



## Hydraulic Piezometer System Model 1510-GS-HP01

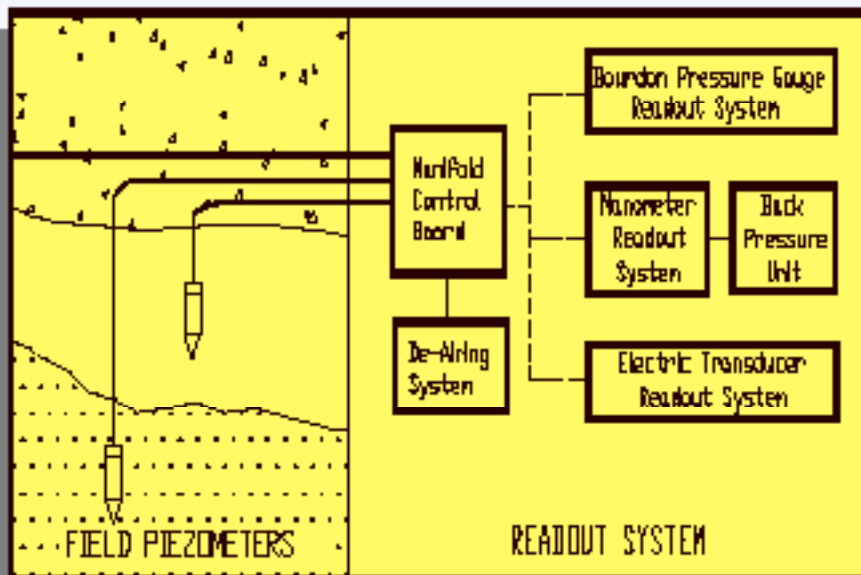
### FEATURES

- Long-Term Stability in Extreme Conditions
- Ceramic HAE filter (LAE on request)
- High Resolution and Accuracy
- Deldrin Plastic, Brass or Stainless Steel Construction
- Wall-Mounted Readout Control Panel
- Portable Readout Option
- Allows measurement of Negative Pore-Water Pressures

### APPLICATIONS

Hydraulic piezometers are typically used to measure fluid or water pressures for :

- Fluid levels or hydraulic pressures in tanks & pipes
- Uplift pressures in dam foundation and abutments
- Pore-water pressures for construction & performance monitoring of earth fill dams, foundations, embankments & other earth structures
- Groundwater levels for de-watering & drainage operations
- In-Situ Permeability Testing



### General

The Hydraulic Piezometer tip consists of a tubular ceramic filter element mounted within a housing (constructed of brass, plastic or stainless steel) - the filter is held between two end caps (front and back) with neoprene 'O' rings. The back cap of the piezometer has connector fittings for twin tubes.

The hydraulic piezometer system offers long-term reliability and high accuracy in readings. The system also allows in-situ permeability testing to be carried out.

### Operating Principle

The hydraulic Piezometer system typically consists of one or more porous ceramic piezometer tips installed at the required locations (within the foundation

ground or earth fill structure) and connected via twin tubing to a remote readout location.

The entire piezometer / tubing / readout equipment will be fully flushed and filled with deaired water and will remain filled throughout the operating life of the hydraulic piezometer system.

Periodically, the system will be re-flushed to remove any accumulated air or gases.

The pore-water pressure acting at the piezometer tips will be measured at the remote readout station using mercury manometers, Bourdon gauges or electric pressure transducers.

Hydraulic piezometers are suitable for measurement of pore-water pressures in saturated or partially saturated soils in the range - 5m to 200m head of water.

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FOR FURTHER INFORMATION

environmental systems & services | 8 River Street, Richmond VIC 3121 Australia  
T + 61 3 8420 8999 | F + 61 3 8420 8900 | geotechnical@esands.com | [www.geosystems.com.au](http://www.geosystems.com.au)



## Accessories & Components

### Piezometer Tips

**Bishop Piezometer Tips** consist of a tapered HAE (High Air Entry) ceramic filter element with Deldrin plastic (optional brass or stainless steel) housing and tube connections for 2 x 1/4" nylon tubing. Suitable for positive and negative pore-water pressures in fully or partially saturated soils. Accessories include hole forming tool, installation adaptor and extension rods for borehole installation.

**Push-In Piezometer Tips** consist of a cylindrical LAE or HAE ceramic filter element with Deldrin plastic (optional brass or stainless steel) housing and tube connections for 2 x 1/4" nylon tubes. LAE filter tips are suitable for fully saturated soils whilst HAE filter tips are for partially saturated of fully saturated soils.

**Cylindrical Piezometer Tips** consist of a cylindrical LAE (Low Air Entry) ceramic filter element with Deldrin plastic (optional brass or stainless steel) housing and tube connections for 2 x 1/4" nylon tubes. LAE filters are suitable for fully saturated soils.

**Push-In Piezometer Tips** consist of a cylindrical LAE or HAE ceramic filter element with Deldrin plastic (optional brass or stainless steel) housing and tube connections for 2 x 1/4" nylon tubes. LAE filter tips are suitable for fully saturated soils whilst HAE filter tips are for partially saturated of fully saturated soils.

### Piezometer Tubing and Accessories

**Twin Tubing** for the hydraulic piezometer consists of two Nylon tubes (1/4" OD = 6.4mm OD) encased inside a polyethylene outer sheath.

**In-Line Couplings** are used for line to line connection to individual Nylon tube. The coupling consists of a brass connector body with two brass nuts and olives to enable water-tight connection to 1/4" Nylon tubes.

### Terminal Readout Board

Various components of the readout system are operated using appropriate controls to carry out measurement of piezometric pressures, flushing and filling the piezometer / readout system as explained below:

**Manifold Board** - Fitted with a pair of valves for every piezometer permitting individual piezometers to be selected in turn for various operations (flushing, filling, taking readings etc)

**Water Pump** - Electric powered (240 VAC) continuous flow pump is used to circulate de-aired water through the system. Fitted with pressure relief valve to protect pressure gauges and ceramic filters.

**De - Airing Cylinder** consists of a cylindrical Perspex tank used for circulation of water through the system. It allows observation of the discharge of air bubbles in the return water.

Supplied with all necessary valves and connections to various other components of the readout system.

**Pressure Gauge** (Bourdon type) is used to measure the pore-water pressures acting at the piezometer tips. The gauge will be mounted on the control panel and connected (using hydraulic fittings) to the readout system.

**Screw Pump** is used for pre-setting pressures, zeroing gauges, testing gauges etc. The screw pump will be mounted on the control panel and connected to the readout system.

**Water Tank** is used to store de-aired water for various operations (flushing, filling etc). Water level scale is provided so the water level measurements can be obtained for reference level for manometers and for in-situ permeability testing.

**Water Boiler** is used for the preparation of de-aired water using boiling technique. 240 VAC electric or gas-fired boilers are available.