Features double junction reference design for extended service life in harsh applications.

1. SENSOR SPECIFICATIONS

pH Range: 0 - 14 pH
Bulb Glass:* HT-3(industrial grade)
HT-4(high pH> 12.0)
Gp (flat bulb)
Temperature Range: *0 - 60°C
Pressure Range:* up to 150 psig
Signal Cable: Low Noise Coax, Dual Shielded
*Varies depending upon Model selected

2. PREPARATION FOR USE

1. Remove protective cap containing the storage solution (3.8 Molar KCl).

2. Save the protective cap for future use as a storage container and bulb protector when sensor is not in service.
We recommend 3.8M KCl as the Storage solution.

3. For first-time use: Inspect the sensor for any signs of breakage or shipping damage and commence with Calibration Procedures.

4. For sensors with replaceable O-ring seals: All O-rings require proper lubrication. We recommend using **PARKER OLUBE** or equal for this purpose. Follow the instructions provided with lubricant.
For best results we recommend that all O-rings be replaced whenever sensor is removed for service or inspection.

CAUTION:

Hand-tighten only! It is not necessary to apply excessive torque to achieve a liquid tight installation. Severe twisting of the sensor housing could cause internal damage. If necessary, use a wrench for removal only! For valve retractable sensors, refer to SA877/SA878 **Service Manuals** for assembly, installation, and complete service instructions.

3. CALIBRATION PROCEDURE

Refer to the specific instructions for pH sensor calibration described in the instruction manual provided with the host pH instrument. These instructions will include procedures for automatic and/or manual calibration. The ProcessProbe is designed to work with all quality pH instruments.
For best results it is recommended to perform a two-point pH calibration using two pH buffer

solutions in accordance with ASTM Method D1293, "Standard Test Methods for pH of Water".

Recommended Two-Point Calibration:

1. Rinse the ProcessProbe thoroughly with D.I. water to remove all traces of storage solution, process medium, or previous test solution to prevent "carry over" contamination of the pH buffer test solutions. Thoroughly rinse the ProcessProbe with D.I. water after each buffer test.

2.Insert the ProcessProbe in 7.0 pH buffer solution and momentarily stir with sensor to ensure proper contact. Allow up to 10 minutes for integral T.C. device to thermally equilibrate with the buffer solution before taking a pH reading.
The pH reading should be 7.0 pH±0.33 pH (± 20 mV) @ 25°C. Make any necessary adjustments to the pH meter with the "standardize" or "zero" control for a pH indication = 7.0 pH.

3. Rinse the ProcessProbe with D.I. water and insert in a 4.01 pH buffer solution. Stir with sensor to ensure proper contact. Allow up to 10 minutes for the integral T.C. device to thermally equilibrate with the buffer solution before taking a pH reading. Make any necessary adjustments to the pH meter with the "slope" or "span" control for a reading 4.01 =pH units.

NOTES:

●Always use "fresh" pH buffer solutions for best results.

●PH buffer solutions above 7.0 pH are less stable and have a very limited life.
These high pH buffers will more readily absorb CO_2 from the atmosphere and will typically change to a lower pH value when left open.

●Keep in mind that the "older" a sensor becomes, it will exhibit slower response times and will become less efficient in terms of its ability to span several pH units with the same repeatability.

●pH sensors are imperfect devices and require "calibration" from time to time in order to be properly characterized to the host pH meter.

4. GRAB SAMPLE CALIBRATION

1. Grab sample calibration of a pH sensor is more valid when the sensor has been previously "characterized" to its pH meter via the two-point pH buffer calibration procedure. The grab sample technique will evaluate the pH sensor's performance under actual operating conditions which differ from the pH buffer calibration conditions previously seen by the sensor.

2. For a proper grab sample technique, a known good laboratory pH sensor and pH meter that are in calibration with each other are required equipment. The laboratory pH sensor should be exposed to the grab sample at the identical temperature that the on-stream pH sensor encounters in service.

3. No two pH sensors are identical, therefore, exact pH readings are rarely achieved. The on-stream pH sensor has been conditioned to the process environment and may report the process pH more accurately than a laboratory pH sensor which has not yet totally acclimated to the process

conditions.

4. The grab sample should be taken as physically close to the on-stream pH sensor as possible to ensure that a "representative" sample is being taken. The pH readings should be compared immediately. If required, adjust the on-stream pH meter to match the reading of the grab sample pH meter. Avoid any time lag between the grab sample pH reading and the calibration adjustment of the on-stream ph meter.

5. CLEANING A PROCESSPROBE WITH IMPAIRED RESPONSE

Used pH'sensors which are physically intact can sometimes be restored to an improved level of performance. All pH sensors have a given useful life span depending on the conditions of use. One of the following procedures may prove helpful in restoring a used pH sensor.

1. Initial Cleaning: Wash with a solution of liquid detergent or enzyme detergent and warm water by gently scrubbing with a soft toothbrush or soft cloth. Follow with thorough rinse in D.I. or clean tap water.

2. Inorganic Scale Deposits: Dissolve the deposit by immersing the sensor's measurement tip in dilute hydrochloric acid for a few minutes. Repeat Step #1 above.

3. **Organic Oil or Grease films:** Perform initial cleaning procedure. If film is known to be soluble in a particular organic solvent, wash with this solvent. Repeat Step #1 above. Depending on the extent of the oil or grease contamination, it's possible that the liquid junction may be damaged beyond recovery. Soak in 3.8M KCl solution for a minimum of 30 minutes before recalbrating and returning sensor to service.

4. **Plugged or Dry Liquid Junction:** Remove any observed contaminant with one of the above procedures, then soak in 3.8M KCl solution for a minimum of 30 minutes.

NOTE:

- Never permit the pH sensor to dehydrate or dry out. Always keep it in a wetted environment especially when not in service.
- Cracked or broken sensors are not repairable.
- Inspect cable and connector to ensure that the insulation integrity is intact and that there are no signs of corrosion or contaminants on the metal components.

6. STORAGE

1.**Short-Term:** Immerse sensor measurement tip and liquid junction surface areas in 3.8M KCl. If this solution is not available, use 4.01 pH buffer, clean tap water, or lastly, a sample of the process being measured to keep the sensor hydrated.

2.**Long-Term:** Fill protective cap that the sensor was originally shipped in with a freshly prepared 3.8M KCl solution and insert sensor. The sensor should be stored in an upright