Instructions for the P/N 06916
pH Electrode Calibration Kit

ATTENTION!

Your monitor must be calibrated
to the electrode before using.
Otherwise the readings will not be correct.

Store kit in a cool dry place.

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This kit includes:

2 ea. Calibration bottles with 50 ml level marks.
5 ea. Yellow pillows (pH 7.0 @ 25°C)
5 ea. Red pillows (pH 4,0 @ 25°C. 4.01 @ 25°C)

You will also need a some tap water, either running or in a container, and a clean container of distilled or deionized water for rinsing,

Cleaning goes hand in hand with calibration; the electrode should always be cleaned before recalibrating. The flat surfaced electrode used in the Ratio:Guard® monitor was selected for easy cleaning.

Cleaning and calibration should be done regularly to keep your instrument operating accurately. You should clean and recalibrate your electrode every 2-3 weeks or any time you suspect that the reading may not be correct.

All pH electrodes eventually wear out. At some point, when the electrode will not calibrate, it will need to be replaced.

Mixing the Buffer Solutions

Always mix fresh buffer solutions. You may calibrate more than one electrode in a solution, However you should never save solutions for use at a later date.

CAUTION!
The powders in these pillows may cause eye and respiratory tract irritation. Do not ingest.

IN CASE OF CONTACT: Immediately flush eyes with water for 15 minutes. Call a physician. Wash skin with soap and plenty of water.

INGESTION: Induce vomiting by sticking finger down throat Never give anything by mouth to an unconscious person. Call a physician.

INHALATION: Remove to fresh air.

CAUTION!
Keep away from children!

1. Rinse both plastic bottles with tap water and then with distilled water.
2. Fill each bottle about half way with distilled water. *NOTE! You must use distilled or deionized water.*
3. Carefully open the yellow pillow and pour the powder into one of the calibration bottles.
4. Open the red pillow and pour it into the other bottle.
5. Fill both bottles to the 50 ml calibration line with distilled water.
6. Arrange the yellow and red buffer solutions and the tap water and distilled water containers so they are easily accessible during the calibration procedure.

Calibration Procedure

1. If you have the control relays performing any alarm function, you will probably want to turn pH control off during the calibration procedure, as it will likely otherwise result in a pH alarm.
2. Close the bypass isolation valves.
3. Carefully remove the electrode from the sensor fitting.

WARNING! Removing the electrode from a closed water line can be difficult and can destroy the electrode.

You should shut off the water and open the sample valve (if present) or remove the seal-screw on the side of the electrode tee before slowly removing the electrode. Place the electrode in tap water. DO NOT STORE THE pH ELECTRODE IN DISTILLED WATER.

4. Clean the electrode if needed. (See section **Care of pH Electrodes**. page 7.)
5. Rinse the electrode in tap water, then rinse in distilled water.
6. Place the electrode in the pH 7 buffer.
7. Press the **MODE** and either the ⬆ or ⬇ key. The display will show **CAL**. Now, before the display changes, press both the **MODE** and **ENTER** keys. Keep them pressed until the display changes to a blinking **PH 7**.
8. Now, with the electrode in the pH 7 buffer, press the **ENTER** key; the display will stop blinking. The calibration process takes about 30 seconds. If calibration is successful the message **good** will briefly appear and then changes to a blinking **PH 4**.
9. At this point, pause until the monitor returns to normal operation. You will later resume calibration at this point for the pH 4 solution.

10. Rinse the electrode in tap water, then rinse in distilled water.
11. Place the electrode in the pH 4 buffer.
12. Press the MODE and either the ⬆ or ⬇ key. The display will show PH 4. Now, before the display changes, press both the MODE and ENTER keys. Keep them pressed until the display changes to a blinking PH 4.
13. Press the **ENTER** key. The calibration process is repeated for the pH 4 solution. Again, if calibration is successful, the message **good** will briefly appear and then the monitor will enter normal operation.
14. Calibration is complete. Rinse the electrode in tap water and reinstall in the line.
15. Close the sample valve (if present) or replace the seal-screw in the electrode tee.
16. Open the bypass isolation valves.
17. If pH control has been turned off, reset the setpoints to turn it back on.

Calibration Problems and Solutions

The monitor has some internal standards against which it checks the buffer solutions during calibration. If the values it reads are too far from what it expects, it will not proceed with calibration, but will indicate bad on the display and abort the process. Here are some possible causes of calibration problems, along with some suggested cures:

1. Contaminated reference solutions.

   Be sure to follow mixing procedures carefully.

2. Using the wrong solution for the calibration point.
3. Faulty, worn out, or dirty electrode.

   Check the electrode for contamination, dirt or scale. Clean the electrode if necessary.

   Inspect the electrode for cracks or breaks. Replace the electrode if necessary.

4. Faulty cable or connections.

   Check to see that all connections to the monitor and signal conditioner are secure. Check to see that the Electrode BNC connector is clean, dry, and securely attached.

5. Unit resumes normal operation during calibration.

   Too much time has elapsed between steps. Repeat starting at step 7. of the calibration procedure to resume. You will not have to start over from the beginning.

6. Unit calibrates properly at pH 7, but not at pH 4.

   Contaminated pH 4 buffer solution or worn out pH electrode.

Care of pH Electrodes

The standard pH electrode supplied with Ratio:Guard® monitors is a flat surfaced self-cleaning sealed double junction electrode.

The electrode comes with a liquid filled cap to keep the electrode surface wet. **You will need to remove this cap to insert the electrode into the manifold fitting.** Save this cap in case you should ever need to remove the electrode.

WARNING! The electrode should never be allowed to dry out. Permanent damage will result.

The primary maintenance for the electrode is simply to keep it clean. The self-cleaning design will reduce the need for cleaning, but will not eliminate completely the need for periodic cleaning. Here are two problems which frequently occur:

1. Inorganic scale deposits

   Dissolve the deposit by immersing the electrode in dilute hydrochloric acid for a few minutes. Rinse the electrode thoroughly in tap water and place it back in service.

2. Organic oil or grease films

   Wash electrode tip with detergent and water. If the film is known to be soluble in a certain organic solvent then wash with this solvent. Rinse the electrode thoroughly in tap water and place it back in service.

If you will be removing the electrode from service you should fill the plastic cap with a pH 4 buffer solution with a pinch of salt.

RATIO:GUARD® pH ELECTRODE LIMITED WARRANTY

WHAT IS COVERED

The H.E. Anderson Company of Muskogee, Oklahoma, will make any necessary repairs and/or replace any parts of any Ratio:Guard® pH electrode assembly made necessary because of defects in materials or workmanship for a period of six(6) months from date of shipment from our factory. Warranty replacement will be made without charge to the owner by H.E. Anderson Company within a reasonable time after prepaid delivery of the defective electrode assembly to the H.E. Anderson Company, 2100 Anderson Drive, Muskogee, Oklahoma 74403.

WHAT IS NOT COVERED

Replacements of parts caused by failure to follow prescribed installation instructions and limitations issued by H.E. Anderson Company. In addition, this warranty does not cover failure caused by misuse, negligence, alteration, accident, or lack of specified maintenance. Specifically, improper handling of pH sensors, including letting the pH electrode dry out, storage in distilled water, or damage to sensor caused by failure to open a valve to atmosphere or remove seal-screw when removing the sensor from the tee. will void the warranty on the sensor. This warranty dies not cover damage from power line spikes or lightning strikes. This warranty does not cover components used by, but not manufactured by H.E. Anderson Company, in the manufacture of said monitor/alarm, except to the extent of said component manufacturer's warranty.

This warranty specifically excludes liability for consequential damages or for charges for labor or expense in making repairs or adjustments, or losses of time or inconvenience.

This warranty gives you specific legal rights and you may also have other legal rights which may vary from state to state. H.E. Anderson Company does not authorize any person to create for it any other obligation or liability in connection with these products. ANY IMPLIED WARRANTY APPLICABLE TO THESE PRODUCTS IS LIMITED TO THE DURATION OF THIS WARRANTY. H.E. Anderson Company shall not be liable for consequential damages resulting from breach of this written warranty.

NOTE: Some states do not allow limitation on how long an implied warranty will last or the exclusion of limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

PURCHASER'S OBLIGATION

a) Purchaser must give H.E. Anderson Company immediate written notice on discovery of defect.

b) Purchaser must pay for shipment of the defective product to the H.E. Anderson Company, 2100 Anderson Drive, Muskogee, Oklahoma 74403.