

# Standpipe Piezometer

## Applications

Standpipe piezometers are used to monitor piezometric water levels. Observation wells are used to monitor ground water levels. Typical applications include:

- Monitoring pore-water pressure to determine the stability of slopes, embankments, and landfill dikes.
- Monitoring the effectiveness of dewatering schemes.
- Monitoring seepage and ground water movements in embankments, landfill dikes, and dams.

## Standpipe Piezometers

The standpipe piezometer, sometimes called a Casagrande piezometer, consists of a filter tip joined to a riser pipe. The filter tip is made from polyethylene or porous stone and has 60 micron pores. The riser pipe is typically made from PVC plastic pipe.

After the filter tip and riser pipe are installed downhole, a sand filter zone is tremied into place around the filter tip. The top of the filter zone is sealed with bentonite to isolate the pore-water at the tip. The annular space between the riser pipe and the borehole is backfilled to the surface with a bentonite grout to prevent vertical migration of water. The riser pipe is terminated above ground level with a vented cap.

Standpipe piezometers can be pushed into very soft soil. In this case, a steel well point is used instead of the filter tip, and steel pipe is used instead of plastic pipe.

## Observation Wells

An observation well also uses a filter tip, but there is no bentonite seal and the borehole is backfilled with gravel or sand rather than a bentonite grout. Since the filter tip is not isolated from vertical migration of water, this type of installation is useful for monitoring the general water level, but not pore-water pressure.



## Water Level Indicators

Water levels in either the standpipe piezometer or the observation well are measured with a water level indicator.

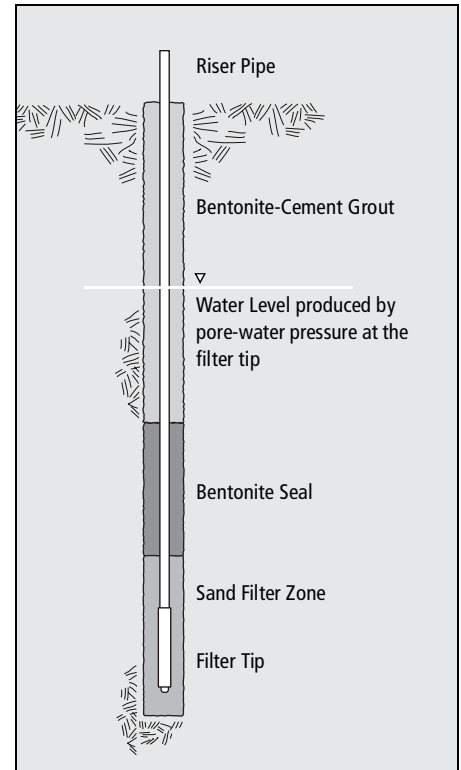
A water level indicator consists of a probe, a graduated cable or tape, and a cable reel with built-in electronics. The probe is lowered down the standpipe until it makes contact with water. Contact is signaled by a light and buzzer built into the cable reel. The depth-to-water reading is taken from the cable or tape.

A unique detection circuit combined with a sensitivity feature helps users obtain consistent measurements and eliminates false triggering in different well and water conditions.

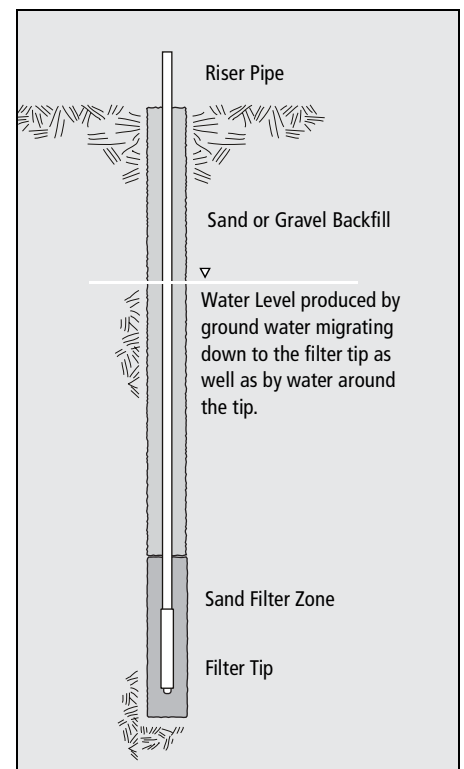
See the Water Level Indicator datasheet for more information.

## Advantages

- Economical components.
- Simple to read.
- Excellent, long-term reliability.



Water level in standpipe (Casagrande) piezometer is produced by pore-water pressure at the filter tip.



Water level in observation well is produced by the intake of the entire borehole.

## STANDPIPE FILTER TIPS

**Polyethylene Tip, 12" (305 mm) . .51417402**

**Polyethylene Tip, 24" (610 mm) . .51417404**

**Porous Stone Tip, 12" (305 mm) . .51405102**

**Porous Stone Tip, 24" (610 mm) . .51405104**

Standpipe filter tip is used with plastic riser pipe. Tip mates directly with 0.75" slip coupling and is supplied with an adapter kit (51405150), which includes adapters for 0.5" and 1" pipe.

**Filter Material:** Polyethylene tip is made from hydrophilic polyethylene and has 60 micron pores. Porous stone filter is made from fused aluminum oxide (Norton Alundum) and has 68 micron pores.

**Filter Size:** Filter is 12 or 24 inches long and formed into 1.5" diameter cylinder.

**Note on Plastic Pipe Couplings:** Slip couplings, although somewhat cheaper, sometimes catch falling bentonite, causing improper placement of the seal due to bridging. To prevent this, construct the riser pipe from flush-coupled plastic pipe. The smooth profile of the flush-coupled pipe allows bentonite chips to fall to the intended depth of the seal.

## PIPE ADAPTERS

**Adapter from 0.75 to 1.25" pipe .50712521**

**Adapter from 0.75 to 1.5" pipe . .50712531**

## WELL POINTS

**Well Point . . . . .51406500**

Well point is used with steel riser pipe and is intended to be pushed into very soft soils. Well point is made from corrosion-resistant, double galvanized, low carbon steel and has #10 slot size (equivalent to Gauze #60). Well point is 1.7" in diameter and 24" long (43 x 610 mm). A 1.25" to 2" IPS adapter is included.

## WATER LEVEL INDICATORS

**Reel Diameter:** 180, 230, 280 mm (7, 9, 11").

**Reel Construction:** Heavy-gage aluminum plate sides, PVC spool, rotating knob. The smallest reel has an aluminum handle, but no stand. The larger two reels have steel stands.

**Control Panel:** Sensitivity adjustment, LED, beeper, test switch, and battery holder.

**Batteries:** Two 1.5 v alkaline AA cells.

**Probe Size:** 10 x 170 mm ( 3/8" x 6.6" ).

**Probe Construction:** Stainless steel body and tip, polyethylene insulator.

**Cable Construction:** 3.2 mm ( 1/8" ) diameter polyurethane jacket with two copper-clad, steel conductors inside. Jacket can be cleaned with laboratory grade detergent, such as Alconox® or Liquinox®. Graduations are marked with laser and cannot be rubbed off.

**English Graduations:** English-unit cables have 0.01 foot graduations with labels at 0.1 foot and 1 foot intervals.

**Metric Graduations:** Centimeters are marked and labelled. Numbers in the label serve as 2 mm graduations, as shown below.

**Recommended Cleaner:** Laboratory grade detergent, such as Alconox® or Liquinox®.

## ENGLISH-UNIT INDICATORS

Cable	Reel	Weight	Part Number
100'	7"	3.5 lb	51690010
150'	7"	4 lb	51680014
100'	9"	5 lb	51690012
150'	9"	5.5 lb	51690015
300'	9"	7.5 lb	51690030
500'	11"	11 lb	51690050
1000'	11"	17 lb	51690100

## METRIC-UNIT INDICATORS

Cable	Reel	Weight	Part Number
30 m	180 mm	1.6 kg	51690303
50 m	180 mm	1.8 kg	51690304
30 m	230 mm	2.3 kg	51690300
50 m	230 mm	2.5 kg	51690305
100 m	230 mm	3.4 kg	51690310
150 m	280 mm	4.7 kg	51690315
200 m	280 mm	5 kg	51690320
300 m	280 mm	7.7 kg	51690330