
Ambient Weather WS-YG501 Galileo Thermometer, Hygrometer and Glass Fluid Barometer



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1. Introduction

Thank you for your purchase of the Ambient Weather WS-YG501 Galileo Thermometer, Hygrometer and Glass Fluid Barometer. The following is a guide for preparation, care and operation of your traditional barometer and thermometer.

2. Preparation

You will need food coloring to color the water in the storm glass. Any color is fine, based on personal taste.

3. Care and Cleaning

Avoid use of harsh household cleaners and coarse paper towels, which can damage the lacquer or glass.

Do not install the barometer and thermometer outside. It is intended for indoor use only.

4. Storm Glass Barometer

4.1 How the storm glass works

The concept that 'decreasing atmospheric pressure predicts stormy weather' was postulated by Lucien Vidie - and it's the basis for a weather prediction device called a storm glass or liquid barometer. It consists of a glass container with a sealed body, half filled with water.

A narrow spout connects to the body below the water level and rises above the water level, where it is open to the atmosphere. When the air pressure is lower than it was at the time the body was sealed, the water level in the spout will rise above the water level in the body and when the air pressure is higher, the water level in the spout will drop below the water level in the body.

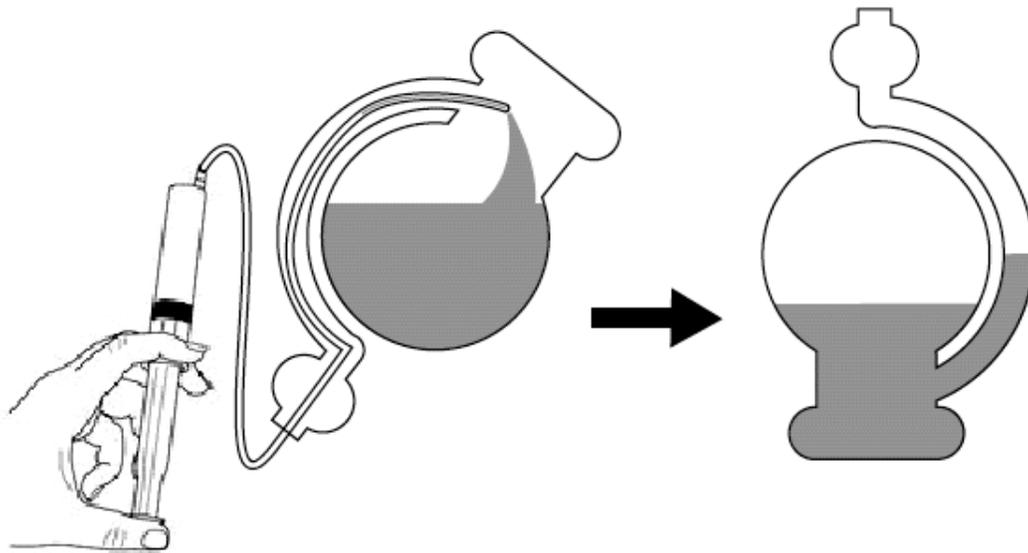


Figure 1

4.2 Filling the storm glass

Each Storm Glass is hand blown and accurately forecasts changes in the weather hours in advance. The Storm Glass should be filled with distilled water which decreases the chance of streaks being left on the glass. Using the enclosed tools filling the Storm Glass is a simple procedure.

1. Fill the syringe (included in the package) the colored water (use food coloring).
2. Attach the syringe to the inlet of plastic tube (included in the package).
3. Turn the storm glass **upside down**. This is to ensure the liquid does not flow out.
4. Gently push the tube into the storm glass through the inlet of the spout until the end of the tube has reached the bottom of the storm glasses bulb.
5. Slowly inject the liquid into the storm glass until half of the bulb is filled, as shown in Figure 1.
6. Turn the storm glass over to its proper position (**do not** remove the syringe).
7. Use more liquid to fill the glass tube until the colored liquid has reached the fair symbol.
8. You may have to add or remove liquid after observing the storm glass for several days and comparing to current and predicted weather conditions.
9. Note that evaporation is normal over time and the storm glass must be topped off occasionally.

4.3 Emptying the storm glass

1. Attach the syringe to the long plastic tube.
2. Put the storm glass in an upright position.
3. Insert the tube into the storm glass until it reaches the bottom of the bulb.
4. Slowly pump the liquid out until all of the liquid is gone.

5. Galileo Thermometer

5.1 How the Galileo thermometer works

The Galileo thermometer consists of a sealed glass tube that is filled with paraffin oil and several floating bubbles. The bubbles are glass spheres filled with a colored liquid mixture.

Attached to each bubble is a little metal tag that indicates a temperature. These metal tags are calibrated counterweights. The weight of each tag is slightly different from the others. Since the bubbles are all hand-blown glass, they aren't exactly the same size and shape.

The bubbles are calibrated by adding a certain amount of fluid to them so that they have the exact same density. So, after the weighted tags are attached to the bubbles, each differs very slightly in density (the ratio of mass to volume) from the other bubbles, and the density of all of them is very close to the density of the surrounding paraffin oil.

As the temperature of the air outside the thermometer changes, so does the temperature of the paraffin oil surrounding the bubbles. As the temperature of the paraffin oil changes, it either expands or contracts, thereby changing its density. So, at any given density, some of the bubbles will float and others will sink. The bubble that sinks the most indicates the approximate current temperature.

5.2 How to read the Galileo thermometer

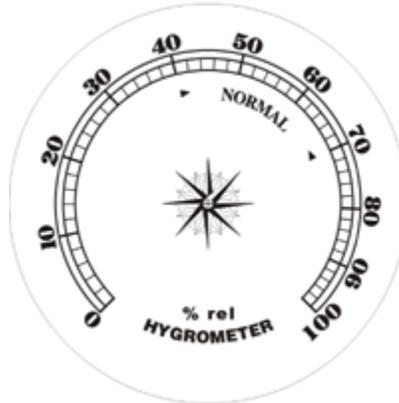
Make certain the weather station is installed on a flat surface. The lowest temperature bubble within the group at the top of the cylinder displays the current temperature.

- The lowest floating ball indicates the current temperature.
- If all of the balls float to the top, the temperature is below the lowest floating ball.
- If all of the balls sink, the temperature is above the highest ball.

5.3 Galileo thermometer warnings

-  **Warning:** This product is not a toy; keep away from children
-  **Warning:** Contains paraffin oil. In case of breakage and contact with liquid contents, wash hands with soap and water.
-  **Warning:** Do not ingest liquid. In case of ingestion, wash mouth with water and call a physician or your local poison control center.
-  **Warning:** Use protective gloves to clean up spilled liquid and broken glass.

6. Hygrometer (Humidity Meter)



6.1 How the hygrometer works

The hygrometer measures the indoor relative humidity. The sensor measures the air moisture by a sensitive mechanical coil spring that is bonded with a moisture absorbent material.

Hygrometers register the percentage of water vapor present in the air, compared to the maximum amount that can be present at a given temperature.

The coils in hygrometers respond slowly and while humidity levels change abruptly, it can take an hour or more for the meter to reach an accurate reading. Remember that the hygrometer is reading indoor humidity, and is vastly different than outdoor humidity, as reported by the National Weather Service.

It is not uncommon to have low humidity reading during cold weather when indoor air is heater. Air conditioning also removes moisture from the air. The optimum levels are 45% to 50% during heating and cooling seasons. Low humidity can cause health problems and can be hard on wood furnishings. High humidity can cause mold or mildew to grow.

6.2 Hygrometer Accuracy

Humidity measurement is among the more difficult problems in basic meteorology. Accuracy is difficult to achieve and are subject to drift, so need regular recalibration.

A further difficulty is that most hygrometers sense relative humidity rather than the absolute amount of water present, but relative humidity is a function of both temperature and absolute moisture content, so small temperature variations within the air in a test chamber will translate into relative humidity variations.

7. Warranty Information

Ambient, LLC provides a 1-year limited warranty on this product against manufacturing defects in materials and workmanship.

This limited warranty begins on the original date of purchase, is valid only on products purchased and only to the original purchaser of this product. To receive warranty service, the purchaser must contact Ambient, LLC for problem determination and service procedures.

Warranty service can only be performed by a Ambient, LLC. The original dated bill of sale must be presented upon request as proof of purchase to Ambient, LLC.

Your Ambient, LLC warranty covers all defects in material and workmanship with the following specified exceptions: (1) damage caused by accident, unreasonable use or neglect (lack of reasonable and necessary maintenance); (2) damage resulting from failure to follow instructions contained in your owner's manual; (3) damage resulting from the performance of repairs or alterations by someone other than an authorized Ambient, LLC authorized service center; (4) units used for other than home use (5) applications and uses that this product was not intended, such as outdoor use.

This warranty covers only actual defects within the product itself, and does not cover the cost of installation or removal from a fixed installation, normal set-up or adjustments, claims based on misrepresentation by the seller or performance variations resulting from installation-related circumstances.