SEA-BIRD SCIENTIFIC

Application Note 85

SBE Sea-Bird Electronics

www.seabird.com
+1 425-643-9866
seabird@seabird.com

Handling of Ferrite Core on Instruments with Inductive Modem Telemetry

(Revised May 2016)

This Application Note applies to instruments and accessories that include a cable coupler for inductive modem telemetry:

- SBE 16*plus*-IM and 16*plus*-IM V2 SeaCAT C-T (optional pressure) Recorder
- SBE 37-IM MicroCAT C-T (optional pressure) Recorder
- SBE 37-IMP MicroCAT C-T (optional pressure) Recorder
- SBE 37-IMP-IDO MicroCAT C-T-DO (optional pressure) Recorder (membrane-type DO)
- SBE 37-IMP-ODO MicroCAT C-T-DO (optional pressure) Recorder (optical DO)
- SBE 39-IM and 39*plus*-IM Temperature (optional pressure) Recorder
- SBE 44 Underwater Inductive Modem
- Inductive Cable Coupler (ICC) – clamps to the jacketed mooring wire, and makes electrical connection with the Surface Inductive Modem (SIM) or Inductive Modem Module (IMM) via a cable housed in reinforced-rubber conduit.

The ferrite modem core in these instruments and accessories is fragile, and must be handled with care. If you are having problems with inductive modem communications, check the core for misalignment or damage as follows.

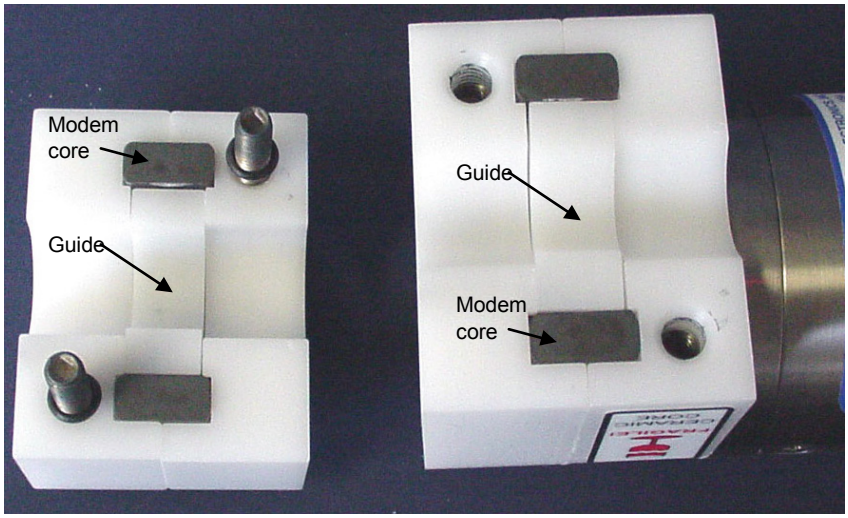
***Note**:* All photos are for an SBE 37-IMP, except as noted. Details are similar for all instruments included in this application note, except as noted.

1. Open the mounting bracket by unthreading the large hex-head bolts.

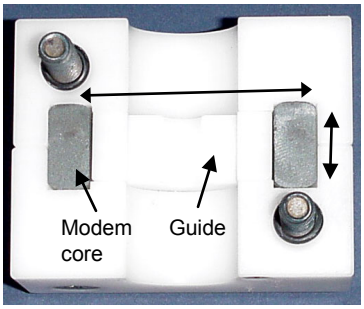
Unthread 2 hex head bolts (Note: ICC has 4 bolts)

Mounting guide / Inductive Modem Coupler Detail
Guide is sized ***slightly*** bigger than specified cable diameter, to allow cable to pass through freely but limit vibration of instrument on cable

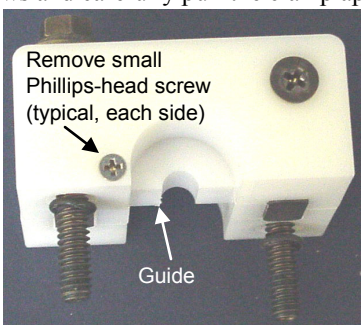
For proper communications, 2 halves of modem coupling toroid core must mate, with no gaps



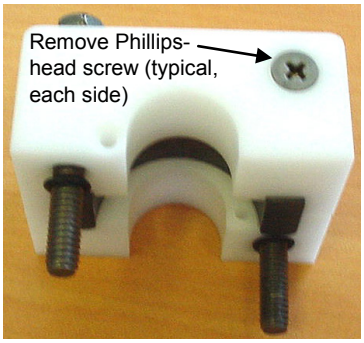
2. On the ***clamp*** side:
   A. Verify that the core provides a level surface for mating with the *instrument* side.
   B. Remove the two small Phillips-head screws securing the guide, and remove the guide.
   C. Remove the 2 larger Phillip-head screws and carefully pull the clamp apart.



Step 2A: Check that core is level in both directions shown

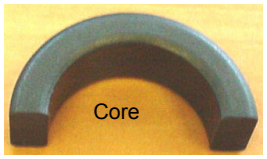


Step 2B: Remove guide



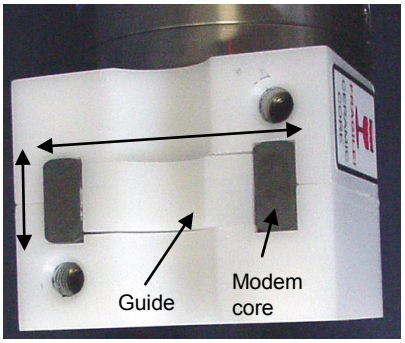
Step 2C: Pull clamp apart

   D. Examine the ferrite core for cracks or chips; replace if necessary.
   E. Reinstall the ferrite core in the two plastic pieces of the clamp, using the 2 Phillips-head screws, being careful to provide a level surface for mating with the *instrument* side.
   F. Reinstall the guide, using the 2 small Phillips-head screws.

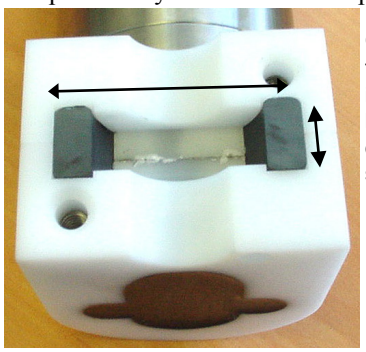


Step 2D: Examine core

3. On the ***instrument*** side:
   A. Verify that the core provides a level surface for mating with the *clamp* side.
   B. Remove the two small Phillips-head screws securing the guide, and remove the guide (similar to Step 2B).
   C. (SBE 16*plus*-IM, 16*plus*-IM V2, 37-IM, 37-IMP, 37-IMP-IDO, 37-IMP-ODO, 39-IM, 39*plus*-IM, and 44) The core cannot be removed for a complete inspection, because it is surrounded by potting compound. Inspect the visual portions of the core for damage; if damaged, the entire end cap assembly will have to be replaced at Sea-Bird.



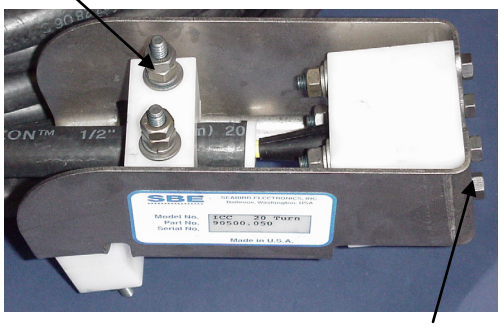
Step 3A: Check that core is level in both directions shown



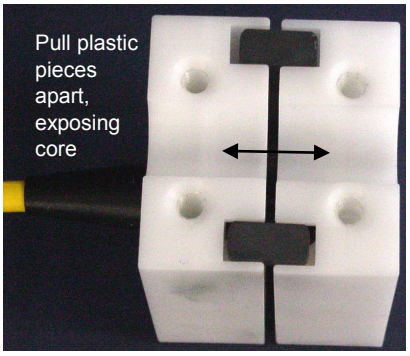
Step 3C: Examine visual portions of core

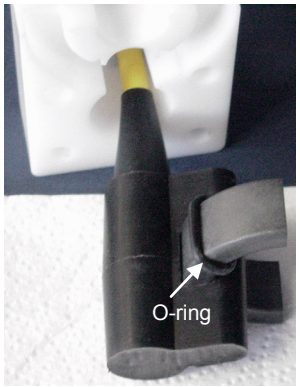
   D. (Inductive Cable Coupler) Remove the core as shown in the photos below. Examine the ferrite core for cracks or chips; replace if necessary. Reinstall the core, plastic, screws, etc.

Details for ICC Only



Remove 4 hex head screws with 2 washers and 1 nut each; pull off bracket attaching to metal frame



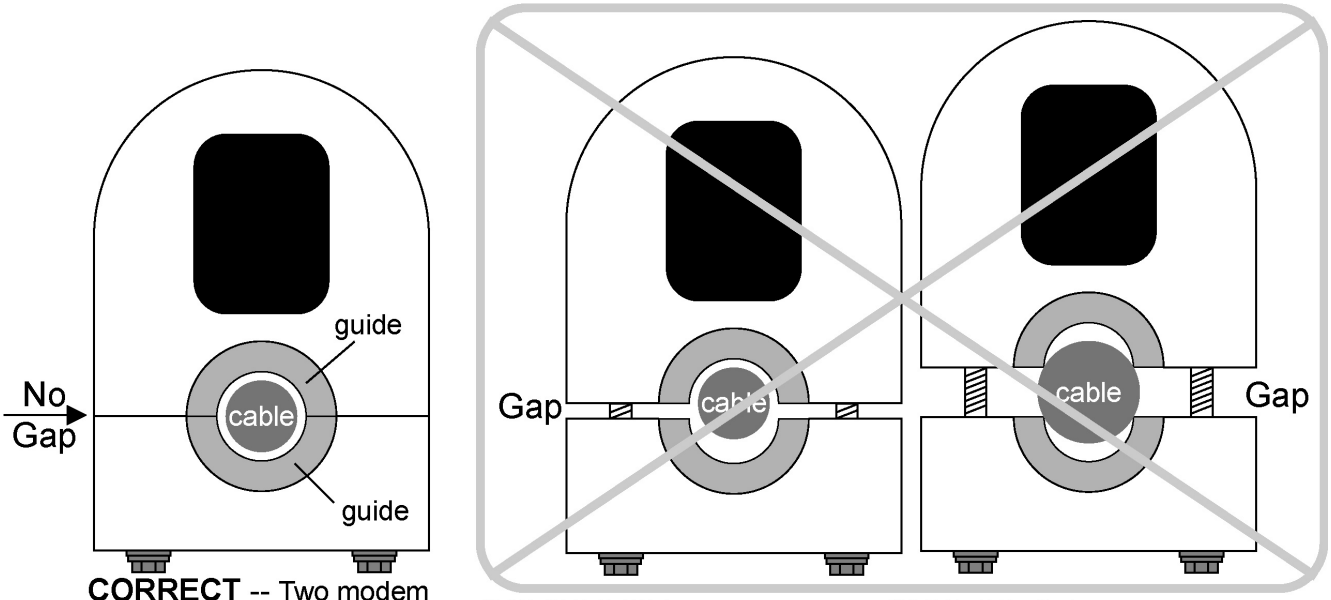


Remove o-rings from core, and slide core out of support

   E. Reinstall the guide, using the 2 small Phillips-head screws.

When installing the instrument or Inductive Cable Coupler on the cable, note the following:

Cable guide and clamp are sized at Sea-Bird to match cable size specified in your order.
If you will be using a different cable size, contact Sea-Bird to order new guide and clamp.



CORRECT -- Two modem halves mating closely (< 0.1 mm gap). Note that guide does not clamp cable.

INCORRECT -- Bolts not tightened completely, creating gap between modem halves. Hand-tighten bolts until snug.

INCORRECT -- Guide hole too small for cable, creating gap between modem halves. May damage cable or modem if over-tightened.

Application Note Revision History

Date	Description
December 2006	Initial release.
April 2008	Add information on SBE 16*plus*-IM V2.
October 2010	• Add information on SBE 37-IMP-IDO. • Update address.
October 2012	• Add information on SBE 37-IMP-ODO.
May 2016	• Add information on SBE 39*plus*-IM.