

## Starpath Notes on Setting the Weems and Plath Marine Barometer

*This is a versatile and accurate device but the instructions are not very clear in some parts. Hopefully this will help.*

To set the barometer, hold the Set/Zoom button down for 3 sec — bottom bar will blink and then show OFF — then promptly

Press Set/Zoom once more to get into the sequence of things that can be set. (If you hold for about 7 seconds without pressing Set/Zoom you will get into the alarm setting mode which we do not want now.)

Each item that can be set will show up with its abbreviation highlighted (dark background) and the actual value blinking. To step through the entire list of things that can be set without doing anything, sequentially press the Set/Zoom button. Do this first to see what is there. If you happen to pause at any stage more than about 7 seconds, the device will revert to the main display and you will need to start again. The sequence you will see is (details follow):

Item 1. Pressure unit selection (hPa highlighted and blinking)

Item 2. Altitude setting (ALT.m highlighted with a number or blank above it blinking)

Item 3. Pressure calibration (your selected unit highlighted and the current value above it blinking)

Item 4. Set Clock hours (TIME highlighted with the hours blinking)

Item 5. Set Clock minutes (TIME highlighted with the minutes blinking)

Item 6. Select temperature units (°C or °F)

**Item 1.** At item 1 with hPa blinking (or inHg or ALT.m blinking) you select the units and mode. You have two modes, Barometer or Altimeter. Most Starpath customers will want the Baro mode, so if ALT.m is blinking it is set up wrong, which we fix at this stage. By selecting hPa or inHg you are choosing barometer mode with the selected units. Note Hg is the chemical symbol for mercury so that choice is inches of mercury, commonly used in aviation or TV weather. hPa (hecto Pascal) is the same as mb (millibar) which is the best choice (by far) for marine applications. Once the unit is blinking you change it with the + or - button. Use those buttons to take it where you want it (hPa) and then press Set/Zoom to accept that choice and move onto the next setting.

**Item 2.** Altitude setting. ALT.m blinking. The + and - keys will now take you from 0 meters (sea level) up to 3995 meters (13,100 feet). It will increment in 5m steps (16.4 feet). Hold down for faster changes. For use underway you will want this at 0. You may also want this at 0 for use at home, even at some elevation. For now, just set it to zero. See notes below.

**Item 3.** Pressure calibration. hPa will be highlighted and the current barometer reading will be blinking. For now we will assume we are at sea level and we know the proper pressure (See references on how to get this data). This is the stage where we set what is showing to what it should be -- or what we want it to be. If you are indeed at sea level then you will want it to be the correct sea level pressure at this moment. This data should be as new as possible, or established from a series of measurements as explained later. Once in this mode, use the + and - keys to adjust the displayed pressure to what you want. Each step in 0.1mb. When it is correct press Set/Zoom. (If you think on it for more than 7 seconds, you get to start again.)

**Item 4.** Set hours. Use + and - key to select the local time you are using and press Set/Zoom

**Item 5.** Likewise, set minutes and press Set/Zoom

**Item 6.** Likewise, select °C or °F and press Set/Zoom

Notes on elevation and calibration. First, we recommend the Starpath Weather Trainer software program or our classroom or online course on marine weather for the details. Here are just a few brief comments. Generally as marine weather observers you want to know the sea level pressure so you can compare forecasts and maps with what you are actually observing yourself. This provides one of the best checks on the forecasts. Marine observations are all corrected to sea level when reported. All pressures on maps are at sea level. So we generally adjust our barometers at home or work to read the correct sea level pressure, even though this is not the true actual pressure at the location of the barometer when not at sea level

The true pressure at any elevation will be lower than that at sea level. There are tables and computers in the Weather Trainer that tell the relationship of elevation to pressure drop. At our school, for example, we are at 165 feet above sea level, so our barometers are set to read 5.8 mb higher than they really would if we had not offset them. Starpath online resources give links to online topo maps you can use to determine your elevation.

You can offset the marine barometer two ways, either enter an elevation directly in Item 2, or simply leave the altitude at 0 and figure out how far off your barometer is from what it should be and then just change the pressure in Item 3. The latter is generally the easiest and most accurate method. You can monitor your pressure for some period of time and then compare it with data from the Internet for nearest stations -- maybe even with some interpolation. Then you will find the recorded pressures differ by some near constant amount and that is how much you should offset the reading. You are in effect measuring your altitude in this manner.

Naturally, if you make this adjustment for some elevation and then move the barometer to sea level, then you will have to readjust the setting. Hence if the barometer is going back and forth from home to boat, then it might be simplest to just figure what elevation will make it work right at home and then take that in and out at Item 2 as needed. This will be most easily done if you first set alt to 0 when at sea level and then use Item 3 to get it exactly right at sea level.

Remember when experimenting with this, if you have a specific reading on the barometer and then go in and add some elevation, then the pressure you will then observe will be higher. In other words, think of your self at sea level at the base of a hill that is 328 feet high. You read the proper pressure which is, say 1011.0 mb. Then you go in at Item 2 and tell it, while still at the base of the hill, that you are at 328 feet (100 m) elevation. Then suddenly the barometer will read 1023.5 mb or so. This is obviously wrong for where you are, but as you climb the hill the pressure will drop and when you get to 328 feet elevation it will now read 1011.0 mb. This is wrong for where you are, but it is corrected for sea level. The real pressure goes down as you go up, so the correction goes up as you go up. The altitude correction is intended to make your barometer display the sea level pressure.

We leave it as an exercise for the reader to figure out the rest of the manual. This device has many functions and display options, but it takes some time to figure out how they work from the manual. We do not use these, so we are not familiar with them. Weems and Plath have an expert staff to help with those as needed ( support@weems-plath.com or 410-263-6700 ).

When you get to the alarm function (if you choose to use that), recall the Starpath guideline for a significant change in pressure "4-5-6" which means a change of 4 or 5 mb in a 6 hour period should catch your attention. Smaller changes generally have no significance in forecasting. When the changes are much faster than that you are often well past the "forecasting" phase and well into the wind.

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