

STANDPIPE PRECIPITATION GAUGE

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Staff from the B.C. Ministry of Transportation and Highways, Snow Avalanche Section, have been testing and developing a relatively new style of precipitation gauge since 1982.

This Standpipe Precipitation Gauge is a PVC plastic container which holds a solution of Ethylene Glycol antifreeze and water. An electronic pressure transducer mounted near the bottom of the gauge measures the pressure of the fluid being forced into a port on the pressure transducer. By calibrating the transducer it is possible to relate this pressure to a vertical measurement of water equivalent. Testing and field use of these gauges over the past six years has proven them to be both accurate and reliable when installed at suitable precipitation monitoring sites.

A small, submersible pump is mounted inside the gauge to prevent possible freezing over of the antifreeze solution in the gauge during periods of heavy snowfall and/or cold temperatures. Experience has shown that insufficient natural mixing of the antifreeze/precipitation solution may occur during extreme weather conditions. This has resulted in a slush or ice layer forming in the gauge. The submersible pump mixes the solution at a predetermined interval to virtually eliminate this problem.

TECHNICAL INFORMATION

Standpipe Gauge

PVC plastic container 1 metre in height by 38 cm in diameter. Base diameter is 48 cm to allow a flange for mounting. The smooth walls of the gauge and the large diameter prevents capping over during heavy snowfall periods.

Pressure Transducer

Sensotech 0-1 PSIG with special temperature compensation from -30 degrees Fahrenheit to room temperature. Maximum gauge capacity is 703 mm of water equivalent. Excitation is +/- 12 volts DC. Output of the transducer is 0-5 volts DC.

The transducer is mounted in a steel U-bolt assembly and is provided with a protective aluminum cover.

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Circulation Pump

A submersible pump with low amperage draw is used to minimize battery power consumption. The pumps currently being used draw 1-1.5 amps under load.

Plumbing

A brass drain tap is used to drain accumulated precipitation from the gauge when it is nearing capacity. A brass fitting is threaded into the side of the gauge to allow transducer mounting.