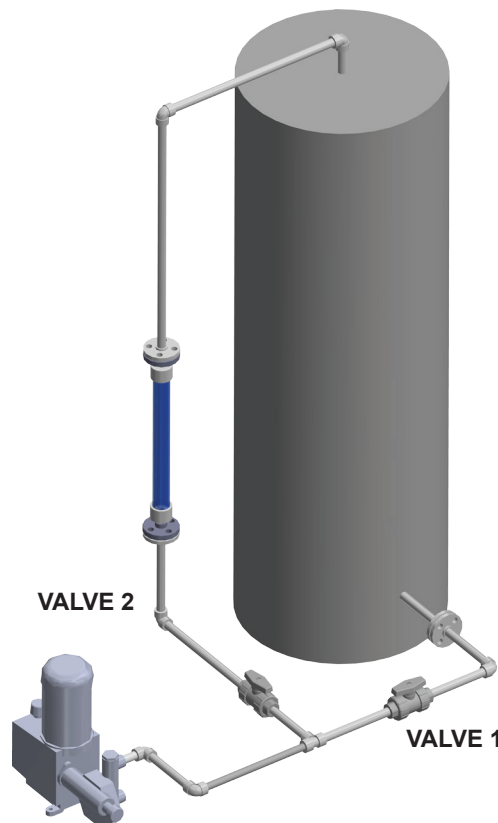


Figure 1

Test Pump Flowrate (One Minute Test)

1. With Valve 1 opened & Valve 2 closed, start the pump (Figure 1).
2. Once system is operating normally, slowly open Valve 2 leading to the calibration column. Close Valve 2 when the fluid level in the calibration column is just above the zero mark on the cylinder scale.

PVC Calibration Column loose cap (dust cover):

PVC calibration columns with loose cap (dust cover) must be manually filled before test. To fill, remove loose end cap and fill the calibration column with fluid from the top until the fluid level is just above the zero mark on the cylinder scale. Replace loose end cap.

3. Once the calibration column is filled, simultaneously close Valve 1 and open Valve 2, and begin timed test when fluid level is at zero. Observe fluid drawdown.
4. At exactly **one minute** simultaneously close Valve 2 and open Valve 1.
5. System flowrate equates to the fluid level left on the cylinder scale.
6. If necessary, adjust the pump flow and repeat the one minute test.
7. Once desired flowrate is achieved, drain the calibration column by closing Valve 1 and opening Valve 2. For normal system operation, open Valve 1 and close Valve 2.

Calibration columns use industry standard milliliters/minute (ML/MIN) and US gallons/hour (US GPH) in a one minute test to determine pump flowrate. Use the following formulas to convert to GPH or LPH:

$$\text{GPH} = \left(\frac{\text{Volume}_{(\text{ml})}}{\text{Draw Time}_{(\text{Seconds})}} \right) \times 0.952$$

$$\text{LPH} = \left(\frac{\text{Volume}_{(\text{ml})}}{\text{Draw Time}_{(\text{Seconds})}} \right) \times 3.60$$

Maintenance

Prior to cleaning or maintenance, isolate calibration column from system. Disconnect calibration column and completely remove from system. O-rings in glass calibration column caps and PVC calibration column removable caps should be replaced on each reassembly.

Glass Calibration Column:

Turn end caps counterclockwise to loosen. Remove both end caps from column. Remove and replace the two (2) O-rings at each end. Replace end caps by threading clockwise onto column.

PVC Calibration Column removable cap:

Remove top cap and replace cap O-ring. (Bottom end cap is sealed – do not remove.) Replace top cap on column.

Figure 1

