



Uses No Power

Melts snow without heater

Overview

The CS705 is a snowfall adapter that converts a standard 8 in. tipping bucket rain gage to a year-round rain and snow gage. It is typically used with our TE525WS rain gages.

The CS705 consists of the following:

- › One black catch tube
- › One reservoir
- › One overflow (measurement) tube

- › One 14807 drain funnel
- › Two stainless-steel band clamps
- › One set of CM270 mounting hardware

Solid precipitation is gathered in the catch tube and mixed with a non-toxic propylene glycol and ethanol (PGE) solution inside the reservoir. The PGE solution lowers the melting point of the frozen snow and allows the resulting liquid solution to flow through the overflow tube and be measured with a standard 8 in. rain gage.

Benefits and Features

- › Melts snow without a heater and therefore eliminates the current consumption associated with heaters
- › Collects PGE/precipitation mixture below the rain gage for disposal according to local requirements
- › Converts a TE525WS to a rain and snow gage

Technical Description

The CS705 consists of a propylene glycol and ethanol (PGE) reservoir, overflow tube, and catch tube. Snow captured in the catch tube dissolves into the antifreeze. The melted snow raises the level of the antifreeze and water solution. The mixture flows through the overflow tube into the tipping bucket where it is measured by the tipping bucket mechanism.

Measurement Delays

The CS705 possesses inherent delays and is not suitable for real-time precipitation measurements. The following factors contribute to the delays:

- › Temperatures of air and liquid in the reservoir
- › Surface tension in the overflow tube
- › Form of the precipitation

For rainfall at 25°C, a delay of minutes is expected after the gage receives a minimum accumulation of ~0.03 inches. For snowfall, a delay of hours to tens of hours is expected. The longest delays should be expected for low-density snows at

very cold air temperatures. However, all precipitation falling into the catch tube eventually flows through the overflow tube and is measured by the tipping bucket rain gage.

Recommended Mixture

The CS705 requires a specific 1:1 formulation of propylene glycol and ethanol (PGE) to function properly. PGE is available from Campbell Scientific in a package of four, one-gallon containers (see [Ordering Information](#)). Due to regulatory restrictions, PGE can only be shipped in multiples of four gallons via UPS Ground and cannot be shipped outside of the continental US.

Why Straight Car or RV Antifreeze is NOT Recommended

Standard RV antifreeze consist of propylene glycol or ethylene glycol, which has a specific gravity of greater than 1. This allows a layer of water to sit on top of the antifreeze. That layer of water can then freeze and form an ice cap that prevents snowfall from being dissolved in the solution. Cutting the antifreeze with ethanol solves the specific gravity issue and prevents the ice cap. PGE is also more environmentally friendly.

Disposing of PGE Mixture

Although PGE is non-toxic, the PGE/precipitation mixture from the tipping bucket gage should be captured and disposed of properly in accordance with local, state, and federal regulations.

Specifications

Compatible Antifreeze Mixture	1:1 mixture of propylene glycol and ethanol (PGE) Campbell Scientific does not recommend using the antifreeze that is typically used in cars or RVs; refer to the Compatibility section for more information.
Material	Powder-coated aluminum

Capacity	20.3 cm (8 in.) of liquid @ -20°C (assuming 1:0 starting ratio of antifreeze to water)
PGE Reservoir Capacity	9.46 L (2.5 gal)
PGE Reservoir Diameter	20.96 cm (8.25 in.)
PGE Reservoir Height	35.6 cm (14 in.)
Catch Tube Orifice	20.3 cm (8 in.)
Catch Tube Height	25.4 cm (10 in.)
Weight	» 2 kg (4.4 lb) without PGE » ~9 kg (20 lb) with PGE

