

**VR2 RECEIVER
USER MANUAL**

2011-12-12

VEMCO, a Division of AMIRIX Systems Inc.

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1 INTRODUCTION

1.1 SYSTEM OVERVIEW

The VR2 is a submersible, multi-channel acoustic receiver capable of identifying VEMCO coded transmitters. The receiver operates on a factory set frequency (see Appendix G - Order Specifications) and can decode up to 256 different coded telemetry transmitters and up to 65536 coded pingers. The receiver is housed in a corrosion resistant cylindrical plastic high pressure case, and incorporates an integral transducer at one end of the case. The VR2 features include a Smart LED, two megabyte of data storage, a resume study feature, and a replaceable battery (a single Lithium cell).

The VR2 records the pinger code number and date/time of each valid detection. This information is stored in memory until downloaded from the receiver using a VR PC interface and an PC computer running VUE software.

WARNING: The VR2 pressure case and seal have a static depth rating of 500 meters (730 psi). Physical shocks to the receiver, such as bumping into a solid object, when it is at any depth can result in a considerably higher pressure on the casing than just the depth pressure and water may enter the VR2 case. If the O-rings or their mating surfaces are dirty or damaged, then water may also enter the receiver case. If you are suspicious that water has entered the receiver then follow the suggestions in Section 6.2.3 - Trouble Shooting, Pressurized Case.

NOTE: As of January 2007, the VR2PC software has been replaced with the VEMCO User Environment (VUE) software. VUE software is available at www.vemco.com.

1.1.1 QUICK START

The list below is designed for users who are familiar with VEMCO equipment. Please read the manual completely before using the VR2 receiver.

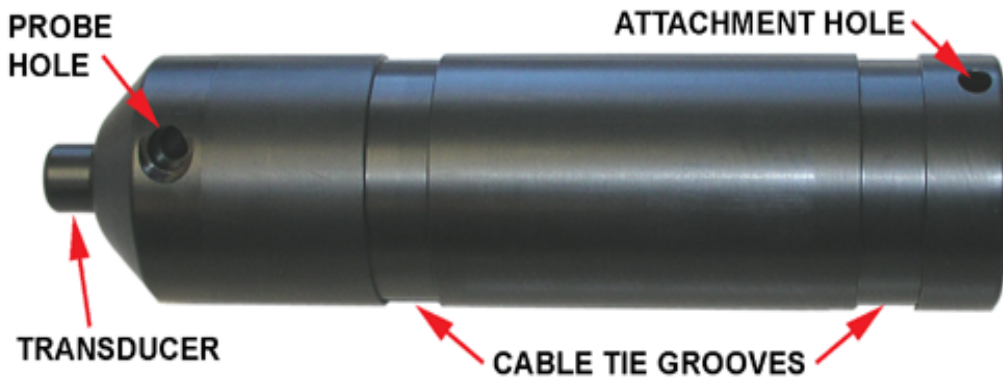
1. Install VUE software on the computer (see VUE Software manual).
2. Setup sensor transmitter information in VUE software (see VUE Software manual for details). This doesn't have to be performed before deployment.
3. Install battery in VR2 receiver (see section 3.2 - Battery Installation/Replacement).
4. Perform an air test (see section 6.1.1 - Air Tests).
5. Insert communication probe in Probe Hole (see section 4.1).
6. *Initialize VR2 to begin recording study (see VUE manual for details). This will also erase the data recorded during the air test.
7. Remove communication probe from VR2 receiver.
8. Deploy VR2 receiver (see section 5, Attachment Methods).
9. Retrieve VR2 receiver.
10. Insert communication probe in Probe Hole (see section 4.1).
11. *Upload data from VR2 receiver (see VUE manual for details).
12. Remove communication probe from VR2 receiver.
13. If study is continuing, re-deploy VR2. If study is not continuing, remove battery to stop recording.

***CAUTION:** Ensure that your PC clock time is accurate. The VR2 has an internal clock that increments a counter each second. At the time of Initialization or Study Start, the VR2 receives the PC clock time and records the time in VR2 memory. When the study is finished and data is downloaded, the PC records the VR2 clock time and the PC clock time in the VR2 data file. Users should be aware that the VR2 end time will most likely be different from the PC clock time. If users wish to time- correct transmitter detection times, then they must ensure that the PC clock time is accurate at Initialization and Study End. If more than one computer is used to initialize the receivers and load data, then make sure the PC clock time is accurate on all computers.

2 HARDWARE FEATURES

2.1 VR2 CASE

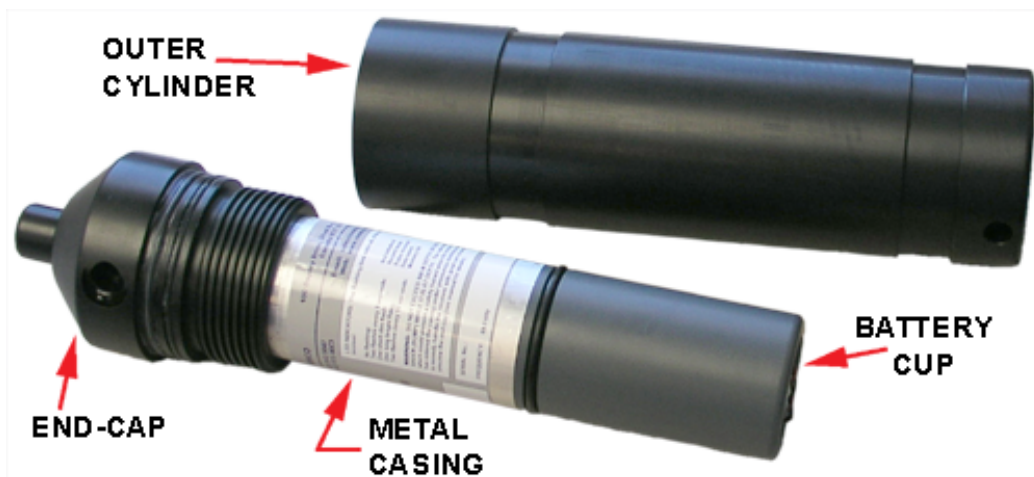
The VR2 receiver is housed in a black plastic high pressure case shown in the photo below. The outer cylinder is removed from the receiver to install the D-cell Lithium battery, as described in the Battery section of this manual. When the outer cylinder is removed, the metal casing protecting the electronics can be seen (see photo below). The O-ring between the metal casing and the battery cup reduces vibration and is not used for water protection. Do not grease this O-ring.



VR2 receiver - closed and ready for attachment to mooring

WARNING: Do not bump the transducer (identified in the photo above) or damage may occur and the receiver will not detect transmitters.

WARNING: The metal casing surrounding the electronics is *not waterproof*. Water, even condensation from a humid environment, will enter the metal case and damage the electronics.



VR2 receiver - open for battery installation

The hardware features of the VR2 receiver include the Smart LED, the Communication Probe Receptacle, the Resume Study feature, and the Flash memory.

2.2 FLASH MEMORY

The VR2 receiver uses a non-volatile Flash Memory (memory that can retain stored information even when not powered) to store valid detections of coded transmitters and the date/time at which the detection was recorded. The VR2 will not continue to record received data once the memory is full. The memory is capable of storing more than 300,000 valid detections. If a valid detection is received every 45 seconds it will require approximately 156 days to fill the VR2 memory (see table below).

Valid detection every...	Time to fill VR2 memory
30 Sec	104 days
45 Sec	156 days
60 Sec	208 days
90 Sec	312 days

2.3 RESUME STUDY

After a VR2 Receiver has been initialized, it will continue to record data until the power is disconnected (battery removed) except when it's connected to the VR PC interface. When the VR PC interface's probe is in the VR2 receiver, the study is stopped. Sixty seconds after the probe is removed from the receiver the study will resume, unless the memory is full. This feature simplifies the process of downloading data while in the field because receivers don't need to be re-initialized before being re-deployed. If a study is completed when the data is downloaded and the VR2 will not be deployed in the near future, remove the battery from the receiver (see Battery section) to stop the receiver from recording and therefore save battery life.

2.4 COMMUNICATION PROBE RECEPTACLE

The VR2 receiver has a receptacle (hole) for the communication probe from the VR PC computer interface. The receptacle, called the probe hole, is located on the end-cap and is identified in the first photo on the previous page. The probe hole is stepped to ensure that the communication probe is inserted from only one direction. Be sure that any marine growth has been removed from the receptacle before inserting the probe, and that the probe is inserted until the O-ring on the probe is fully seated.

2.5 SMART LED

The Smart LED indicates the operational status of the VR2 receiver. The red LED is located on the side of the end-cap (the end-cap is identified on the previous page). The number, brightness, and length of each flash from the LED indicates the function being performed. Table H-1 lists the meaning of each flash pattern. An explanation follows the table.

Number of Flashes	Meaning
No flashes	Not initialized
Two flashes every 5 seconds	Record mode
One short dim flash	Acoustic pulse received
One long bright flash	Data saved in memory
Two flashes every 10 seconds	Memory full

When the VR2 is powered up (see the Battery section), the Smart LED will emit three quick flashes to indicate the receiver has been successfully powered. After ten seconds, two long flashes will indicate that necessary information was read from memory and the receiver is ready for initialization. The LED will not flash again until the receiver has been initialized. When the receiver has been initialized (it is in record mode), the LED emits two quick flashes every five seconds. A received acoustic pulse will be indicated with a short dim flash from the LED. A long bright flash indicates that a pulse string has been received and stored to memory. Two flashes every ten seconds from an initialized receiver indicates that the memory is full.

3 BATTERY

The VR2 receiver is powered by a single “D” size 3.6 Volt Lithium battery with a connector attached – the Tadiran TL-5930/F. The VR2 is usually shipped with the battery inside the VR2 but not connected – the VR2 is not shipped powered. Battery life is consumed from the time the battery is connected so always disconnect the battery when the receiver is not being used for an extended period of time. The battery must be connected before the VR2 can be initialized. Section **Error! Reference source not found.** contains the details of installing and connecting the battery.

3.1 BATTERY LIFE

A new Lithium D-cell battery will last approximately 15 months.

3.1.1 Saving Battery Life

Battery life is consumed from the time the battery is installed (connected), even if the receiver has not been initialized (a study begun). Always remove the battery when the receiver is not being used for an extended period of time.

NOTE

Battery life is consumed from the time the battery is **connected**, even if the VR2 is not initialized.

When a VR2 receiver is initialized, it is programmed to resume the study sixty seconds after data has been downloaded and the VR PC probe is removed. This feature (Resume Study) was designed for ease of use in the field. If the study is not continuing (i.e. the last download of data for this study has occurred), then remove the battery and store it separately. The used battery may be marked with the amount of life used for future reference or use.

NOTE

Always remove the battery when the receiver is not being used for an extended period of time.

3.2 BATTERY INSTALLATION/REPLACEMENT

Inserting or replacing a battery in the VR2 requires three basic steps, opening the case, inserting/replacing the battery, and closing the case. Each of these steps is dealt with in detail in the following sections. Two steel rods are necessary to properly open and close the VR2 case. A pair of rods is included with each shipment of VR2 receivers.

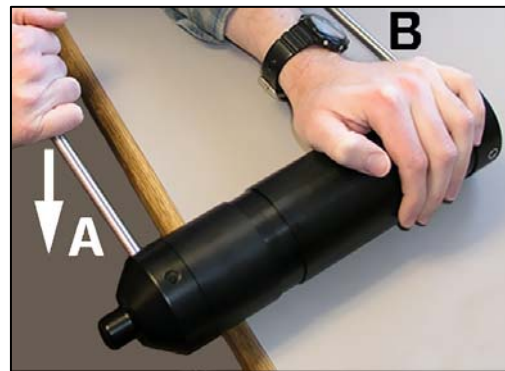
3.2.1 Opening the VR2 Case

1. Make sure there is **absolutely no water** on or near the VR2 case. If the VR2 is attached to a wet rope, remove the receiver from the rope before opening the case.

WARNING

It is vitally important that the electronics inside the receiver case **do not come in contact with any water** or the receiver will be damaged. This also means the electronics can not be exposed to a sudden change in temperature and **humidity** that will cause condensation to develop on the electronics and destroy the receiver.

2. Place the VR2 on a clean, flat surface so the hydrophone is hanging over the edge as shown in the photo. DO NOT let the receiver fall off the surface.
3. Insert one steel rod into the hole that runs through the diameter of the case near the flat end of the VR2. This rod is labelled “B” in the photo.
4. Insert the other steel rod into the wider end of the Probe Hole on the end-cap of the receiver. Make sure the rod is fully inserted into the hole or damage may occur to the Probe Hole. This rod is labelled “A” in the photo.
5. Place a hand on the back of the receiver to hold it in place (see photo).
6. Apply pressure to rod “A” in a downward direction (see arrow in photo) so the end-cap twists in a counter-clockwise direction when you are facing the hydrophone. Rod “B” will act as a brace while you apply pressure.
7. Continue moving the rod in the counter-clockwise direction until turning becomes easier.
8. Remove the steel rods from the VR2 case.
9. Use your hands to continue twisting the end-cap in a counter-clockwise direction until the end-cap and outer cylinder separate.
10. Slide the end-cap and cylinder apart until the battery compartment has cleared the cylinder.



Opening the VR2 case.

WARNING

DO NOT impact the threads on the end-cap or they will dent and prevent the VR2 case from closing. See the Trouble Shooting section of the Appendix for tips on thread care.

3.2.2 Inserting or Replacing Battery

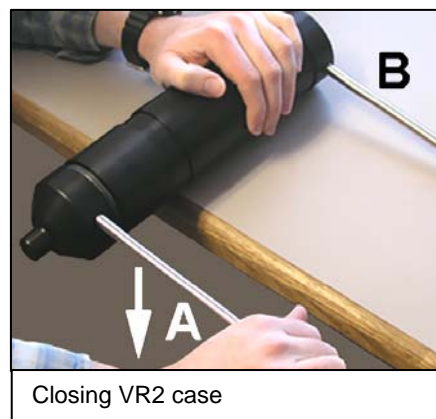
1. Open the VR2 case as described previously in section 3.2.1, Opening the VR2 Case.
2. Remove the battery (if applicable):
 - a. Press the release lever on the battery connector and pull the connector apart. The connector is small and a small flat screw driver may be helpful.
 - b. Press the back of the battery towards the body of the VR2 until the battery is not pressing against the O-ring. There is a spring at the other end of the battery cup so the battery will move.
 - c. Slip the O-ring from it's groove as shown in the photo here. The O-ring's purpose is to hold the battery from sliding out the end of the battery cup.
 - d. Slide the O-ring over the battery's connector wires so they are separated from each other.
 - e. Tip the VR2 so the battery slides out the battery cup.
3. Remove the O-ring from the groove in the battery cup if it hasn't already been removed (see photo).
4. Slide the end of the new battery without connector wires into the battery cup. The connector wires should be sticking out of the battery cup.
5. Thread the connector wires through the O-ring (see photo).
6. Press on the battery until the top of the battery is below the O-ring groove (see photo).
7. Squeeze the O-ring into an oval shape and push it into the groove in the battery cup as shown in the photo. Do not grease the O-ring.
8. Make sure the connector wires are not pinched in any way, especially between the O-ring and the battery or case. Pinched wires can break internally.
9. Connect the Tadiran TL-5930/F battery to the VR2 connector in the proper orientation. The two connector halves should lock together.
10. Close the VR2 case as described in section 3.2.3, Closing the VR2 Case.



Inserting or removing the battery's O-ring

3.2.3 Closing the VR2 Case

1. Make sure the serial number around the outer cylinder matches the serial number on the metal casing. This is particularly important when more than one VR2 receiver is open at the same time.
2. Inspect the O-ring surface inside the outer cylinder to be sure it is clean, undamaged, and debris free.
3. Inspect the two O-rings near the threads on the end-cap to make sure they have not been damaged and that they are properly greased (see section 6.2.2 for proper O-ring care).
4. Slide the end-cap into the cylinder until the first threads are inside the outer cylinder.
5. Turn the end-cap in a clockwise direction (when looking at the hydrophone) with your hand until it becomes too hard to turn.
6. Place the VR2 on a clean, flat surface so the hydrophone is hanging over the edge as shown in the photo. DO NOT let the receiver fall off the surface.
7. Insert one steel rod into the hole that runs through the diameter of the case near the flat end of the VR2. This rod is labelled “B” in the photo.
8. Insert the other steel rod into the wider end of the Probe Hole on the end-cap of the receiver. Make sure the rod is fully inserted or damage may occur to the Probe Hole. This rod is labelled “A” in the photo.
9. Place a hand on the back of the receiver to hold it in place (see photo).
10. Apply pressure to rod “A” in a downward direction (see arrow in photo) so the end-cap twists in a clockwise direction when you are facing the hydrophone. Rod “B” will act as a brace while you apply pressure.
11. Continue moving the rod until the end-cap suddenly stops turning. DO NOT continue to apply pressure on the rod or the receiver case will be damaged. The gap between the end-cap and the outer cylinder will be closed. Do not over tighten the end-cap or the receiver case will be damaged.
12. Remove the steel rods from the VR2 case.
13. Initialize the receiver (see VUE software manual for details).
14. Deploy the VR2 receiver.



CAUTION:

The VR2 must be initialized to conduct a new study after the battery has been replaced.

4 COMMUNICATION

The VR PC computer interface uses electromagnetic waves to communicate with the VR2 receiver at a rate of 4800 baud. A VR2 with 100% of its memory full may contain 300,000 detections. The table below shows the amount of VR2 memory used and the approximate time required to download the data.

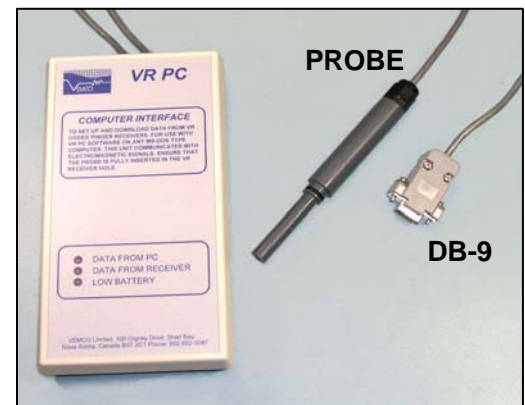
Percent of VR2 memory used	Number of Detections	Approx. Time to Download (minutes)
5%	15000	6
10%	30000	12
25%	75000	29

The interface box has two cables running from it. One cable is terminated with a 9-pin female DB-9 connector and the other with the communication probe.

The VR PC cable terminated with the DB-9 connector must be connected to a RS-232C serial port on the computer to be used for communication with the VR2 receiver. The serial port is a 9 pin male DB-9 connector. It is common for computers to have more than one serial port, usually marked as COM1 or COM2. Make note of the COM number to which the VR PC unit is connected and enter this information in the VUE software.

The VR PC interface has an internal 9 volt battery and is activated when attached to an enabled serial port. The VUE software, or VR2PC software or another communications program, will enable the serial port and cause the VR PC computer interface to use power from its internal

9 volt battery. The VR PC computer interface has three indicator LED lights, two of which indicate the progress of data communications with the VR2 and the third indicates a low voltage level of the internal battery.



4.1 INTERFACE WITH VR2

To interface with a VR2 receiver, connect the VR PC to the computer as described above and insert the probe into the probe hole near the pointed end of the VR2. NOTE: The probe must be inserted until the lip (see arrow in photo) is tight against VR2 case. Open VUE software and initiate communication with receiver (see VUE software manual for details).



VRPC Interface probe being inserted into VR2.

4.2 CHANGE BATTERY

To change the 9 volt battery in the VR PC computer interface:

1. Disconnect the serial cable between the VR PC and the computer.
2. Turn the interface case over and slide the battery cover away from the case.
3. Remove the battery from the case and disconnect it.
4. Connect the replacement 9 volt alkaline battery,
5. Insert the battery into the case and replace the battery cover.

5 ATTACHMENT METHODS

The common method used to attach a VR2 receiver to a mooring line is to use five cable ties with the characteristics described in section 6.3. One set of five cable ties is shipped with the receiver and more may be purchased from VEMCO. Details for using the cable ties are found in section 5.1, Cable Tie Attachment Method.

Additional equipment may be purchased from VEMCO to allow other methods of attachment to be used, including the traditional mounting bar used with past VR2 receiver cases. Contact VEMCO for more information on the optional attachment methods.

For best horizontal range, mount the VR2 receiver in a vertical position. If the VR2 is deployed close to the bottom of the water, mount the VR2 with the hydrophone pointing up to the surface. If the VR2 is deployed close to the surface of the water, position the VR2 so the hydrophone is pointing down.

NOTE: The hydrophone *must be kept free of mooring lines* regardless of the attachment method. Objects around the hydrophone will affect the detection range of the VR2 receiver.

Some customers use a rubber shrink tape, such as DAFLEX ST250 Cold Shrink Tape available from Digikey (W211-ND), to prevent biofouling on the VR2 receiver. It can be used to cover the entire receiver case or just the Probe Hole and does not leave a glue residue when it's removed. Another option is to use an antifouling paint, such as Interlux Micron CSC.

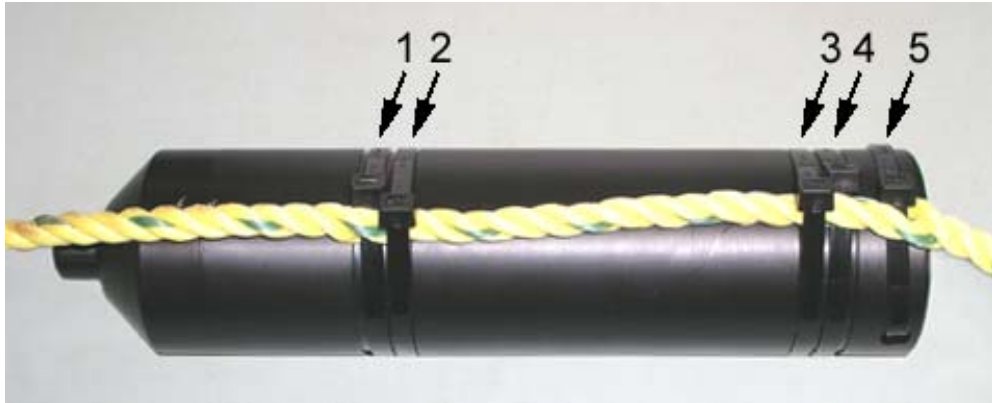
5.1 CABLE TIE ATTACHMENT METHOD

The VR2 is attached directly to the mooring line with five non-releasing cable ties. Five cable ties are supplied with the VR2 and replacement cable ties can be purchased from VEMCO. Follow the instructions listed below to attach the VR2 receiver to the rope used as the mooring line. A minimum rope size of 3/8" diameter nylon rope is suggested.

1. Open the “warp in the rope”:
 - a. Identify the location on the rope where the bottom of the VR2 receiver will be attached.
 - b. Twist the rope so the strands of the rope separate from each other and an opening in the rope is seen (see photo).
2. Slide one of the cable ties through the center of the rope. This cable tie is identified as number 5 in the photo below.
3. Place the VR2 receiver against the rope so the hole running through the bottom of the receiver is lined up with the cable tie.
4. Pass the cable tie through the hole in the bottom of the receiver and latch the cable tie so the head of the cable tie is next to the rope.
5. Wrap the cable tie labelled 4 in the photo below around the body of the VR2 so the cable tie is in the bottom half of the lower groove in the VR2 body (see the photo below).
6. Open the “warp in the rope” as described in Step 1 to line up with the #4 cable tie.
7. Slide the cable tie through the center of the rope and latch the cable tie so the head of the cable tie is next to the rope.
8. Wrap a cable tie around the VR2 receiver and the rope so the cable tie occupies the top half of the lower groove in the VR2 body (see the photo below).



9. Latch the cable tie so the head of the cable tie is over the rope. This cable tie is #3 in the photo below.
10. Repeat Steps 5 to 9 to place the cable ties labelled 1 and 2 in the photo below in the upper groove in the VR2 body.
11. Trim the cable ties so there is no excess cable tie material and no sharp edges.



Cable tie locations for attaching VR2 receiver to a mooring line. NOTE: Cable ties labelled 1, 4, and 5 pass through the wrap in the rope.

IMPORTANT: Cut the cable ties when removing a VR2 from the mooring line. DO NOT re-use cable ties. Use only new cable ties when deploying a VR2 receiver.

6 APPENDIX

6.1 TESTING PROCEDURES

6.1.1 Air Tests

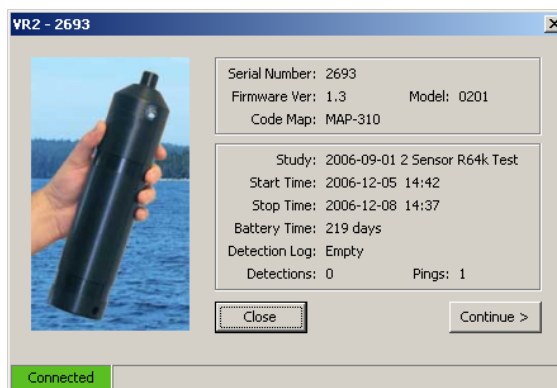
The VR2 can detect coded pingers in air, but at a much reduced range (between one and three meters) compared to range capabilities in water. Perform air tests away from electrical noise sources such as motors, PC screens, or fluorescent lights. Before beginning the test, ensure the clock of the PC to be used is set to the correct time. Follow the steps listed:

For VR2 receivers with firmware versions 1.01 or lower:

1. Insert the VR PC interface probe into the VR2.
2. Initialize a study and remove the probe.
3. Activate a coded pinger transmitting on the same frequency that the VR2 is set to receive (refer to Transmitter Specifications manual for the pinger information). A VR100 receiver may be used to audibly confirm when the pinger is transmitting.
4. Lay the VR2 receiver on its side with the transducer (pointed end) past the edge of the table.
5. Hold the pinger approximately one meter from the transducer with the side of the pinger facing the side of the transducer.
6. Watch the LED on the VR2 receiver. The LED will flash briefly for each acoustic pulse received. A long bright flash occurs when the receiver is writing information to the memory.
7. After the pinger transmits, move the pinger further away until the VR2 cannot detect the acoustic pulses (LED fires two quick flashes every five seconds).
8. Connect the VR2 to the VR PC interface and download the data.

For VR2 receivers with firmware versions 1.02 or higher:

1. Open VUE software on your PC.
2. Insert the VR PC probe into the Probe Hole in the VR2.
3. When the receiver appears in the selection tree on the left side of the window, double-click the receiver name to open the *Receiver Control Window*.
4. Activate a coded tag on the same frequency that the VR2 operates (refer to Transmitter Specifications manual for the tag information). A VR100 receiver may be used to audibly confirm when the tag is transmitting.
5. Lay the VR2 receiver on its side with the hydrophone (pointed end) past the edge of the table.
6. Hold the tag approximately one meter from the hydrophone with the side of the pinger facing the side of the hydrophone.
7. Watch the LED on the VR2 receiver. The LED will flash briefly for each acoustic ping received. A long flash occurs when the receiver is writing information to the memory.
8. Verify that the “Detections” and “Pings” numbers in the *Receiver Control Window* are increasing.
9. Stop recording and retrieve the stored data (see the VUE manual for details).



Receiver Control Window

6.1.2 Water Tests

1. Initialize a study with your watch synchronized to the PC time.
2. Moor the VR2 close to the bottom and with the hydrophone pointing up. If you hang the VR2's from a noisy boat and moor the pinger you may observe reduced range.
3. Activate a coded pinger.
4. Hang the pinger 5 meters below the surface.
5. If you have a VR100, place its hydrophone in the water on the pinger frequency and record when the pinger transmits.
6. Record the time and distance between the pinger and VR2 receiver.
7. Move further away and repeat.
8. Download the data and compare the detections with your recorded time and distance.

For a detailed discussion on range testing, visit http://www.vemco.com/pdf/under_perf.pdf

6.2 TROUBLE SHOOTING

6.2.1 Dented Threads

It's very important that the threads on the end-cap are not dented or the outer cylinder will not thread onto the end-cap properly. If the threads on the end-cap are slightly dented, use a sharp knife, such as an X-Acto knife, to remove the deformed plastic until the sides of the thread are smooth and below the normal line of the thread. It is important that there is nothing sticking out of the thread to damage the thread on the outer cylinder or prevent the case from closing.

6.2.2 O-ring Care

O-rings located in the end-cap of the VR2 case are crucial to the watertight seal of the receiver. Each time an O-ring is disturbed, for any reason, it **must** be checked before the unit is sealed again.

The surface inside the outer cylinder the O-rings come in contact with must be clean and smooth, free of debris and nicks. Dirt or damage may cause flooding of the VR2 receiver.

The O-rings must be free from dirt or debris and covered with a **light** coat of O-ring grease for lubrication. If too much grease is used, the O-rings may pop out of their grooves and not seal correctly. Each O-ring should be inspected for any damage, such as nicks or cracks. A damaged O-ring should be replaced **immediately** with an O-ring of the same size and type. Ensure that the O-rings are properly seated in their grooves as the end-cap is moved into the outer cylinder.

WARNING:

Improper care of the O-rings and their mating surfaces can result in water leaking into the receiver casing.

6.2.3 Pressurized Case

When handled correctly, the VR2 pressure case and seal have a static depth rating of 500 meters (730 psi). If the receiver experiences a pressure greater than this, then water may enter the case.

NOTE: Physical shocks to the receiver, such as bumping into a solid object, when it is at any depth can result in a considerably higher pressure on the casing than just the depth pressure. Also, if the O-rings or their mating surfaces are dirty or damaged, then water may enter the receiver case.

If water enters the receiver case under high pressure, then some water may still be in the case when it is returned to the surface, along with compressed air. This can be identified by its increased weight and a sloshing sound when the case is moved. The VR2 case will also be very difficult to open, if at all possible. If you are suspicious there is compressed air in the receiver case, then check for air or water leaking from seam in the case where the end-cap and outer cylinder meet.

To check for...	Then...
water leakage	dry the seam completely and watch for drops of water around the seam
air leakage	spread soapy water around the seam and watch for bubbles indicating air escaping

If air and/or water are found leaking from the receiver case, do not attempt to remove the end-cap. Instead, place the receiver in a safe place and cover it with a protective layer of towels, tarpaulins, etc. until the leaking stops. If water is still in the case after the air and/or water have finished leaking from the case, then attempt to open the case with the steel rod kit. If it will open, do so very slowly to allow the compressed air to escape. If the case will not open using the steel rods, then it is under a greater pressure than will allow the case to open and contact VEMCO for further instructions.

When the pressure has been released from the VR2 case, carefully unscrew the end-cap from the outer cylinder (see section 3.2.1, Opening the VR2 Case). Use fresh water to rinse the internal parts of the VR2 while avoiding skin contact with any battery electrolyte that may have escaped from the battery.

Do not attempt to re-use the VR2 receiver after water has been inside the case. The metal sleeve protecting the electronics is not waterproof and the electronics have been destroyed by contact with water.

6.2.4 Communication Error

A communication error occurs when the VR2PC program is unable to communicate with the VR2. The possible causes, and suggested remedies, of a communication error are:

Possible Cause	Possible Cure
Dead VR PC battery	Check the battery voltage, and replace the battery if necessary.
Bad serial connection	Verify that the serial cable is properly connected. Check that the serial cable/adaptor is not damaged.
Incorrect com port	Verify that the com port number entered in the VR1PC software matched the com port to which the serial cable is connected.
Com port on computer not functioning properly	Verify that the com port is functioning correctly by using a different serial device.

Disable all power saving features if the program is being run on a laptop computer. This will prevent the com ports from being powered down when the laptop goes into power saving mode.

If the VR2 has returned from a long deployment and won't communicate with the VUE software, then try replacing the battery and attempting a download of data.

6.3 VR2 SPECIFICATIONS

Size:	308 mm (12.125") overall length x 73 mm (2.875") diameter
Receive Frequency:	69.0 kHz
Battery:	1 - Tadiran TL-5930/F Lithium Inorganic battery or equivalent, 3.6 Volts
Battery Life:	Approximately 15 months
Memory:	2 Megabyte Flash Memory (approximately 300000 detections)
Cable Ties:	5 non-reusable lashing cable ties, 388 mm (15.25") long, 7.5 mm (0.3") wide, UV protected, 120 lb tensile strength (VEMCO number HWE 507450).

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