



Clark Cell Calibration Video Transcript

Function

The Clark Cell dissolved oxygen sensor consists of two electrodes surrounded by an electrolyte solution and covered with an oxygen permeable membrane. As oxygen crosses the membrane, it is consumed in a chemical reaction which generates a small electrical current between the electrodes. The current measured is directly proportional to the amount of oxygen in the water sample. Since the oxygen is consumed from the water surrounding the sensor, the water must be replaced either by natural flow or the use of a circulator to prevent the readings from drifting downwards.

Maintenance

The Clark Cell membrane and electrolyte must be periodically replaced and the sensor re-calibrated to ensure accurate readings. Remove the o-ring at the top of the sensor and discard the old membrane and electrolyte. Check the condition of the electrodes.

The anode should be a white or off-white triangle in the center of the sensor. As it ages it may begin to turn black or break apart. When it reaches this stage, the readings may become unstable or inaccurate and the sensor must be replaced.

The cathode is a gold ring around the top of the sensor. It should be a bright yellow. If it appears tarnished or dirty, it can be gently cleaned with a cotton swab and toothpaste, a mildly abrasive detergent or hand cleaner with pumice. Rub the swab around the ring in a clockwise motion to prevent accidental damage to the sensor. When the original yellow shine is restored, rinse the inside of the sensor several times with the 'DO' electrolyte provided in the maintenance kit.

Refill the sensor with the electrolyte so that there is a slight dome on top and no bubbles. Place a new membrane over the top and secure it with the o-ring so that it does not wrinkle and no air is trapped underneath it. If a bubble is trapped under the membrane, discard the membrane and try again with a new one. Trim the excess membrane with scissors.

The sensor must soak in clean water and the membrane allowed to relax for a minimum of 4 hours prior to calibration. The dissolved oxygen readings will drift if the sensor is calibrated early.

The Clark Cell is now ready to Calibrate.

Calibration

Establish a connection to the sonde with Hydras 3LT. Click the button labeled '**Operate Sonde**'. When the sonde finishes its initialization, click the '**Calibration**' tab, then click the '**DO% [Sat]**' tab. You will see a picture of the Clark Cell probe, the current dissolved oxygen reading, the date and time, and the current temperature.





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Rinse the sensors with clean water and install the calibration cup. Fill the cup with water until the level is just to the bottom of the o-ring. Remove any drops from the top of the membrane. Place the storage cap over the top of the cup upside-down. Wait for the current value to stabilize. Enter the current absolute barometric pressure in the box and click the '**Calibrate**' button. A "Calibration successful" message will appear.

The Clark Cell dissolved oxygen sensor is now calibrated.

