

### Operating Principles

When the Solinst Bladder Pump is placed in a well or borehole, water rises inside the bladder and sample tubing to static level. Compressed nitrogen or air is supplied to the pump via the drive tubing using a Control Unit. Applying pressure causes the bladder to compress and closes the bottom check valve, forcing water from the bladder into the sample tubing.

During a vent cycle the pressure is released from the drive tubing. The bladder returns to its initial state as water re-enters the pump, while the top check valve prevents water already in the sample tubing from falling back into the bladder. Cycling the drive and vent provides water flow, the rate of which can be adjusted for purging or sampling.

- Notes:**
1. The maximum depth for stainless steel Bladder Pump operation is 500 ft. (150 m) below grade.
  2. **DO NOT** exceed an operating pressure of 250 psi.
  3. An external filter (#112832) is recommended if using a compressor to operate the Bladder 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.



### Pump Operation

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

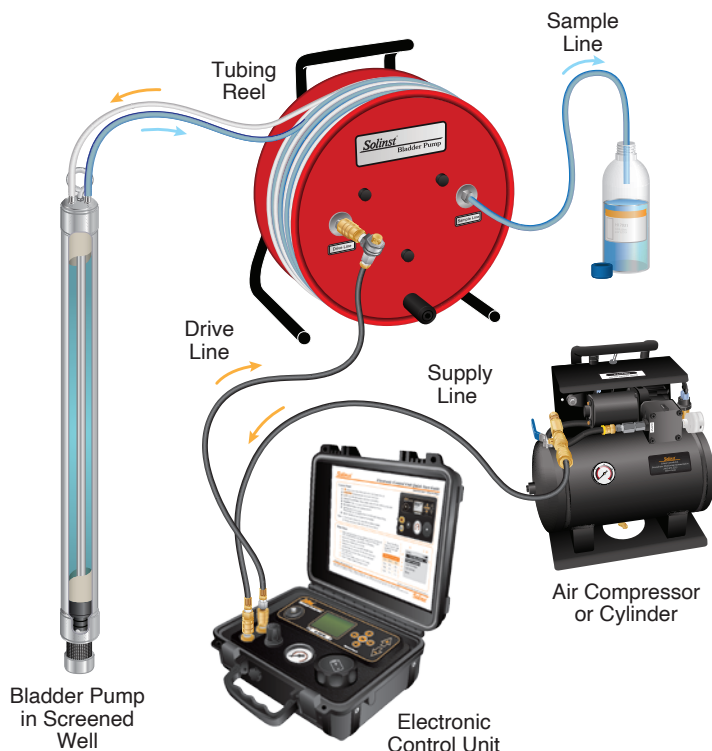
- a) Push the drive and sample tubing over the tubing barbs on the stems, identified by an "S" and a "D" etched on the pump.

**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 Bladder Pump 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.

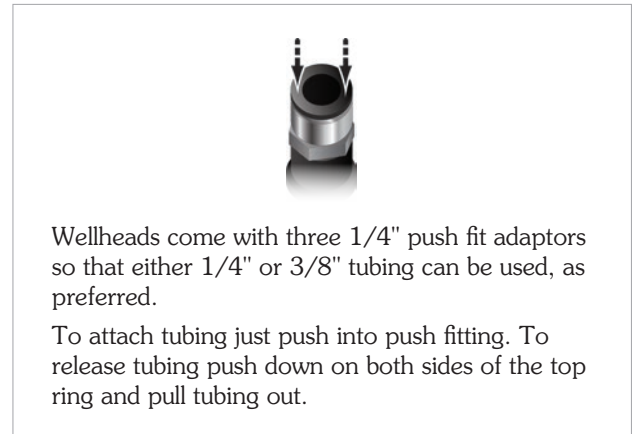
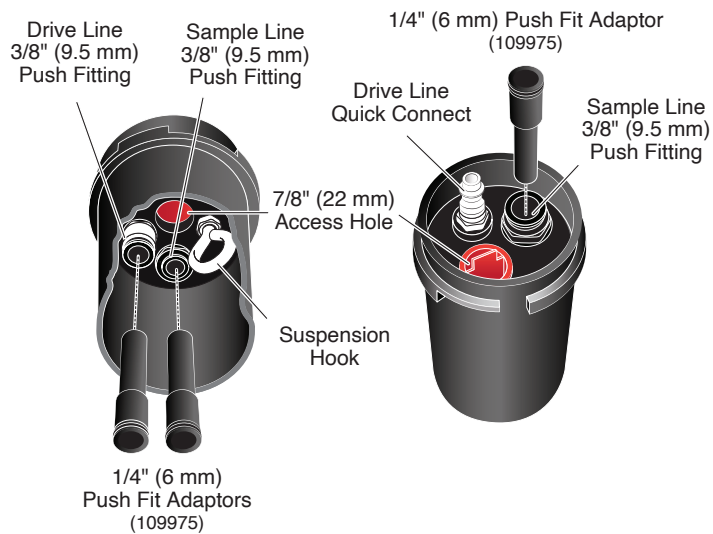
For detailed pumping instructions, please see the Solinst Model 464 Control Unit Operating Instructions.

### Portable Sampling Setup



# 1.66" Bladder Pump Operating Instructions

## Dedicated Wellhead Setup (110227)



**Dedicated:** The pump will come with a roll(s) of tubing to be cut to length, as required, for attachment to a Wellhead.

- Cut the tubing to desired length. 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.

- Attach the sample line and drive line to the appropriate push fitting on the underside of the Wellhead (see diagram for use of push fittings and adaptors).

- Lower the Bladder Pump 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 down firmly onto the riser casing.
- 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 Wellhead (drive and supply lines come with the Model 464 Control Unit).
- 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 fitting and adaptors).

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

## Optional Drive Line Adaptor (107117)

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



## Decontamination

**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.

1. Completely disassemble the pump. See Disassembly section.

2. Wash all pump components with phosphate-free soap or a detergent.
3. Rinse all components thoroughly with deionized water.
4. Replace any worn O-rings and Bladder if necessary, and reassemble. We recommend replacing Bladders between wells, or as needed.

## Disassembly

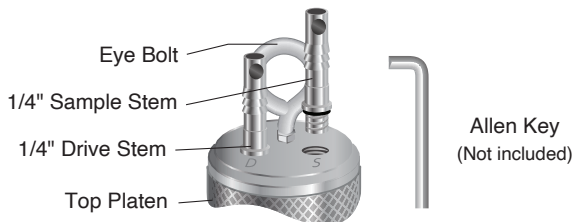
1. Unscrew and remove the Filter Retainer, Filter Screen and Top and Bottom Platens, being careful not to lose the Check Balls.

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

2. Remove the Bladder Cartridge from the Pump Body.

## Reassembly

1. If necessary install new O-rings on both Top and Bottom Retainers and both Platens. (Total of 7)
2. Put the Filter Screen over the Filter Retainer. Screw the Filter Retainer into the Bottom Platen.
3. Drop a 3/8" OD Check Ball into the Bottom Platen. Do not force the ball in, as the correct ball should drop in easily.
4. Fit the Bottom Retainer of the Bladder Cartridge Assembly firmly into the Bottom Platen (Bottom Retainer has a notched end).
5. Slip the Pump Body over the Bladder Cartridge Assembly and screw it onto the Bottom Platen.
6. Drop a 3/8" OD Check Ball into the Top Platen and screw the Pump Body onto it.
7. Shake the assembled pump to hear if the Check Balls rattle. If not, repeat the steps to ensure that the Check Balls are positioned correctly.

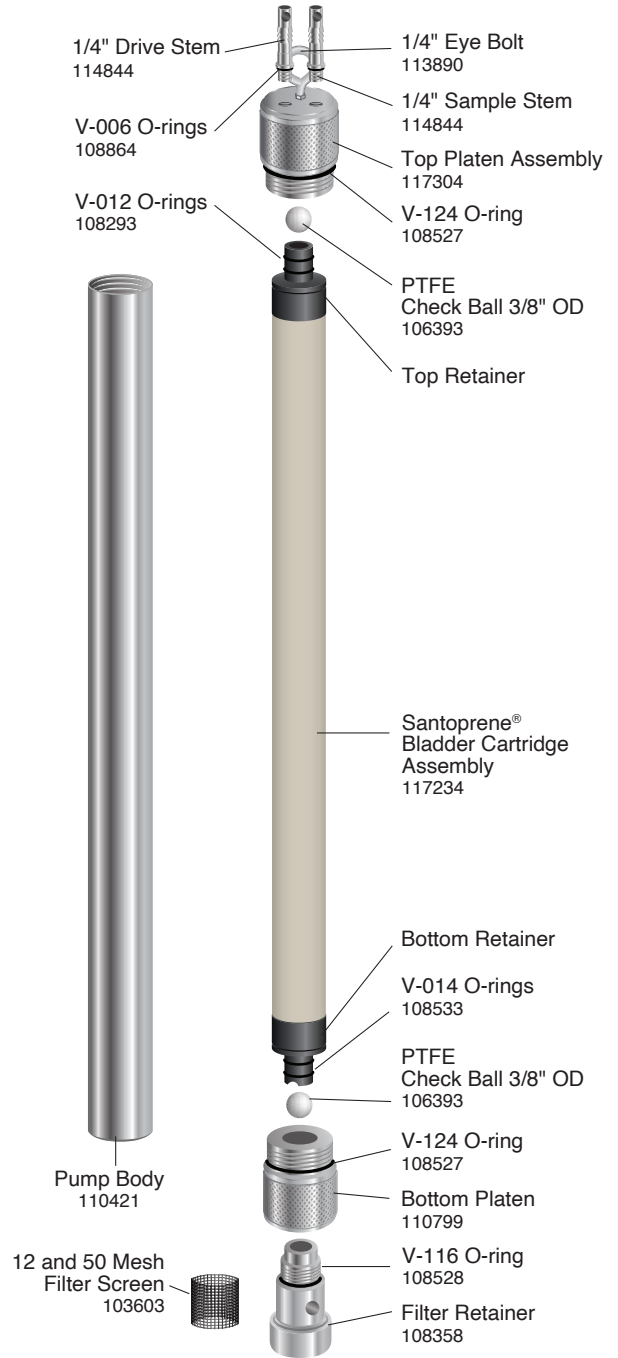


**Note:**

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.

**Note:** The Model 407 Mk2 is also available with stainless steel check balls and is assembled and operated in the same manner.

## Model 407 Mk2 2 ft. x 1.66" dia. SS Bladder Pump (117209)



(Filter Retainer and Screen Assembly (Complete) 110517)

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