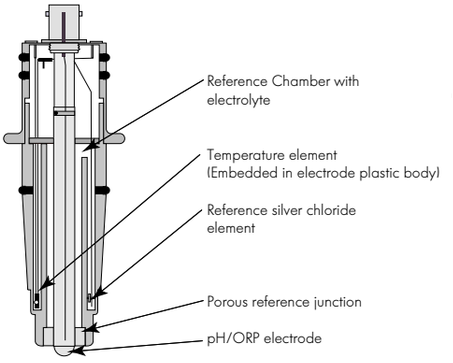
Technical Reference Section: pH/ORP

Principle of Operation

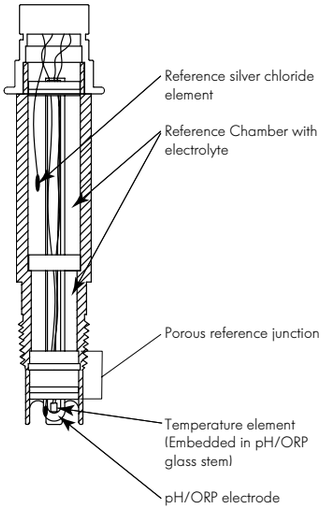
- **Standard pH/ORP** electrodes are also commonly called combination electrodes; a pH/ORP measuring electrode and a reference measuring electrode are combined in a single body. The pH/ORP sensor measures the amount of hydrogen ions in the liquid. The pH signal is measured against the steady reference signal. Various chemical elements leaching through the porous reference junction can react with the reference electrolyte, dilute the electrolyte solution, or attack the silver chloride element; in either case, it will disturb the steady reference signal. Stray electrical currents will also affect the steady reference signal. A temperature element is also built into the pH/ORP combination electrode. Instruments interpret and temperature compensate the pH/ORP and reference signals into pH/ORP readings at 25°C (77°F).

Standard pH/ORP Electrode
+GF+ SIGNET offers three different groups of Standard pH/ORP Electrode Models. Models 2714-2717, 2754-2757, and 2774-2777

Cutaway of 2716 pH electrode

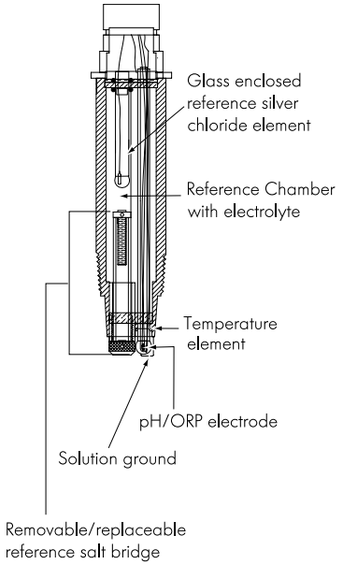


Cutaway of 2776 pH electrode



- **Differential pH/ORP** electrodes function similar to the standard (combination) electrodes, but the reference design is modified and there is a third electrode, the solution ground. The pH and reference electrodes are measured against the solution ground. The solution ground drains stray currents away from the reference element, hence maintaining a steady signal at all times. The reference salt bridge slows or stops various chemical elements from leaching into the reference chamber. Chemicals that leach in may dilute the electrolyte but will not react with the glass-encased reference silver chloride element. The reference electrolyte can be refreshed if it is diluted or depleted. The temperature element is embedded in the pH/ORP electrode for an extremely quick response.

Cutaway of 2766 pH electrode



Differential pH/ORP Electrode
+GF+ SIGNET offers one group of Differential pH/ORP Electrodes, Models 2764 - 2767