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PRODUCT SUPPORT MANUAL

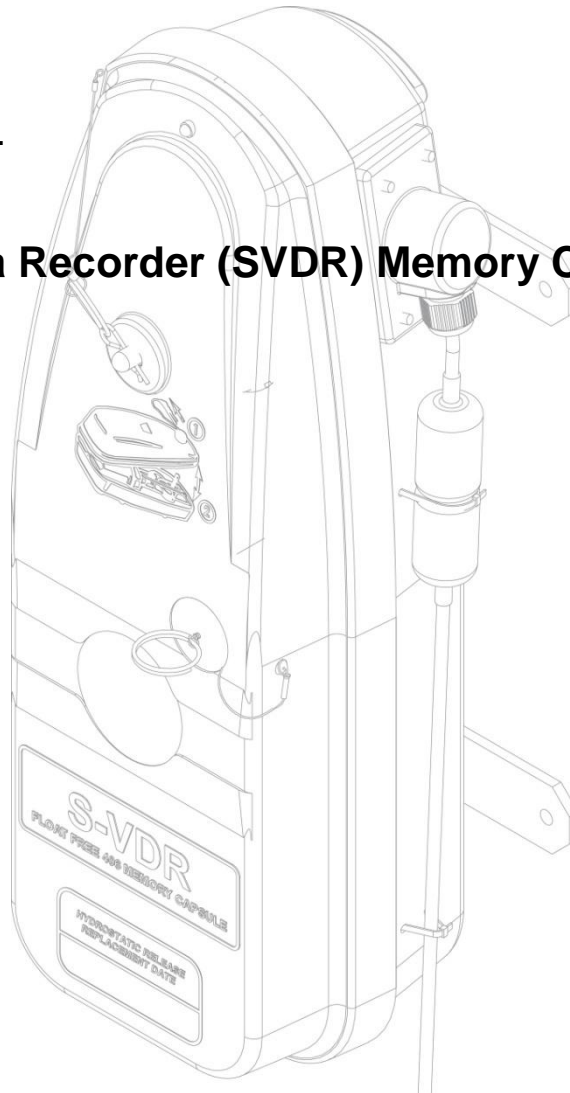
**Float Free 406 //
Simplified Voyage Data Recorder (SVDR) Memory Capsule**

Product No. 2515 Cat.1

RLB-35MC

Y1-03-0199 Rev. D

FCC Type Accepted
Patent Pending



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CAUTION: Before proceeding to install, test or use your new ACR Electronics' product, please read this Product Support Manual in its entirety.

If you have questions regarding the contents of the manual, please contact our Technical Service Department at ACR Electronics, Inc., Telephone +1 (954) 983- 3333. Please be ready to provide the technician with the page number you wish to discuss. If you have a question that is not covered in the manual, please visit our website and access the Frequently Asked Questions (FAQs) section for further information or call our Technical Services Department. The website address is www.acrelectronics.com. If in the future you lose this manual, you may access and print a replacement on the ACR website.

OWNER _____

VESSEL _____

RADIO CALL SIGN _____

MMSI _____

EPIRB UIN _____

FOREWORD

Congratulations and thank you for purchasing the ACR Memory capsule. The combination of superior design, high quality raw materials and quality controlled manufacturing produce a product that will perform for years to come. The test facility at ACR can reproduce some of the harshest environmental conditions known to man. This assures that the products we produce can stand up to the rigors found in a marine environment. With proper care and maintenance, your MEMORY CAPSULE will be in service for years to come.

ACR is proud to be certified to the ISO 9001:2000, the International Organization for Standardization.

This manual provides installation, operation and maintenance instructions for the Float Free 406 Memory Capsule, hereinafter referred to as the memory capsule. This manual also describes the characteristics and details of the Memory capsule System. S-VDR carriage requirements are contained in IMO regulations.

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 **PLEASE READ ALL WARNINGS, CAUTIONS AND NOTES CAREFULLY**

SECTION 1 - REGISTRATION OF 406 MHZ MEMORY CAPSULES

1.1 Why is registration important?

As the owner of this 406 MHz beacon, it is mandatory that you register it with the EPIRB national authority of your country: It is the law. Please note that all 406 MHz beacons are required to have their registration updated every two years by the owner.

Your personalized ID code programmed inside each EPIRB is transmitted to Search and Rescue (SAR).

SAR forces use this code to pull up your registration to find out valuable information about who needs help.

YOUR RESCUE WILL BE DELAYED IF YOUR BEACON ISN'T PROPERLY REGISTERED!

Official 406 MHz BEACON Registration Form	
EPIRB Information	
<input checked="" type="checkbox"/> Category 1 (Automatic Deployment)	EPIRB Manufacturer: ACR ELECTRONICS
<input type="checkbox"/> Category 2 (Manual Deployment)	Model No.: 350-30
<input checked="" type="checkbox"/> New EPIRB Registration	
<input type="checkbox"/> Renewal of EPIRB Registration	
<input type="checkbox"/> Change of EPIRB Information or Ownership	
Please enter the old EPIRB unique ID number: _____	
Owner/Operator Information	
Name: John Doe	Telephone: _____
Mailing Address: 5787 Riverwood Road	City: Fort Lauderdale
State: FL	Zip: 33309
Country: USA	EPIRB Serial Number: _____
Vessel Information	
Type: <input checked="" type="checkbox"/> Recreational	Radio Equipment (Type of unit): _____
Sub-Number of Vessel: _____	Vessel Telephone Numbers: _____
Primary: <input checked="" type="checkbox"/> Home <input type="checkbox"/> Office <input type="checkbox"/> Mobile <input type="checkbox"/> Personal Cell	Cellular: _____
Home: <input type="checkbox"/> In Home <input type="checkbox"/> Out Home	Portable or State Registration Number: _____
Vessel Name: BOE BOY	Length Overall (ft): 20 Capacity: 10
Vessel Code: 000000	Homeport: FORT LAUDERDALE FL
Additional Data	
Emergency Contact Information (Please include names and phone numbers)	
Name of Primary 24-Hour Emergency Contact: JOHN DOE	Name of Alternate 24-Hour Emergency Contact: MICHELLE DOE
Telephone: _____	Telephone: _____
Registration: John Doe	Date: 07/01/2008

HOW REGISTRATION WORKS:

All 406 MHz beacons transmit a Unique Identifier Number (UIN) when activated. This UIN is programmed into the beacon based on the country in which the beacon is registered, thus authorities are able to determine which country's database will have your registration information. SAR forces will have information as to who you are as the owner of the beacon, the name and type of vessel that you have, your homeport, and who to contact that might know of your current situation - but only if your beacon has been properly registered. Valuable search and rescue resources are wasted every year responding to false alarms, and registering your beacon helps to resolve false alarms quickly.

1.2 What country should I register in?

Register your beacon with the EPIRB national authority of the country for which the beacon was programmed, typically the country where purchased, regardless of where you do your boating.

The beacon must be reprogrammed if you, as the owner, move or the boat sails under a different country than the one for which the beacon was previously programmed. To verify the country for which a beacon is programmed, see the label with the UIN (Unique Identification Number) on the back of the unit. Units that do not have a country specified on the UIN label are programmed for the United States.

1.3 How do I register?

Registration in the United States

The national authority that accepts registrations in the United States is the National Oceanic and Atmospheric Administration (NOAA).

Here are three ways to register:

1. The fastest and easiest way to register is online at www.beaconregistration.noaa.gov/.
2. Faxing a registration is also acceptable. Fax the registration form to the fax number on the top of the registration form.

NOTE: Do not confuse the registration form with the ACR Electronics warranty card.
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3. If online or fax registration is not available, mail the registration form with the pre-addressed, postage paid envelope to:

**SARSAT Beacon Registration NOAA
NSOF, E/SP053
4231 Suitland Road
Suitland, MD 20746**

All registration forms will be entered in the 406 MHz beacon registration database within 48 hours of receipt. The information you provide on the registration form is used for rescue purposes only.

A confirmation letter, a copy of the actual registration and a proof-of-registration decal will be mailed to you within two weeks. When you receive these documents, **please check the information carefully**, then affix the decal to your beacon in the area marked "BEACON DECAL HERE." If you do not receive confirmation back from NOAA in the expected timeframe, call toll free (888) 212-7283 for assistance.

Registration outside of the United States

In countries other than the United States, 406 MHz beacons are registered with that country's national authority at the time of purchase. The sales agent should have assisted you in filling out the forms and sending them to the country's national authority. Alternatively, many countries allow online registration in the International 406 MHz Beacon Registration Database (IBRD) at www.406registration.com.

To verify that the unit is properly programmed for your country, view the UIN label on the back of the unit. In the event that the beacon is not programmed for your country, the sales agent (if properly equipped) can reprogram the unit for the correct country.

1.4 Do I need a radio license?

In the United States, you may or may not need to obtain or update a radio station license. Check the FCC's website at http://wireless.fcc.gov/services/index.htm?job=licensing&id=ship_stations or call toll-free (888) 225-5322 (CALLFCC) for the latest information.

Outside of the United States, contact your local authority for the requirements.

1.5 Change of Ownership or Contact Information

It is the owner's responsibility to advise the national authority of any change in the information on the registration form. If the current owner is transferring the memory capsule to a new owner, the current owner is required to inform the National Authority by letter, fax or telephone, of the name and address of the new owner. The new owner of the memory capsule is required to provide the National Authority with all of the information requested on the registration form. This obligation transfers to all subsequent owners. Registration forms are available from NOAA. Call (888) 212-7283 or visit our website at www.acrelectronics.com.

1.6 Commercial Vessels Worldwide

406 MHz memory capsules that are carried on commercial vessels worldwide, should be registered with the country where the vessel is flagged regardless of where the vessel operates. When a commercial vessel acquires a 406 MHz memory capsule from outside of its home country, the memory capsule should be reprogrammed for the home country and registered there.

1.7 Lost or Stolen Memory Capsules

Inform NOAA immediately at 1-888-212-SAVE (7283), or your national authority, that your memory capsule has been lost. They will update your memory capsule registration with the appropriate information.

Things that you need to do:

- Report to your local authorities that the memory capsule has been lost or stolen.
- Contact NOAA at 1-888-212-SAVE (7283), or your national authority, with the following information so your EPIRB registration information can be updated with the appropriate remarks:
 - Police Department Name
 - Police Phone Number
 - Police Case Number

If your memory capsule were to activate, the information you provide will be forwarded to the appropriate search and rescue authorities who will ensure that your memory capsule gets back to you.

If someone attempts to register a memory capsule reported as lost or stolen, NOAA or your national authority will notify the appropriate police department.

Visit the Cospas-Sarsat website for more detailed information: www.cospas-sarsat.org

SECTION 2 – PRODUCT FEATURES

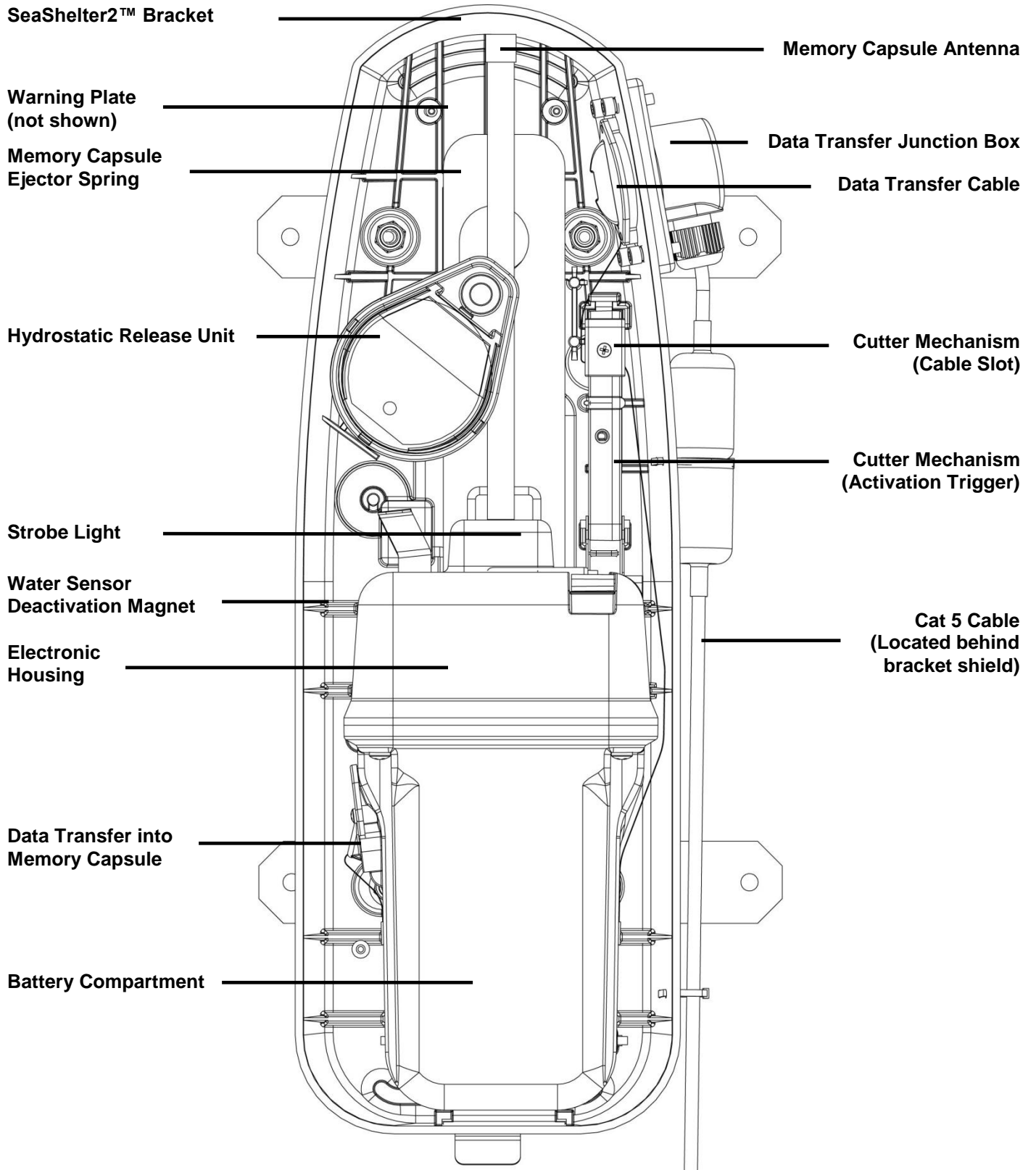
2.1 Memory Storage System

The float-free memory capsule contains non-volatile memory (FLASH), intended to store ship parameters in real time. The storage memory will continually store the last 12 hours (minimum) of received data. The interface between the S-VDR (Simplified Voyage Data Recorder) and the memory capsule is a standard 10/100 Base-T Ethernet connection using TCP/IP standard protocol.

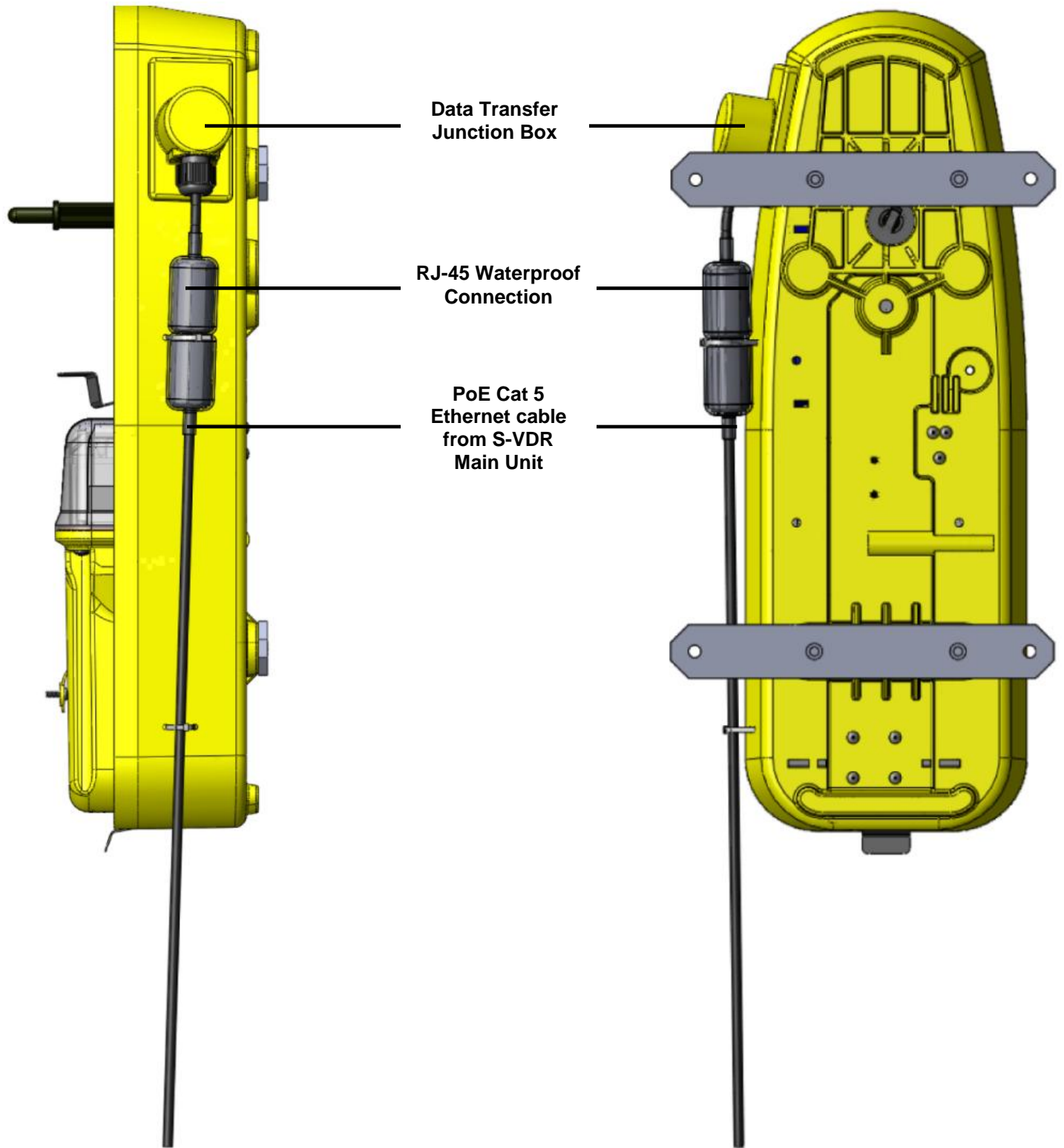
Power for the capsule is provided over the same Ethernet cable using PoE (Power Over Ethernet). This feature has the advantage in that a separate power cable is not required.

Much like a black box on an airplane, in an emergency your float free 406 memory capsule will store the last twelve hours of the ship's critical and navigational data to be retrieved and reviewed to assist in explaining the cause of the accident.

If the ship should sink, the hydrostatic release unit will sense the water pressure and release the memory capsule out of the bracket and into the water. This happens when the hydrostatic release essentially releases the spring located behind the memory capsule. This spring will trigger the flex data cable cutting mechanism to activate and slice the flex data cable disconnecting the memory capsule from the bracket while the spring also pushes the memory capsule into the open water. Once in the water the memory capsule will be activated by built in water sensor and upon reaching the water surface will begin transmitting a 406 MHz signal to the Cospas-Sarsat satellite system. The built in GPS receiver will search to acquire the latitude and longitude positions and upon acquiring this data will include this information into the distress message. The memory capsule will continue to operate for a minimum of 7 days.



**Float Free Memory Capsule Components
Front view
Figure 1**



**Side and Back view of Float Free Memory Capsule
Figure 2**

SECTION 3 - FALSE ALARMS

3.1 Prevention of False Alarms

Your memory capsule can be activated by two different methods.

1. When the memory capsule is out of its bracket and in the water, the unit is transmitting.
2. When the switch is moved to the ON position, in or out of the bracket, the unit is transmitting.

There are a few precautions that should be taken to prevent false alarms.

Do not transport memory capsule within 1 meter (3.3ft) of a magnetic source.

Do not mount memory capsule within 1 meter (3.3ft) of a magnetic source.

Do not store memory capsule outside of its bracket if it can get wet.

Do not clean memory capsule with a water hose and brush.

Do not mount memory capsule backwards in bracket.

3.2 Reporting of False Alarms

Should there be, for any reason, an inadvertent activation or false alarm, it must be reported to the nearest SAR (search and rescue) authorities. The information that should be reported includes the memory capsule Unique Identifier Number (UIN), Date, Time, duration and cause of activation, as well as location of memory capsule at the time of activation.

To Report False Alarms in the United States Contact any of the Following:

Atlantic Ocean / Gulf of Mexico
USCG Atlantic Area Command Center
Tel: (757) 398-6390

Pacific Ocean Area
Tel: (510) 437-3700
From Any Location

USCG HQ Command Center
Tel (800) 323-7233

To Report False Alarms Worldwide Contact your National Authority.

SECTION 4 - INSTALLATION / ASSEMBLY

4.1 Mounting Location

The location selected must be sufficiently rigid to support the weight (approximately 9 lbs) of the total installation and at the same time consider vibration, exposure to the elements, exposure to surrounding hazards, such as equipment movement, doors being opened, accidental covering, personnel traffic, etc. **The memory capsule must be located no further than 50 meters (164 ft) from the S-VDR main unit.**

Also to be considered in selecting a location for installation is the harmful effect that certain corrosive vapors might have on the memory capsule. Under no circumstances should a location be selected for installation where the memory capsule would be jeopardized by any foreign articles that emit corrosive vapors being temporarily or permanently positioned during "at sea" or "in port" activities.

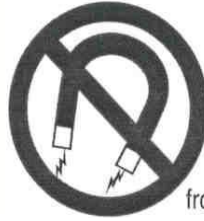
Location aboard a vessel must be chosen to allow the memory capsule to float free of sinking craft and as high as possible especially on smaller vessels. This will help ensure operation of the hydrostatic release unit in the event the vessel capsizes without sinking.

Do not mount the memory capsule in the vicinity (3.3 ft.) of strong magnetic (such as loud speakers) or electrical (such as radar or high power radio transmitter) fields. The memory capsule should not be mounted closer than (3.3 ft) to a navigation compass.



**Stereo Speaker
safe distance
1 m (3.3 ft)**

Keep this container
a safe distance away
from all stereo speakers.



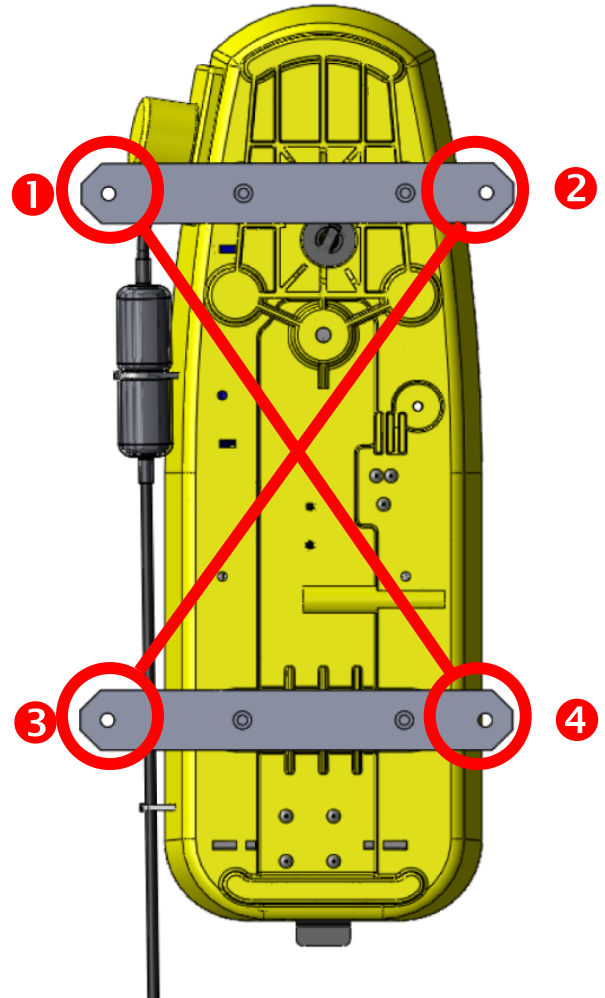
**Magnet
safe distance
1 m (3.3 ft)**

Keep this container
a safe distance away
from all magnetic sources.

The memory capsule should be mounted securely to a *vertical* or *horizontal flat surface* where there are no overhead obstructions.

The use of #10 stainless steel hardware is recommended. There is no need to open the Sea Shelter or remove the S-VDR during mounting.

Note: The Sea Shelter has two mounting brackets for attachment to a flat surface (see Figure 3)



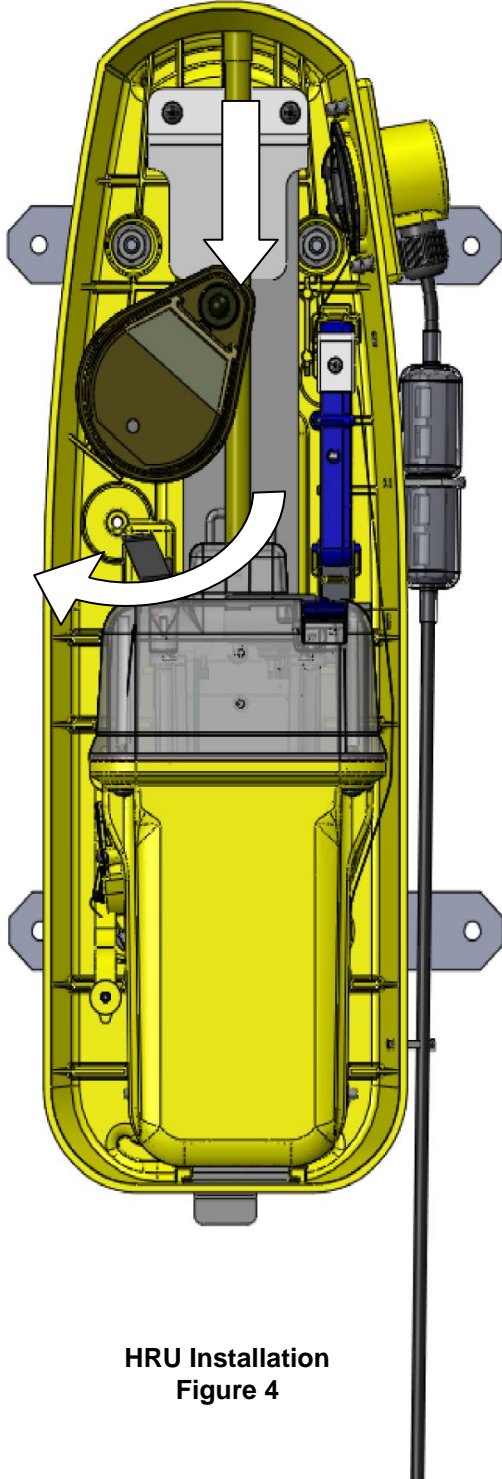
**Mounting hole locations
Figure 3**

4.2 Assembling your Float Free Memory Capsule

(To remove all components, reverse these directions at step 5).

NOTE: HRU and cutter assembly replacement can be performed more easily by removing the Sea Shelter from the bulkhead first. This can be done by removing the screws holding the mounting brackets to the bulkhead.

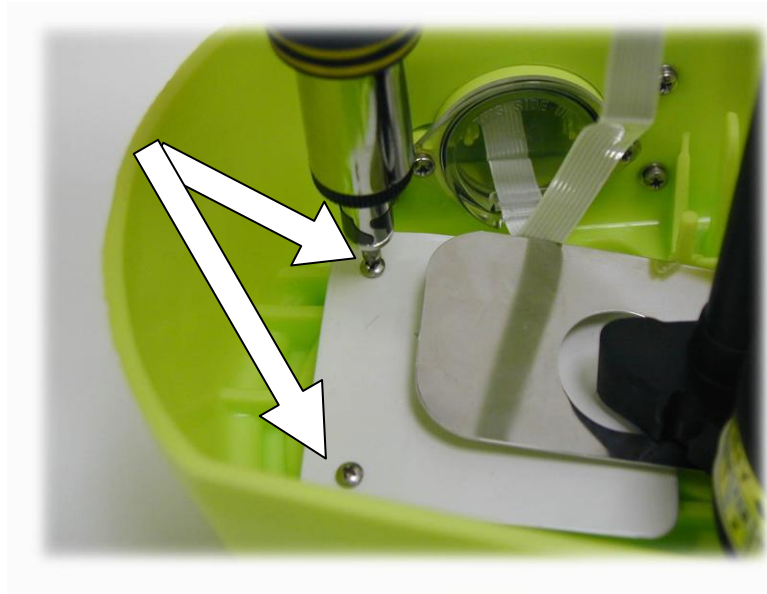
1. HRU and warning plate installation



**HRU Installation
Figure 4**

- A) Push the release spring back against the bracket aligning the holes on the spring with the holes in the back of the bracket. Take the HRU and place the washer end of the HRU through the larger top hole and slide down into the smaller slot.

Turn the HRU to the left side of the bracket. This will lock the HRU and spring into place. Carefully release the HRU and make sure it is securely in place.

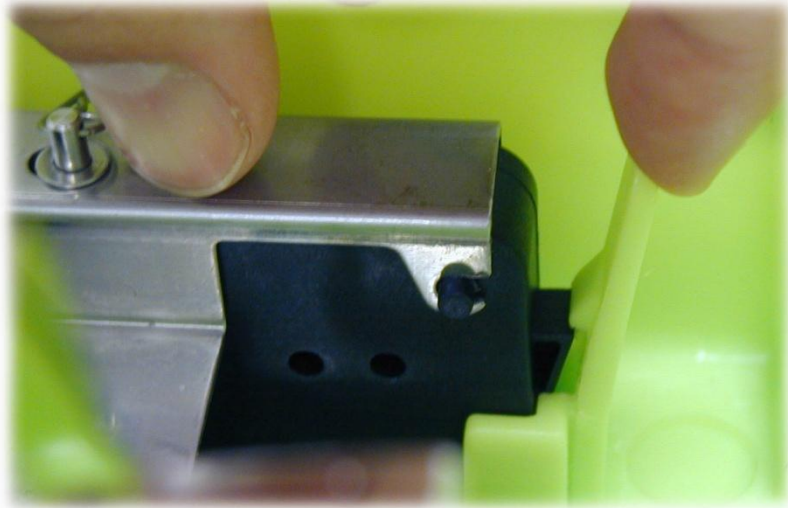
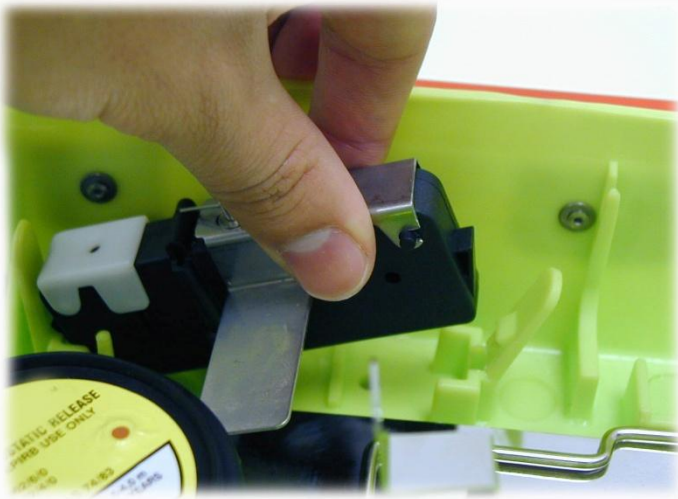


**Warning Plate Installation
Figure 5**

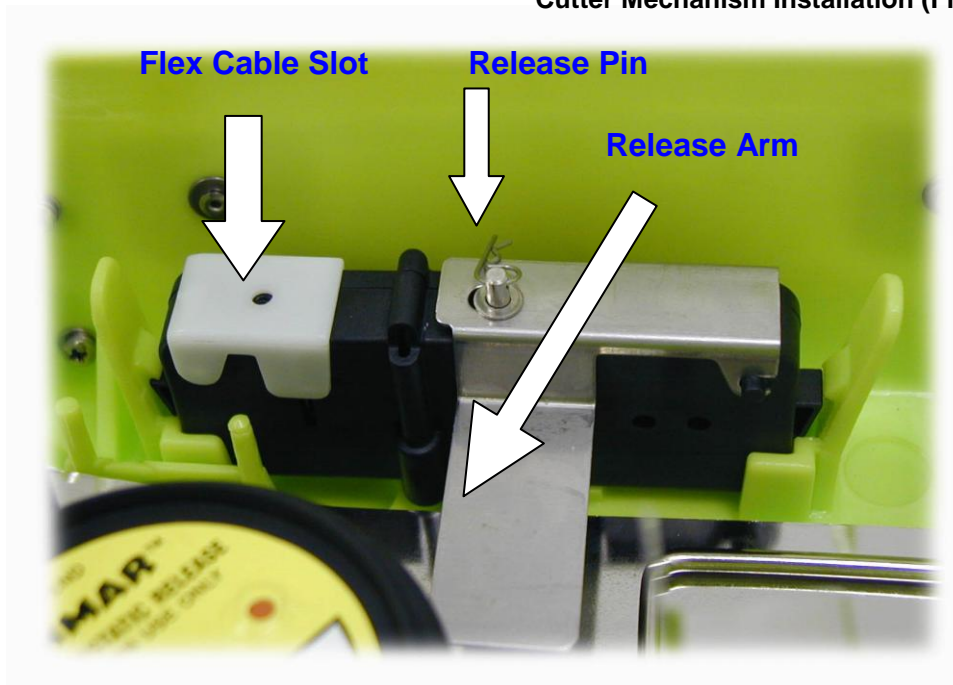
- B) Insert the metal warning plate behind the spring so that the bottom of the plate butts up against the HRU.

With the screws provided, secure the warning plate in place as shown.

2. Cutter Mechanism Installation



Cutter Mechanism Installation (Figure 6)



- A) Insert the flex cable cutter mechanism into place.
- B) Position the cutter with the release arm extending across the ejector spring and the slot for the flex cable positioned at the top.
- C) Simply push the cutter into the slot until the teeth connect and lock the mechanism into place. Try to pull it back out to make sure the device is locked in securely.

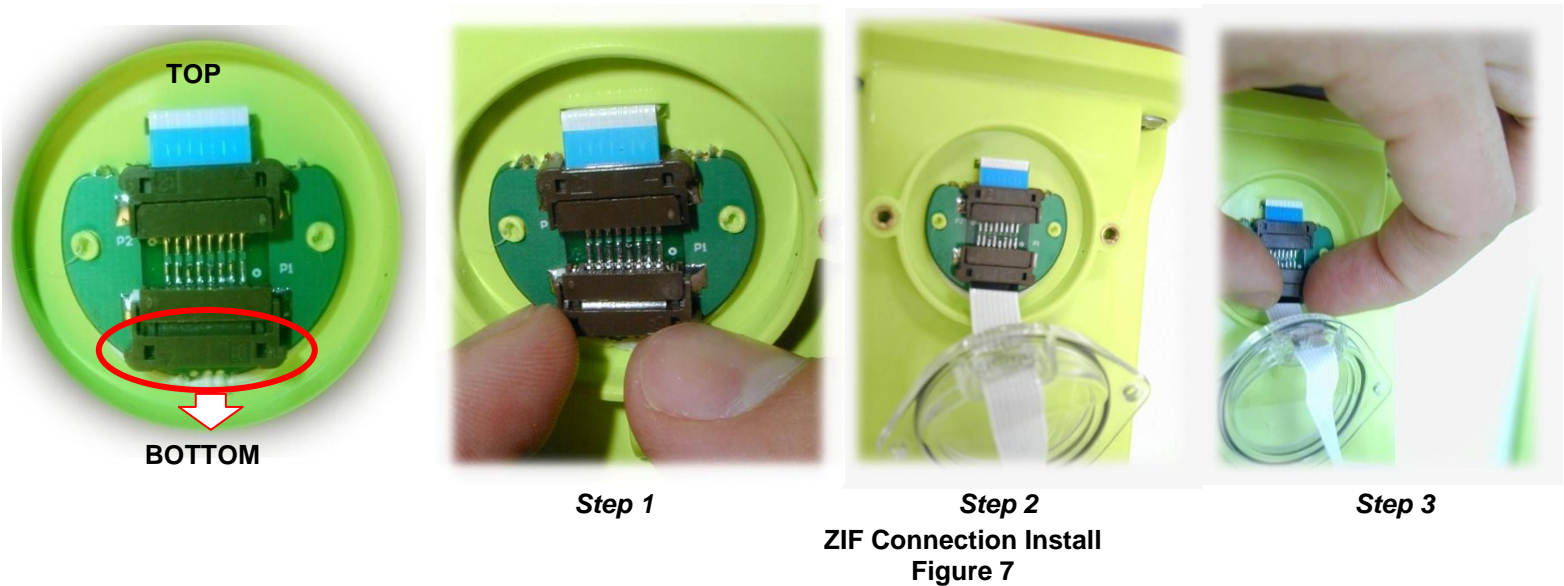
Use extreme caution when installing the Float Free Memory Capsule cutter mechanism. By releasing the pin located on the top of the mechanism, the cutter blade will be activated. *Once this device has been activated it must be replaced by a new cutter mechanism (P/N 2520).*

To remove the flex cable cutter mechanism from the bracket first remove the flex cable from the cutter (if already installed). Next, simultaneously push the two plastic bracket teeth in opposite directions. While the two teeth are pushed back pull the cutting mechanism out of the bracket.

3. ZIF Connection and Data Transfer Cable Installation

Data is stored in the memory capsule using the data transfer cable which connects to the junction box on the bracket, runs thru the cutter mechanism and attaches to the left side of the memory capsule. This cable is connected to both the junction box and the memory capsule using ZIF (Zero Insertion Force) connectors.

NOTE: ZIF connectors are fragile. To avoid breaking the connectors, touch them carefully. Do not apply too much pressure to the movable part of the connector when opening or closing it.



To connect the data transfer cable to a ZIF connector, follow these steps:

1. Using your thumb and index finger, pull down on the movable part of the ZIF connector open.
2. Orient the end of the cable with the ZIF connector, and insert the blank side (or printed side) of the cable into the connector.
3. While holding the cable firmly in place, close the ZIF connector. To ensure a firm connection, make sure the ZIF connector is completely closed.

To disconnect the data transfer cable from a ZIF connector, follow these steps:

1. Using your thumb and index finger, pull down on the movable part of the ZIF connector open.
2. Pull up gently on the movable part of the connector until the cable is released.
3. Grasp the cable and pull it out of the connector.

4. Data Transfer Cable Window Installation

After the flex data cable is connected to bracket and memory capsule, the protective window must be installed. The protective window caps come with pre-lubricated O-ring assembled on the window cap ensures a tight, waterproof fit.

Align the side window cap holes with the memory capsule or bracket and using a phillips head screwdriver, fasten the window cap in place with the provided screws.



**Window Cap
Installation
Figure 8**

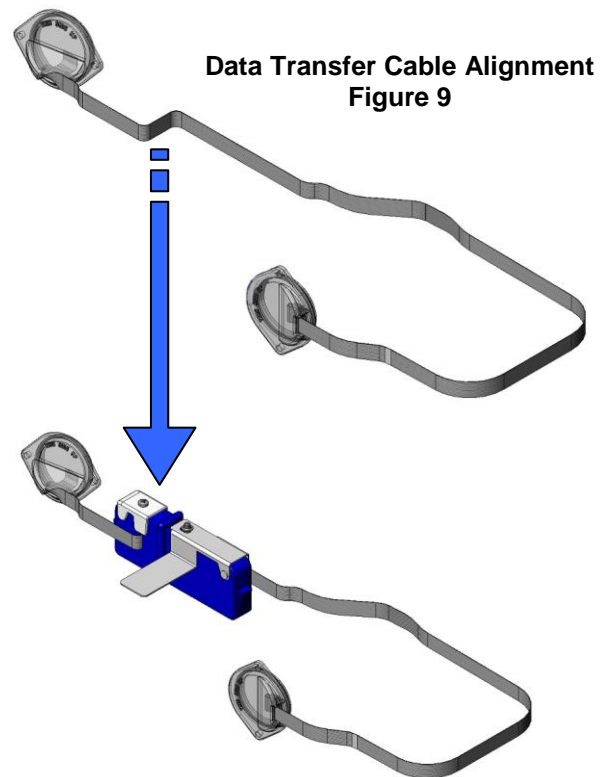


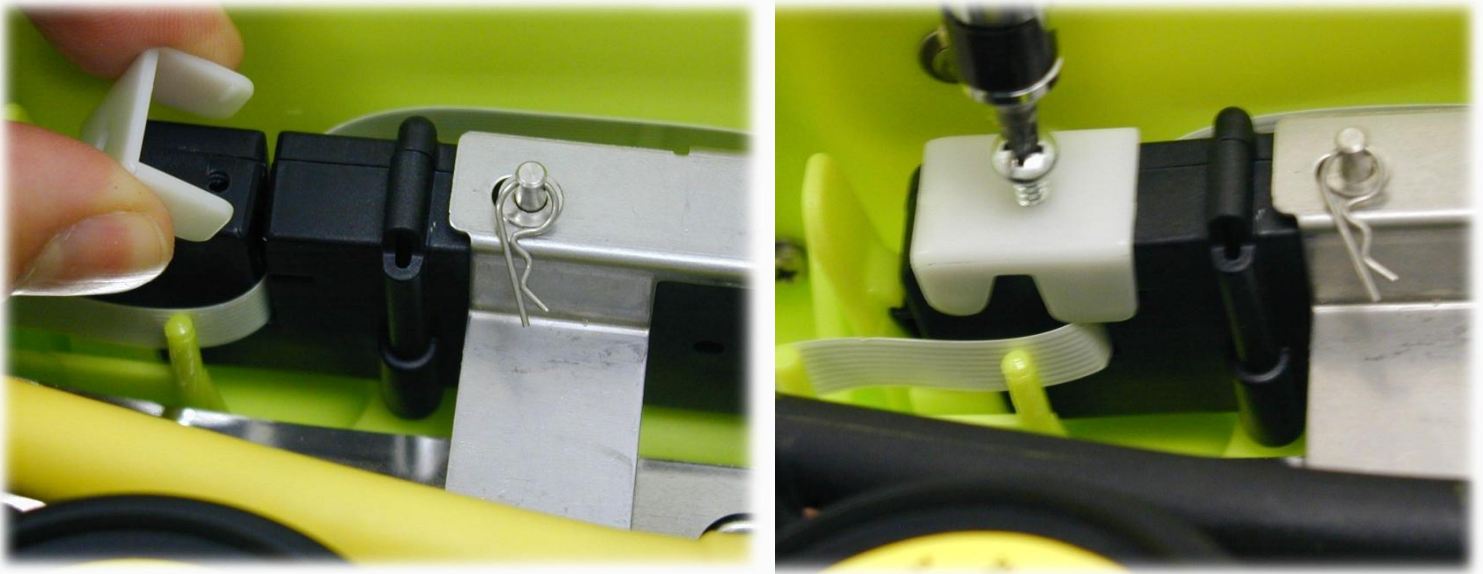
4.2.5 Data Transfer Cable Alignment

The data transfer cable connects the memory capsule to the bracket which in turn connects to the PoE and S-VDR. The flex data cable comes with two flex connectors on either end accompanied by protective window caps.

To remove the memory capsule from the bracket you must unscrew the window cap and unplug the flex connector from the memory capsule.

To remove the flex cable from the cutter mechanism you must remove the top screw from the cutter slot door and open the door. Then simply slide the cable out of the slot.





Data Transfer Cable in Cutter
Figure 10

The installation step is placing the data transfer cable inside the cutter mechanism. Remove the top screw from the flex cable slot and open the white door (see Figure 10). Slide the data transfer cable along the side of the cutter mechanism and into the slot as shown above. Close the flex cable slot door and secure shut with by replacing the top screw.

Final Installation Steps:

Now the memory capsule is armed and ready for service.

- Place the protective top cover on the memory capsule, placing the bottom clamp through the top cover opening on the bottom and the secure the top closed by placing the cotter pin thru the hydrostatic release rod.
- Connect the Cat. 5 cable to your S-VDR unit and ensure that the S-VDR unit is communicating properly with your float free 406 memory capsule. Consult your technical user's guide for proper installation to your S-VDR.

4.3 Visual Inspection

Visually inspect the area surrounding the installation site for hidden hazards, obstacles, etc., that may have been overlooked during selection. If there is any doubt as to the ready accessibility to the memory capsule at all times or if any condition may appear to be questionable, make a complete and thorough investigation before making final approval of the installation.

4.4 Important Expiration Dates

The label on the hydrostatic release mechanism inside of the bracket and the replacement date label on the outside of the bracket **MUST** be marked with the date of expiration at time of installation according to coastal marine authority regulations.

To record the expiration date on the hydrostatic release mechanism, with a permanent indelible marker mark off the dates to indicate the month and year **two years** from date of installation. Write the date of expiration with an indelible marker on the label appearing on the outside cover.

Replace 2 years after
Installation
or 3 years from date of
Manufacture

MM/YY

Cutter Mechanism

HRU →

**HYDROSTATIC RELEASE
REPLACEMENT DATE**

Model: HRU-100 Part No. 9490
Patent No. 7,435,148

Expiry Date / Gebrauchszeit / Validate / Validita

2011		2012		2013	
JAN 1	FEB 2	MAR 3	APR 4	MAY 5	JUN 6
JUL 7	AUG 8	SEP 9	OCT 10	NOV 11	DEC 12

DISPOSE AFTER TWO YEARS FROM INSTALL DATE
OR 4 YEARS FROM DATE MANUFACTURED

**Expiration Date Labels
Figure 11**

**Float Free 406
Memory Capsule**



DATE: _____
Replace battery after use or by date shown
Remplacer pile apres usage ou par la date indique

Memory Capsule

SECTION 5 - OPERATION

5.1 General

The memory capsule is designed to be automatically deployed and activated. The memory capsule is designed to operate best while floating in water. Hand held operation should be avoided when possible. Do not operate inside a life raft or under any similar cover or canopy.

Changes in the laws governing memory capsules have mandated that the memory capsule be armed at all times. If certain criteria are met, the memory capsule will begin transmitting.

The memory capsule is equipped with sensors to detect when it is no longer in its bracket (a deployment condition) and other sensors to determine if it is in water.

Two conditions must be satisfied for the memory capsule to automatically activate:

- 1) It must be out of its bracket,
- 2) It must be in the water,

Note: Either condition by itself will *not* automatically activate the memory capsule.

The memory capsule is designed to allow the user to perform periodic testing while the memory capsule is in the release bracket to assure a functioning memory capsule.

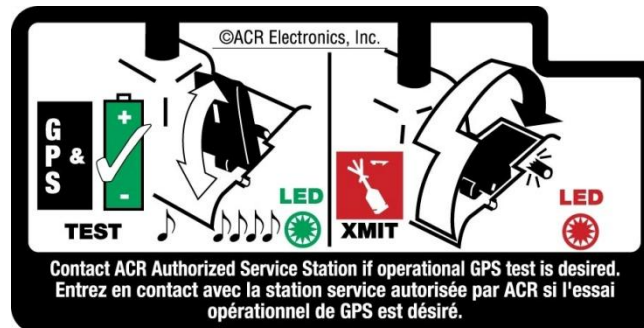
5.2 Automatic Deployment and Activation

Automatic deployment and activation occurs when the vessel sinks and a hydrostatic release device frees the memory capsule from the bracket allowing it to float to the surface. Built-in sensors detect that the memory capsule is no longer in its bracket and is in water. This condition will automatically activate the memory capsule.

Note: Transmissions of the 121.5 MHz and 406 MHz signal will not occur until 100 seconds after activation.

5.3 Manual Deployment and Activation

The memory capsule can be manually activated by lifting the thumb switch to a vertical position, sliding it towards the antenna and pushing back down to the opposite side of the memory capsule. Activating the memory capsule in this manner breaks off the “Activation Indicator Plastic Pin” and allows the switch to properly seat, show the “I” symbol (ON).



Memory Capsule Instruction Label
Figure 12

5.4 Deactivation

The **memory capsule** can be deactivated by:

If manually activated:

- 1) Returning the thumb switch to the “OFF” position.

If automatically activated:

- 1) Removing the memory capsule from the water. The memory capsule normally takes up to 12 seconds to deactivate, or
- 2) Placing the memory capsule back into the release bracket.

If the memory capsule continues to operate after it has been deactivated, remove the four screws holding the unit together and unplug the battery to disable the unit. Return it to a service center for repair.

5.5 Full Functional Self Test

Please read all instructions before performing any of the tests. Be prepared to record data from the test.

Self-test is initiated by momentarily lifting the thumb switch to a vertical position and holding it in this position for at least two seconds and at most 4 seconds. A beep and the simultaneous lighting of the red LED indicate the initiation of the test. The buzzer will beep an additional four times as the red LED lights simultaneously. The **green** LED will then light, followed by a flash of the strobe, indicating a successful test. During self-test, an actual satellite message is transmitted while certain key performance parameters are measured and recorded. The self-test message is modified to prevent the satellite from forwarding an alert message during self-test.

The **memory capsule** can be tested in or out of the release bracket.

The sequence of tests is:

1. Check Data Integrity Beep and lights up red LED if passed
..... Stop if failed
2. Check 406 MHz Synthesizer Beep and lights up red LED if passed
..... Stop if failed
3. Check RF Power/Battery Beep and lights up red LED if passed
..... Stop if failed
4. Check internal GPS Beep and lights up red LED if passed
..... Stop if failed
5. Turn on green LED to indicate Successful Test.
6. Flash Strobe Light to test Strobe.

If all of the above occurs, the test has been successful.

NOTE: The homing memory capsule at 121.5 MHz is inhibited during self test.

It is strongly recommended to perform the full functional self test on the memory capsule on a monthly basis.

If the thumb switch is accidentally or inadvertently put in the vertical or test position (not in the OFF or ON position), the memory capsule would still be turned ON and would drain the battery. The chance of this happening accidentally or inadvertently is very unlikely. However, if this should occur, the memory capsule will sound a beep once per second and will alternately flash the red and green LED's at a rate of one per second until the memory capsule is turned OFF. It is important that the memory capsule be turned OFF immediately (lowering the thumb switch to the OFF position, thumb switch at rest in the front position) if this alert is ever obtained.

5.6 Internal GPS Test

Warning: The following test should never be performed more than once during the five-year life of the battery pack! Return the unit if this test needs to be repeated (see Page 1 for return information).

The memory capsule is fitted with an internal Global Positioning System (GPS) receiver that will determine the navigational coordinates, latitude and longitude, of its position on the globe to be transmitted to the emergency system. When the memory capsule is turned ON, the GPS is immediately turned ON and it immediately begins acquiring data. Initially the red Light Emitting Diode (LED), flashes once per second to indicate the memory capsule is turned ON and operating. As soon as the GPS receiver acquires good navigational data the red LED stops blinking and the green LED flashes once per second to indicate that the internal GPS receiver has acquired good navigational data. Once good navigational data has been obtained the GPS receiver waits for 20 minutes before looking for new navigational data again. If for any reason a time period of 4 hours passes without the GPS receiver being able to update the last good set of navigational data, the message transmitted by the memory capsule will revert back to default data. At this point the green LED will stop blinking and the red LED will flash once per second. If at any time after this, good navigational data is obtained, this data will be transmitted, the red LED will stop blinking and the green LED will flash once per second.

Performing the Internal GPS test

To perform the internal GPS test, make sure that you perform the test outside with a clear view of the sky. This will help the GPS locate a satellite and reduce the amount of time the GPS engine remains on, saving valuable battery life. If the thumb switch is held in the vertical position after the full functional self-test has finished, the buzzer will beep and the red LED will light simultaneously. This beep and simultaneous red LED indicates that the GPS has been turned ON and a live test of the internal GPS has begun. At this point the thumb switch should be allowed to return to its normal OFF position. The GPS will remain ON until good navigation data has been obtained or until 10 minutes has elapsed. If good navigation data has been obtained, the GPS will be turned OFF and the green LED will light for at least 3 seconds and the strobe will flash once. This navigation data is not saved for use when the memory capsule is turned ON. A green LED and strobe flash indication is proof that the GPS is functioning properly and that the memory capsule is in a location or environment where it can receive the necessary signals from satellites. If the GPS does not acquire good navigation data, the GPS will turn OFF after 10 minutes and there will be no successful green LED indication. This test should never be performed more than once during the five-year life of the battery pack to prevent excessive current drain! **The memory capsule must remain under observation to witness the results of the test.**

SECTION 6 - CARE AND MAINTENANCE

At least every ninety days, the mounting bracket and float free memory capsule should be inspected for deterioration and/or buildup that may affect the function of the memory capsule or automatic release.

Also carefully inspect the memory capsule case for any visible cracks. Cracks may admit moisture, which could falsely activate the memory capsule or otherwise cause a malfunction. Any cracking observed should be immediately returned for repairs (See returning product information on page 1).

Clean the memory capsule and the mounting bracket to remove residue buildups. It is recommended that the mounting bracket be wiped with a damp cloth.

The hydrostatic release unit (HRU) must be replaced by the date indicated on the float free mounting bracket. The hydrostatic release can be replaced by removing the memory capsule from the bracket, then sliding the hydrostatic release assembly out of the keyed opening on the spring and mounting bracket. Insert the new hydrostatic release assembly, in place by engaging it to the opening of the ejection spring and case. When servicing the HRU, it is required that you replace the entire hydrostatic assembly, including hydrostatic release, release rod and all hardware (P/N 9490 Universal kit). Failure to replace the entire assembly can cause the bracket to malfunction. Always use original ACR replacement parts. Use of unauthorized replacement parts will void your warranty and may cause the bracket to malfunction. Place memory capsule into the mounting bracket, and replace cover, securing in place with hitch pin going through the hydrostatic release rod.

Check antenna for tightness.

The battery (P/N 1078) must be replaced by the date indicated on the memory capsule. At each inspection, check the time remaining until replacement is required. Battery should be replaced if the memory capsule has been activated for any use other than the self test.

NOTE: There are no user serviceable items inside the memory capsule. DO NOT OPEN THE MEMORY CAPSULE EXCEPT TO DISABLE IN CASE OF FAULTY ACTIVATION.

Self contained long life batteries with a five-year recommended replacement cycle provide power. *See factory authorized service center for replacement.*

Battery replacement includes servicing the memory capsule by replacing the lithium batteries, o-rings, testing the water seal and the electrical properties.

Always refer all long life battery replacement and other memory capsule service to a factory authorized service center. *For battery replacement information, please refer to Section 10.*

The memory capsule contains lithium batteries which meet the requirements of the DOT Hazardous Materials Regulations. They also meet the United Nations Classification of Lithium Batteries for Shipment as "Non – Dangerous Goods".

Data transfer cable cutting mechanism

Like the HRU, the data transfer cable and cutting mechanism (ACR P/N 2518) should be replaced every two years.

SECTION 7 - THE SEARCH AND RESCUE SYSTEM

7.1 General Overview

Memory capsule's provides distress alerting via radio transmission on 406 MHz to satellites of the Cospas-Sarsat network. ACR's Float Free 406 Memory Capsule can also transmit a distress alert to the GEOSAR network that includes GPS latitude and longitude coordinates that are inputted through an I/R Interface that connects to the data output of a GPS Receiver.

The message transmitted is unique for each beacon, which provides identification of the transmitter through computer access of registration files maintained by the National Oceanic and Atmospheric Administration or other National Authority. Remember, if your beacon is **not registered**, Search and Rescue (SAR) Authorities **do not** know who you are, or how to contact anyone who might know anything about your situation (Refer to section 1).

Once the signal (406 MHz) is relayed through the LEOSAR and/or GEOSAR network, SAR forces determine who is closest, and then track the signal using the 121.5 MHz homing frequency for intermediate and short-range location.

7.2 Satellite Detection

Memory capsule's transmits to the satellite portion of the Cospas-Sarsat System. Cospas-Sarsat is an international system that uses Russian Federation and United States low altitude, near-polar orbiting satellites (LEOSAR) that assist in detecting and locating activated 121.5/243 MHz beacons and 406 MHz Satellite beacons.

COSPAS and SARSAT satellites receive distress signals from memory capsule transmitting on the frequency of 406 MHz. The Cospas-Sarsat 406 MHz beacon signal consists of a transmission of non-modulated carriers followed by a digital message format that provides identification data. The 406 MHz system uses Satellite-borne equipment to measure and store the Doppler-shifted frequency along with the beacons digital data message and time of measurement. This information is transmitted in real time to an earth station called the Local User Terminal (LUT), which may be within the view of the satellite, as well as being stored for later transmission to other LUTs.

The LUT processes the Doppler-shifted signal from the LEOSAR and determines the location of the beacon; then the LUT relays the position of the distress to a Mission Control Center (MCC) where the distress alert and location information is immediately forwarded to an appropriate Rescue Coordination Center (RCC). The RCC dispatches Search and Rescue (SAR) forces.

The addition of the GEOSAR Satellite system greatly improves the reaction time for a SAR event. This satellite system has no Doppler capabilities at 406 MHz, but will relay the distress alert to any of the LUT stations. When there is GPS data included in the distress message, SAR authorities instantly know your location to within 110 yards. This speeds up the reaction time by not having to wait for one of the LEOSAR satellite to pass overhead. Because most of the search and rescue forces presently are not equipped to home in on the 406 MHz Satellite beacons signal, homing must be accomplished at 121.5 MHz.

7.3 Global Positioning System (GPS)

The GPS system is a satellite group that enables a GPS receiver to determine its exact position to within 30m anywhere on Earth. With a minimum of 24 GPS satellites orbiting the Earth at an altitude of approximately 11,000 miles they provide users with accurate information on position, velocity, and time anywhere in the world and in all weather conditions. The memory capsule stores this data into its distress transmission allowing search and rescue forces to narrow the search into a very small area and thus minimize the resources required and dramatically increases the effectiveness of the overall operation.

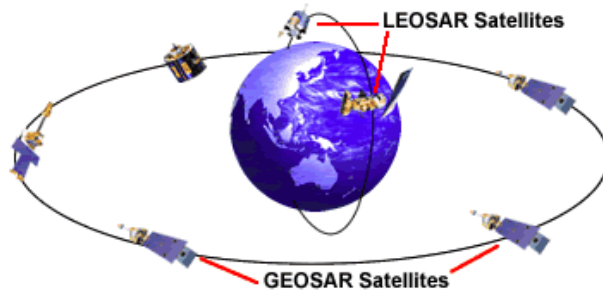


Figure 13- Satellite coverage

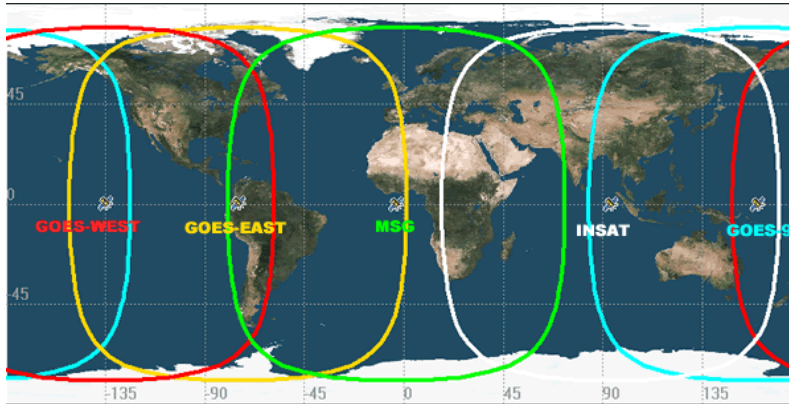


Figure 14- GEOSAR satellite orbits

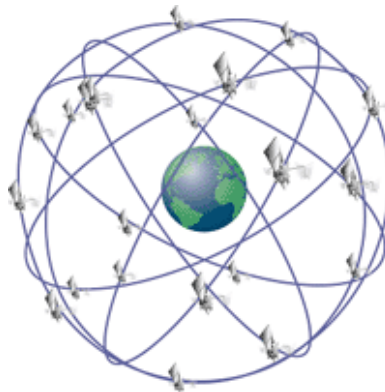


Figure 15- GPS satellite orbits

SECTION 8 - AUTHORIZATIONS

8.1 Approvals

The memory capsule meets the requirements of Federal Communications Commission (FCC) Part 80; and GMDSS.

Applicable Documents:

RTCM	Standard for 406 MHz Satellite EPIRBs
Cospas-Sarsat	Document C/S T.001 Oct. 04, C/S T.007, Oct. 04
FCC	Part 80.1101(C) (s): EPIRB Part 80, subpart W: GMDSS

For complete type approval information, please refer to our website at www.acrelectronics.com.

8.2 Characteristics

The memory capsule is a floatable, battery operated unit. The memory capsule case, with its external antenna, is waterproof. The semiconductor circuits are mounted within the case assembly that also contains the battery power supply. A "Test/On" switch is installed on top of the memory capsule, along with a strobe light. The memory capsule must be stored in its special mount, free of obstructions aboard a vessel for automatic float-off. The unit is self-buoyant and no external flotation devices are required.

8.3 Technical Data - memory capsule

The memory capsule is available in two combinations. The following product codes define the options available to meet specific operational requirements:

Prod. No.	Model No.	Cat. I	Memory
2515.4	RLB-35MC	X	4 GB Flash Memory
2515.8	RLB-35MC	X	8 GB Flash Memory

8.4 Specifications

406 MHz Transmitter	
Frequency	406 MHz
Frequency Stability	±2 parts per billion/100ms
Output Power	5 watts
Digital Message Format	Serialized ¹
Duration	520 ms
Rate	400 bps
Encoding	Biphase L
Modulation	±1.1 radians peak
¹ Leaves ACR with Serialized U.S. code but can be reprogrammed at a service center to Maritime or other coded format including nationality of registration.	
121.5 MHz Transmitter	
Frequency	121.5 MHz
Frequency Tolerance	±50 ppm
Output Power	25 mW PEP
Modulation	
Type	AM (3K20A3X)
Sweep Range	400 to 1200 Hz
Sweep Rate	3 Hz
Duty Cycle	37.5%

Antenna	
Frequency	406 & 121.500 MHz
Polarization	Vertical
VSWR	Less than 1.5/1
GPS Antenna	12 Channel Parallel Receiver
Xenon Strobe	
Light Color	White
Output Power	0.75 effective candela
Flash Rate	20—30 per minute
General/Environmental	
Battery Life	
Operating	48 hours minimum
Replacement Interval	5 years or after use in an emergency
Operating Temperature Range	CLASS 1 -40°C to +55°C
Storage Temperature Range	CLASS 1 -50°C TO +70°C
Size (EPIRB less Antenna)	7.0 x 4.25 x 3.62 in. (17.8 x 10.8 x 9.2 cm)
Antenna Height	7.5" (19.05 cm)
EPIRB Material	High impact and UV resistant plastic
Color	ACR-treuse™ (High-Vis Yellow)
Weight (complete assembly)	Approximately 9 lbs
Waterproof	Exceeds RTCM Standards - Factory Tested to 10 meters at room temperature

8.5 Accessories

Mounting Case

Construction	ACR-treuse™ high visibility yellow, high Impact and UV resistant HDPE
Size	6.5" x 17.1" (16.51 cm x 43.4 cm)
Release System	Hydrostatic with manual override

Hydrostatic Release Kits

ACR P/N 9490

Hydro and data cable cutter kit

ACR P/N 2517

Complete Flex data cable/cutter assembly

ACR P/N 2518

Replacement Data Transfer Cable (only Cable)

ACR P/N 2519

Replacement Data Transfer Cable Cutting Mechanism (only flex cable cutting mechanism)

ACR P/N 2520

Battery Replacement Kit

ACR P/N 1078 (ACR Battery Replacement Service Center only)

SECTION 9- WARRANTY

9.1 Limited Warranty

This product is warranted against factory defects in material and workmanship for a period of 1 (one) year* from date of purchase or receipt as a gift. During the warranty period ACR Electronics, Inc. will repair or, at its option, replace the unit at no cost to you for labor, materials and return transportation from ACR. For further assistance, please contact our Technical Service Department at ACR Electronics, Inc., 5757 Ravenswood Road, Fort Lauderdale, FL 33312-6645. Email: service@acrelectronics.com, Fax: +1 (954) 983-5087, Telephone: +1 (954) 981- 3333.

This warranty does not apply if the product has been damaged by accident or misuse, or as a result of service or modification performed by an unauthorized factory. Except as otherwise expressly stated in the previous paragraph, THE COMPANY MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER WITH RESPECT TO THIS PRODUCT. The Company shall not be liable for consequential or special damages.

To place the warranty in effect, register online at www.acrelectronics.com or return the attached card within 10 days.

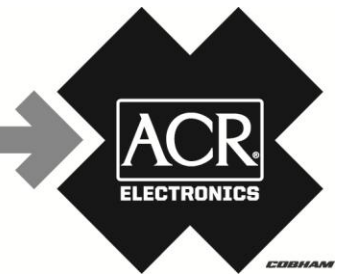
*Five years for the following products: EPIRB, PLB, S-VDR, SSAS.

9.2 Notices

ACR Electronics diligently works to provide a high quality Product Support Manual, however, despite best efforts, information is subject to change without notice, and omissions and inaccuracies are possible. ACR cannot accept liability for manual contents. To ensure that you have the most recent version of the Product Support Manual, please visit the ACR website at www.acrelectronics.com.

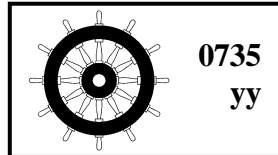
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EC DECLARATION OF CONFORMITY

ACR Electronics, Inc. hereby declares that the following product is in conformity with Council Directive 96/98/EC of 20 December 1996 on Marine Equipment (MED) as amended by Commission Directive 2002/75/EC of 2 September 2002, and has been type examined as described in this Declaration. In accordance with the Directive, the product will be marked with the MED Mark of Conformity as follows:



yy = Last two digits of the year in which the mark is affixed

Product: 406 MHz (COSPAS_SARSAT) Emergency Position-Indicating Radio Beacon (EPIRB) with Simplified Voyage Data Recorder (S-VDR) Float-Free Memory Capsule
MED Item A.1/5.6
Trade Name: Float Free 406 Memory Capsule
Model: RLB-35MC

Notified Body: Bundesamt für Seeschifffahrt und Hydrographie (BSH)
Notified Body No. 0735
Bernhard-Nocht-Str. 78
20359 Hamburg, Germany
EC Type Examination (Module B) Certificate No. BSH/4612/5060372/06
EC Quality System (Module D) Certificate No. BSH/4613/05101/0555/07

Regulations and Standards: IMO Resolution A.694(17) ETSI EN 300 066 V1.3.1 (2001-01)
IMO Resolution A.810(19) IEC 60945 (2002-08)
IMO Resolution MSC.56(66) IEC 61097-2 (2002-09)
IMO Resolution MSC.120(74) IEC 61996-2 (2006-03)
IMO MSC/Circ.862

Manufacturer: ACR Electronics Inc.
5757 Ravenswood Road
Fort Lauderdale, FL 33312
USA

European Representative: ACR Electronics Inc.
(European Office)
1 Rose Cottages, Pitmore Lane,
Sway, Lymington, Hampshire SO41
6BX UK

Signed on behalf of ACR Electronics Inc.

Signed: _____

Name: Kerry Greer

Date: November 6, 2008

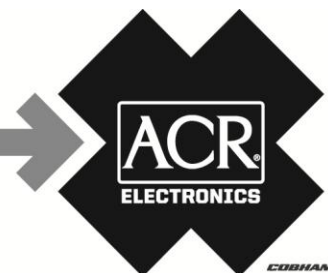
Title: VP Engineering

Document RLB-35MC-001



This Declaration complies with
ISO/IEC 17050-1:2004

ACR Electronics, Inc. is registered by UL to ISO 9001:2000



INTERNATIONAL MARITIME ORGANIZATION **SHORE BASED MAINTENANCE**

The Maritime Safety Committee approved guidelines for shore-based maintenance (SBM) of satellite EPIRBs, for the purpose of establishing standardized procedures and minimum levels of service for the testing and maintenance of satellite EPIRBs to ensure maximum reliability whilst minimizing the risk of false distress alerts. (IMO MSC/Circ.1039)

Products: 406 MHz (COSPAS-SARSAT) Emergency Position-Indicating Radio Beacons (EPIRBs):

- ACR Satellite 406™ RLB-27/28 (Cat. I & Cat. II)
- ACR Satellite₂ 406™ RLB-32 (Cat. I & Cat. II)
- ACR RapidFix™ RLB-33 (Cat. I & Cat. II)
- ACR GlobalFix™ RLB-35 (Cat. I & Cat. II)
- ACR GlobalFix™ iPRO RLB-36 (Cat. I & Cat. II)
- ACR Float Free 406 Memory Capsule RLB-35MC (Cat. I)

Maintenance Service Interval: 406 MHz satellite EPIRBs should be inspected and tested annually in accordance with MSC/Circ.1040. Shore-based maintenance of all satellite EPIRBs should be carried out at intervals not exceeding 5 years. It is recommended that maintenance be performed at the time when the battery is to be changed.

All ACR 406 MHz EPIRBs shall have their first shore-based maintenance performed on the same dates as their battery replacement.

SBM Providers: ACR only authorizes battery replacements and shore based maintenance to be performed by certified ACR service providers.

Manufacturer: ACR Electronics Inc.
5757 Ravenswood Road
Fort Lauderdale, FL 33312
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European Representative: ACR Electronics Inc.
(European Office)
1 Rose Cottages, Pitmore Lane,
Sway, Lymington, Hampshire SO41
6BX UK

Signed on behalf of ACR Electronics Inc.

Signed: 
Name: Kerry Greer **Date:** September 23, 2008
Title: VP Engineering



ACR Electronics, Inc. is registered by UL to ISO 9001:2000