



### Operating Principles

When the Solinst Integra 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 up 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.

### Pump Operation

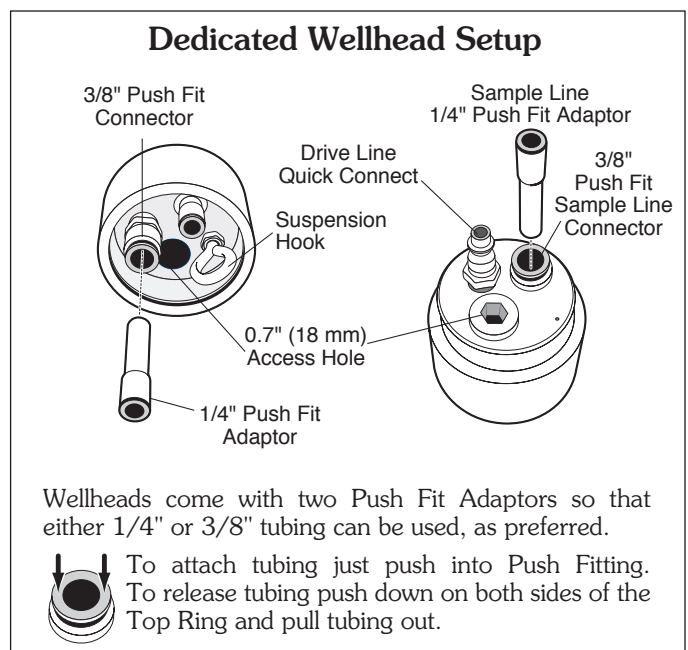
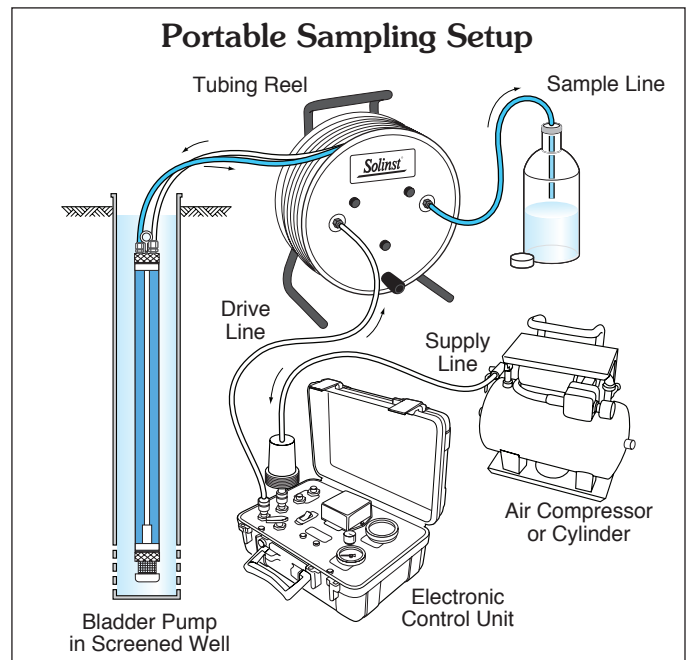
**Portable:** The Bladder Pump will be attached to skip-bonded, dual 1/4" OD tubing, mounted on a reel.

- Push the tubing into the drive and sample compression fittings of the Bladder Pump. The compression fitting nuts may have to be loosened before the tubing is inserted. Tighten the nut 1-1/4 turns past finger tight for a proper seal (see overleaf).
- Lower the assembled Bladder Pump into the well. The Solinst Model 103 Tag Line can be used for this purpose.
- 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.
- Attach a short (3 ft. or 1 m) length of 3/8" OD sample line to the sample connector on the reel.

**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. See step a) above for tubing connection instructions to the Pump.
- Attach the sample line and drive line to the appropriate Push Fitting on the underside of the Wellhead (see diagram at right for use of Push Fittings).
- Lower the Bladder Pump into the well, using a stainless steel safety line if desired, and 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.
- Attach a short (3 ft. or 1 m) length of 3/8" OD sample line to the sample connector on the Wellhead.
- For detailed pumping instructions, please see the Solinst Model 466 Control Unit Operating Instructions.

- Notes:**
- The maximum depth for PVC Bladder Pump operation is 500 ft. (150 m) below grade.
  - DO NOT** exceed an operating pressure of 50 psi.
  - 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.
  - Tube fittings are based on use of 1/4" drive line and 3/8" sample line. A 3/8" to 1/4" adaptor is also supplied, if dual 1/4" tubing is preferred.
  - Refer to the operating instructions in the lid of the Solinst Model 466 Control Unit for detailed pumping instructions.



## Disassembly

1. Unscrew and remove the Filter Retainer, Vyon Filter and Top and Bottom Platens, being careful not to lose the Check Balls. Remove the Bladder Cartridge from the Pump Body.
2. Use Oetiker pliers to remove the Oetiker clamps from the Top and Bottom Retainers of the Bladder Assembly.
3. Remove the Top and Bottom Retainers from the Bladder. Remove the Riser from inside the Bladder.

## Decontamination

**Notes:** 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 detergent.
3. Rinse all components thoroughly with deionized water.
4. Replace any worn O-rings and reassemble.

## Reassembly

### Assembling the Bladder Cartridge

1. Insert the Riser into the Bottom Retainer until the O-ring properly seats.

**Note:** The Bottom Retainer is identified by the four holes at the bottom of its stem.

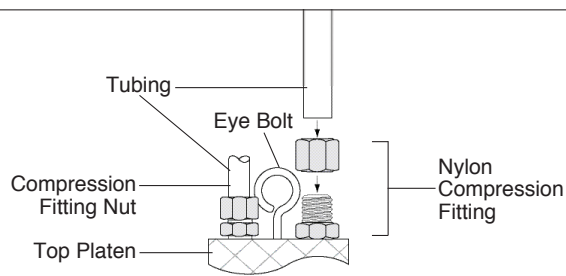
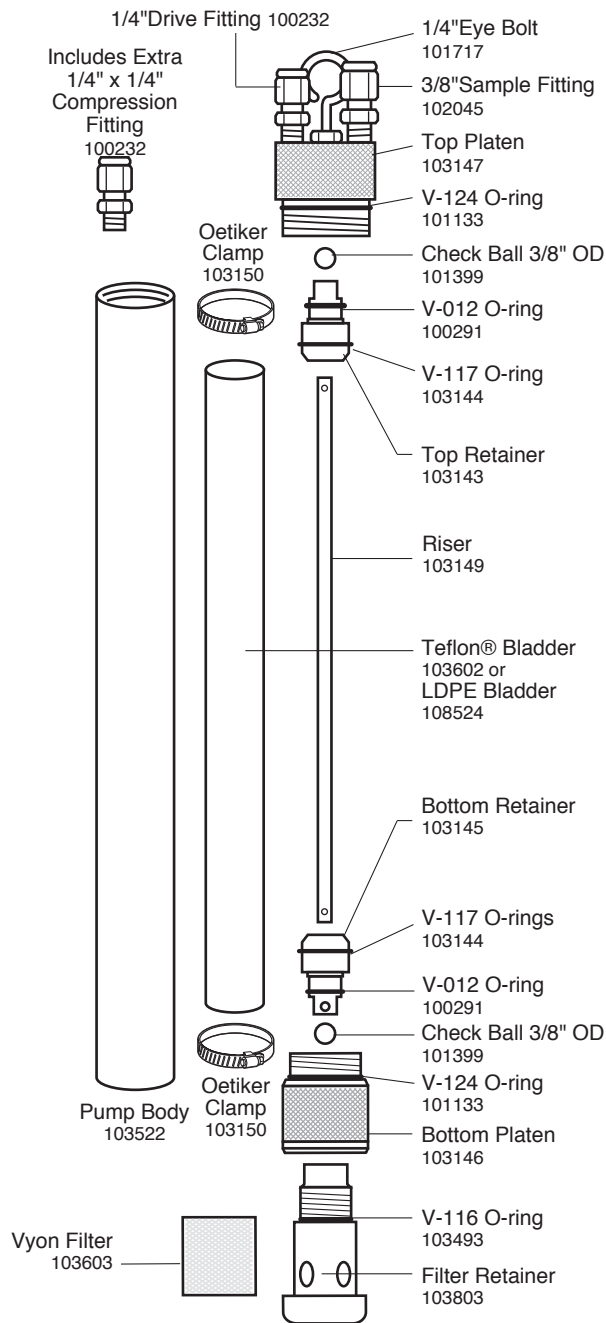
2. Slide the Bladder over the Riser until the Bladder overlaps the O-ring on the Bottom Retainer.
3. Using an Oetiker clamp, fasten the Bladder to the Bottom Retainer.
4. Fit the Top Retainer onto the top of the Riser until the O-ring properly seats.
5. Slide the top of the Bladder over the Top Retainer until the Bladder overlaps the O-ring. Use an Oetiker clamp to fasten the Bladder to the Top Retainer.

### Assembling the Pump

1. Slide the Vyon Filter over the Filter Retainer until firmly seated in the groove at the bottom of the Retainer.
2. Thread the Bottom Platen onto the Filter Retainer until the O-ring seats and parts are finger-tight. Insert the Check Ball into the top of the Bottom Platen.
3. Insert the bottom end of the assembled Bladder Cartridge into the Bottom Platen until the O-ring firmly seats.
4. Slide the Pump Body over the Bladder Cartridge. Thread the Pump Body onto the Bottom Platen until the O-ring seats and parts are finger tight.
5. Carefully place the Check Ball in the top of the Top Retainer.
6. Holding the Bottom Platen with one hand, take the Top Platen and thread into the top of the Pump Body until the O-ring seats and the parts are finger tight.

**Note:** With PVC Pumps there is the option of using a stainless steel weight threaded into a tapped Filter Retainer to reduce buoyancy during operation. An optional Weight and Filter Retainer Assembly (part #105881) is available from **Solinst**

## Model 407 2 ft. x 1.66" dia. PCV Bladder Pump



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