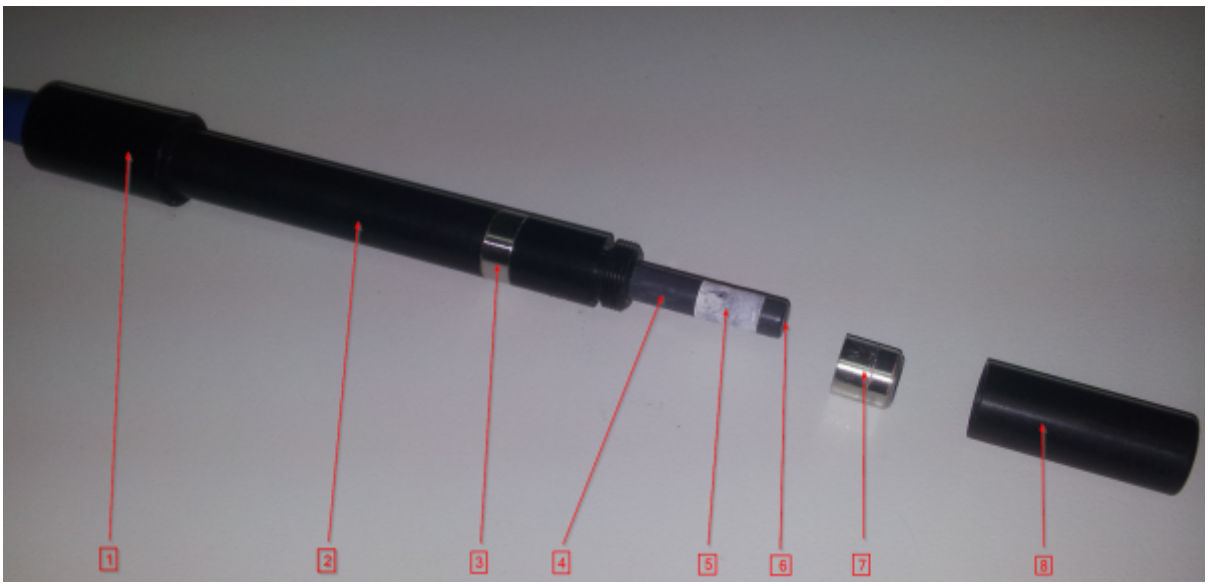
SZ10T Consort Dissolved Oxygen electrode

Description

The SZ10T dissolved Oxygen electrode is a MPOD (Membrane-covered Polarographic Oxygen Detector) system. This model is a galvanic type. The external portion of the electrode is constructed of stainless steel or Delrin. The internal portion of the electrode is constructed of 316 L stainless steel enclosing a Lead anode and a Platinum cathode. A thin Teflon-FEP membrane, provides for efficient sealing of the cathode/anode and electrolyte within the cylinder. The membrane is permeable to Oxygen but impermeable to water and electrolyte.

The mechanical construction is shown in this picture:



1. Electrode cap (material Nylon) with cable/body connection
2. Electrode body (Delrin)
3. Temperature sensor (for older system). The latest electrodes have this sensor built in the inner electrode stem
4. Inner electrode stem
5. Anode (Lead)
6. Cathode (Platinum)
7. Capsule with membrane (Teflon)
8. Membrane cap (Delrin) with internal O-ring

Start Up

- Unscrew the membrane cap (8) from the electrode body (2).
- Clean it with distilled water (DI water).
- Fill the membrane cap with the electrolyte to a level above the membrane cartridge using the syringe provided. Hold the electrode in an upright position and gently screw the cap back onto the body. Make sure there remain no air bubbles in it.
- Please inspect the membrane for tears or leakage. The membrane should be uniformly

stretched across the inner body. Replace the membrane if any damage has occurred.
- Let the electrode rest for a while to polarise. This can be followed by reading the output value with the meter. It is required to wait until the measurement has stabilised. This can take several hours.

Now the electrode should be ready for use. Start and complete the calibration procedure following the manual of the device, before starting the measurements.

Mind that after disassembling/reassembling the electrode for any reason, this procedure should be followed again.

The electrolyte may be worn out after some time of use, or dried out when left in air for some time. Then it is required to replenish it the same way as here described.

Placement of the membrane capsule

Check the correct position of the O-ring, insert the capsule and push it to its final position using the supplied stick, check the membrane.

Zero point

The zero current of the O2 electrode is usually negligibly small. Nonetheless, the electrode zero point should be periodically checked as some electrode faults result in an excessive zero current. Checking the zero point is necessary before the measurement of low oxygen concentration.

Zero point checking may be effected in both pure nitrogen and in water saturated with nitrogen. An alternative is the use of a freshly prepared 2% bisulfite solution.

The saturation of water with nitrogen takes several minutes. Checking with pure nitrogen gas is faster and more reliable. The zero point can be read after about 5 minutes.

Calibration

Calibration is usually effected at Oxygen saturation since it is the easiest method. Calibration causes

the DO reading to be adjusted to 100% saturation. As it is dependent on pressure, the calibration should be effected under operating pressure.

The preferred method for calibrating an Oxygen electrode is using air-saturated water. Alternatively can it be also done in the air that is water saturated (100% humidity). Always mind that the temperature and the air pressure influences the calibration and the measurements. So take care of stable environment conditions for the electrode.

Saturate distilled water in a vessel by purging air in it for approximately 20 minutes to create 100% air saturation. Perform the saturation of the solution under operating pressure. Allow the output signal to stabilise. Follow the instructions of the meter to calibrate the electrode at 100% saturation.