Solinst® 3/8" dia. Micro Double Valve Pump Operating Instructions

Model 408M Micro DVP

Operating Principles

When the Solinst Micro Double Valve Pump (DVP) is placed in a well or borehole, water rises inside the pump and up the concentric tubes to static level. A Control Unit is used to supply compressed gas to the pump on the drive cycle. The gas pushes down on the water column contained in the outer, larger dia. tubing (drive line tubing), closing the check valve at the base of the pump. This forces the water up the inner sample line tubing.

A vent cycle, during which the gas is released, allows water to refill the pump and drive line (outer tubing). The top check valve prevents water in the sample line from falling back into the pump body. This drive and vent cycle is repeated manually or automatically as set by the timers on the control unit. The cycle may be regulated for purging or sampling.

Purging/Sampling Setup

Note: The pump has been decontaminated before leaving Solinst, however, if you wish to decontaminate your pump before use, Follow your state/provincial decontamination guidelines..

1. When using the Solinst Model 466 Electronic Control Unit, connect the "Air Out" line to the quick connect fitting on the side of the Delrin pump head manifold..
2. This feeds air to the drive line, which is the larger diameter tubing.
3. The smaller inner tube is the sample line.

Taking a Sample with the Micro Double Valve Pump

1. Feed your sample line at surface into your sample container or beaker.
2. Take a Water Level measurement using an accurate Water Level Meter such as the Solinst Model 101 to determine the amount of water head above the sampling zone.
3. Adjust the control unit "Pressure Regulator" to the appropriate value [(pump intake depth below grade in feet x 0.43) +10 psi].
4. Adjust the Drive and Vent times on the Model 466 Electronic Control Unit to adjust the sampling flow rate to the desired amount.

Note: Please refer to the Control Unit Operation Tips section for setting drive and vent cycle times.

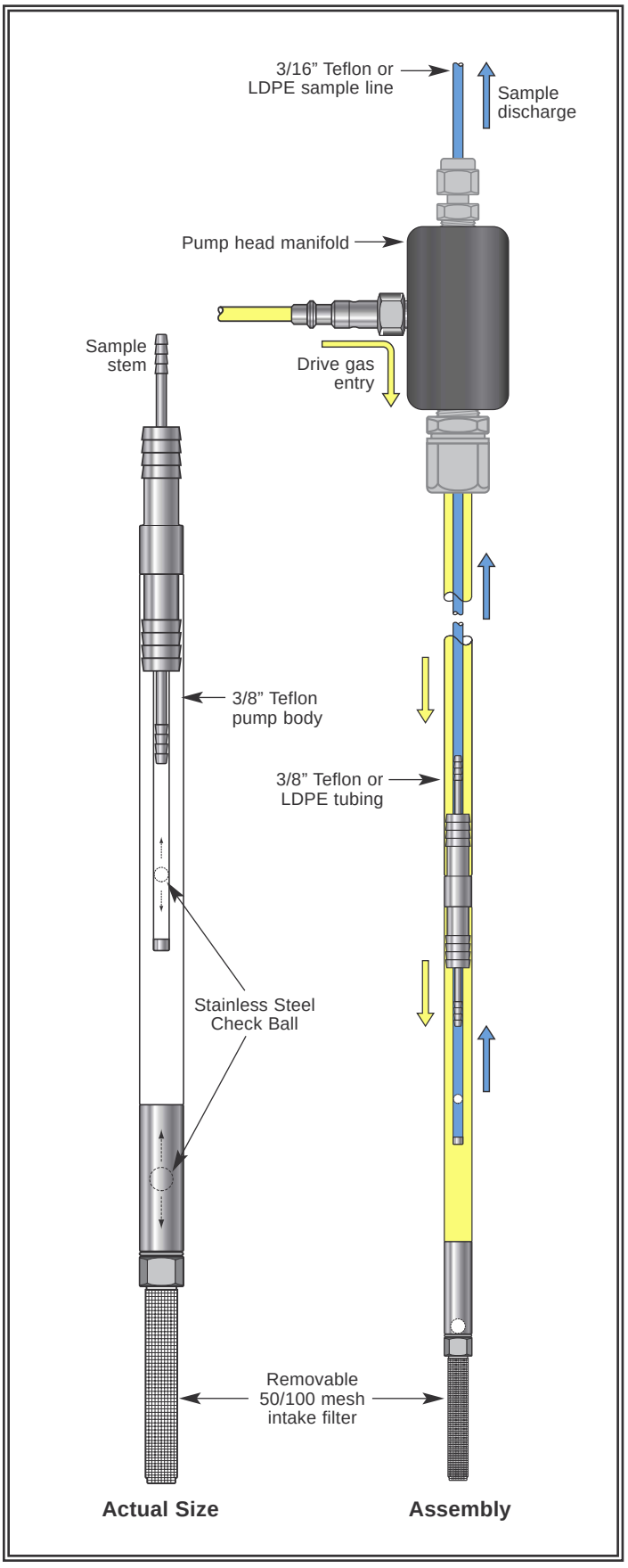
5. During the Drive period on the Control Unit, the sample line will produce your water sample. During the Vent period on the Control Unit, the Drive Line is filling again under hydrostatic pressure to the previously measured water level.
6. Turn on the compressed gas supply and set the regulator to supply not more than 300 psi to the control unit.

Note:

- *The **MAXIMUM INPUT** to the Automatic Control Unit is 300psi.*
- *The **MAXIMUM OUTPUT** from the Automatic Control Unit is 125psi., depending on the Model 466.*

Control Unit Operation Tips

1. The control unit may be operated automatically for timer periods of between 5 and 40 seconds. Periods outside of this range will require manual operation.
2. Optimal Control Unit settings may be found through manual operation of the Control Unit. Once achieved, make note of the pressure, timer, and flow rate settings for subsequent sampling events and or to operate the Control Unit automatically.
3. Once optimum flow rates have been achieved, make note of the pressure, flow rate and timer settings for subsequent sampling dates.
4. Each revolution of the timer knobs provides for a five second change in the period.



Purging or Sampling

Manual Operation

1. Begin pumping by turning the "Auto, Off/Vent, Pressure" switch clockwise to "Pressure". The control unit will supply a flow of gas to the pump until the switch is returned to the "off" position. Gas from the pump is vented with the switch in the "Off" position allowing formation water to re-enter the pump and larger, outer drive line.
2. Repeat step 1 until purging and/or sampling is complete.
3. The "Flow Rate" dial may be used to fine-tune pump operation. The full counter-clockwise position provides unrestricted gas flow for maximum flow rates. Flow rates may be minimized by turning the dial clockwise (the full clockwise position will shut off gas flow completely).

Automatic Operation

1. Set both timers knobs to the fully counter-clockwise position. The dial and the window should both read zero. At this point, the Pressure and Vent times are 3 seconds approximately. As a starting guide, turn the "Pressure Timer" knob four revolutions clockwise and the "Vent Timer" knob two revolutions clockwise. Each revolution of the timer knobs provides for a five second change in the period. Therefore, both of the dials should read zero and both of the windows should read 4. This will provide approximately 23 seconds for pressure and vent periods.
2. Begin pumping by turning the "Auto, Off/Vent, Pressure" switch counter-clockwise to "Auto". The control unit will enter a pressurization period followed by a vent period and continue to cycle until switched "Off".
3. Adjust the Pressure and Vent timers to obtain the best flow rates for purging or sampling.
4. The "Flow Rate" dial may be used to fine-tune flow rates. The full counter-clockwise position provides unrestricted gas flow for maximum flow rates. Flow rates may be minimized by turning the dial clockwise (the full clockwise position will shut off gas flow completely).
5. Once optimum flow rates have been achieved, make note of the pressure, flow rate and timer settings for subsequent sampling dates. For example, with an 85 ft. - 408M assembly and a static water level at 60 ft. With a pump pressure of [(85 ft. x 0.43) + 10psi] = 50psi., a suitable drive of 11 sec. and vent of 9 sec., will produce a flow rate of about 150mL/min.

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