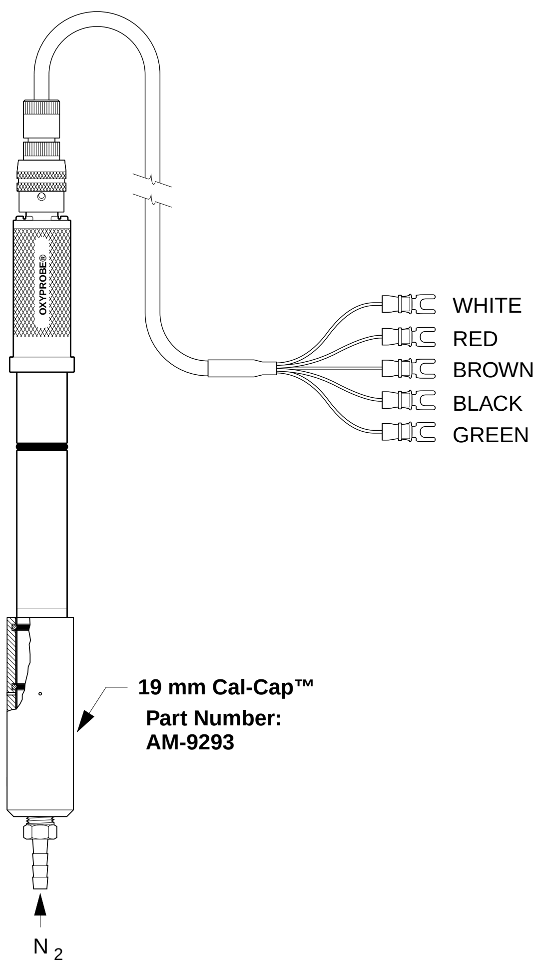
Checking Sensor Performance

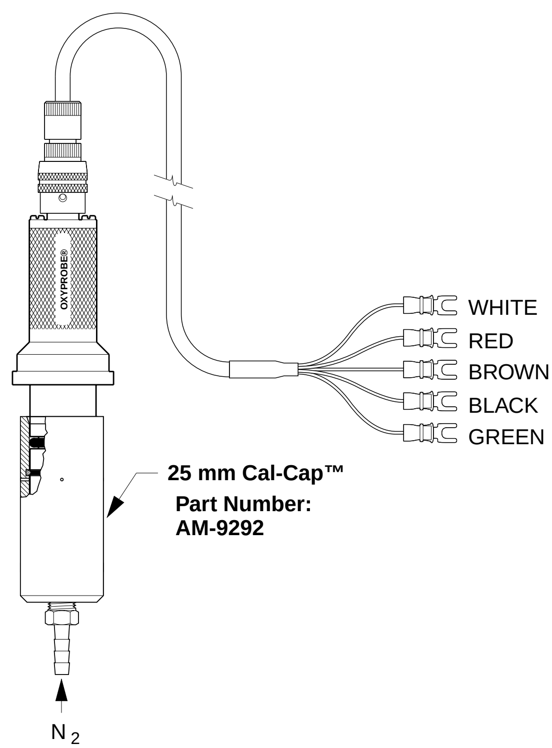
1. Disconnect the OxyProbe from the cable assembly and set the transmitter to "zero". Since the sensor is not attached, the current should be very close to absolute zero. The transmitter will now display a nanoAmp value relative to this "absolute" zero value, for any attached sensor.

2. Connect the OxyProbe to the host oxygen transmitter, and expose it to atmospheric air. Allow 45 seconds or more for equilibration. Record the nanoAmp output displayed on the host transmitter as **A_S = ________nA** . This should be 30 – 90 nA.

3. Place the sensor in a pure nitrogen atmosphere. If available, select the appropriate Cal-Cap™ and install it onto the sensor. Apply N_2 to "zero" the sensor and record this reading as **A_N =_______nA.** This should be less than 1 nA.

4. Expose the sensor to atmosphere air again for 45 seconds. This reading should be within 3 nA of **A_S**, determined in Step 2.





OxyProbe is a registered trademark of Broadley Technologies
Cal-Cap is a trademark of Broadley-James Corporation

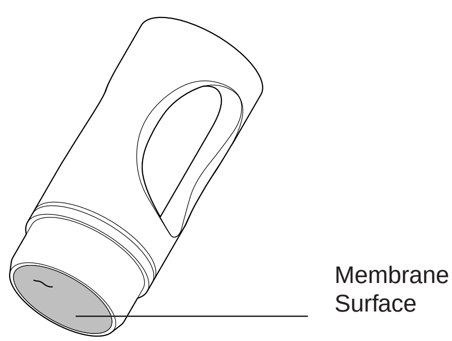
Testing the Membrane Cartridge

PURPOSE FOR TEST:

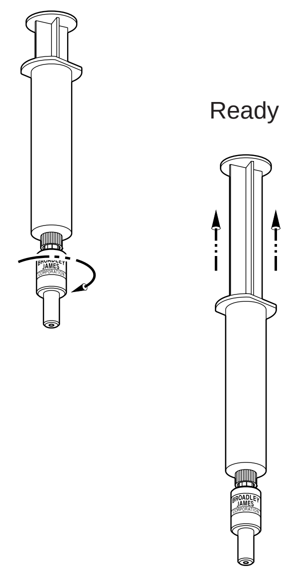
Dissolved oxygen membrane cartridges contain an oxygen-permeable, polymer membrane, which is impermeable to liquid. Improper storage or accidental handling of the D.O. sensor or membrane cartridge can damage the polymer membrane. A hairline scratch, slight abrasion or any tear of the polymer membrane may render the cartridge inoperable. Often the damage may not be visible to the naked eye.

STEP 1. VISUAL EXAMINATION
Remove the membrane cartridge from its storage vial or from the dissolved oxygen sensor. Be careful not to scratch or abrade the polymer membrane portion of the cartridge.

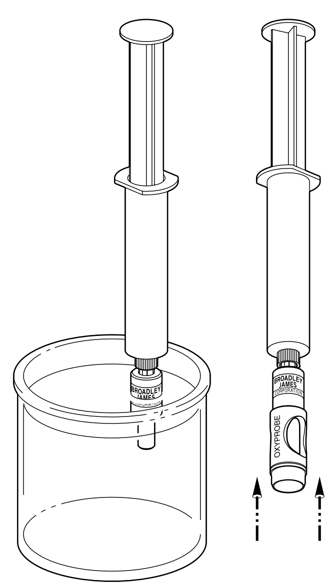
Visually inspect the outer surface polymer membrane for scratches, scars, abrasions or tears.



STEP 2. PLUNGER "READY" POSITION
Install the nosepiece onto the syringe and retract the plunger of the membrane tester to the "ready" position as shown below.

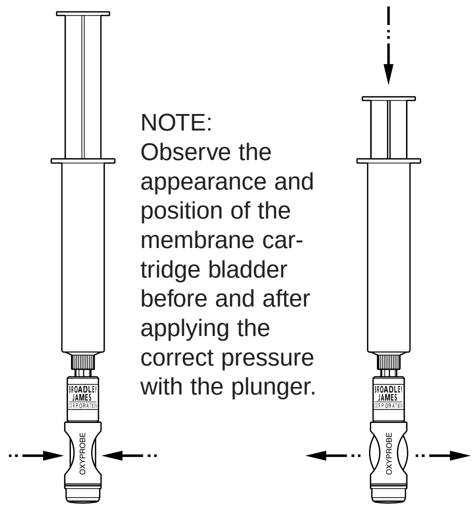


STEP 3. MEMBRANE CARTRIDGE INSTALLATION
Insert the tip of the membrane tester into DI water to lubricate it before installing the membrane cartridge as shown below. Avoid excessive force.



STEP 4. APPLYING PRESSURE TO THE MEMBRANE CARTRIDGE

Slowly compress the plunger until the membrane cartridge bladder slightly protrudes from the thumb and forefinger slots of the cartridge housing.



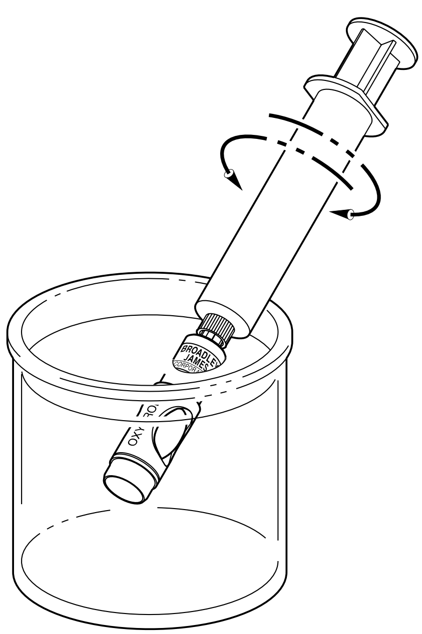
NOTE:
Observe the appearance and position of the membrane cartridge bladder before and after applying the correct pressure with the plunger.

Before

After

STEP 5. MEMBRANE CARTRIDGE TEST

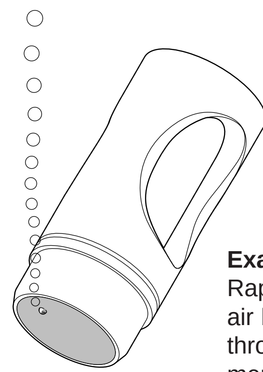
Place membrane tester with the membrane cartridge into a beaker of DI water as shown. Make certain the front of the membrane cartridge is completely submerged.



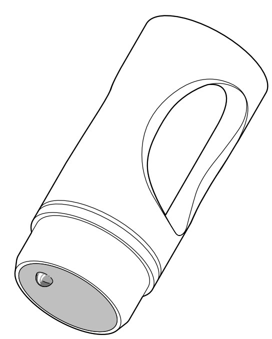
STEP 6. ASSESSING DAMAGED MEMBRANE CARTRIDGES

While maintaining a slight pressure on the plunger to keep the bladder extended, slowly rotate the test assembly in the water.

Look for any signs of air bubbles which indicate a damaged membrane or bladder. Refer to the two illustrations for typical examples of air leaks found when the membrane has been damaged.



Example 1:
Rapid Leak–Visible air bubbles escaping through polymer membrane.



Example 2:
Slow Leak–Air bubble(s) form on the surface of the polymer membrane and reappear when removed.

NOTES:

- A good membrane will not permit any air to escape from the membrane cartridge when this test is properly performed.
- Replace cartridges which show any signs of air leakage, whether flowing from or clinging to the surface of the polymer membrane.
- New membrane cartridges should always be kept in their individual storage vials until required for service. Avoid unnecessary handling.
- Membrane cartridges installed on a dissolved oxygen sensor should be protected during non-use.

Testing the Cathode

PROCEDURE:

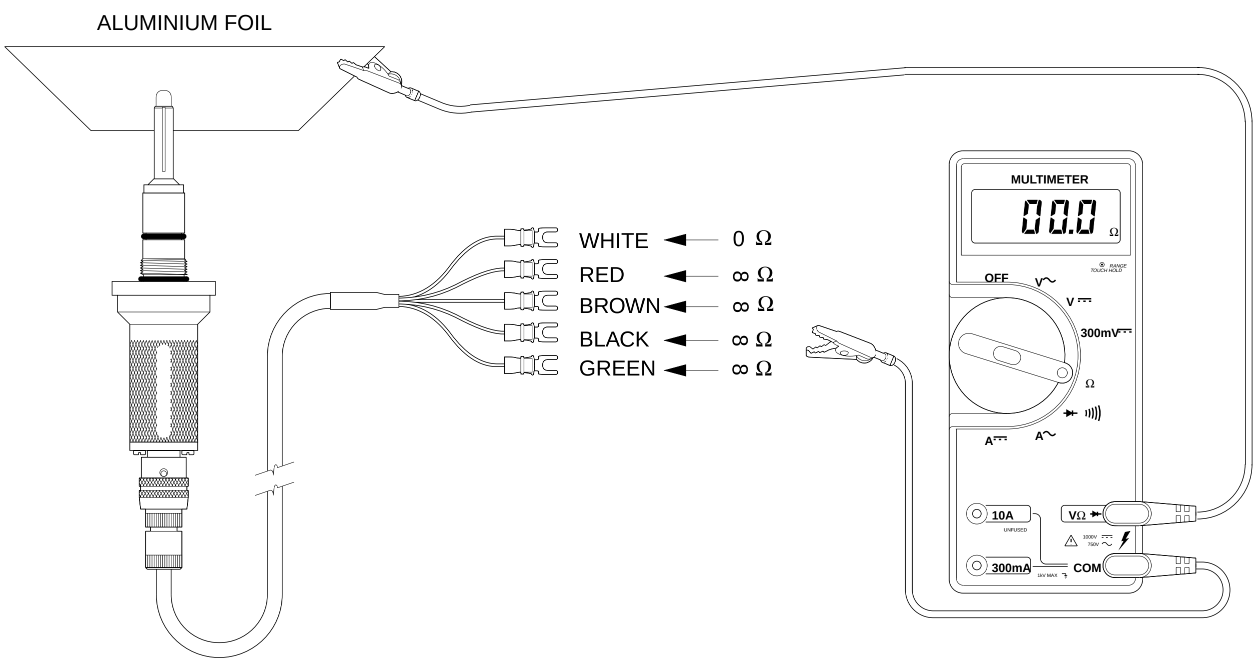
Refer to drawing below. Using a multimeter with the test leads attached to **VΩ** and **COM** as shown, connect one lead to a small piece of aluminum foil and the other lead to the WHITE (cathode) lead of the sensor cable. Gently touch the tip of the platinum cathode to the aluminum foil being careful not to damage the surface of the cathode. With the multimeter selector switch in the Ω position, the readout should indicate a direct short or "zero" ohms. This measurement verifies proper electrical continuity between the tip of the platinum cathode, the connectors, and the cable.

RESULTS:

A reading which is significantly different than "zero" ohms could indicate a faulty cable, cable connector, sensor connector, and/or internal fault to the cathode. Replace the cable assembly and repeat the test measurement. If the correct reading is not achieved, replace the sensor connector. If the correct reading is not achieved after these two steps, the sensor should be returned to the factory for further service.

GOOD READING = 0 Ω

BAD READING > 0 Ω



Testing the Anode

PROCEDURE:

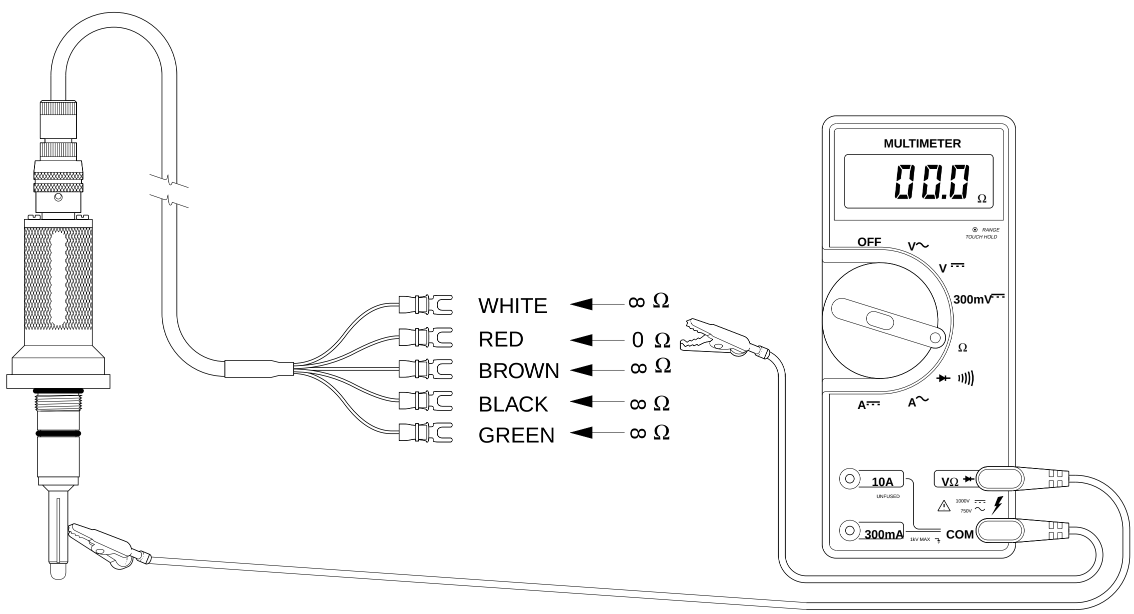
Refer to drawing below. Using a multimeter with the test leads attached to **VΩ** and **COM** as shown, connect one test lead to the RED (anode) lead of the sensor cable. Gently touch the tip of the other test lead to the outer surface of the silver anode. With the multimeter selector switch in the Ω position, the readout should indicate a direct short or "zero" ohms. This measurement verifies proper electrical continuity between the anode, the connectors, and the cable.

RESULTS:

A reading which is significantly different than "zero" ohms could indicate a faulty cable, cable connector, sensor connector, and/or internal fault to the Anode. Replace the cable assembly and repeat the test measurement. If the correct reading is not achieved, replace the sensor connector. If the correct reading is not achieved after these two steps, the sensor should be returned to the factory for further service.

GOOD READING = 0 Ω

BAD READING > 0 Ω



Testing the Thermistor

PROCEDURE:

Refer to drawing below. Using a multimeter with the test leads attached to **VΩ** and **COM** as shown, connect one test lead to the BROWN (RTD) of the sensor cable and the other test lead to the BLACK (RTD) of the sensor cable. With the multimeter selector switch in the Ω position, the readout should indicate between 27.0 kΩ to 22.0 kΩ at room temperature (20 to 25°C) or other appropriate resistance value depending upon the ambient temperature. This measurement verifies the internal thermistor is functioning properly.

RESULTS:

A reading which is significantly different than the values given above could indicate a faulty cable, cable connector, sensor connector, and/or internal fault with the thermistor. Replace the cable assembly and repeat the test measurement. If the correct reading is not achieved, replace the sensor connector. If the correct reading is not achieved after these two steps, the sensor should be returned to the factory for further service.

GOOD READING = 20 kΩ to 29 kΩ at room temperature

BAD READING is < 20 kΩ or > 29 kΩ at room temperature