

## MODEL 4590



Model 4590 Casagrande Piezometer.

### APPLICATIONS

For the measurement of...

- Ground water pressures
- Pore water pressures
- Slope stability studies
- Effectiveness of de-watering operations
- Wick drain efficiency

### OPERATING PRINCIPLE

The 4590 Casagrande Piezometer is intended for measurements of pore pressures, groundwater sampling and monitoring in a simple and economic way and where time lags and or obstruction to construction are not critical.

The piezometer consists of a porous tip, attached to a riser pipe. The porous tip is isolated in the zone of interest, usually with an overlying bentonite seal. Water is free to flow through the porous tip and stabilizes in the riser pipe at the piezometric elevation.

The elevation of the water level in the riser is measured using a sounder or, more commonly and accurately, with a water level meter (such as the Solinst Model 101 — see separate data sheet)

### ADVANTAGES & LIMITATIONS

Open standpipe piezometers are quite reliable, with a long and successful performance record. They can also be used for groundwater sampling and to measure the permeability of the surrounding soil using constant, or falling head test methods.

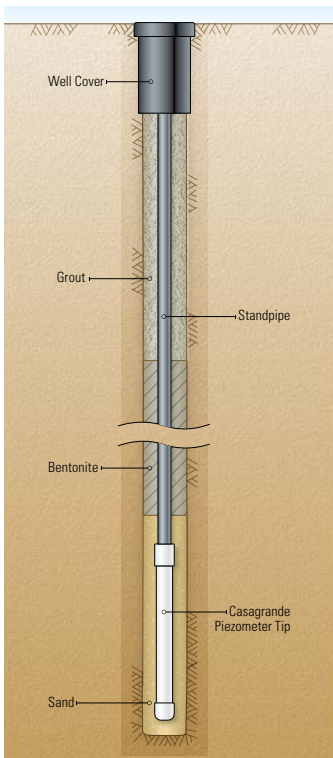
One drawback of the standpipe piezometer is its hydrodynamic time lag, which is much greater than

that of diaphragm type piezometers because a much greater movement of pore or joint water is involved.

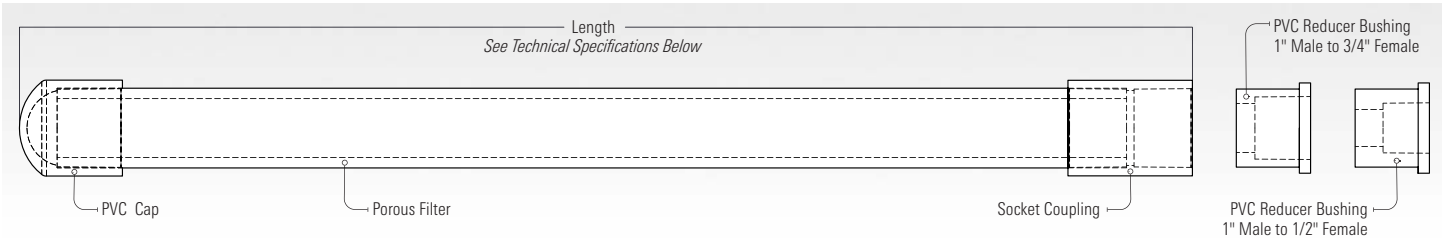
Standpipe piezometers are also more subject to damage by construction plant, than are buried types, and extending riser pipes through embankment fills can result in inferior compaction at the piezometer location.

Care should be taken to prevent rainwater run-off from entering open standpipes; stopcocks or well covers are available for this purpose.

In critical monitoring situations, and or where automatic readings are required at frequent intervals the standpipe piezometer is easily "converted" by installing a diaphragm type piezometer (Model 4500C for example).



Casagrande standpipe piezometer schematic.



Casagrande standpipe piezometer



Solinst Model 101 Water Level Meter.



Typical well cover.  
(Photo provided courtesy of Martin Products, Inc. [www.martinproducts.net](http://www.martinproducts.net))

#### OPTIONAL EQUIPMENT

##### PVC Riser Pipe:

Specify: 0.5", 0.75" or 1" and flush coupled or socket couplings.

##### Well Covers:

Specify: Size (7" standard).

##### Water Level Meters:

Specify: Tape length (please see the Solinst Model 101 data sheet)

#### TECHNICAL SPECIFICATIONS

The Casagrande Piezometer tip consists of a 50 micron porous plastic filter element with PVC fittings.

The unique design of the piezometer tip allows for connection to 0.5" (1.27 cm), 0.75" (1.91 cm) or 1" (2.54 cm) riser pipes.

Material	UHMW Polyethylene Tube, PVC Fittings
Available Connections	1" (2.54 cm), ¾" (1.91 cm), ½" (1.27 cm) nominal pipe size
Lengths	4590-11-12   13.74" (34.9 cm) 4590-11-18   19.74" (50.14 cm) 4590-11-24   25.74" (65.38 cm)
Maximum OD	1.64" (41.5 mm) on PVC fittings
Filter Dimensions	1.35" OD, 0.99" ID, 0.18" wall thickness
Effective Filter Area	4590-11-12   30.8 in <sup>2</sup> (198.71 cm <sup>2</sup> ) 4590-11-18   49.5 in <sup>2</sup> (319.35 cm <sup>2</sup> ) 4590-11-24   68.1 in <sup>2</sup> (439.35 cm <sup>2</sup> )
Pore Diameter	50 micron
Hydraulic Conductivity	2.69 × 10 <sup>-2</sup> cm/s

\*Photo provided courtesy of Martin Products, Inc. [www.martinproducts.net](http://www.martinproducts.net)