TPS Models ED500, ED500W, ED500M and ED500L
Dissolved Oxygen Electrode

Maintenance of the Membrane

If the membrane has been punctured or is suspected of leaking around the edges, it must be replaced.

1. Unscrew the cable seal screw (see (1) in the diagram over the page).

   This releases the pressure on the O-rings which seal the cable at the rear of the probe.

2. Unscrew the white barrel (3), by holding the body (2), and undoing the barrel (3). Lay the body (2) and exposed stem (4) down carefully.

   DO NOT TOUCH the Gold cathode or the silver wire with the fingers, as this leaves grease, which must then be chemically cleaned off.

   Use clean methylated spirit and a clean cloth if this occurs.

3. Carefully pull off the probe end cap (5) from the barrel (3), and remove the old membrane.

   Inspect it carefully for any sign of tearing, holes etc. as this may give a clue as to the reason for incorrect probe performance.

4. The probe tip and barrel should be rinsed off with distilled water.

5. Cut a 25 mm square new piece of membrane from the material supplied with the probe kit, and hold this over the barrel end (3) with thumb and forefinger. Make sure there are no wrinkles. Carefully push the cap back into place. Check that there are no wrinkles in the plastic. If so, redo. The excess membrane may be trimmed off with a sharp blade.

6. **ONLY IF** the probe interior has been exposed to chemicals through a torn membrane, should the gold cathode then be cleaned. This should first be attempted with methylated spirits and a soft cloth or tissue. If this fails, the gold cathode can be GENTLY cleaned with No 800 wet & dry sandpaper. The gold surface must NOT be polished. Care should be taken not to treat the gold cathode too roughly as it may become loosened in the epoxy mounting.

7. Add 1/4 barrel of filling solution to the barrel. (DO NOT OVER-FILL)

   Screw on the probe barrel. During reassembly, the centre stem can be used to "pump" the membrane gently to check for any leaks in the membrane.

   No air bubbles should be included between the cathode and the membrane.

8. If there is no evidence of electrolyte leakage, the barrel can be screwed back into place. The membrane should form a smooth curve over the gold cathode (see the diagram over the page).

   DO NOT OVER-TIGHTEN – AN OVER-STRETCHED MEMBRANE WILL TEAR EASILY.

9. To check for leaks, the following test can be done. The probe should be washed off and put into fresh or distilled water. If the membrane is leaking (even slowly), it will be possible to see electrolyte "streaming" from the tip by viewing obliquely in a bright light. This test uses the effect of differential refractive index and is quite sensitive.

10. Finally, re-tighten the rear cable seal screw to lock the O-ring seals.

Notes on Sample Stirring

Stirring is absolutely essential with this type of probe. A steady stirring rate must be provided for the probe. Hand stirring is generally sufficient to provide a peak oxygen reading. Do not stir so fast as to make bubbles, as this will change the Oxygen content of the water being measured.

To see how much stirring is required, try the following…

Shake a sample of water vigorously to get the oxygen content to 100%. Turn on your meter, and after it has polarised (approx 1 minute), calibrate the meter to 100% Saturation. Rest the probe in this sample (without stirring), and watch the oxygen reading fall away. Now stir the probe slowly and watch the reading climb. Stir a little, the reading may or may not increase more, depending on whether you are stirring fast enough. When the probe is used submerged, the probe may be moved up and down in the water, (on the cable) to provide stirring. The stirring problem is discussed rather more fully in the electrode section of the instrument handbook.

Storage

When storing the electrode overnight or for a few days, place it into a beaker of distilled water. This stops the gap between the membrane and the gold cathode drying out.

When storing the electrode for more than a week, unscrew the barrel, empty out the electrolyte Re-fit the barrel loosely, so that the membrane is not touching the gold cathode. There is no limit to the time the electrode can be stored in this way. Fit a new membrane and re-fill the electrode before its next use.

Ordering Information

ED500 Electrode to suit LC82, 2052A with complete membrane kit 123200
ED500W Electrode to suit MC82 & WP82, with complete membrane kit 123220
ED500M Electrode to suit mini*CHEM*-DO_2, with complete membrane kit 123230
ED500L Electrode to suit 900D & 900LAB, with complete membrane kit 123240

The membrane kit includes…
1 x 45 mL Probe filling solution
1 x 50g bottle of Sodium Sulphite for Zero Dissolved Oxygen test
2 x spare barrel "O" rings
1 x sheet of probe membrane material
3 x spare probe end caps

Spares & Accessories

Membrane replacement kit 123301
Probe filling Solution (45 mL) 123303
50g Sodium Sulphite for Zero Dissolved Oxygen test 123302

Options

Extended cable option (order by the metre) 130040
Probe protector cover 130014
Adaptor barrel to fit electrode into standard BOD bottle 123201

Troubleshooting

Symptom	Possible Causes	Remedy
Reading in air too low to calibrate	1. Gap between membrane and gold cathode has dried out. 2. Membrane is dirty, torn or wrinkled 3. Filling solution is chemically depleted.	1. Undo the barrel 3 turns, then re-tighten to re-flush the filling solution. 2. Replace membrane and filling solution. 3. Replace membrane and filling solution.
Noisy readings, or cannot Zero, or slow response.	1. Gap between membrane and gold cathode has dried out. 2. Membrane is dirty, torn or wrinkled	1. Undo the barrel 3 turns, then re-tighten to re-flush the filling solution. 2. Replace membrane and filling solution.
Discoloured Gold cathode	1. The electrode has been exposed to pollutants.	1. Return the electrode to the factory for cleaning.
Blackened Silver anode wire.	2. The electrode has been exposed to pollutants, such as Sulphide.	2. Return the electrode to the factory for cleaning.

Please Note

The Warranty conditions on electrodes do not cover mechanical or physical abuse of the electrode, either deliberate or accidental.