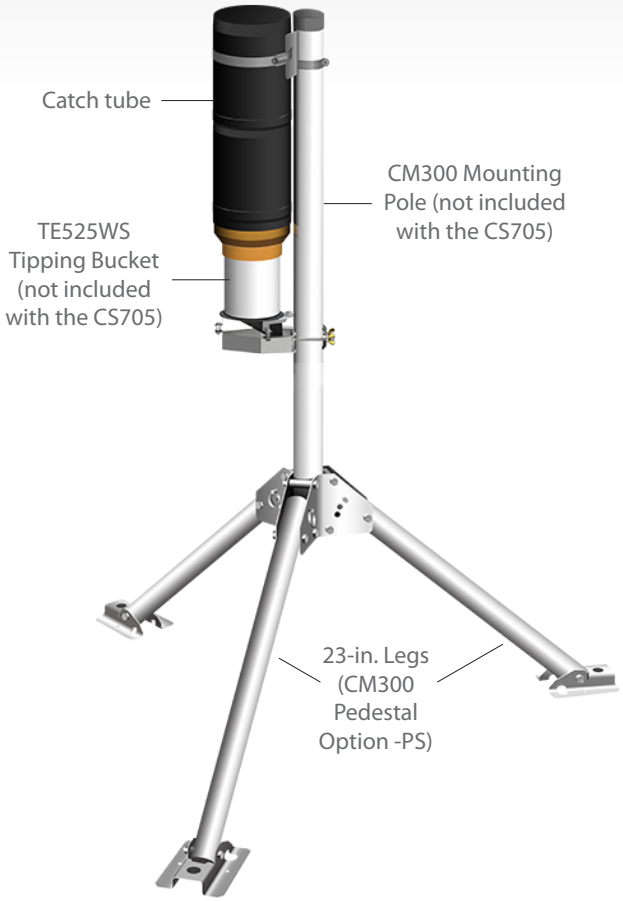
CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

CS705

Tipping Bucket Snowfall Adapter



Uses No Power

Melts snow without heater

Overview

The CS705 is a snowfall adapter that converts a 8-in. tipping bucket rain gauge to a year-round rain and snow gauge. It consists of an anti-freeze 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.

Features

- Melts snow without a heater and therefore eliminates the current consumption associated with heaters
- Converts a TE525WS to a rain and snow gauge

bucket rain gauge. Both the TE525 and TE525MM can be converted to a TE525WS by returning them to Campbell Scientific.

Antifreeze[1]

Recommended Mixture

Campbell Scientific recommends a 1:1 mixture of propylene glycol and ethanol (PGE). PGE is available from Campbell Scientific in a package of four, one-gallon containers (see Ordering Information). Antifreeze can only be shipped in multiples of four gallons via UPS Ground and can not be shipped outside of the Continental United States.

Why Straight Car or RV Antifreeze is NOT Recommended

Standard RV antifreeze consists 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.

[1]*The waste from the tipping bucket gauge should be captured and disposed of properly in accordance with local, state, and federal regulations.*

Measurement Delays

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

- Temperature 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 gauge receives a minimum accumulation of ~0.03 in. 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 gauge below.

Mounting

The CM270 Mounting Kit is included with each purchase of the CS705 Snowfall Adapter. The kit consists of a funnel, two band clamps, and mounting hardware. The funnel drains the antifreeze/precipitation mixture into a pail. One of the band clamps secures the top of the CS705 to a pole. The other band clamp attaches the funnel and the bottom of the rain gauge to the pole. A user-supplied pole or a CM300-series Mounting Pole may be used. The user must provide a pail and a hose with a 0.5 in. inner diameter. The hose must be long enough to span the distance from the funnel outlet to the pail.

Ordering Information

Snowfall Adapter and Antifreeze	
CS705	Snowfall adapter for rain gauges with 8-in. orifices
#10869	Four one-gallon containers of 50:50 PG:E Antifreeze; only US ground shipments
Mounting Poles	
CM300	23-in. Mounting Pole with Cap
CM305	47-in. Mounting Pole with Cap
CM310	56-in. Mounting Pole with Cap
Pedestal Options for Mounting Poles	
-NP	No Pedestal Base
-PJ	CM340 Pedestal J-Bolt Kit
-PS	CM350 Pedestal Short Legs (23-in. legs)
-PL	CM350 Pedestal Short Legs (39-in. legs)

Specifications

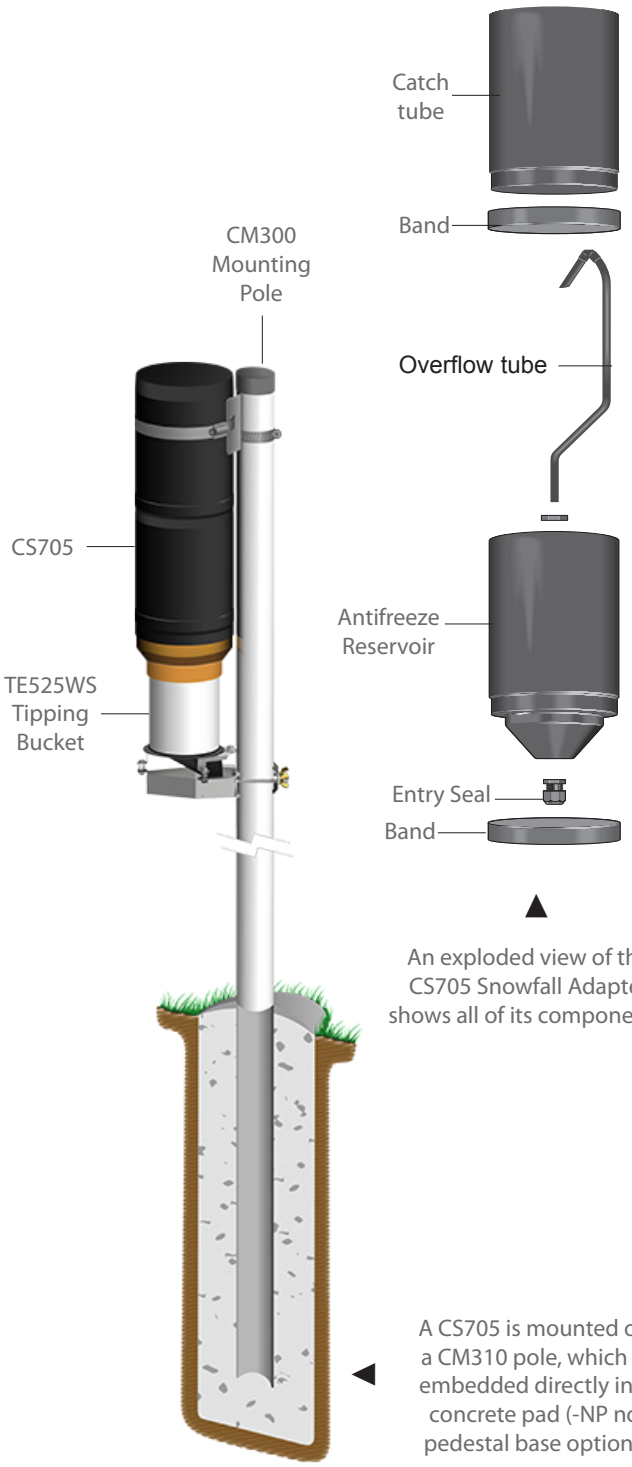
- Recommended Antifreeze Type: 1:1 mixture of propylene glycol and ethanol (PGE)
- Material: Powder-coated aluminium
- Total Weight: ~9 kg (20 lb) includes antifreeze
- Capacity: 20.3 cm (8 in.) of liquid @ -20°C (assuming 1:0 starting ratio of antifreeze : water)

Catch Tube

- Height: 25.4 cm (10 in.)
- Diameter: 20 cm (8 in.)

Antifreeze Reservoir

- Capacity: 2.5 gallons
- Height: 35.6 cm (14 in.)
- Diameter: 20.96 cm (8.25 in.)



An exploded view of the CS705 Snowfall Adapter shows all of its components.

A CS705 is mounted on a CM310 pole, which is embedded directly in a concrete pad (-NP no pedestal base option).

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