

Section 6: Routine Maintenance and Calibration

This section reviews corrosion precautions, conductivity cell cleaning and storage, replacement of the Anti-Foulant Device, and sensor calibration. The accuracy of the MicroTSG is sustained by the care and calibration of the sensors and by establishing proper handling practices.

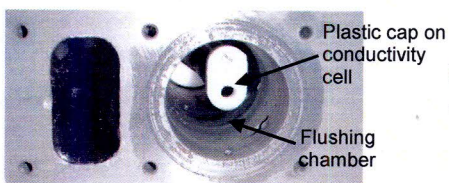
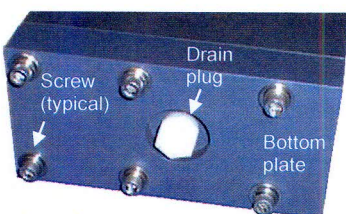
Corrosion Precautions

All hardware exposed to seawater is titanium; the housing is plastic. No corrosion precautions are required. The MicroTSG should be cleaned after use and prior to storage, as described in *Cleaning and Storage*.

Cleaning and Storage

CAUTION:

The MicroTSG's conductivity cell is shipped dry to prevent freezing in shipping. **Do not store the MicroTSG with water in the conductivity cell.** Freezing temperatures (for example, in Arctic environments or during air shipment) can break the cell if it is full of water.



CAUTION:

- Do not put a brush or any object inside the cell.
- Do not spray any solutions directly into the open end of the cell.

If fouling remains in the conductivity cell after these procedures, return the MicroTSG to Sea-Bird for internal cleaning and recalibration.

Clean the MicroTSG and conductivity cell:

- Monthly (during sustained use)
- Before periods of non-use – If the cell is not rinsed between usage, salt crystals may form on the platinized electrode surfaces. When the instrument is used next, sensor accuracy may be temporarily affected until these crystals dissolve.
- If the data looks incorrect –
 - Unusually *noisy* data may be caused by debris going through the cell.
 - Unusually *smooth* data may be caused by a blockage in the flow path or in the cell.
 - Shifted data may be caused by fouling inside the cell.

Follow this cleaning procedure:

Step 1: Clean Out Drain

- Keeping the MicroTSG in an upright position, remove the drain plug from the housing's bottom plate.
- Allow any water to drain out and remove any sediment or debris from the drain.

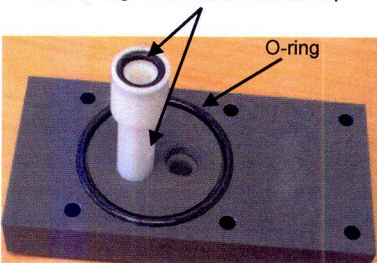
Step 2: Inspect and Clean Flushing Chamber

- Remove the bottom plate:
 - Remove the six 1/4-inch socket head screws, lock washers, and flat washers securing the plate to the housing body. Hold the bottom plate as you remove the hardware, to prevent the plate from falling.
 - Pull the bottom plate straight down from the housing body, being careful not to damage the conductivity cell, which sits in the housing.
- Use a flashlight to inspect the flushing chamber and conductivity cell for debris or fine deposits. If this is a routine monthly maintenance, and there is no evidence of debris or fine deposits, proceed to *Step 4: Clean Bottom Plate Assembly*.
- Gently spray fresh water up into the chamber to remove any fine deposits inside the housing. Be careful not to hit the conductivity cell with the spray hose.

Step 3: Flush Inside of Conductivity Cell

- A. Remove the external plumbing connecting the seawater intake and drain lines to the MicroTSG.
- B. Clean the inside of the conductivity cell with a series of slow back flushes into the **OUT** port (reverse of the normal operation flow). Collect the drainage in a bucket held below the open housing:
 - **Refer to Application Note 2D: Instructions for Care and Cleaning of Conductivity Cells for conductivity cell cleaning materials and concentrations.**
 - The Active Use (after each cast) section of the application note is not applicable to the MicroTSG.
- C. If the MicroTSG is being stored, gently blow-dry the conductivity cell and flushing chamber. **Do not use compressed air**, which typically contains oil vapor.
- D. Reinstall the external plumbing connecting the seawater intake and drain lines to the MicroTSG.

Flush through anti-foulant device cup



Note:

Early versions of the SBE 45 had a rectangular o-ring in addition to the round o-ring on the bottom plate; see the photo in *Replacing Anti-Foulant Device (SBE 45)*.

CAUTION:

- If you remove sensors and electronics from the housing to troubleshoot, **avoid getting anything on the PCB**, which can be damaged by water or other materials. See *Appendix II: Electronics Disassembly/Reassembly*.
- **Do not put any object inside the conductivity cell to clean it.** Return the MicroTSG to Sea-Bird for internal cleaning and recalibration.

Step 4: Clean Bottom Plate Assembly

- A. Remove the O-ring on the bottom plate. Put the O-ring aside, being careful to protect it from damage or contamination.
- B. Flush the anti-foulant device cup on the bottom plate with fresh water, to remove any debris or fine deposits. See *Replacing Anti-Foulant Device* for details on touching or handling the AF24173 Anti-Foulant Device.
- C. Rinse the bottom plate with fresh water.
- D. Remove water from the O-ring and the bottom plate with a lint-free cloth or tissue.
- E. Inspect the O-ring and mating surfaces for dirt, nicks, and cuts. Clean as necessary. Apply a light coat of O-ring lubricant (Parker Super O Lube) to the O-ring and mating surfaces.
- F. Replace the O-ring on the bottom plate.

Step 5: Reinstall Bottom Plate

- A. Align the bottom plate with the housing body, ensuring the end of the anti-foulant device cup is aligned with the conductivity cell. Slowly position the bottom plate on the housing.
- B. Re-secure the bottom plate to the housing body with the six 1/4-inch socket head screws, lock washers, and flat washers.
- C. Reinstall the drain plug in the bottom plate.

If the data still looks incorrect after cleaning, it may be caused by:

- a problem with the electrical connections
- a problem with the PCB
- internal fouling in the conductivity cell that was not removed by flushing
- sensors that need to be recalibrated