



**Overboard Recovery
Communications Apparatus
(ORCA[®])
TX-104 User's Guide**



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Introduction

ORCA[®] is a personal saltwater or manual-activated man overboard (MOB) alarm system developed by BriarTek Inc. The system is utilized by the U.S. Navy and other mariners to aid in the rescue of an MOB victim. The ORCA[®] system operates on 121.5 MHz and includes a transmitter, receiver, and direction finder. When the transmitter is activated, it emits a signal which is processed by the receiver. The receiver emits an audible alarm and displays the ship type/hull # and serial number of the transmitter on the receiver LCD. The transmitter also emits a signal that is received by the direction finder and other standard search and rescue (SAR) equipment to locate the MOB.

Parts Overview (figure 1)

- A - Antenna
- B - Manual activation/deactivation recess
- C - Water sensors
- D - Distress marker light (DML)
- E - Battery door
- F - Antenna tip holder

Modes

The TX104 has three modes:

- ◆ ARMED - Each transmitter is ARMED after a 3 volt CR123 lithium battery is correctly installed.
- ◆ TRANSMIT - The transmitter goes from ARMED to TRANSMIT mode when it is automatically activated by submerging it in saltwater for a minimum of 3 seconds or when it is manually activated. *Note: the transmitter can be factory-programmed to be automatically activated in freshwater.* After the transmitter is activated, it emits an FM signal for approximately 1 minute. This sends the transmitter identification to the receiver. After approximately 1 minute, the transmitter switches to a non-data FM transmission for 40 seconds. This allows the DF to track the transmitter. After every 40 second non-data transmission, the unit transmits identification information to the receiver for 9-15 seconds.
- ◆ DISABLED - The transmitter is DISABLED when the battery is removed or the battery runs out.

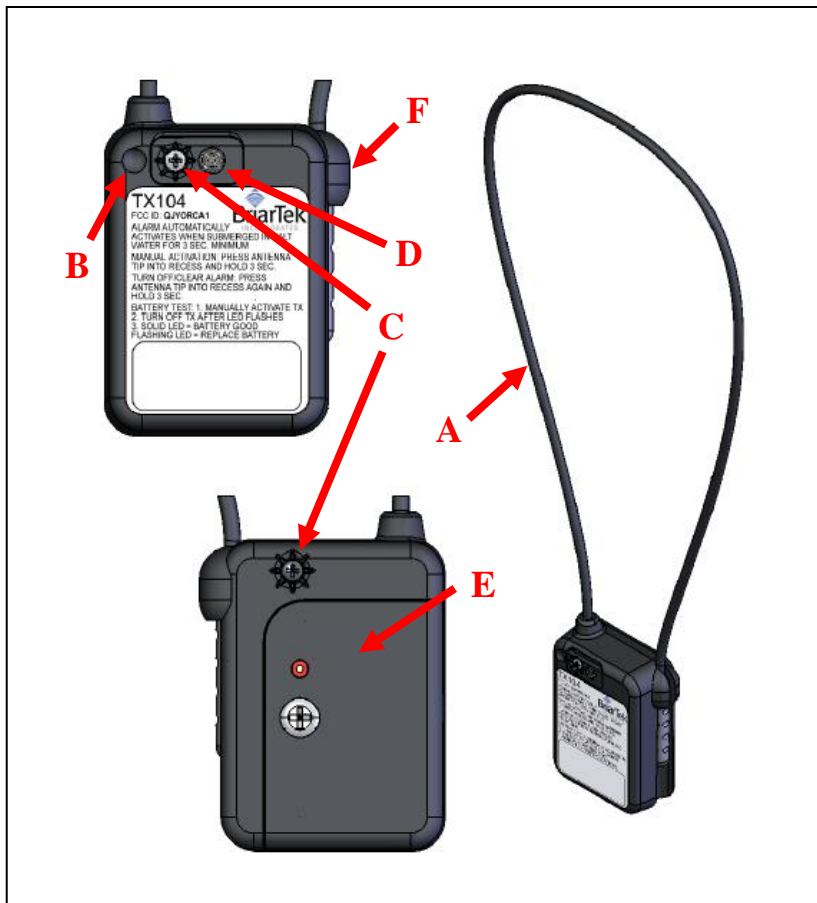


Figure 1: TX104 parts

Operating Instructions

Manual activation:

Option 1: Remove antenna tip (A) from holder and press the antenna tip into the manual activation/ deactivation recess (B) on the face of the transmitter for 3 seconds until the DML begins flashing rapidly. See figure 2.

Option 2: If transmitter is being worn in the blue nylon pouch provided (see figure 3), release the securing strap and align the embedded magnet with the round recess for 3 seconds until the DML begins flashing rapidly.

After the distress marker light begins flashing, remove antenna tip / embedded magnet. Approximately 3-5 seconds after DML begins flashing, the transmitter will begin transmitting.

Automatic activation: The transmitter will activate when the water sensors are submerged in saltwater for at least 3 seconds.

All Clear (deactivate transmitter): When the MOB is recovered, align the antenna tip / embedded magnet with the manual activation/ deactivation recess. This sends an ALL CLEAR message to the receiver and returns the transmitter to the ARMED mode.

Wearing the transmitter

THE TRANSMITTER MUST BE WORN SO THAT THE WATER SENSORS ARE UNDER WATER AND WET AND THE ANTENNA IS ABOVE THE WATER SURFACE WHEN THE PERSON IS FLOATING. The transmitter can be attached to a PFD using the pouch provided by the manufacturer (figures 3 and 4) with the antenna attached to the collar using a lanyard clip. In addition, the transmitter has been designed to be worn around the neck. See figure 5. This affords the best opportunity for the signal to be received in a man overboard event if the MOB is not wearing a PFD.



Figure 2: Manual activation/deactivation



Figure 3: Nylon Pouch (front)



Secure to
body by
feeding belt
or strap
through loop

Figure 4: Nylon pouch (back)



Figure 5: TX104 worn around neck

Battery Lifespan—TX104 has very low current consumption. It is recommended that the battery should be replaced once a year and sooner if the TX104 has been activated for more than occasional testing. When the TX104 is in TRANSMIT mode, a new battery will last approximately 24 hours.

Use the following steps to test the battery strength:

1. Activate the unit using option 1 or 2 in Operating Instructions.
2. As soon as the distress marker light begins to flash rapidly, remove antenna tip / embedded magnet.
3. Once more, align antenna tip / embedded magnet with the manual activation/deactivation recess.
4. If the light turns on and remains on solid for approximately 5 seconds, the battery is useable. If the light flashes on and off for 5 seconds, the battery is not useable and must be replaced.

Use the following steps to replace battery:

1. Using a #1 size Phillips head screwdriver, unscrew the crosshead screw on the battery door. See figure 6 on following page.
2. Remove battery door.
3. Remove used battery.
4. Insert new 3 volt CR123 lithium battery according to polarity diagram on the inside of the battery door. See figure 7 on following page.
5. Replace battery door. Grasping screwdriver with thumb and forefinger, screw down the battery door to 45 in/oz. **Caution: Do not over tighten!**



Figure 6: Remove battery door



Figure 7: Insert new battery

Specifications

- ◆ Size: length = 2.4 inches (6.1 cm) x width = 1.7 inches (4.3 cm) x depth = 0.8 inches (2.0 cm)
- ◆ Weight: 2.5 oz. (70.9 g)
- ◆ Power: 100 mW
- ◆ Tracking Range: 2 NM from small craft, 5 NM from ship, 20 NM or greater from aircraft
- ◆ Alerting Range: 1 NM to receiver
- ◆ Power Source: One (1) 3 volt CR123 lithium battery
- ◆ Battery Life: One year (Armed mode); 24 hours continuous once activated (Transmit mode)
- ◆ Activation: manual or saltwater
- ◆ Current Draw: Armed 15 uA; Transmit (high power): 185mA; Transmit (low power): 80mA
- ◆ Modulation Frequency: 121.5 MHz
- ◆ 25.5 inch (64.75 cm) external antenna with strain relief (the length can be modified based on user needs)
- ◆ Operating Temperature -20° C (-4° F) to +70° C (158° F)
- ◆ Storage Temperature -40° C (-40° F) to +85° C (185 ° F)



Figure 8: TX104 dimensions

Warranty

BriarTek will provide a one-year warranty on the ORCA[®] system following the date of original purchase.

If a component fails to function properly during its warranty period (one year), the manufacturer will proceed according to its warranty as follows:

BriarTek Inc. guarantees each product it distributes to be free from defective materials and workmanship and agrees to remedy any such defect, or to furnish a new or equal part in exchange (at its option) for a period of one year from the date the component is purchased. For an exchange of the product, please contact BriarTek at 703-548-7892 or on the web at www.briartek.com and a customer service representative will provide the necessary instructions.

This warranty is void if:

- ◆ any component has been subject to misuse or improper installation by a non-BriarTek employee or a non-BriarTek certified technician, or has been repaired or altered by a non-BriarTek employee or a non-BriarTek certified technician.
- ◆ any component fails to function properly after being put into service due to something other than defective materials or workmanship, i.e. excessive temperature, humidity or shock while component is in storage.

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