

**WARNING:** Before driving into the ground, be sure you have underground service clearance to avoid cables, gas lines, pipes, etc.

## Component List

- Drive-Point Piezometer Tip
- Screened Extensions
- Extensions (suitable to reach the required depth)
- Couplings (one required for each extension)
- Manual Slide Hammer
- Piezometer tubing (suitable to reach the required depth)
- Drive Head Assembly (welded)

Includes: Drive Head, Drive Extension & Tubing Bypass

- Delrin Cap (111148)

## Installation with a Manual Slide Hammer

**Note:** Drive-Points are designed for single use installations (temporary or permanent). They are not meant for removal and reuse.

1. Ensure that all components are clean prior to use.
2. If using piezometer tubing, cut it to the depth of the proposed installation plus an additional 5 ft (1.5 m).
3. If using a 615 or 615S, Connect the 5/8" OD piezometer tubing to barbed fitting on the Drive-Point Piezometer Tip by pushing firmly until the tubing reaches the base of the fitting.

Or, if using a 615C, loosen the compression fitting and insert the 1/4" piezometer tubing. Tighten 1 and 1/4 turns past finger tight to properly secure the tubing in the fitting.

4. Slide a length of extension pipe over the tubing, and thread it firmly onto the Drive-Point Piezometer Tip. Tighten with a pipe wrench.

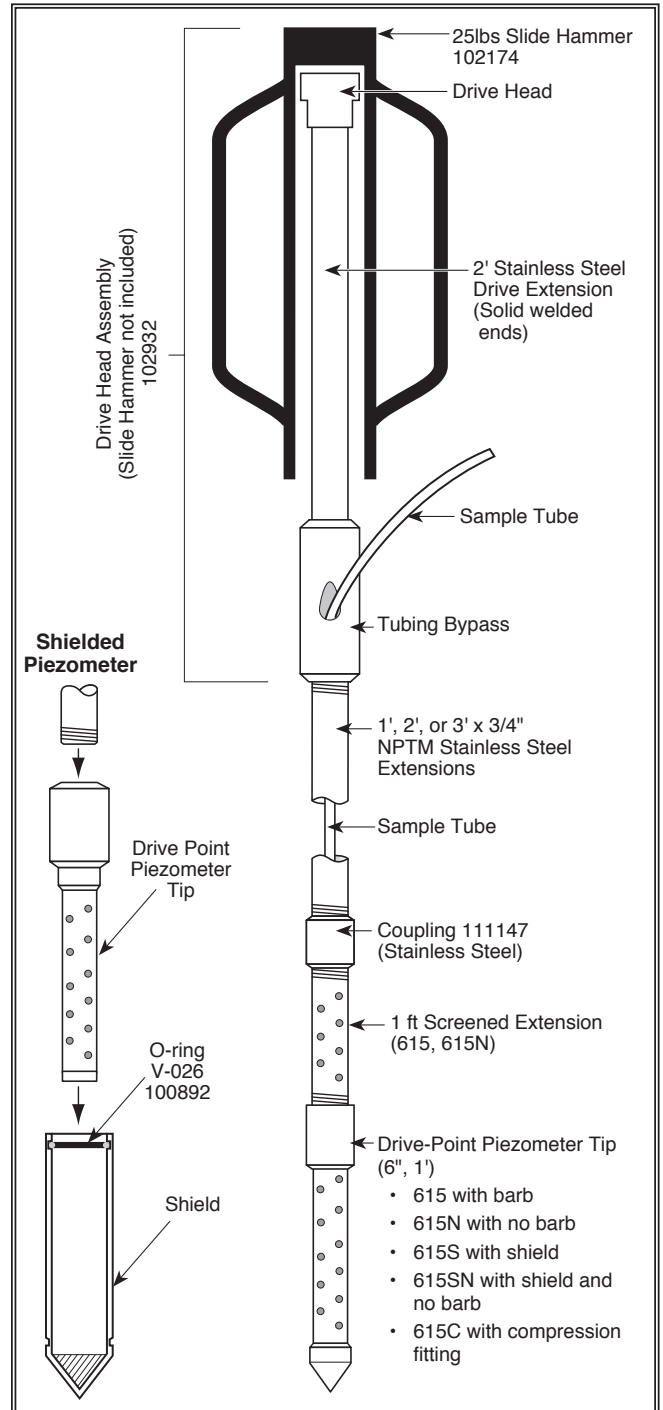
If using a 615N or 615SN, then you will not be working with tubing. Simply thread the extension pipe onto the Piezometer Tip.

**WARNING:** When connecting or removing the Tubing Bypass, it is very important to hold the tubing to prevent it from turning. Failure to do so may result in the tube being dislodged from the Drive-Point Tip.

5. Hold the tubing to prevent it from turning, then slide the Tubing Bypass over the tubing and tighten it firmly onto the extension pipe, with the tubing extending through the side hole.
6. Slide the Slide Hammer over the Drive Head and operate the hammer to drive the device until only about 6" (15 cm) of the extension pipe below the Tubing Bypass remains above the ground.

**WARNING:** For health and safety reasons, it is strongly suggested that only a suitable slide hammer be used for Drive-Point Piezometer installations. Sledge hammers are not suitable and can cause serious physical injury.

7. Remove the hammer, then holding the tubing to prevent it from turning, remove the Drive Head Assembly.
8. Slide a coupling over the tubing and tighten firmly onto the previous extension pipe. Slide the next extension pipe over the tubing and tighten it securely.
9. Repeat steps 5 through 9 until the desired sampling depth is reached.
10. Cut the piezometer tubing to fit flush to the top of the extension pipe. Attach a cap to the top of the piezometer to complete the installation.



### Important Notes about Shielded Piezometers

1. Before driving into the ground, ensure that the shield is on firmly and the o-ring seats properly.
2. Drive the Piezometer an equal length past the desired depth, then pull back/up to expose the inlet.
3. 1ft (102412) and 6" (104370) Replacement Shields are available when re-using the Drive-Point Piezometer.

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## Monitoring Options

The **615** has a barbed fitting to attach 5/8" x 1/2" LDPE or Teflon tubing. They are suitable for water sampling using Solinst 429 Point-Source Bailers, 404 Inertial Pumps, or the 410 Peristaltic Pump. Water level measurements can be taken using the Model 102 or 102M Water Level Meters.

The **615N** does not have a tubing barb. The open 3/4" (20 mm) piezometer pipe is ideal for water level measurements using the 102 or 102M Water Level Meters, or 101 Water Level Meter, and provides more access to sample with Model 404 Inertial Pumps, or 429 Point-Source Bailers.



The **615S** is a shielded version of the 615. It has the same monitoring options as the standard 615. The shield prevents the screen from smearing during installation in soft soils and clay.

The **615SN** is a shielded version of the 615N. It has the same monitoring options as the standard 615N. The shield prevents the screen from smearing during installation in soft soils and clay.



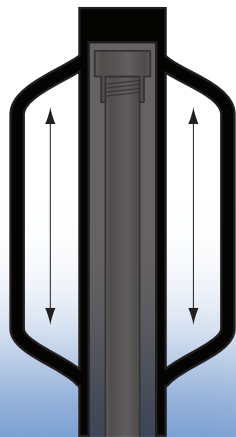
The **615C** comes with a compression fitting to attach 1/4" x 0.170" LDPE or Teflon tubing. The 615C is suitable for water and soil vapor sampling using the Solinst Model 410 Peristaltic Pump.



**1 ft. Screened Extensions** are an option for extending the screened length of the piezometer tip. Note: Available with or without a barbed fitting.



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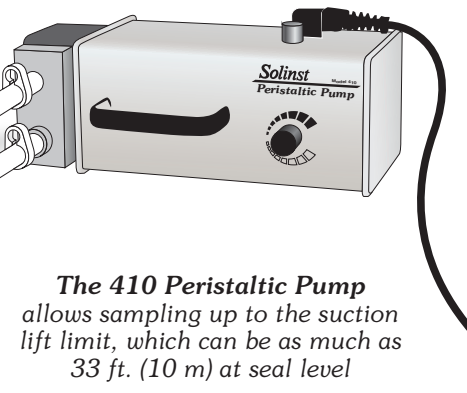


**Get High Quality Samples with your Drive-Point Piezometer**

The results from short-term and long-term groundwater monitoring studies have shown that samples taken from Direct Push wells are comparable in quality to those obtained from conventional monitoring wells (ITRC, 2006).

Solinst offers the **Model 615 Drive-Point Piezometers** that can be driven into suitable soils for groundwater sampling up to 20 to 25 ft. (6 – 7.5 m). High quality samples from a Solinst Model 615 Drive-Point Piezometer can be easily obtained with the use of a Solinst 410 Peristaltic Pump.

*The Tubing By-Pass ensures that the tubing is not damaged while the piezometer is driven to depth.*



**The 410 Peristaltic Pump** allows sampling up to the suction lift limit, which can be as much as 33 ft. (10 m) at seal level

**Maintaining Sample Integrity**

The 615 Drive-Point Piezometer tip comes with an inner barbed fitting to attach 5/8" OD x 1/2" ID Teflon<sup>®</sup> or LDPE sample tubing. The Model 410 Peristaltic Pump uses this same size tubing in medical grade silicon. The tubing from the 615 Drive-Point Piezometer tip can be simply connected to the 410 Peristaltic Pump tubing with a short length of 1/2" OD tubing.

This setup maintains sample integrity from the Drive-Point Piezometer tip to the sample discharge at surface, even when inexpensive carbon steel extensions are used. Connecting the tubing from the Drive-Point Piezometer tip to the pump head prevents sample water from contacting the steel extension rods of the 615 Drive-Point Piezometer during sampling. The piezometer tips and screens are made of high quality stainless steel, allowing a "clean" sample.

In addition, when using the Model 410 Peristaltic Pump, the samples come in contact only with the tubing, also helping to maintain sample integrity.

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## Installing Drive-Points with Tubing

The 615 Drive-Point Piezometer can be installed with the tubing already connected to the Drive-Point Piezometer tip with the use of a convenient tubing by-pass along with a drive head assembly and manual slide hammer. The tubing by-pass ensures that the tubing is not damaged while the piezometer is driven to depth.



The sample tubing is cut to length and pushed onto the barb; an extension pipe is slid over the tubing and threaded onto the 615 Drive-Point Piezometer tip; the tubing by-pass is slid over the tubing and tightened onto the extension pipe. The tubing end is extended through the side hole in the tubing by-pass, and out of the way.

A drive head assembly is threaded onto the tubing by-pass. The manual slide hammer only contacts the drive head assembly, ensuring the tubing is not damaged. To install to greater depths, extension pipes are added and hammered to depth, each time using the tubing by-pass and drive head assembly, until the desired depth is reached.

The sample tubing is inserted inside the Peristaltic Pump tubing and the other end into the Drive-Point Piezometer tubing. The friction-fit holds the tubing together. The Model 410 Peristaltic Pump allows sampling up to the suction lift limit, which can be as much as 33 ft. (10 m) at seal level. One easy-access control enables flow rates from 40 ml/min to 3.5 L/min.

## Sampling at Contaminated Sites

Model 615 Drive-Point Piezometers provide many benefits when used to sample at contaminated sites, especially when compared to conventional monitoring wells. Because of their portability, quick and simple installation, and rapid sampling, they are excellent to use as an exploration tool for initial site investigations. They can be installed for short term monitoring, and can be used for profiling if installed at a number of different depths on site.

Drive-Point Piezometers are also extremely cost-efficient. There are no drill rigs or large installation tools required; installation and sampling is quick, reducing time in the field; smaller holes mean less purge water and no soil to dispose of; and the few materials that are required, are inexpensive.

Contaminated sites can be quickly, accurately and safely assessed. Drive-Point Piezometers can help determine the existence and location of contaminants. This can help zero in on areas that require immediate remediation without drilling many expensive boreholes. They can also help decide on the placement of more permanent monitoring wells, such as Solinst Multilevel Systems (403 CMT Multilevel Systems, 401 Waterloo Multilevel Systems).

Overall, Model 615 Drive-Point Piezometers and Model 410 Peristaltic Pumps, combined with tubing, tubing by-pass, inexpensive extension rods, drive head assembly and the manual slide hammer, provide a complete groundwater monitoring well solution that is efficient, highly portable and affordable.



**Note:** for higher resolution profiling, Solinst offers the Model 660 Drive-Point Profiler, which can also be used with the Model 410 Peristaltic Pump. Samples are taken at multiple depths, as the Drive-Point Profiler is advanced deeper.

## References

ITRC (Interstate Technology & Regulatory Council), 2006. *The Use of Direct-push Well, Technology for Long-term Environmental Monitoring in Groundwater Investigations. SCM-2.* Washington, D.C.: Interstate Technology & Regulatory Council, Sampling, Characterization and Monitoring Team. [www.itrcweb.org](http://www.itrcweb.org).