

## 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 supply compressed gas to the pump. During the drive cycle, 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.

- Note:**
1. The maximum lift for stainless steel (SS) pumps is 500 ft. (150 m).
  2. **DO NOT** exceed an operating pressure of 250 psi.
  3. 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 Operation

**Portable:** The Pump will be attached to skip-bonded, dual 1/4" OD LDPE tubing, mounted on a reel.

- a) Push the drive and sample tubing over the tubing barbs on the stems. The drive tubing connects to the stem identified by a small dimple/indent beside it.

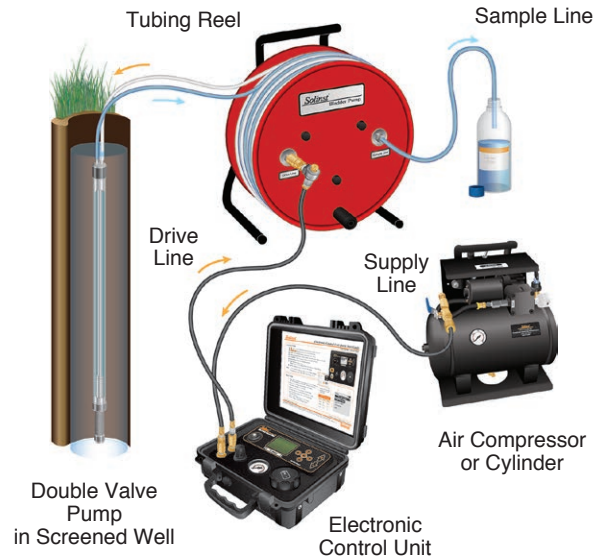
**Note:** Use an awl to open the very tip of the tubing, or heat the tubing to help push it completely over all the barbs.

- b) Lower the assembled DVP into the well.
- 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.

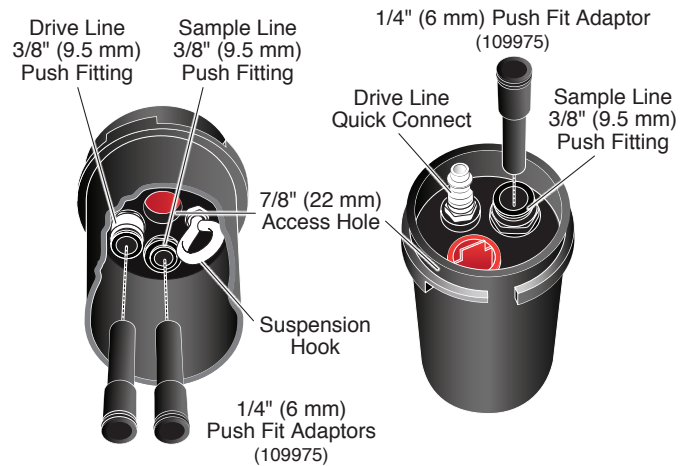
**Dedicated:** The Pump will come with a roll of tubing to be cut to length, as required, for connection to a Wellhead.

- a) Cut the tubing to desired length. Push the drive and sample tubing over the tubing barbs on the stems. The drive tubing connects to the stem identified by a small dimple/indent beside it. (See note below step a above).
- b) Attach the sample and drive lines to the appropriate push fittings on the underside of the Wellhead (see diagram at right for use of push fittings and adaptors).
- c) Lower the DVP into the well. Push the Wellhead firmly onto the riser casing.
- d) Attach a short (3 ft. or 1 m) length of 1/4" OD sample line to the sample line fitting on the Wellhead (see diagram at right for use of push fittings and adaptors).
- e) 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).

## Portable Sampling Setup



## 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.

## 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.

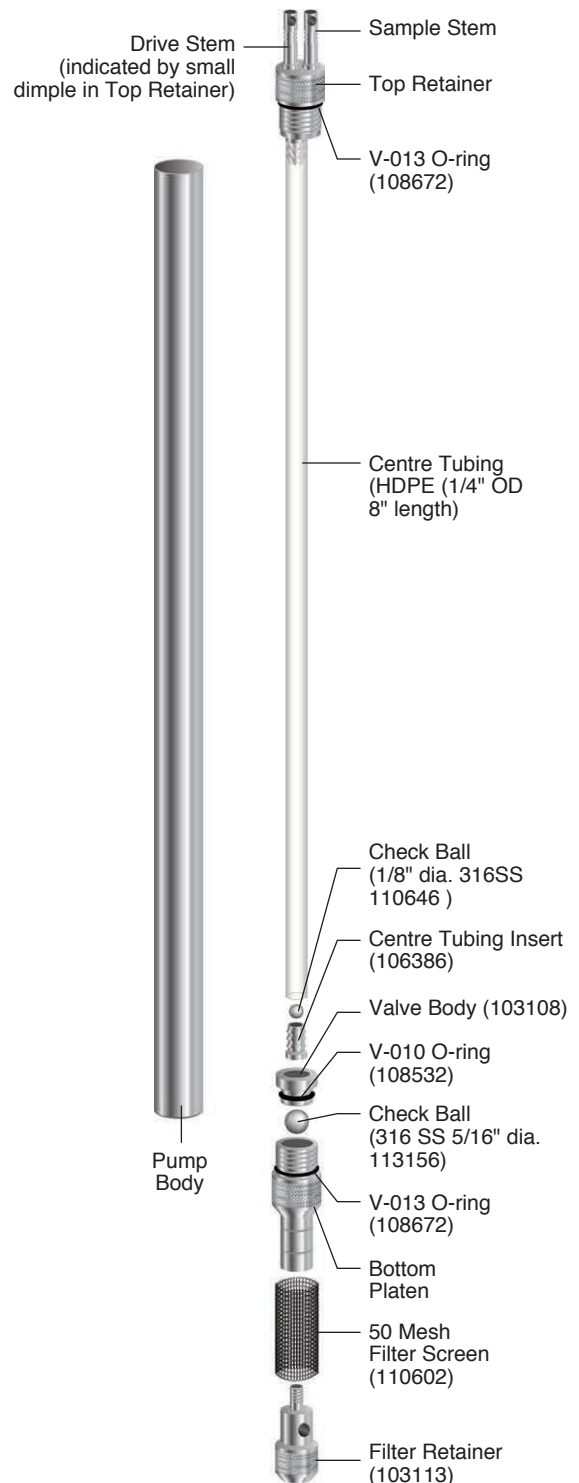
1. Completely disassemble the pump.
2. Wash all pump components with phosphate-free soap or a mild detergent.
3. Rinse all components thoroughly with deionized water and dry.
4. Replace worn O-rings as necessary, and then reassemble.
5. The pump's interior can be cleaned without disassembling by flushing your cleaning solution up and through the pump's intake. With the pump's Filter and Filter Retainer removed, use a peristaltic pump connected to the Bottom Platen to push the cleaning solution through the pump. Then flush the interior with deionized water.

## 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.
3. Pull to remove the Valve Body from the Bottom Retainer. Be careful not to lose the Check Ball.
4. Remove the Pump Body by unthreading it from the Top Retainer.
5. The Tubing Insert is a hose barb style fitting; to remove, cut the 1/4" OD HDPE Centre Tubing straight across, directly above the barbed end. Be careful not to lose the small check ball. Cut off any remaining tubing on the barb.
6. Cut the 1/4" OD HDPE Centre Tubing straight across, directly below the barbed end on the Top Retainer. Be careful not to lose the small check ball. Cut off any remaining tubing on the barb.

## 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 larger stainless steel Check Ball into the top of the Bottom Platen.
4. Insert the Valve Body into the top of the Bottom Platen. Push past the O-ring until the Valve Body is firmly seated.
5. Push the Centre Tubing onto the tubing barb on the Top Retainer. Push the tubing all the way onto the tubing barb.
6. Insert the smaller stainless steel Check Ball into the Centre Tubing.
7. Push the Tubing Insert into the bottom of the Centre Tubing.
8. Slide the Pump Body over the Centre Tubing and thread onto the Top Retainer until the O-ring seats firmly.
9. Thread the Bottom Platen with Valve Body and Filter Retainer into the Pump Body until the O-ring properly seats.



5/8" Double Valve Pump Mk3 (#103104)