OxyGuard® Commander
Dissolved Oxygen / Temp Probe

Maintenance Instructions

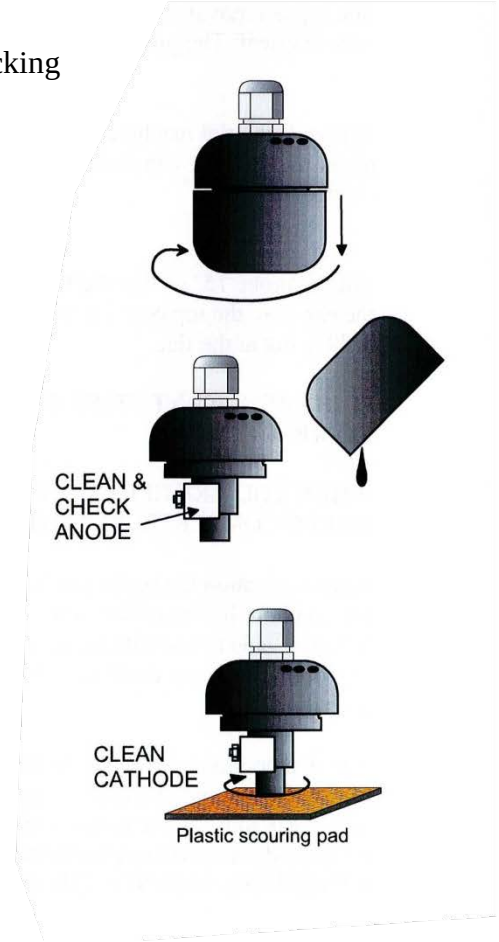
DO PROBES — CHECK & MEMBRANE REPLACEMENT

The probe's membrane should be wiped clean from time to time. If you observe erratic DO measurement at a site where you expect steady readings there can be a fault in the cable or connection. If you experience erratic readings you can try exchanging the probe with one that works well to help localize the cause of the fault. If the probe has been in use for years use the following procedure to change the membrane — the procedure will completely renovate the probe.

The probe should not be taken apart unless:
• the membrane is damaged or
• after long use (some years), you cannot calibrate up to the correct value or
• the probe is not completely full (shake it close to your ear - if you can hear liquid it is not full).

Please note the following points:
Commander probes are type 3 and have 3 dots on the top part near the cable gland. They have type 3 anodes and electrolyte. The electrolyte of a probe with type 3 chemistry is blue to start with, but soon becomes very dark, and deposits are found inside the probe.
-If there are three dots on the top of the probe, and very dark deposits inside it, you can be sure that it is a type 3 probe with type 3 chemistry.

Commander probes use 1OXSS006 membranes with grey backing paper.
To replace the membrane and renovate the probe proceed as follows:



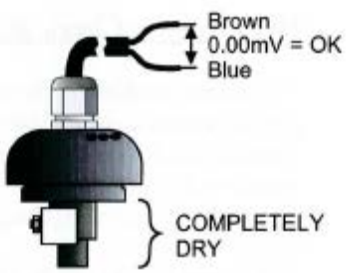
1) Remove the probe, rinse it and unscrew the cap. If it sticks, tap the side of the probe gently with a hammer then try again. Discard the electrolyte, rinse the cap and top part, clean off any brown or black oxide deposits.

2) Inspect the anode. If the probe was filled correctly when it was last renovated it will be easy to clean the dark deposits from the anode - use a nail brush or similar. If the probe was not filled completely the anode will be very corroded and must be replaced. Check that the nut under the anode is tight before fitting a new anode. Wash the anode in soapy water before use to remove any protective oil. Make sure that you use type 3 anodes on the probe.

3) Check the cathode and remove any deposits using the plastic abrasive pad supplied with the probe or a little wet or dry emery paper, grade 600. The cathode MUST NOT BE POLISHED.

4) Rinse and dry the top part.

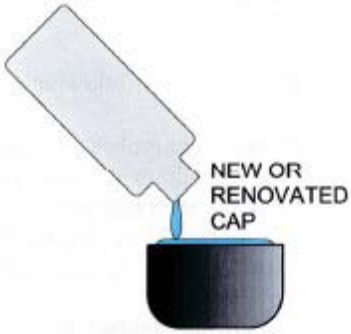
5) We advise that the following easy check on the probe is performed - the "Dry Probe Check". Dry the probe — especially the cathode and area around it - completely, then observe the measurement or output signal — the probe should have zero output. You can also measure on the probe leads — when the probe is completely dry there should be no voltage (mV) between the brown and blue leads (you can disconnect the leads and measure as below). Contact Point Four Systems (technical support) if this is not the case.



BROWN: Plus millivolt — 0 mV with the probe open and completely dry

BLUE: Minus millivolt

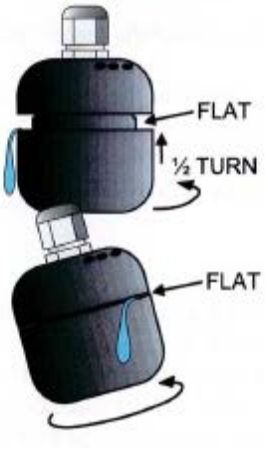
BLACK: Resistance
10 kilohm at 30°C,
15 kilohm at 20°C
20 kilohm at 10°C
25 kilohm at 0°C



6) Fill a new (or renovated) cap to the brim with electrolyte — the excess electrolyte helps remove any air bubbles. The cap is renovated by fitting a new membrane and 0-ring - see overleaf. The process is very easy.

7) Locate the flat section machined into the thread. Lower the upper part into the cap and turn the cap half a turn to engage the thread.

Tilt the probe 15° so that the flat is uppermost and screw the cap onto the top part. Excess electrolyte and air should dribble out at the flat.



IT IS IMPORTANT THAT THE PROBE IS FILLED COMPLETELY.

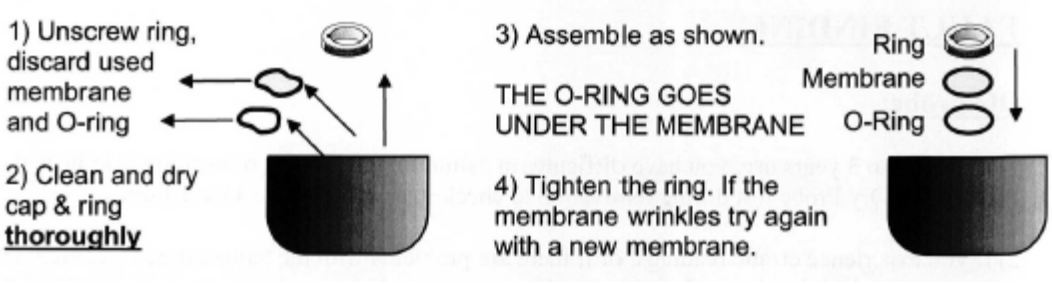
WHEN YOU ARE CERTAIN THAT THE PROBE IS FILLED COMPLETELY TIGHTEN THE CAP **HARD.**

After renovation the probe can be regarded as new. It should be hung up in air to stabilize for at least an hour before calibration.

It is advisable to re-calibrate after a day or two.

The output between the blue and brown leads should be between 20 and 40 millivolt with the probe in air.

A new membrane can easily be fitted to the cap see the drawing. The membrane must be flat - if it wrinkles remove it and try again with a new one. It is important that all parts are clean and dry. A cap must not be re-used without replacing the membrane, as the membrane stretches to fit the cathode, and will not fit perfectly a second time. MAKE SURE YOU USE THE MEMBRANE AND NOT THE BACKING PAPER. The backing paper is grey.



1) Unscrew ring, discard used membrane and O-ring
2) Clean and dry cap & ring **thoroughly**
3) Assemble as shown.
4) Tighten the ring. If the membrane wrinkles try again with a new membrane.
THE O-RING GOES UNDER THE MEMBRANE

FAULT FINDING

1) If, after 1 to 3 years use, you have difficulty in calibrating the probe, renovation is indicated. Perform the Dry Probe test during renovation to check it, as stated in the instructions.
2) If you experience erratic readings, or if there are problems with the temperature measurement, you can try exchanging the probe with one that is connected to terminals to the left or right of the problem probe.
3) If the fault moves with the probe check the wiring carefully before replacing the probe. You can try connecting a spare probe (that you are certain works well) directly to the DO meter, then to the junction box nearest the point of measurement. If the wiring is OK replace the probe.
4) If the fault stays on the same channel exchange the DO input module with one to the right or left. If the fault now moves replace the DO input module.
5) If the fault still stays in the same place contact Point Four Systems (technical support).
When you have corrected any fault remember to re-calibrate the probe. Remember that calibration needs steady temperature. PLEASE CALIBRATE CAREFULLY - NO MEASUREMENT IS MORE ACCURATE THAN THE CALIBRATION.
You should also note that DO measurements that fluctuate regularly (oscillate) in tanks with oxygen dosing can be caused by wrong adjustment of PID settings, wrong positioning of probe or poor mixing in the tank - please contact Point Four Systems (technical support).

SPARES

It is a good idea to make sure that you always have a supply of probe membranes and electrolyte. A spare probe cap will enable a fast probe renovation. After many years' use (about 10 years) probes might need new anodes. [A complete probe can be stocked as spare.]

1OXYC310	Commander oxygen probe with integrated temperature sensor
1OXPA057	Multi Service Kit [10 membranes / 1L of Electrolyte / 2 Anodes / tool / cleaning cloth]
1OXSS006	Set of 10 membranes and 0-rings for Commander probes
1OXS5130	50 ml Electrolyte for Commander probes (type 3).
1OXS5134	1L Electrolyte for Commander probes (type 3).
1OXSS033	Type 3 Anode for Commander probes.
1OXSA002	Membrane retaining ring removal tools