Micrometrix Extends the Life of Streaming Current Meter with User Serviceable Probe

Unlike other SCM probe designs, the Micrometrix XL Series streaming current probe can be easily disassembled for cleaning and service. The Micrometrix probe incorporates robust, easily serviceable electrodes which support a replaceable Teflon sleeve sensor element. This design allows the user to significantly minimize the costs of maintaining the SCM over its life due to the ability to refresh the sensor to a "like-new" condition by simply cleaning or replacing the Teflon sleeve and piston. Other manufacturers use a non-serviceable, and costly, sensor assembly which periodically requires replacing at a cost of $600 to $1000 each.

It is a fact that all Streaming Current probes and pistons wear over time. The piston is a continuously moving part within the probe cylinder filled with abrasive particles in water. The amount of wear is specific to the particular sample, but can be significant. The Streaming Current (SC) signal is generated by shearing counter ions via a reciprocating piston within a probe cylinder. The gap between the piston and cylinder is only a few thousands of an inch, but has a direct relationship to the Streaming Current signal strength. The wider the gap, the lower the velocity or shearing action of liquid sample within the probe. Over time, this gap widens as the piston and cylinder parts wear and the result is lower signal strength. This condition also results in lower Signal to Noise ratio (S/N).

One technique to overcome the problem is to increase the electronic sensitivity or gain to compensate for the lower signal strength. This method will only work until the S/N gets low enough that the noise level overcomes the true measured signal. In other words, it is possible to only amplify the noise to get an instrument reading without getting a reliable measured SC signal.

Although the wear factor on the probe and piston is gradual, it can be significant when looking the overall lifespan of the instrument over years. In some applications, there was enough wear on the piston and probe after one year that the measured signal decreased by a factor of 10 (tenfold) when compared to a "new" piston and sleeve. In this example, an oscilloscope was used to measure the amplified AC probe signal which was increased to 1 Volt (peak to peak) from 100mVpp by simply replacing the piston and sleeve.

What this means to the user is that the sensor can easily and economically be restored to an original (new) condition on a periodic basis over the life of the instrument.

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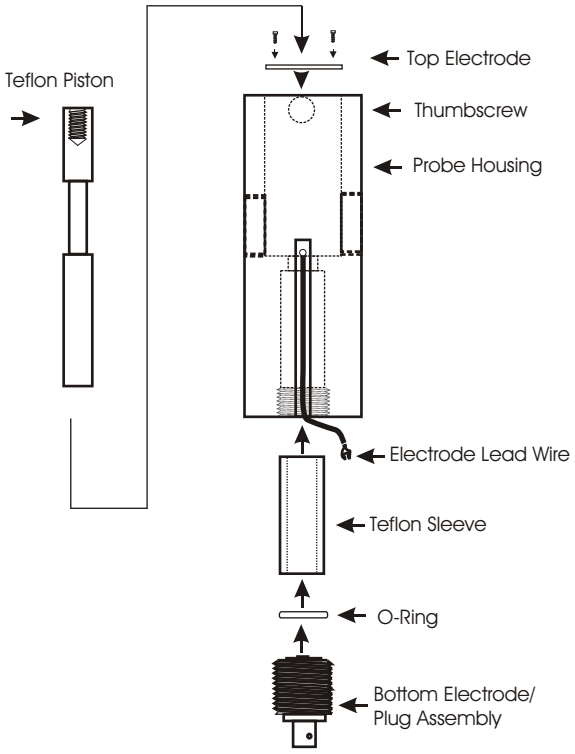

US Patent 6,515,481