STs Series Dissolved Oxygen Membrane Replacement Guide

Replacement of the STs Series Dissolved Oxygen membrane is recommended when the current calibration values vary significantly (1-2 mA) from the original values when the membrane was first installed. This change happens after 1-2 months in typical applications but may vary for your specific application.

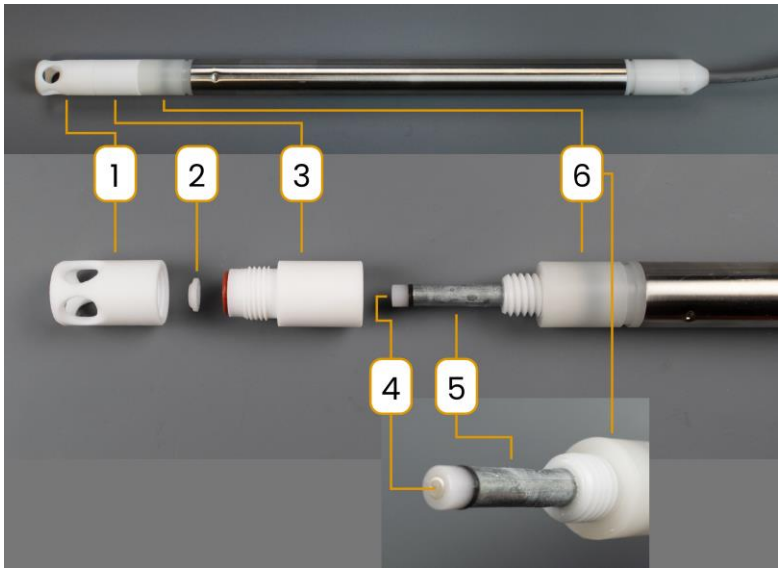
Required Supplies

- pHionics STs Series Dissolved Oxygen Sensor
- STs Series Dissolved Oxygen Membrane Replacement Kit
- RO/DI or distilled water (approx. 50mL)
- Paper towel
- Container (to catch sodium chloride solution)
- Clean workstation

Electrode Anatomy

All sensor components are non-toxic unless ingested. Please don't put any parts of our sensors in your mouth.

1. Electrode Guard
2. Electrode Membrane
3. Electrode Chamber
4. Cathode Plate (Silver - Ag)
5. Anode Shaft (Zinc - Zn)
6. Electrode Body



Copyright © pHionics, Inc. 2026. All Rights Reserved.

Instructions

1. Place the Container on your workstation.
2. Angle the electrode end of the sensor down and over the cup. Unscrew the Electrode Guard from the Electrode Chamber, letting excess electrolyte solution (harmless 2 molar NaCl) drain into the cup (see Image 1).
3. Shake the Electrode Guard out into your hand or the cup to remove the old Electrode Membrane.
    a. The Electrode Membrane is made of unreactive plastic that may be disposed of in the trash when it is no longer usable.



Image 1. Pointing sensor down during Step 2

Warning: *These Electrode Membranes can be easily pierced by sharp corners of tools or fingernails. When picking new Electrode Membranes up, always touch them with the pads of your fingers and try to keep contact points on the rounded edges (see Image 2). The flat membrane surface shouldn't be destroyed by light touch with the pads of your fingers but it is best to be careful.*

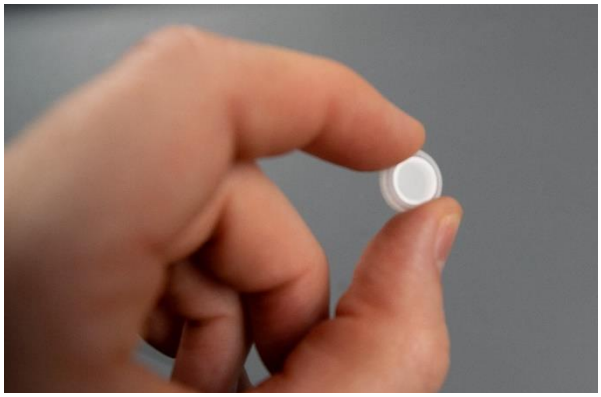


Image 2. Safely holding an Electrode Membrane

4. Point the sensor electrode-end up, then place a new Electrode Membrane (found in the Membrane Replacement Kit) onto the exposed Cathode Plate. There will be a small gap between the bottom (See Image 3 and 4) of the Electrode Membrane and the red rubber ring.



Image 3. Placing an Electrode Membrane on top of the Cathode Plate

Copyright © pHionics, Inc. 2026. All Rights Reserved.

a. ***The membrane will be damaged in later steps if it is oriented incorrectly.***

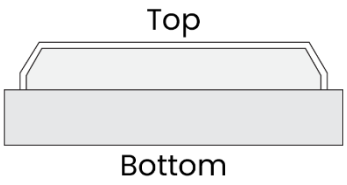


Image 4. Electrode Membrane Orientation

5. Screw the Electrode Guard ***halfway*** onto the Electrode Chamber (see Image 5).
    a. This holds the Electrode Membrane in place without stretching it over the Cathode Plate, which we do not want to do yet.



Image 5. How the sensor should look after Step 5

6. *Keeping the sensor with the electrode pointed up*, unscrew the Electrode Chamber roughly ¼ inch (0.5 cm) from the Electrode Body (See Image 6).
    a. This step extends the membrane far enough from the Anode Plate that the Electrode Guard may now be tightened without stretching the membrane.

Warning: *Pointing the electrode down at this step may displace the Electrode Membrane into the wrong orientation.*

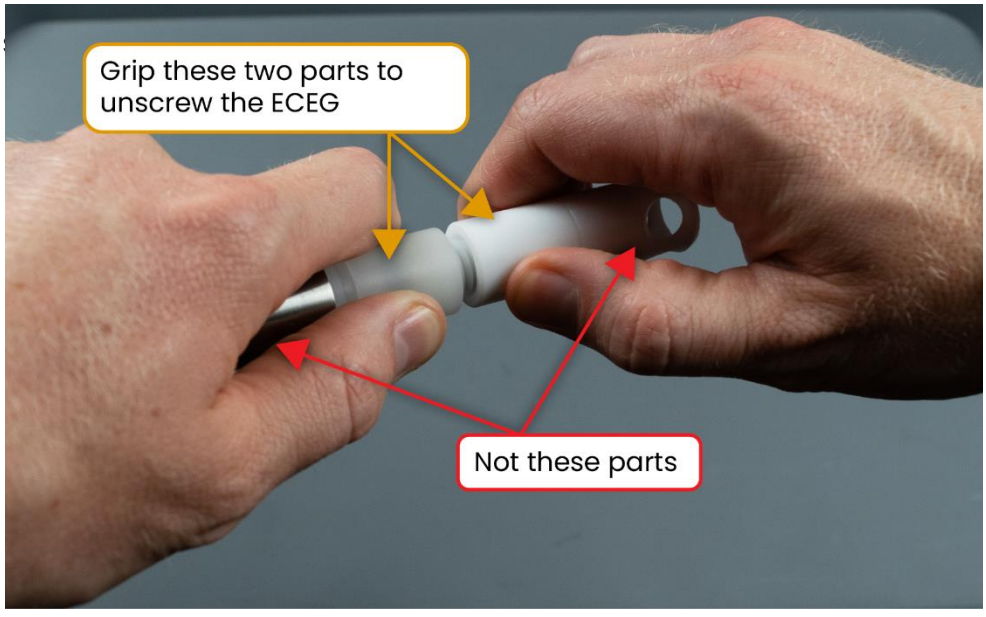
Copyright © pHionics, Inc. 2026. All Rights Reserved.



Image 6. How the sensor should look after Step 6.

7. Screw the Electrode Guard fully onto the Electrode Chamber. These two parts together are called the **ECEG**.
    a. The Electrode Membrane is now securely in place so the sensor may be oriented in any direction without displacing it.
8. Grab the Electrode Chamber in one hand and the Electrode Body in the other, then fully unscrew the Electrode Chamber from the Electrode Body.
    a. Make sure the Electrode Guard stays tightly screwed onto the Electrode Chamber.
    b. Holding the sensor by the metal housing or the electrode guard may lead to the wrong piece being tightened or loosened. Doing so may expose

the



Copyright © pHionics, Inc. 2026. All Rights Reserved.

Image 7. Where to grip to avoid damaging the sensor.

9. Set the **ECEG** aside for now.
10. Take the Grey Scouring Pad (found in the Membrane Replacement Kit) and press it against the Anode Shaft. Move the Pad up and down the Anode Shaft while rotating the sensor to remove any oxidized zinc (a white coating). The Anode Shaft surface should appear rough with a shiny silver-ish color.
    a. ***Warning:*** *Do not grip the Anode Shaft hard with bare hands or the Pad and then twist the Shaft. Doing so may cause the Anode Shaft to rotate, breaking key internal connections.*
    b. If you no longer have the Grey Scouring Pad, you may use 120+ grit sandpaper on the Anode Shaft. ***DO NOT use sandpaper on the Cathode Plate.***

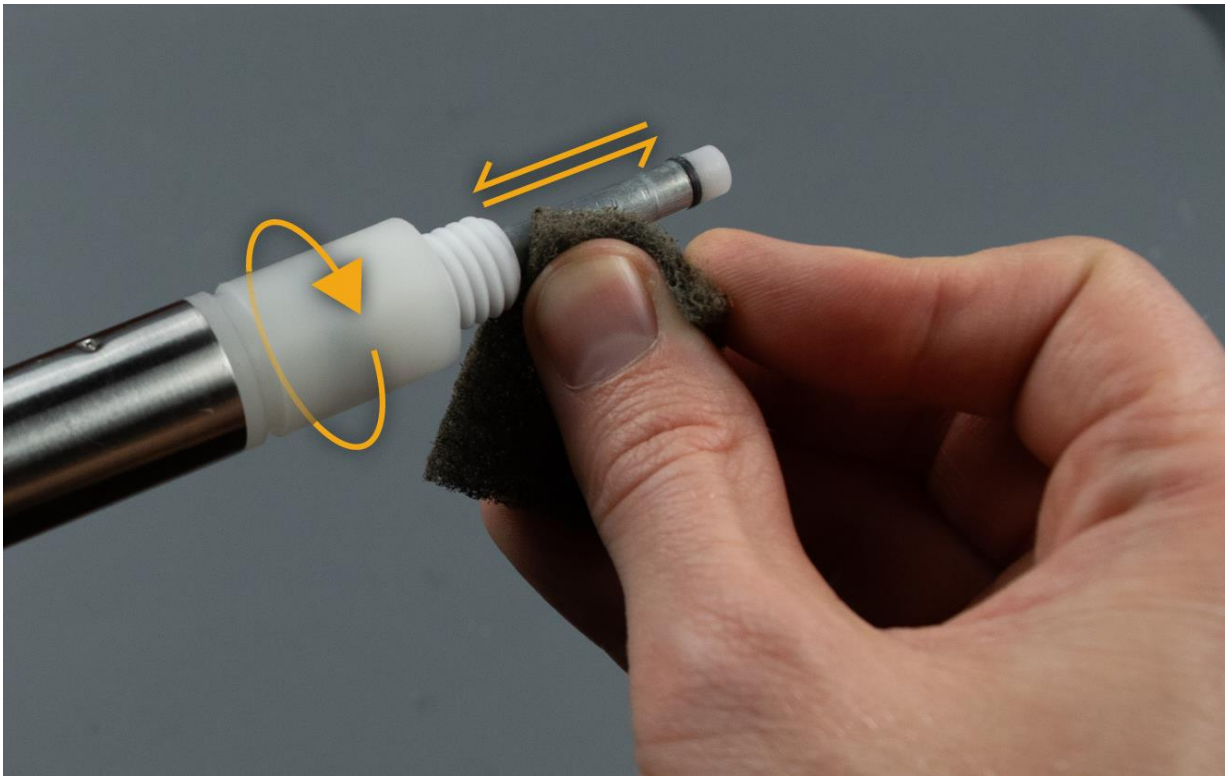


Image 8. Spin the sensor while rubbing the Scouring Pad up and down the Anode Shaft.

Copyright © pHionics, Inc. 2026. All Rights Reserved.

11. Lightly rub the Pad over the Cathode Plate to remove any build-up.
    a. If you no longer have the Grey Scouring Pad, you may use emery cloth to clean the Cathode Plate. The cathode must be smooth for reliable performance, so anything that scratches it (sandpaper, etc.) should not be used to clean it.



Image 9. Rub the Scouring Pad across the Cathode Plate.

12. Rinse the Cathode Plate and Anode Shaft in tap water to remove any leftover debris.
13. If you have not already done so, remove the tip of the STs Series Dissolved Oxygen Reference Solution (found in Membrane Replacement Kit) and fill it up to the top edge of the label (approx. 50 mL) with RO/DI or distilled water. Cap the bottle, then shake it until the salt (NaCl) in the bottle dissolves.
    a. The tip of the bottle is a separate piece that pops out when sideways force is applied (see image 10).



Image 10. Push the bottle tip sideways to remove it.

Copyright © pHionics, Inc. 2026. All Rights Reserved.

14. Hold the ECEG with the Electrode Guard pointed down, then squirt the Electrolyte Solution (Reference Solution) into the Electrode Chamber. Fill it approximately ¾ full.
    a. ***It is always better to overfill the chamber rather than underfill it.*** Underfilling will cause more oxygen to be trapped inside, which will take multiple hours to burn off before calibration can be performed.



Image 11. Filling up the Electrode Chamber in Step 14.

15. Keeping the open end of the ECEG pointing up, screw it onto the Electrode Body until the ECEG bottoms out on the thread. It does not need to be tightened past that point.
    a. Electrolyte Solution should squeeze out as the parts are tightened together. If it does not, then unscrew the ECEG and add more Electrolyte Solution. If Electrolyte Solution does not squeeze out while tightening, then there is excess air left in the Electrode Chamber that may take several hours to burn off before the sensor starts working again.



Image 12. Screw the ECEG fully onto the Electrode Body.

Copyright © pHionics, Inc. 2026. All Rights Reserved.

16. Let the sensor sit for 30 minutes, then recalibrate it.
    a. Even when the chamber is overfilled, there is always a small amount of excess oxygen trapped in a newly filled electrode. This causes much higher readings than expected until it burns off, which typically happens within 30 minutes.
    b. See our Quick Start Guide for steps to calibrate the sensor.

Please contact us for any questions or assistance with the membrane replacement procedure, or for additional Membrane Replacement Kits for your STs Series DO Sensor.

OneTemp pty ltd
measure | control | record
1300 768 887
www.onetemp.com.au

Copyright © pHionics, Inc. 2026. All Rights Reserved.