RJE International, Inc.
Irvine, California

TECHNICAL MANUAL
ULB-350 SERIES
UNDERWATER ACOUSTIC BEACON

August 1, 2002
REV 00

RJE International, Inc.
15375 Barranca Pkwy, Suite B107,
Irvine, California 92618
Tel: (949) 727-9399 Fax: (949) 727-0070
E-mail: sales@rjeint.com Web Page: www.rjeint.com

This manual should be read in its entirety prior to using the ULB-350 Series

SECTION I
INTRODUCTION

1.1. GENERAL. This manual contains the description, operation, theory and maintenance procedures for the Underwater Acoustic Beacon Model ULB-350 Series, hereafter referred in this manual as the Model ULB-350.

1.1.1. The ULB-350 is a water switch activated underwater locating device designed for use in marking applications. Housed in a water tight case, the ULB-350 consists of an electronic module, transducer and a self contained battery. The ULB-350 operates at depths down to 4,000 feet (1216 m).

1.1.2. The ULB-350 will operate for a minimum of 20 days under normal conditions.

FIGURE 1. ULB-350 UNDERWATER ACOUSTIC BEACON

TABLE 1. ULB-350 ACOUSTIC BEACON SPECIFICATIONS

Operating Frequency	27 or 37kHz ± 1kHz
Operating	Depth Surface to 4,000 feet (1216 meters)
Pulse Length	10 milliseconds ± 10%
Pulse Repetition Rate	Not less than 0.9 Pulses/Sec
Operating Life	20 Days (minimum)
Acoustic Output	163 db at 1 meter
Operating Temperature Range	+28°F to +100°F (-2°C to +38°C)
Actuation	Fresh or salt water
Size	1.70 inches (4.30 cm) diameter x 3.1 inches (7.90 cm) long
Weight, Beacon	7.0 ounces (217 grams)
Storage Temperature	-65°F (-54°C) to 160°F (71°C)

SECTION II
BEACON MAINTENANCE

2.1. BEACON TESTING. The beacon should be tested prior to each use.

2.1.1. Using the 42A12 Series Ultrasonic Test Sets, test the beacon in the following manner:

2.1.2. Turn the GAIN control to a fully clockwise position. A pronounced background noise should be present. Lack of noise may indicate a dead battery. Should this occur, replace battery in the test set before resuming operational testing.

2.1.3. Set the TUNING control to approximately midscale. Rubbing fingers in front of microphone should produce a rushing noise from the speaker.

2.1.4. Set the GAIN control at a comfortable listening level.

2.1.5. Point the microphone of the Test Set towards the water switch end of the beacon for best results. If the beacon is mounted, position the Test Set for maximum unobstructed signal. Beacon operation will be indicated by an audible pulsing tone.

SECTION II
MAINTENANCE

2.2. GENERAL. This section describes beacon cleaning, disassembly, O-ring replacement, battery replacement and battery testing.

2.3. BEACON CLEANING. Clean the switch end of the beacon with mild detergent then dry thoroughly with a clean cloth.

2.4. BEACON DISASSEMBLY. Disassembly of the beacon is limited to battery replacement, as outlined in Section 2.5.

2.5. BATTERY REPLACEMENT AND TESTING.

2.5.1. GENERAL. Perform an operational test (Section 2.1.) to determine if beacon is operational. If not, insert a new battery and run the test again (Section 2.1.) Battery replacement should be done in a maintenance shop under clean conditions to prevent dust from contaminating O-ring and lubricant. Because the old O-ring may have developed a set with age, a replacement is recommended at the time of battery change. O-ring lubrication should be applied to the new O-ring and threads before installation.

FIGURE 2. BATTERY END CAP REMOVAL

2.5.2. PROCEDURE. To replace the battery, remove battery end cap from beacon as follows:

2.5.3. Remove the three brass 4-40 machine screws from the battey end cap. Lift that battery end cap to access the battery.

2.5.4. Remove battery from beacon. Replace with battery a 9 Volt Alkaline or Lithium Battery. Note: Battery orentation is based on the battery contacts. If battery is installed the wrong way, then the battery end cap will note seat on the beacon housing.

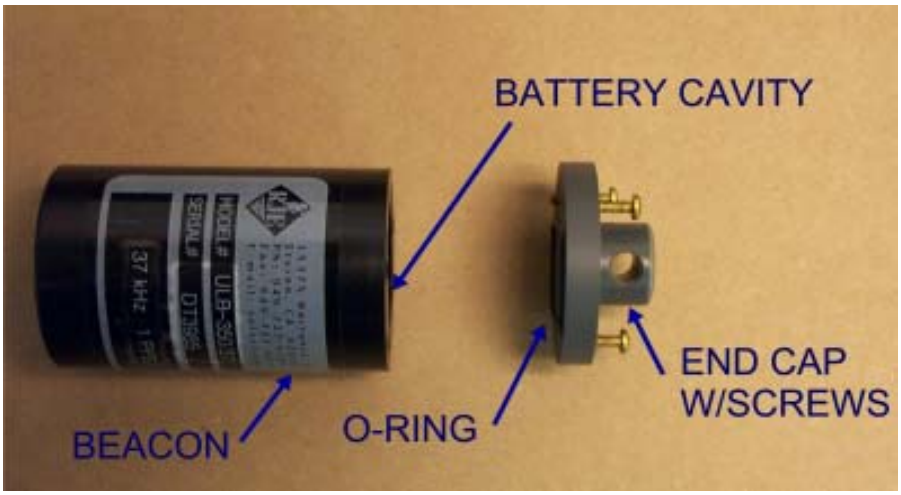

FIGURE 3. BEACON EXPLODED VIEW SHOWING RELATIVE LOCATION OF BATTERY AND RELATED PARTS

2.5.5. Check O-ring for ware or damage. If it is necessary to replace O-ring. remove the old O-ring from the battery end cap. Do not use steel screwdriver or sharp tool because of danger to damaging O-ring groove . Clean O-ring groove in the body and the threads on the cover by wiping them thoroughly with mild soap and water.

CAUTION

DIRT, LINT, SAND AND OTHER FOREIGN SUBSTANCES IN LUBRICANT ON SEALING SURFACES MAY ALLOW WATER LEAKAGE THROUGH THE O-RING SEAL. SCRATCHES OR GOUGES WILL ALSO CAUSE WATER LEAKAGE.

2.5.6. Carefully install new O-ring on battery end cap. Apply a thin coating of O-ring lubricant to O-ring and O-ring groove.

2.5.9. Replace the battery end cap and install the three 4-40 brass machine screws. Tighten until the cap flange contacts the body or leaves less than a 0.003 inch (0.076 mm) gap. Use hand force only on the brass screws. Clean beacon exterior of excess O-ring grease.

2.5.10. Perform operational test of beacon as outlined in Section 2.1.

3.0 Returning Product for Service

When shipping a product back to RJE from either inside or outside the United States, the following instructions will help ensure the equipment arrives with the minimum possible delay. Any deviation from these instructions increases the potential for delay.

Step 1 - Get a Return Authorization

The best way to make sure RJE is aware of your intentions to ship equipment is to obtain a Return Material Authorization (RMA) before sending the shipment. Return Material Authorizations are issued by Sales Administration or Customer Service and are used to notify us of your needs in advance of arrival so we can provide a faster turnaround. When requesting a Return Material Authorization, please give us the following information.

- What is being shipped (include the serial number)
- When you plan to send the shipment
- What problem(s) need correction
- When you need the instrument returned

When the Return Material Authorization is issued, we will tell you the RMA number. Please include this number on all packages and correspondence.

Mark the Package(s)

To: RJE International, Inc. (RMA Number)

15375 Barranca Parkway, Suite B107

Irvine, California 92618

Step 3 - Update RJE International

Send the following information by fax or telephone to RJE.

Attention: **Sales Administration**

Fax: **(949) 727-0070**

Phone: **(949) 727-9399**

- Detailed descriptions of what you are shipping (number of packages, sizes, weights, and contents).
- The name of the freight carrier
- Master Air bill number
- Carrier route and flight numbers for all flights the package will take

SECTION III
WARRANTY

RJE International warrants that this equipment (referred to as the unit) will be free from defects in materials and workmanship, when used under normal operating conditions as determined solely by RJE International, for a period of one (1) year from the date of shipment from RJE International.

As the sole remedy for breach of the foregoing warranty, RJE International shall repair or replace, at RJE International's option, any unit, component or part thereof found defective or nonconforming within said one (1) year period from the date of shipment. Customer shall give RJE International notice of any defect or nonconformity and, if so instructed by RJE International, customer shall, at its expense, ship the unit, component or part to RJE International. If RJE International determines that the unit, component or part is actually defective or nonconforming, it shall, at its expense, ship a new or a rebuilt unit, component or part to the customer. The customer shall be responsible to perform, at its own expense, any necessary installation work related to any defective or nonworking unit, component or part. The functionality and operational aspects of the unit is determined by the unit operating within the specifications and is dependent of proper maintenance as required to be performed by the customer.

RJE International shall not be liable for any expense or damages resulting from interruptions in the operation of the unit.

RJE International shall not be liable for the cost of any repairs undertaken by the customer or any third party without RJE International prior written authorization.

RJE International shall not be liable for any incidental, special consequential or exemplary damages arising out of the installation, use, testing, servicing or maintenance of any unit, component or part. This warranty is given in lieu of all other warranties, expressed or implied, including the warranties of merchantability or fitness for a particular purpose.

RJE International's total liability under this warranty is limited to the remanufacture or replacement of the unit, component or part.

APPENDIX A
ULB-350/TD

A.1. GENERAL. The ULB-350/TD is configured with the time delay option that is factory set. This configuration will delay the normal underwater operation of the beacon based on the time set at the factory (ie.., 8, 16, or 32 minutes).

A.2. BEACON DELAYING FUNCTION.

A.2.1. When the water switch is activated the beacon will ping several times and then begin the selected delaying period. This function is provided to verify the operation of the beacon and the delaying period.

A.2.2. Upon completion of the selected delaying period the beacon will resume pinging for the live of the battery.

A.2.3. Removing the beacon from the water will reset the delaying period.