

# Solinst® 1.66" Double Valve Pump Operating Instructions

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Model 408 Mk2 SS 1.66" Dia.

## Operating Principles

When the Solinst Double Valve Pump (DVP) is placed in a well or borehole, water rises inside the pump and the twin tubes to static level. A Control Unit is used to deliver compressed gas to the pump. During the drive period the gas pushes down on the water column contained in the drive line tubing, closing the check valve at the base of the pump. This forces water up the sample line tubing.

A vent period, during which the gas is released, allows hydrostatic pressure to refill the pump and drive line with sample water. The top check valve prevents water in the sample line from falling back into the pump body. This pressurization 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.

- Notes:**
1. The maximum lift for stainless steel pumps is 150 m (500 ft).
  2. DO NOT exceed an operating pressure of 250 psi.
  3. An external filter (#112832) is recommended if using a compressor to operate the Double Valve Pump.
  4. Tube fittings are based on use of 1/4" drive line and 1/4" sample line. Optional 3/8" tubing barbs (#114845) are available if 3/8" drive line tubing is preferred. See page 3 for instructions to change the fitting.

**Note:** The pump has been decontaminated before leaving Solinst however, you may wish to decontaminate your pump before use. The pump should be decontaminated between wells.

## Pump Assembly

**Portable:** The Double Valve Pump is assembled by connecting it to skip-bonded, dual 1/4" OD tubing, mounted on a reel.

- a) Push the drive and sample tubing over the tubing barbs on the stems, identified by an "S" and a "D" etched on the pump.

**Note:** If required, use an awl to open the very tip of the tubing, or heat the tubing to help push it completely over all the barbs.

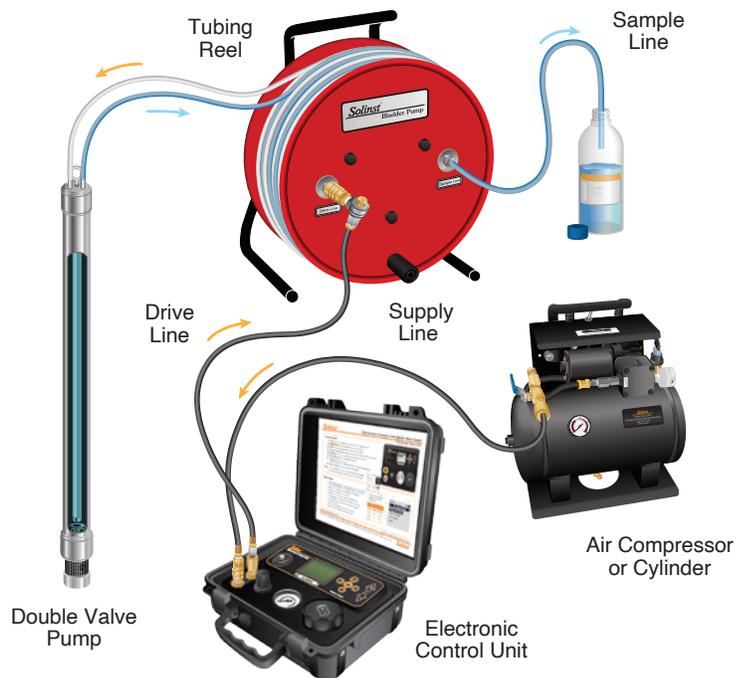
- b) Lower the assembled DVP into the well, using a stainless steel safety line connected to the eye bolt on the pump. The Solinst Model 103 Tag Line can be used for this purpose.
- c) Connect the supply line with the in-line dryer from the compressed gas source to the Control Unit. The drive line connects from the Control Unit to the reel (drive and supply lines come with the Model 464 Control Unit).
- d) Attach a short (3 ft. or 1 m) length of 1/4" OD sample line to the sample connector on the reel.

For detailed pumping instructions, please see the Solinst Model 464 Control Unit Operating Instructions.



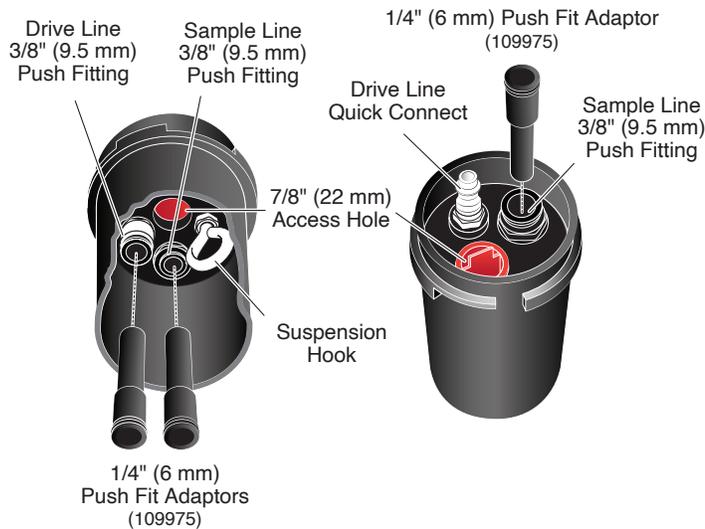
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## Portable Sampling Setup



# 1.66" Double Valve Pump Operating Instructions

## Dedicated Wellhead Setup (110227)



Wellheads come with three 1/4" push fit adaptors so that either 1/4" or 3/8" tubing can be used, as preferred.

To attach tubing just push into push fitting. To release tubing push down on both sides of the top ring and pull tubing out.

**Dedicated:** The Double Valve Pump is assembled by connecting to a Dedicated Wellhead with sample and drive line tubing.

- Cut the tubing to desired the lengths. Push the drive and sample tubing over the tubing barbs on the stems, identified by an "S" and a "D" etched on the pump.
- Attach the sample and drive lines to the appropriate push fittings on the underside of the Wellhead (see diagram for use of push fittings and adaptors).
- Lower the DVP into the well, using a stainless steel safety line if desired. If useful, attach the safety line to the suspension hook on the underside of the Wellhead. Push the Wellhead firmly onto the riser casing.
- Attach a short (3 ft. or 1 m) length of sample line to the sample connector on the Wellhead (see diagram for use of push fittings and adaptors).
- Connect the supply line with the in-line dryer from the compressed gas supply to the Control Unit. The drive line connects from the Control Unit to the top of the Wellhead (drive and supply lines come with the Model 464 Control Unit).

For detailed pumping instructions, please see the Solinst Model 464 Control Unit Operating Instructions.

## Optional Drive Line Adaptor (107117)

When the Double Valve Pump is deployed without a Wellhead or Tubing Reel, use a Drive Line Adaptor to allow the connection of the drive line quick connect fitting from the Control Unit to the drive line pump tubing.



## Decontamination

**Note:** 1. Always follow your local guidelines and standard protocols.  
2. Do not use acetone on the O-rings.

1. Completely disassemble the pump. See Disassembly section.

- Wash all pump components with phosphate-free soap or a detergent.
- Rinse all components thoroughly with deionized water and dry.
- Replace worn O-rings as necessary, and then reassemble.

## Disassembly

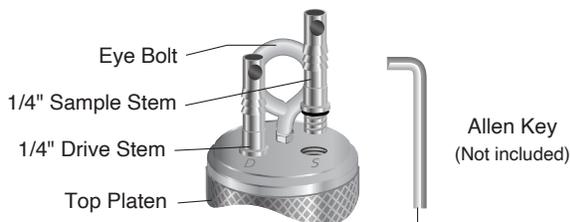
1. Unscrew and remove the Bottom Platen from the Pump Body.
2. Unscrew the Filter Retainer from the Bottom Platen and remove the Filter Mesh.

**Note:** When disassembling 12 and 50 Mesh filter screen assembly, be careful of sharp screen edges.

3. Pull to remove the Bottom Retainer from the Bottom Platen. Be careful not to lose the Check Ball.
4. Remove the Pump Body by un-threading it from the Top Platen.
5. Pull to remove the Top Retainer/Tubing Assembly from the Top Platen.

## Reassembly

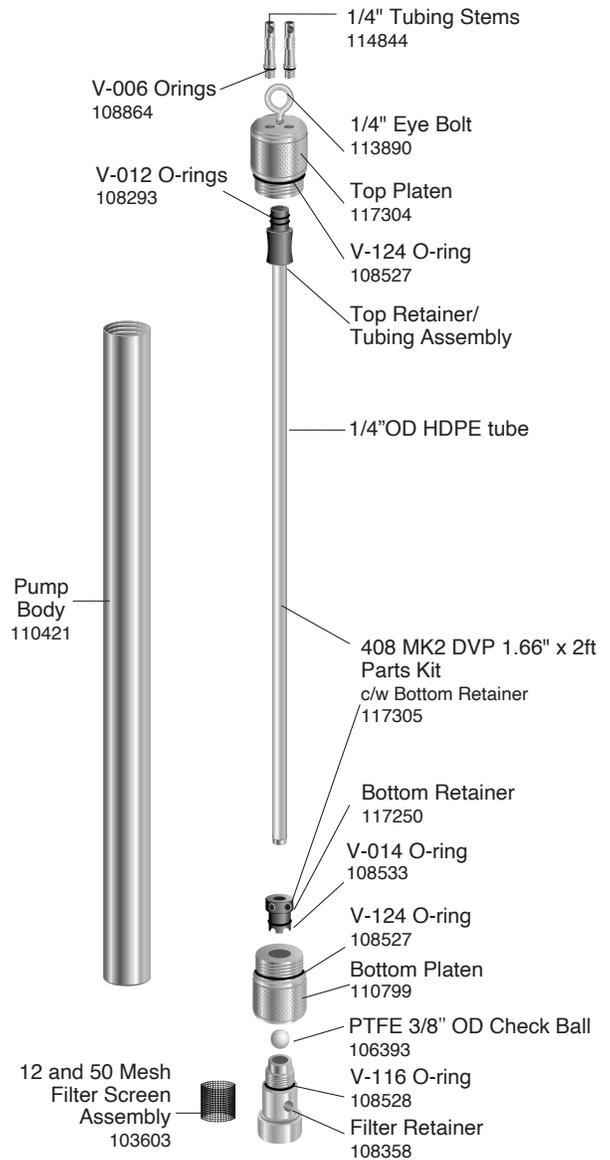
1. Slide the Filter Mesh over the Filter Retainer until seated.
2. Thread the Filter Retainer into the Bottom Platen until the parts are finger tight.
3. Drop the 3/8" OD Check Ball into the top of the Bottom Platen.
4. Insert the Bottom Retainer into the top of the Bottom Platen. Push past the O-ring until the Retainer is firmly seated.
5. Insert the Top Retainer/Tubing Assembly into the Top Platen. Push past the O-rings until the Top Retainer is firmly seated.
6. Slide the Pump Body over Top Retainer Tubing/Assembly and thread onto the Top Platen until the O-ring seats firmly.
7. Thread the Bottom Platen with Bottom Retainer and Filter Retainer into the Pump Body until the O-ring properly seats.



**Note:**

If use of optional 3/8" tube barbs (#114845) is desired, use a small (2 mm) Allen key through the hole to help loosen and tighten the tubing stems as required.

## Model 408 Mk2 2 ft. x 1.66" dia. Double Valve Pump (117252)



(Filter Retainer and Screen Assembly (Complete) 110517)