

Background

Although individual Datasonde 4a's (DS4a), Minisondes 4a's (MS4a), Quanta's or Quanta G's can be configured in a multitude of ways, the sonde itself will need to be cleaned and serviced on occasion. Great care needs to be taken here, in that any damage to the sonde, housing or O-ring seals will have a catastrophic effect on the entire unit. It is preferable, and in some cases you will be required, to maintain a log of all the repairs, maintenance and calibration that is done on each unit. This log can take any form that is convenient to you but should include the unit serial number, date, who serviced the equipment and what was done.



Equipment

- ◆ DS or MS4a calibration cup.
- ◆ Distilled water, methanol, cotton swabs and silicone grease.
- ◆ Table clamp or lab chain clamp to hold the sonde inverted and vertical.
- ◆ Hydrolab's Basic Maintenance Kit including small Allen wrenches and Philips screwdriver.
- ◆ Duct tape (the wider the better).
- ◆ Scrub pads and cleanser (lab grade Sparkleen or Alconox works great).
- ◆ Soft bristle scrub brush or old toothbrush.

Maintenance

The sonde, circulator and individual probes should be maintained on a regular basis (at least monthly during regular use) or prior to and after any long-term deployment.

1. If the sonde is covered with sediment, algae and other biological growth when it is recovered, try to clean as much off right away so it doesn't bake on while it is in the back of your truck.
2. After returning to your lab remove the duct tape (if you have used it to help keep the sonde clean) and with the scrub pads and Sparkleen get all the caked on sediment algae and other material off as best you can. You may need to let the whole thing soak in a sink of warm water and Sparkleen overnight to soften the gunk up and try scrubbing again the next day.
3. Use the toothbrush or other small nylon brush to gently remove sediment, algae, bugs, and any other debris around the sensors. It is important not to use soaps or solvents if any of the ion sensors are installed (NH_4 , Chloride & Nitrate).
4. Remove the circulator's impeller and clean and remove any debris that may be wrapped around it. In some areas pyrite or other iron based materials can accumulate around the magnet of the circulator and in time can interfere with it's function and even cause premature wearing of the surfaces.
5. On Series 3 equipment, remove the circulator's impeller and clean and remove any debris that may be wrapped around it. Put a very small amount of silicone lubricant on the impeller post.
6. Every other year or so the O-rings and internal memory battery in the sonde need to be checked. Great care is needed to open the sonde and if you are unsure check with

Campbell Scientific (Canada) Corp. for assistance.

7. Check the pair of O-rings for any wear spots, tears or deterioration and replace as required. Thoroughly clean both the bulkhead and the inside of the tube and lightly grease the O rings with silicone.
8. Check the internal lithium battery in the DS4a or MS4a to ensure it is still at or above 3 volts DC. If not replace the battery. With DS3's the lithium battery is soldered to the CPU board and may need to be returned to CSCC for replacement. Series 3 equipment could have a pair of 3-volt lithium batteries installed to power the Dissolved Oxygen probe. Check to ensure they are still above 2.75 volts and replace only if required. If you do not require D.O. measurements in less than two minutes we recommend you do not use these batteries. Replace the desiccant packets and carefully put the sonde back together.
9. With the sonde back together and the set screws in place tape the outside of the sonde at the O rings with the wide duct tape to help to keep sediment and debris out of there. If the sonde is to be out for long periods (especially in warm productive water) you can duct tape the whole thing to make cleaning easier next time (don't tape the storage cup).

Cautions & Problems

Maintenance of the sonde and probes should become second nature. In other words too much maintenance is better than not enough. The amount or frequency of maintenance is directly related to the overall quality of data you will collect. On long term deployments if you are only able to get to the site to service the unit every 6 weeks, you may have to be satisfied with broader data acceptance criteria, especially towards the end of the deployment period. If you visit the site every other week you can expect to have the best data possible.

If the sample site has been chosen well, maintenance problems could be minimised but will not likely be eliminated. When choosing a site, especially for long term deployment look for sufficient flow without turbulence, depth without direct sunlight

Under certain conditions it may be advisable to make a mesh screen to protect the sensors from debris, slush, macrophytes, algae, bubbles and even sunlight. Screens as in the figure below can be easily made from Nitex mesh, window screening, shade cloth or any available mesh material that will let water pass through but help to keep the other junk out.



For more information on this or any Hydrolab application, please contact Campbell Scientific (Canada) Corp. at (780) 454-2505.