



## Digital Refractometer Care & Maintenance

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### Keep Measuring Surface Clean

The most important piece of information we can give you is, “Keep the Measuring Surface Clean!” It is extremely important to thoroughly clean the refractometer measuring surface after each use to ensure the most accurate readings and to prevent cross-contamination. You can clean the sapphire measuring surface with a wet, soft, clean cloth or paper towel. For the most accurate readings, keep the measuring surface clean and free of residue at all times.

### Special Care of Rubber Armor Jacket

If your Palm Abbe is equipped with a Rubber Armor Jacket, you must take special care to ensure that any excessive sample fluid does not leak down and become trapped between the jacket and instrument body. If this happens, pull the instrument from the Rubber Armor and wipe off the fluid before storing. This precaution is especially significant if the Palm Abbe is stored in the rugged waterproof storage case, since the draining fluid will remain trapped in the case. This is even more important if you are testing hazardous or corrosive fluids that could damage the Palm Abbe or leak onto people or other equipment over time.

### Use Only One or Two Drops of Sample

You only need one or two drops of fluid to take a measurement. Use a disposable pipette to place the sample on the measuring surface and use the same pipette to suck the sample back up and dispose of it. This will leave very little residue to wipe off. NEVER submerge your instrument or hold it under a stream of fluid or running water.

### Important Precautions!

DO NOT SUBMERGE INSTRUMENT IN LIQUIDS.

DO NOT hold instrument under running water.

DO NOT leave instrument in direct sunlight or in a vehicle on a sunny day.

DO NOT subject instrument to temperatures above 50°C (122°F) or less than –10°C (14°F).

DO NOT attempt to repair, modify, or disassemble any portion of the instrument.

DO NOT let liquid fall from instrument onto clothing or other surfaces after taking readings.

DO NOT drop or subject instrument to strong shocks or vibration.

DO NOT use a metal device to transfer samples to the measuring surface.

DO NOT use an instrument unless you have personal knowledge of its calibration.

DO NOT attempt to recharge the batteries that came with the instrument.

DO NOT press the buttons with anything other than a finger.

Note: When storing the instrument for long periods of time, it is advisable to remove the batteries. Use only AAA batteries. Pay close attention to battery polarity when inserting batteries. Reversing the polarity can cause instrument damage.

The entire refractometer may be cleaned with a soft, clean cloth or paper towel, dampened with a mild liquid dish soap and water. The use of solvents or petroleum-based cleaners is not recommended.

### **Additional Training:**

[How to Take a Reading with the Palm Abbe Digital Handheld Refractometer](#)

[How to Zero-Set a Digital Handheld Refractometer](#)

[The Heat Is On - Measuring Hot Fluids](#)

[How to Change a Digital Refractometer Battery](#)

[What Makes the Palm Abbe the BEST Digital Handheld Refractometer in the World?](#)

[Digital Refractometer Error Messages](#)

[The Art of the Chart – Charting Solution Concentrations Using a Refractometer](#)

[3 Digital Refractometer Secrets Even Your Mother Doesn't Know](#)



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**Additional Tips & Precautions When Using Your Palm Abbe Digital Refractometer**

- 1.) NEVER submerge the instrument in liquids.
- 2.) NEVER place instrument under a stream of fluid while testing or cleaning.
- 3.) USE a disposable pipette to transfer ONE or TWO of drops of sample to the measuring surface. After testing, use the same pipette to suck up the sample and dispose of properly. Wipe any remaining residue from well with a damp cloth and then wipe dry.
- 4.) Be careful not to let fluid drip down the instrument where it can become trapped between the instrument and the Rubber Armor Jacket.
- 5.) At the end of each testing day, remove the Rubber Armor Jacket and clean the instrument with a damp cloth. Dry instrument completely before replacing the Rubber Jacket.
- 6.) NEVER store an instrument in a Rugged Proof Case if there is fluid trapped between the instrument body and Rubber Armor Jacket. The Proof Case is waterproof and will keep fluid and moisture in as well as it keeps it out.
- 7.) Residual fluid trapped in the Proof Case may damage the instrument over time.



## **CALIBRATION – ZERO SET**

The Palm Abbe Refractometer **MUST** be Zero Set before initial use and periodically thereafter. It is recommended that a Zero Set be performed at least once a day as well as prior to performing tests requiring the highest precision, or when moving between environments with extreme changes in ambient temperature.

A clean container of water is all that is needed to automatically zero the instrument. Distilled or deionized water is recommended. The water temperature for zero setting should ideally be between 10°C to 30°C (50° to 86° F). It is important to independently verify that you are indeed calibrating the instrument with water and not just a clear liquid which you think is water. Never use an instrument unless you have personal knowledge of the unit's calibration. The well and prism should be thoroughly cleaned with isopropyl alcohol prior to zero/span setting especially for viscous applications.

1. Inspect the measuring surface to make sure it is clean and dry.
2. Place two or three drops of distilled water on measuring surface.
3. Close the sample cover and allow some time for the temperature to equalize. The sample cover must be closed to calibrate or take readings.
4. Press and release <GO> to turn the instrument on.
5. Press and release <MENU> until the display reads: SET ZERO? (GO) to SET
6. Press and release <GO> to automatically zero the instrument. Remember to clean and dry the measuring surface after calibration.

If the calibration was successful, the instrument will display "READY", otherwise there will be an error message displayed.

## **CALIBRATION – SPAN SET**

The Span Point represents a calibration point toward the upper end of the Palm Abbe range. Although it is important to Zero Set the Palm Abbe daily, you may at some time want to set the span adjustment as well. The span should be set if you notice a general degradation of the instrument's accuracy and/or precision on a periodic basis determined by your particular history with the instrument.

Factors affecting your decision to set the span adjustment include how often the instrument is used, how roughly it is handled, how often it is exposed to large temperature changes and the level of precision you require for your measurements.

To set the span, begin with a Zero-Set, then follow the procedure for zero setting noted above but go to the SET SPAN? (GO) to SET menu and substitute the water for calibration fluid in the procedure. The calibration fluid temperature for span setting must be between 15 to 25°C (59 to 77°F). If the span set is successful, the instrument will read "READY", otherwise an error will be displayed. Follow up with a Zero-Set.

It is recommended that you use only NIST traceable calibration fluid specific to the Palm Abbe. This fluid is available by calling MISCO directly or by purchasing online from the MISCO website at [www.misco.com](http://www.misco.com) (p/n CALFLU202-3).