

Signet pH Buffer Calibration Kit Instruction Sheet



3-2700.095 Rev. 1 01/19 English



Instruction Sheet

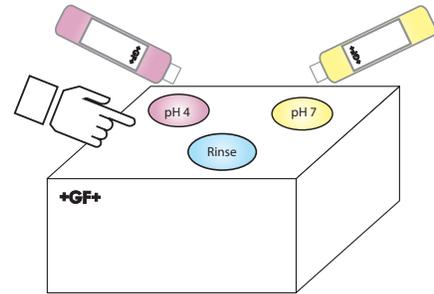
This kit comes with the following items:

1. One pint bottle of pH 4 buffer solution PN 3822-7004
2. One pint bottle of pH 7 buffer solution PN 3822-7007
3. Three reusable polypropylene buffer cups
4. One calibration stand with three punch-out holes

To set up calibration stand:

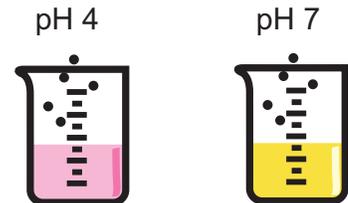
Take out all items from box.

1. Close Box with flaps inserted into side of box. The box is now ready to be used as a calibration stand.
2. Punch out holes on the top of box using perforated cut out marks.
3. Place buffer containers in holes.
4. Fill one container with rinse water; tap or deionized water is acceptable.
5. Fill the other two containers with about one inch of liquid buffer solutions. The calibration stand is now ready to be used.



pH Calibration Procedure

1. Rinse the sensor off in the rinse water cup. Gentle pat dry with a soft, dry cloth or tissue. **Warning: Do not let the rinse water drip into the buffer solution; this will dilute the solution and may lead to offset buffer values.**
2. Gently place the pH sensor in the first buffer solution (pH 7). Wait until the output from the sensor is stable on the instrument display.
3. Follow the instrument's instructions regarding buffer recognition.
4. Rinse the sensor with water. **Warning: Do not let the rinse water drip into the buffer solution; this will dilute the solution and may lead to offset buffer values.**
5. Dry the sensor gently by patting it with a dry, clean cloth or tissue.
6. Place the sensor in a cup containing the second buffer solution (pH 4 or pH 10). The second solution used will depend on the typical pH value of the application.
 - If the process value is below pH 7, then use a pH 4 buffer solution.
 - Sometimes pH buffer solution is used when the typical process value is above 7 pH, however, pH 4 buffer is sufficient if pH 10 buffer is not available.
7. Wait until the output from the sensor is stable.
8. Follow the instructions in the instrument manual regarding buffer recognition.
9. Rinse the sensor with water. **Warning: Do not let the rinse water drip into the buffer solution; this will dilute the solution and may cause offset buffer values.**
10. Dry the sensor gently by patting it with a dry, clean cloth or tissue.
11. If the calibration was successful, put the sensor back on-line. If it was not successful, clean the sensor and re-calibrate. If the sensor cannot be calibrated, the electrode may need to be replaced.



Calibration Tips

1. The pH solutions can be used for calibrating more than one sensor within a day. However, the solutions must remain free of debris and must not be diluted by rinse water from previous calibrations. **Note: Use fresh buffer solutions for best results.**
2. ORP solutions can be created using pH 4 and pH 7 buffer solutions saturated with quinhydrone, but these solutions are very unstable and may not read properly after exposure to air for a prolonged time. These solutions must be discarded after a few hours.
3. Tap or deionized water may be used to rinse the electrodes between each buffer solution.
4. Calibration solutions change value with varying temperature. Sensors will not calibrate properly if the sensor is not at ambient temperature. Take note of all temperature variations of the sensors and the calibration solutions.
5. Do not pour used buffer solutions back into the bottle; dilute with plenty of water and flush them down the drain.
6. Store electrodes in pH 4 buffer when not in use.
7. Calibrate sensors on a regular basis.
8. If the pH sensor does not calibrate within acceptable limits, clean the electrode and calibrate again. If the sensor continues to calibrate outside of acceptable limits, the electrode is spent and must be disposed.
9. Acceptable pH ranges during calibration are as follows:

pH 7:	High: 7.8 pH	= -50 mV	Low: 6.2pH	= 50 mV
pH 4:	High: 4.8 pH	= 227 mV	Low: 3.2pH	= 127mV
pH 10:	High: 10.8pH	= -227 mV	Low: 9.2pH	= -127 mV

Calibration Tips continued

Most common errors associated with buffer calibration

1. Failure to compensate for the buffer value at the actual temperature; see buffer bottles for temperature corrected values.
2. Accepting a calibration value before the sensor has had time to fully respond.
 - This also occurs as a result of a warm pH sensor being placed in a cool buffer solution; full stabilization and a correct pH reading will not occur until all components of the pH sensor and the buffer have reached the same temperature.
3. Some automatic buffer calibration features, such as the Signet EasyCal feature, help eliminate these errors by identifying and temperature correcting the calibration buffer and not allowing the calibration procedure to be completed until a stable reading has been reached.



When to calibrate:

- When the sensor is new and initially installed.
- When the sensor is cleaned for regularly scheduled maintenance.

Caution:

- Always wear protective gloves and appropriate eye wear when using calibration solutions.
- In rare cases, calibration solutions may come in contact with skin or eyes. Rinse solution off of skin or out of eyes by flushing with tap water for 5 minutes.

Sensor Cleaning

Symptom	Suggested Solution
Hard Coatings	Use a dilute acid solution (HCl solution of 5% or less). If the electrode has been used in applications with a pH value higher than 7 pH, soak the electrode for 2 to 5 minutes.
	Use a dilute alkaline solution (NaOH solution at 5% or less) if the electrode has been used in applications with pH values less than 7 pH, soak the electrode for 2 to 5 minutes.
	Alternating immersion in acidic and alkaline solutions may be necessary for thorough cleaning.
	A soft bristle brush, like a toothbrush, may be used to remove coatings.
Soft Coatings	Spray or vigorously stir the electrode with a mild detergent (such as dish washing liquid).
	Chlorine bleach can also be used.
Oily or Organic Coatings	Spray or vigorously stir the electrode with a mild detergent or an appropriate solvent that will not attack the materials of construction (isopropyl alcohol or similar).
ORP Platinum Coating	Gently wipe the electrode surfaces with a paper towel.
After Cleaning	Always rinse the electrode with water after cleaning.
	Soak the electrode in a pH 4 buffer (with KCl if available) for at least 10 minutes after cleaning.

Ordering Information

Mfr. Part No.	Code	Description
3822-7004	159 001 581	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	159 001 582	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	159 001 583	pH10 buffer solution, 1 pint (473 ml) bottle
3-0700.390	198 864 403	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form)
3-2700.395	159 001 605	Calibration kit; includes 3 reusable polypropylene buffer cups, one sensor stand, 1 pt pH 4 buffer solution, 1 pint pH 7 buffer solution
Special Request	-	NIST Traceable Certificate
3822-7115	159 001 606	20 gm bottle Quinhydrone for ORP calibration



Georg Fischer Signet LLC, 3401 Aero Jet Avenue, El Monte, CA 91731-2882 U.S.A. • Tel. (626) 571-2770 • Fax (626) 573-2057
 For Worldwide Sales and Service, visit our website: www.gfsignet.com • Or call (in the U.S.): (800) 854-4090
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