



Sea-Bird Electronics, Inc.  
 13431 NE 20<sup>th</sup> Street  
 Bellevue, WA 98005  
 USA

Phone: (425) 643-9866  
 Fax: (425) 643-9954  
 E-mail: seabird@seabird.com  
 Web: www.seabird.com

## APPLICATION NOTE NO. 85

revised October 2012

### Handling of Ferrite Core on Instruments with Inductive Modem Telemetry

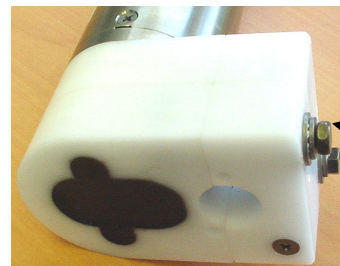
This Application Note applies to instruments and accessories that include a cable coupler for inductive modem telemetry:

- 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 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.

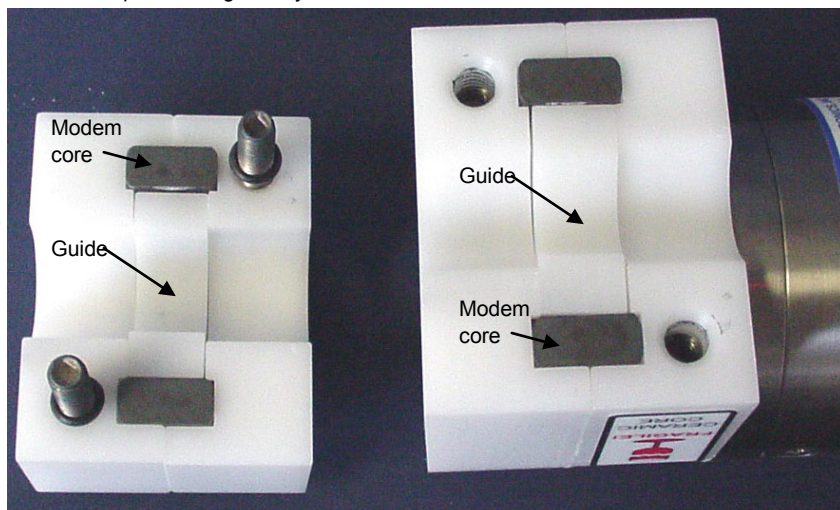


Unthread  
2 hex  
head  
bolts  
(Note:  
ICC has  
4 bolts)

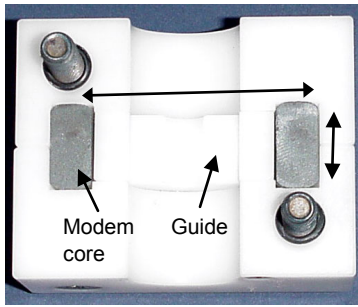
#### Mounting guide / Inductive Modem Coupler Detail

Guide is sized *slightly* bigger than specified cable diameter, to allow cable to pass through freely but limit vibration of instrument on cable

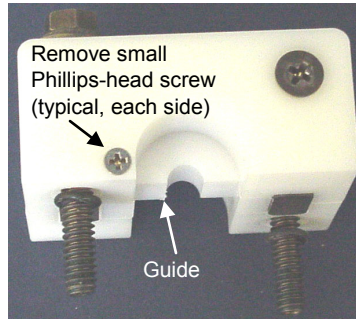
For proper communications, 2 halves of modem coupling toroid core must mate, with no gaps



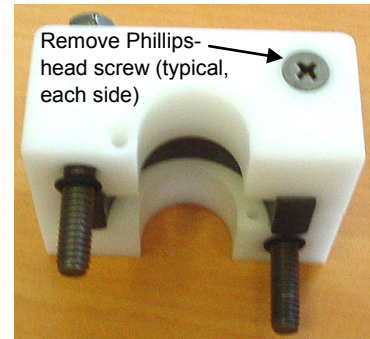
2. On the *clamp* side:
  - A. Verify that the core provides a level surface for mating with the *instrument* side.
  - B. Remove the two small Phillips-head screws securing the guide, and remove the guide.
  - C. Remove the 2 larger Phillips-head screws and carefully pull the clamp apart.



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

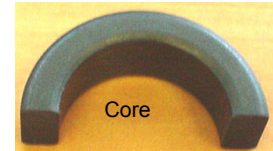


Step 2B: Remove guide



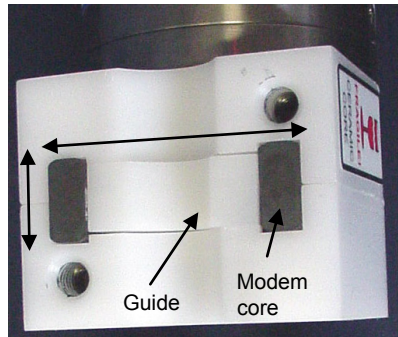
Step 2C: Pull clamp apart

- 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.

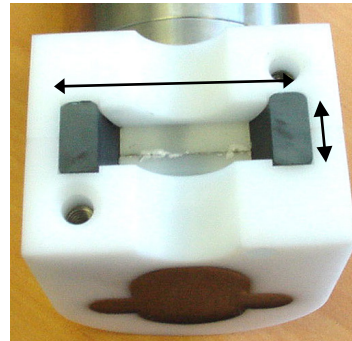


Step 2D: Examine core

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, 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

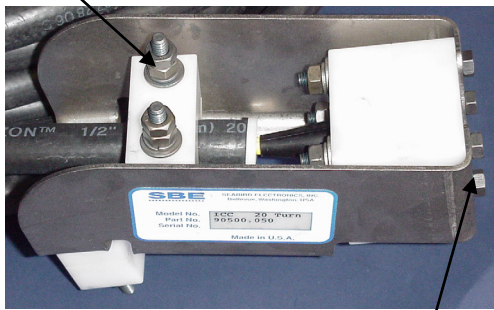


Step 3C: Examine visual portions of core

Check that core is level in both directions shown

- 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.

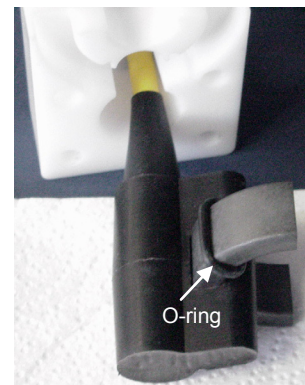
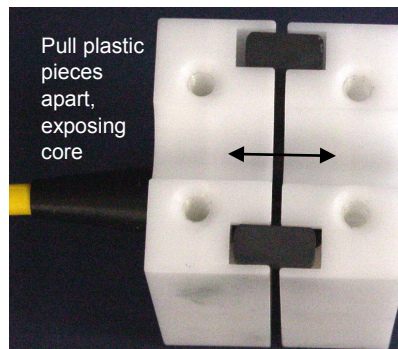
Remove 2 hex head screws with 2 washers and 2 nuts each; pull off bracket attaching cable to metal frame



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

#### Details for ICC Only

Pull plastic pieces apart, exposing core

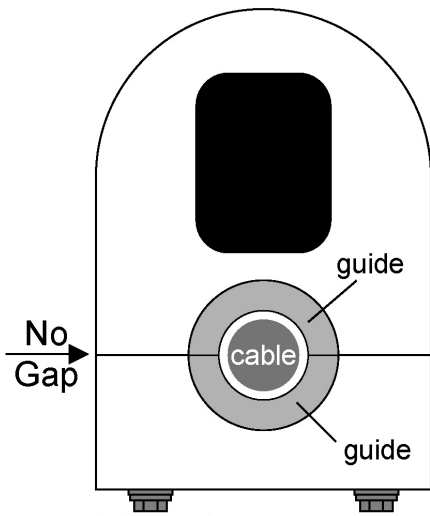


Remove o-rings from core, and slide core out of support

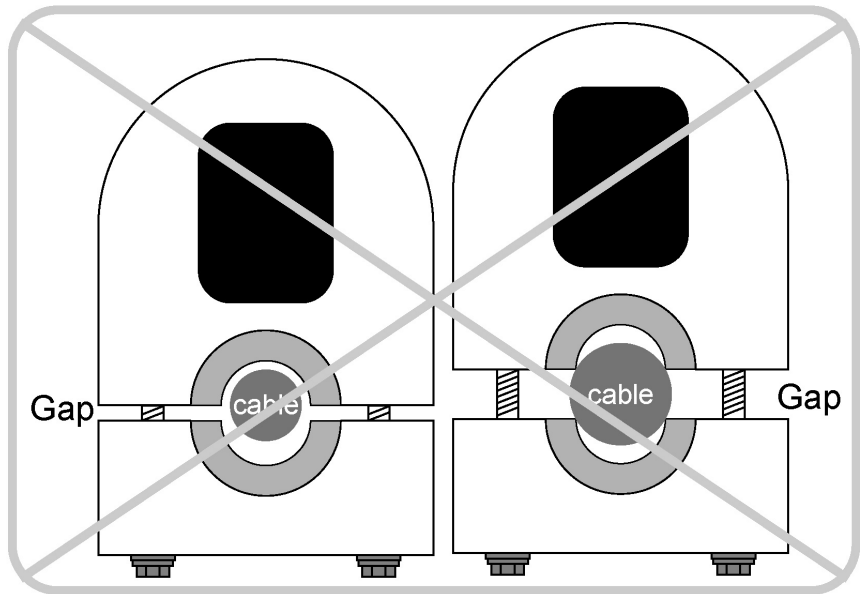
- E. Reinstall the guide, using the 2 small Phillips-head screws.

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

<b>Date</b>	<b>Description</b>
December 2006	Initial release.
April 2008	Add SBE 16 <i>plus</i> -IM V2.
October 2010	<ul style="list-style-type: none"><li data-bbox="370 296 667 323">• Add SBE 37-IMP-IDO.</li><li data-bbox="370 327 586 354">• Update address.</li></ul>
October 2012	<ul style="list-style-type: none"><li data-bbox="370 363 678 390">• Add SBE 37-IMP-ODO.</li></ul>