

# INDUCTIVE MODEM TERMINATION OPTIONS

(LEGACY) Technical Note

A WW with autonomously logging sensor package uses the profiling wire solely for its mechanical purposes. However, if real time data is required, the conductive wire also acts like an electrical cable that sends data up to a telemetry system in the surface buoy. Here, we will address some of the nuances associated with using the jacketed wire rope in inductive telemetry scenarios; including, how to assemble the top side inductive assemblies.

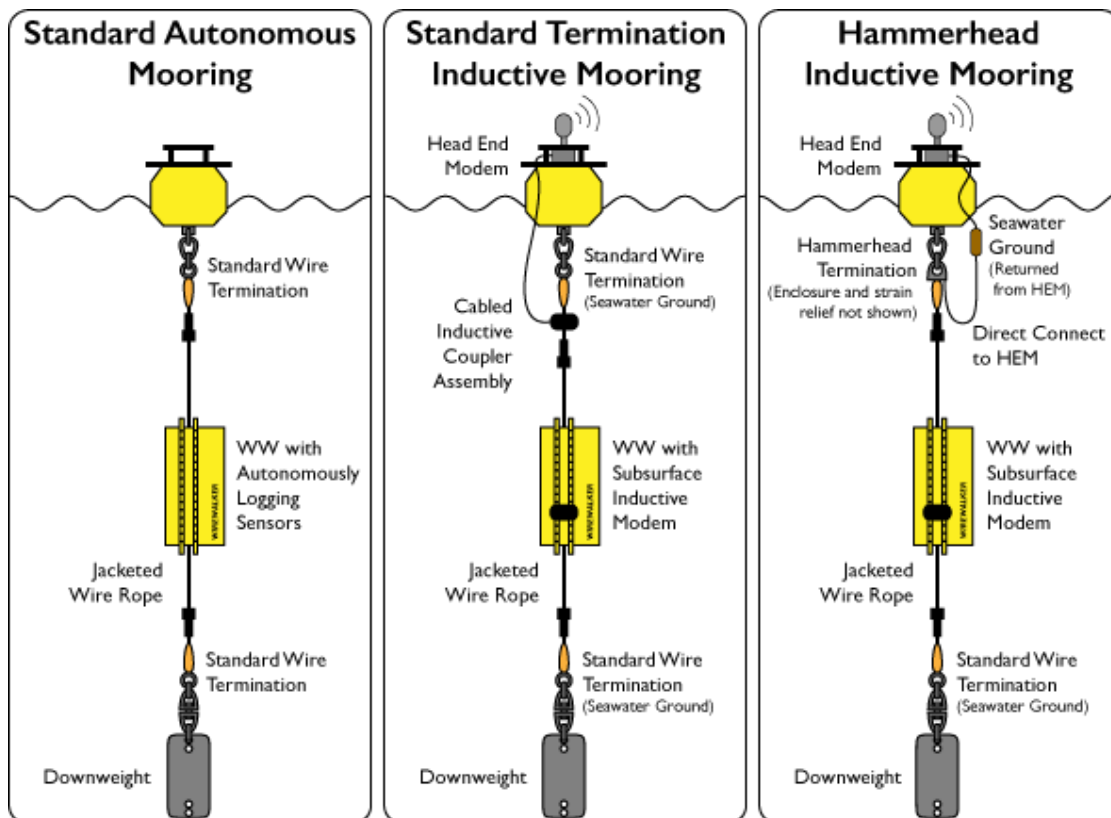
First, it is important to determine which type of terminations are ideal for your application and inductive telemetry hardware. There are two primary types of terminations used: standard or hammerhead.



Standard terminations are primarily used in autonomously logging deployments; however, as indicated in the mooring cartoons below, they can also be used when a cabled inductive coupler assembly (i.e. cabled ferrite holder) is clamped onto the wire below the termination. In this case, the terminations themselves act as the seawater ground. While nice in simplicity, this method complicates the connection to the buoy and is generally not as robust as the hammerhead connection.

A hammerhead termination gets its name from its shape, and often connects directly to a head end modem. In the case of a "direct connect" inductive coupling, the termination cannot act as a seawater ground as there is a jumper wire that, in essence, directly connects the wire into the modem itself. Since a seawater ground is still required, a seawater ground return is typically passed back into the water to an exposed anode. This method of inductive coupling is very robust and becoming standard practice on extreme weather and long term moorings.

The mooring cartoons below provide a visualization of the differences and similarities of these options. The following guides provide further detail and a step-by-step explanation of the procedures for assembling the inductive connections. We also suggest checking our [youtube](#) channel for video tutorials.



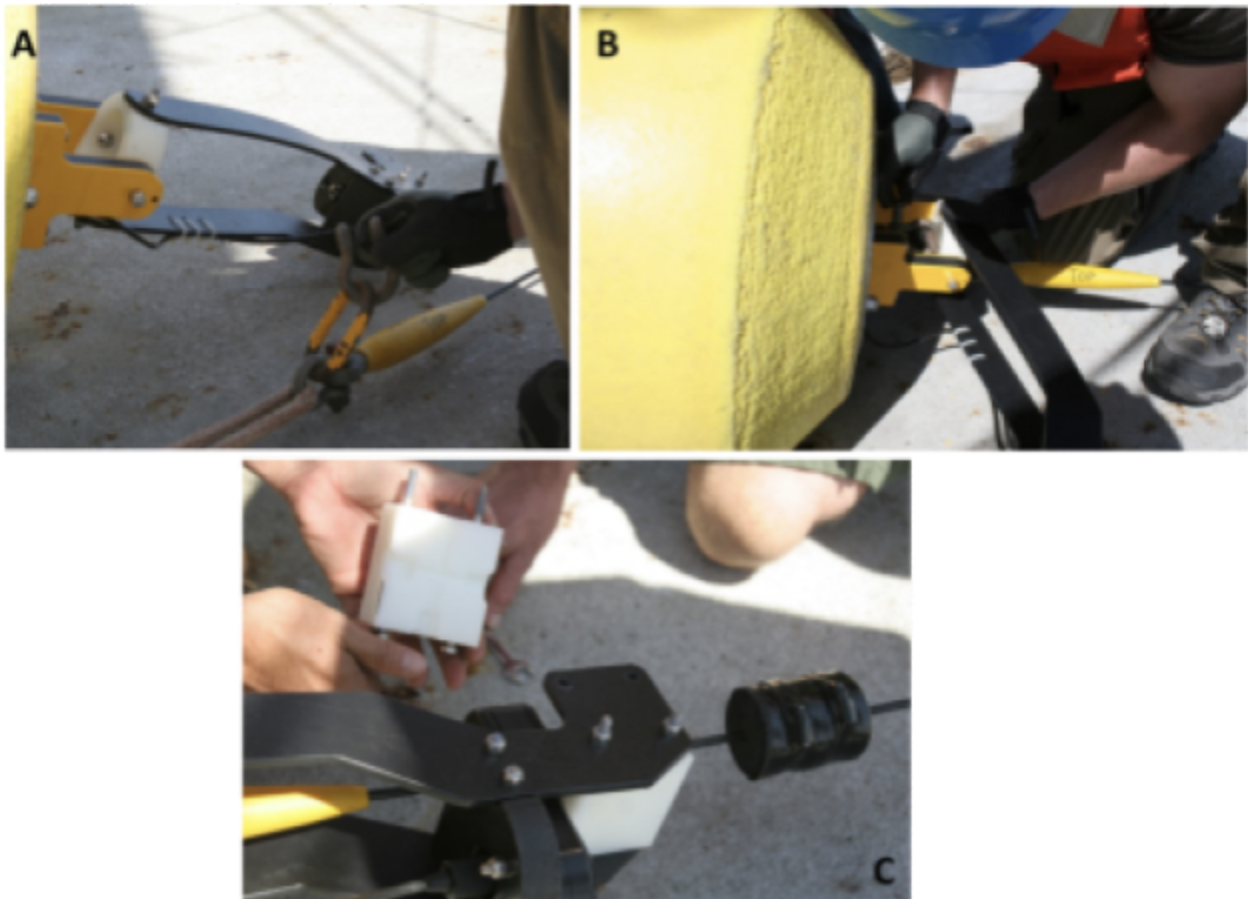
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## STANDARD TERMINATION ASSEMBLY GUIDE

- No special assembly of the jacketed profiling wire is necessary with this configuration. However, the surface buoy utilizes a flexible arm to maintain a robust connection to the subsurface modem which requires some additional assembly.
- Remove half of the block under the side of the subsurface modem that opens.
- Pass the shackle assembly and wire termination through the gimballed ring, and attach the shackle to the surface buoy.
- Open the modem's ferrite holder, insert wire, and close around the wire. The ferrite holder must be between the termination boot and the turnaround stop.
- Install the arm's half block, clamping the wire under the modem, and between the termination boot and turnaround stop.
- Upon recovery, remove the half block, remove the wire from the ferrite holder (don't leave the ferrite holder open), and remove the shackle to the buoy, in that order.

It should be noted that a swivel under the buoy is not require



*Connecting the wire to the surface float - (A) Shackle to connect to the surface float; (B) Shackle is connected through the center channel; (C) Connect the cable to the surface modem and lock the cable into place.*

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## HAMMERHEAD TERMINATION ASSEMBLY GUIDE

- Locate and layout the hammerhead and cover components.
- Wrap a small piece of electrical tape at the base of the hammerhead jumper connection and insert into the hammerhead. This better seals that connection from introducing a seawater ground.
- Tighten the set screws on the hammerhead to secure the jumper pin.
- Prep the HH cover by installing the bolts on one side of the cover. Lay on a surface with bolts facing up.
- Coat the hammerhead (and jumper plug interface) with Lanocote to further isolate it from acting as a seawater ground.
- Place HH in the cover with the jumper protruding through the appropriate hole and attach the fasteners. Tighten appropriately.
- Prep the HH strain relief by installing the bolts on one side and install the bottom of the jumper clamps.
- Lay the HH assembly onto the strain relief cover with jumper passing over the jumper clamp.
- Add the top half of the jump clamps.
- Add the top of the strain relief and attach fasteners, tighten appropriately.
- On the surface buoy, route the inductive modem cable through the buoy.
- Connect the brass seawater ground to the modem cable
- Sandwich the seawater ground and modem cable with the dogbone assembly and tighten bolts. The middle section should be over the seawater ground.
- Connect the HH shackle assembly to the surface buoy.
- The wire jumper can now be connected to the seawater ground and clamped in place by the lower clamp on the dogbone.
- For retrieval, these last two steps are all that are required to remove the wire from the buoy.

The final assembly should look like the bottom image in the photo panel to the right. Note that there is no swivel under the buoy.

