



# **Overboard Recovery Communications Apparatus (ORCA<sup>®</sup>) Direction Finder Data Cable Installation Guide (Bridge)**



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## 1. Introduction

This document is provided as a guide when installing or replacing the ORCA® DF data cable (2XO-6). The installation notes provided herein are intended to serve as a guide only. They do not serve as material required for the certification of technicians for the installation, repair or alteration of the ORCA® system.

## 2. Materials Supplied:

- 2XO-6 MOBI data cable with waterproof female DB9 connector
- 1 DB9 male connector
- 1 DB9 hood assembly
- Heat shrink - 1.5"x6"
- Heat shrink - .75"x6"
- Heat shrink - .5" x6"
- Heat shrink tubing (labeling)

## 3. Data Cable Removal (as applicable)

- a. Remove existing data cable connectors from DF display and antenna. In order to remove DB9 connector from antenna, the DF array/base must be removed from the DF mast.

- i. Remove set screw(s) used to secure the DF array/base to the DF mast (see figure 1) and set aside in a safe location. These screws will be used to secure antenna to foundation when complete.
- ii. Use flathead jewelers screwdriver to remove DB9 connector from array.
- iii. DB9 Waterproof Gasket: If replacing cable on a DF-100 antenna, save DB9 waterproof gasket and set aside in a safe location. If replacing cable on a DF-101

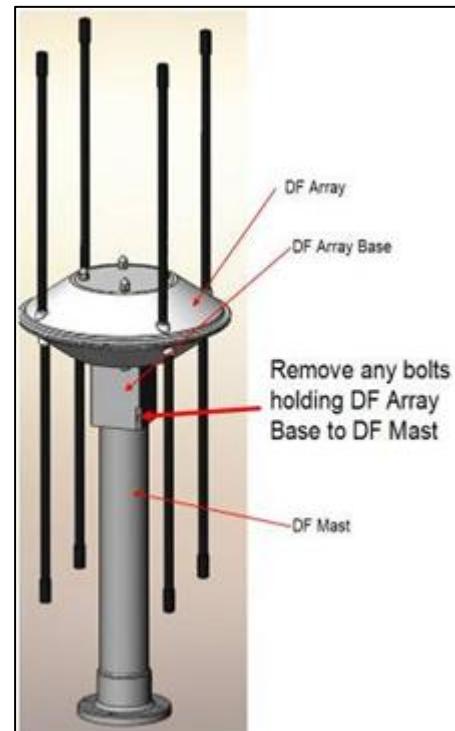
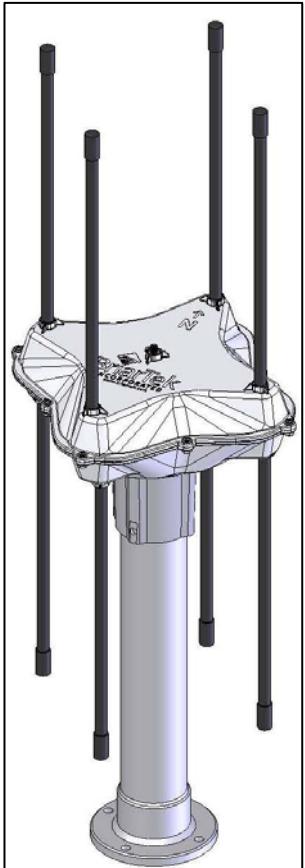
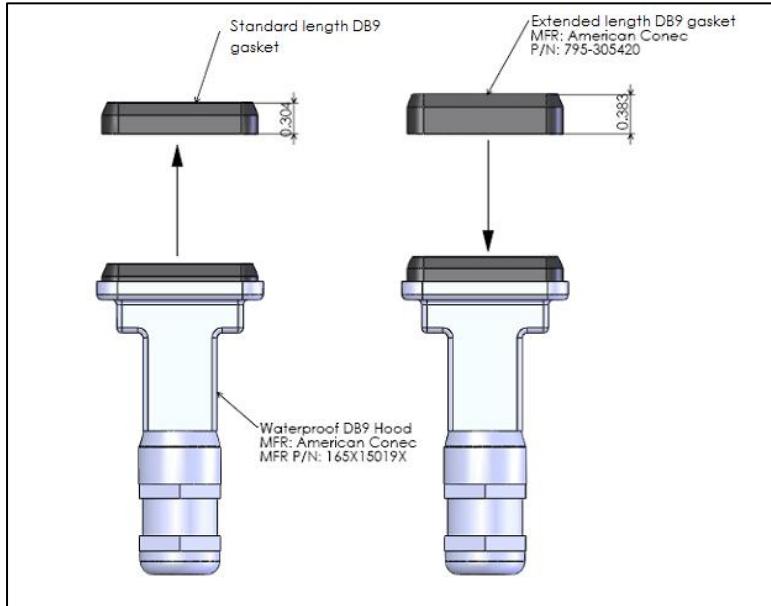


Figure 1: Set screws on DF-100 antenna

antenna (see figure 2), an extended length gasket is required. A replacement extended length gasket is provided in the cable kit. See figure 3 for gasket specifications.



**Figure 2**



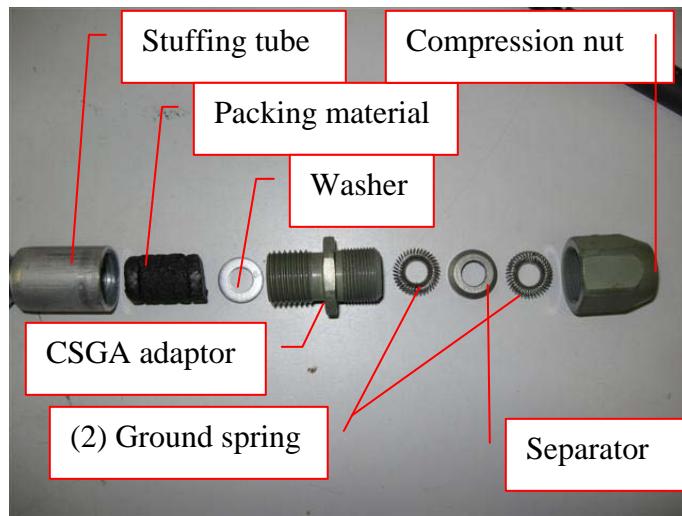
**Figure 3**

- b. Cut DB9 connector from antenna end of cable run to facilitate removal of existing data cable.
- c. Remove existing data cable run. Set aside bulkhead Cable Shield Grounding Assembly (CSGA) fitting, including packing material, for use when installing new cable.

#### 4. New Cable Installation

- a. New data cable is provided with the DB9 waterproof hood and connector attached on one end. Connect this end to the antenna.
- b. Slide heat shrink over unterminated cable end. If applicable, feed cable through CSGA fitting components (see figure 4).
- c. Prepare CSGA fitting (if applicable)
  - i. Ground cable to CSGA fitting.
    1. **Note: before cutting cable, be sure to leave enough slack in the cable to remove and replace the antenna array.** Cut and remove 1" of vinyl jacket. This should be accomplished with a razor knife with an adjustable depth to avoid damage to the wires.
    2. Apply anti-seize to exposed braided shield
    - ii. Insert packing material in stuffing tube.

- iii. Slide washer on top of packing material.
- iv. Insert CSGA adaptor into stuffing tube and tighten using crescent wrench.



**Figure 4**

- v. Slide ground springs and separator over exposed braided cable shield and position to the base of the CSGA adaptor. See figure 5.



**Figure 5**

- vi. Apply anti-seize to the CSGA adaptor's threads and tighten compression nut to 300 in/lbs.
- d. Apply heat shrink to stuffing tube
  - i. Slide 0.5" diameter heat shrink tube to the base of the CSGA compression nut (if installed) see figure 6. If CSGA fitting is

not installed, slide heat shrink tube to the base of the stuffing tube.



Figure 6

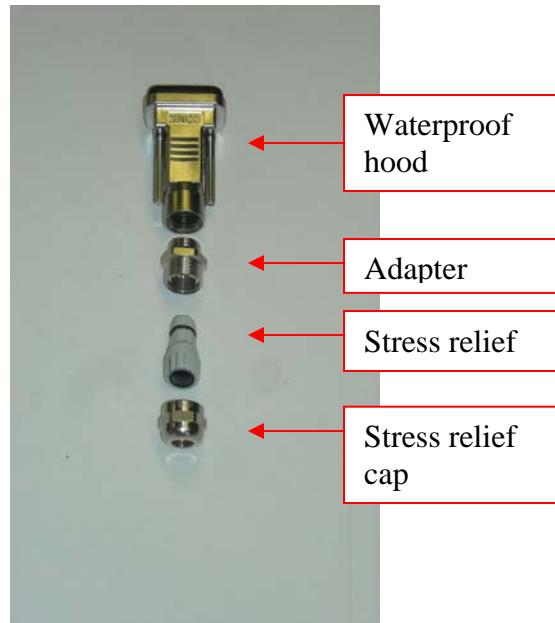
- ii. Apply heat evenly to entire tube using a 750-watt heat gun. Ensure adhesive seals around the perimeter of the tube and onto the cable.
- iii. Repeat process with 0.75" diameter heat shrink tubing
- iv. Slide 1.5" diameter heat shrink tubing such that it covers at least 2" of the stuffing tube, the CSGA assembly (if installed) and 2" of the 0.75" diameter heat shrink tubing.
- v. Apply heat evenly to entire tube using a 750-watt heat gun. Ensure adhesive seals around the perimeter of the tube and onto the stuffing tube and



Figure 8

the smaller heat shrink tube. See figure 8.

- e. Continue with remaining cable run. Measure cable to fit and cut excess. Ensure that enough slack remains for connector termination on DF display end.
- f. Slide DB9 hood assembly over unterminated end of 2XO-6 cable. The hood assembly includes a strain relief cap, strain relief, adaptor and waterproof hood body w/ gasket. See figure 9



**Figure 9**

- g. Fabricate the DB9 connector
  - i. Remove 1.5" of the cable's jacket. Do not cut the cable's shield. See Figure 10.



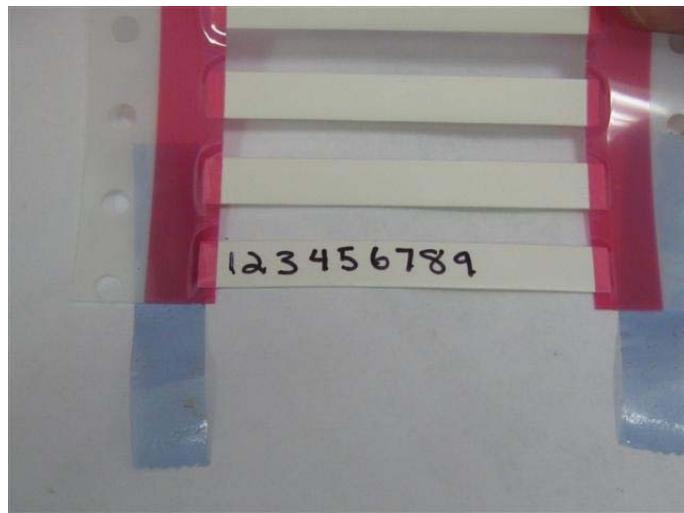
**Figure 10**

- ii. Fan out the cable's shield. Be sure braid is completely fanned out down to cable jacket. Remove plastic wrap and separate the leads inside the cable. See Figure 11.



**Figure 11**

- iii. Using the supplied heat shrink tubing, write 1-9 and cut each number from the heat shrink. See Figure 12.



**Figure 12**

- iv. Install heat shrink tubing over conductors in accordance with Table 1. Use a heat gun to shrink the tubing. See figure 13.

**TABLE 1**

serial cable conductor	heat shrink label	d-sub pin hole
Black - 1	1	1
Black - 2	2	2
Black - 3	3	3
Black - 4	4	4
Black - 5	5	5
Black - 6	not used	
White - 1	6	6
White - 2	7	7
White - 3	8	8
White - 4	9	9
White - 5	not used	
White - 6	not used	

**Figure 13**

- v. Strip individual conductors to expose 1/8" of the wire and crimp the DB-9 pins (supplied) onto the conductors. See Figure 14.



**Figure 14**

- vi. Insert black leads 1-5 into DB-9 slots 1-5. Insert white leads 1-4 into DB-9 slots 6-9. See Table 1 and Figure 15.



**Figure 15**

- vii. Lightly tape shield to outside of jacket (This tape will be removed later). Slide waterproof hood over taped shield.



**Figure 16**

- viii. Place installation key between waterproof hood and DB9 male connector and gently pry the hood while pushing the DB9 into the slot. See figure 17.



**Figure 17**

- ix. Place the assembly key between the opposite side of the waterproof hood and DB9 male connector and gently pry the hood while pushing the DB9 male connector into the slot.

- x. Remove assembly key and verify DB9 male connector is inside both slots. See figure 18.



**Figure 18**

- xi. Screw the waterproof hood adapter onto the hood.
- xii. Remove tape attaching shield to cable jacket.
- xiii. Snip off excess shield flush with the bottom of the adapter.  
See figure 19.



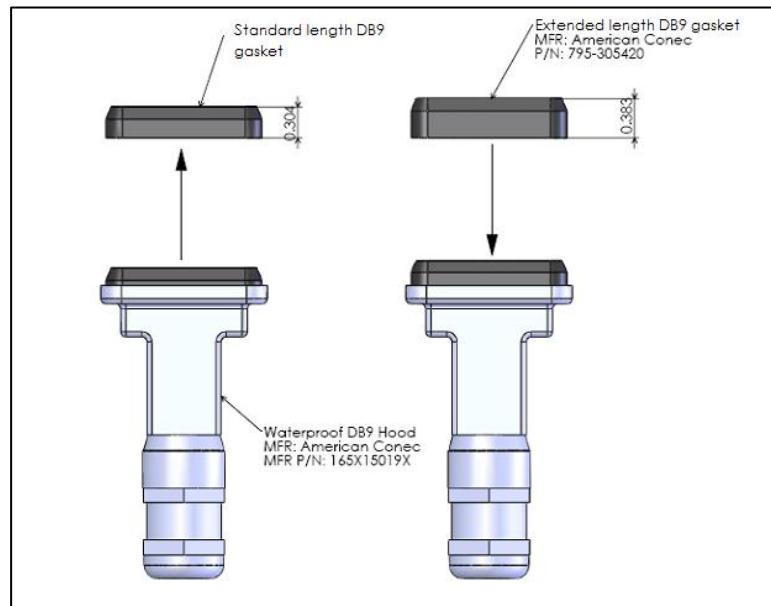
**Figure 19**

- xiv. Slide the strain relief into the adapter. See figure 20. Ensure cable shield makes contact with the inside wall of the hood & adapter.



**Figure 20**

- xv. Screw the strain relief cap to the waterproof hood. Ensure strain relief is snug against the cable.
- xvi. Using voltmeter, test for continuity at each pin including ground. Ensure all ring. If all ring, connect DB9 connectors to display and antenna
- xvii. Install waterproof gasket on waterproof DB9 hoods (see figure 22)
- xviii. If connecting to the DF100, use 8mm gasket
- xix. If connecting to the DF101, use 10mm gasket



**Figure 22**

- h. Connect DB9 connectors at display and antenna.
5. Perform system operational verification test (SOVT):
  - i. Turn on power at breaker.
  - ii. Press power button on DF display
  - iii. Activate MOBI transmitter
  - iv. When signal is detected by direction finder, bearing indicator LED(s) will illuminate on display. Ensure illuminated bearing indicator LED correlates with actual bearing. Move transmitter to different bearing and ensure correlation again.
  - v. Deactivate transmitter
6. For additional assistance, please contact BriarTek at 703-548-7892 or through our website at [www.briartek.com](http://www.briartek.com).

Notes: