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Field Service Bulletin No. 10

December 2006

Retrofit for Support of SBE 39 Battery

Equipment Affected

Most SBE 39s shipped before October 2006.

Notes:

- This Field Service Bulletin does not apply to SBE 39s that have been returned to Sea-Bird for service or repair in October 2006 or later; Sea-Bird has already performed the retrofit for these instruments.
- This Field Service Bulletin does **not apply to the SBE 39-IM**, which has a different design.

Description of Problem

Strong repetitive motions, such as cable strumming or vibrations on a towed net / sled can cause the SBE 39's internal battery to vibrate. In a few cases of severe vibration, the battery movement cracked the PCB, affecting operation of the instrument and resulting in loss of data.

Approximately 3500 SBE 39s have been deployed since the instrument's introduction in 1998; this problem has only been reported in less than one dozen instruments.

Solution

Sea-Bird can provide a battery support retrofit kit, PN 50419. The retrofit holds the battery firmly in place, preventing battery movement due to cable strumming or vibrations:

- SBE 39s with **firmware version 2.0 and higher** - Retrofit is very easy and simply requires slipping a plastic battery support over the battery and attaching the battery support to an existing screw hole in the PCB with a small screw.
- SBE 39s with **firmware version less than 2.0** - Retrofit is slightly more difficult. You must drill the screw hole in the PCB before slipping the plastic battery support over the battery and attaching the battery support to the PCB with a small screw.

See the attached PN 76141B SBE 39 Battery Support Retrofit Kit Documentation for details.

Notes:

- The firmware version is shown on the first line of the SBE 39's status command (**DS**) response.
- Sea-Bird switched to firmware version 2.0 at approximately SBE 39 serial number 1283. However, SBE 39s with serial number less than 1283 but firmware version 2.0 or greater have been retrofitted with a newer PCB when they were at Sea-Bird for service / calibration; this newer PCB already has the screw hole necessary for the battery support installation.

Corrective Action by Sea-Bird

- SBE 39s shipped before October 2006: Sea-Bird will install the battery support in these instruments (at no charge) the next time they are returned to Sea-Bird for calibration or repairs (note that Sea-Bird began to do these retrofits in October 2006). Alternatively, you can request that Sea-Bird send you the battery retrofit kit (at no charge) if you want to do the retrofit yourself before you are able to send it in for calibration or other repairs.
- SBE 39s shipped in October 2006 and later: The battery support is already installed in these instruments.



SBE 39 Temperature Recorder Battery Support Retrofit

P/N 50419 SBE 39 Battery Support Retrofit Kit

| Part Number | Qty | Description |
|--------------------|------------|---------------------------------------------------|
| 233161 | 1 | SBE 39 9V Battery Holder |
| 30123 | 1 | Machine Screw, 4-40 x 1/4" PH, SS |
| 30571 | 1 | O-Ring, Parker 2-124N674-70 |
| 76141B | 1 | SBE 39 Battery Support Retrofit Kit Documentation |

Sea-Bird Electronics Procedure

PROCEDURE NUMBER: 76141

TITLE: SBE 39 Battery Support Retrofit

REVISION: **A**

EFFECTIVE DATE: 04 DEC 06

WRITTEN BY: A.Dean____ PAGE - 1 - of 5

History Log

| Rev Date | Authorized By | Rev | Description of changes |
|-----------|---------------|-----|--------------------------------------------------------------------------------------------------------------------|
| 30 NOV 06 | AD | A | Install new desiccant added to conform to the users manual. Changed language of some steps added metric dimensions |
| 08 JAN 07 | AD | B | Corrected P/N Table |

Scope:

This procedure contains instructions for the installation of the battery support retrofit kit on SBE 39 Temperature Recorders

Precautions:

Some instruments may require that a hole is drilled in one of the electronic boards. If the unit requires drilling use great care to avoid damaging the electronics and/or the board.



If there is not a hole in the board, eye protection is required when drilling the hole.

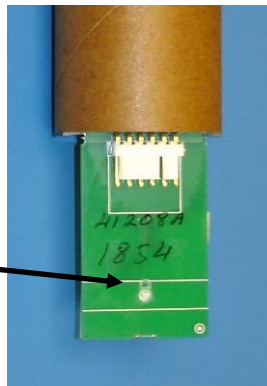
Required Tools and Materials:

| | | |
|--------------------------|--------------|--------------------------------------------------------------------------------|
| #1 Phillips Screw Driver | Drill | #31 drill bit. Can be drilled "oversized" using a 3.1mm drill bit if necessary |
| Machinists rule | Masking Tape | |

Step 1 Open the SBE 39 for battery replacement.

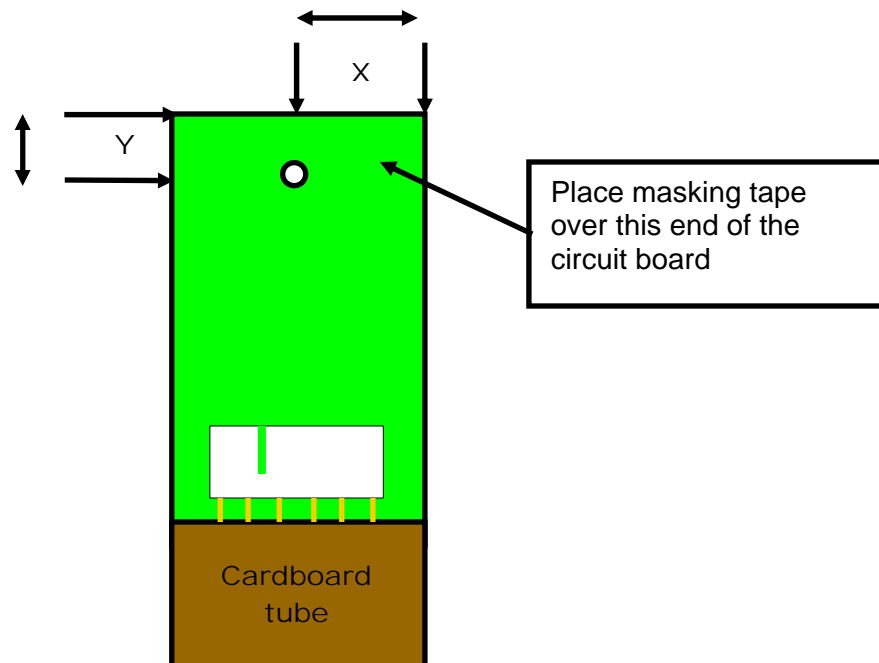
- 1) Follow the directions in the ***SBE 39 Temperature Recorder Users Manual*** for opening the instrument for battery replacement.
- 2) Remove the installed battery
 - a) Remove the rubber band that is holding the battery and desiccant bag in place (Do Not Discard)
 - b) Examine the end of the exposed circuit board and determine if the board has already been drilled.
 - i) If the board does not have a hole drilled in it proceed to step 2
 - ii) If the board already has a hole drilled in it proceed to step 3

Hole in the end of the electronic circuit board. Note that there is a piece of cushion tape on the other side of the board



Step 2 Drilling the hole in the board

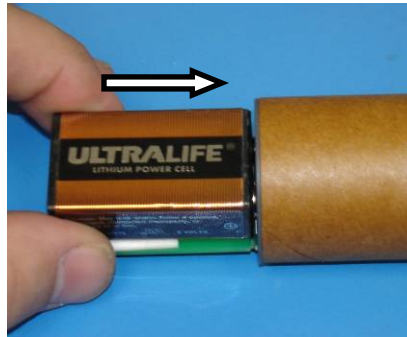
- 1) Place a piece of masking tape over the end of the circuit board
 - a) The tape is used to lay out the drill point and also helps contain the dust particles caused by the drilling.
 - b) Using the machinists ruler mark the board for drilling as shown.
- 2) Drilling the hole in the board.
 - a) Place a #31 drill bit in the drills chuck
 - b) Place a block of wood underneath the end of the board
 - i) The wood is to support the board and to prevent cracking of the board
 - c) Slowly drill through the end of the board at the marked hole location
 - d) Remove the tape and clean the board as necessary



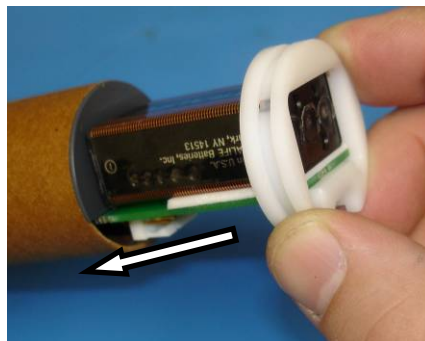
| Layout Dimensions | | |
|-------------------|-----------|----------|
| Axis | Inches | Metric |
| X | .55 Inch | 13.96 mm |
| Y | .375 Inch | 9.52 mm |

Step 3 Install the battery and the battery holder.

- 1) Align the battery polarity and gently press the battery into the battery terminal



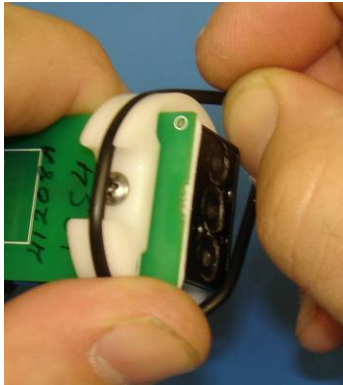
- 2) Place the **new** battery holder over the board and battery.
 - a) Use gentle pressure to start the holder onto the battery
 - b) You may have to pinch the battery to the board slightly to compress the cushion tape glued to the board.
 - c) Slide the battery holder down the battery and board until the hole in the board lines up with the hole in the battery holder



- 3) Install the holder retaining screw.
 - a) Check the alignment of the screw hole and the hole in the board
 - b) Place the screw in the screw hole and tighten the screw with the #1 phillips screwdriver.
 - c) Do not over tighten the screw.
 - i) The tip of the screw **should not** pass all of the way through the hole in the board only approximately half way



- 4) Install the O-Ring on the battery holder.
 - a) **DO NOT LUBRICATE THIS O-RING**
 - b) This O-Ring is used as a bumper to support the battery end of the boardset only



- 5) Install a **new** desiccant bag behind the battery using the rubber band
- 6) Follow the directions in the ***SBE 39 Temperature Recorder Users Manual*** for closing the instrument after battery replacement