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MODEL 620

Installation and Operating Instructions

Installing The Anode

1. The anode should be located on the transom or under the hull depending on the type of drive that is to be protected and the mode in which the vessel will be operated. Generally for boats with stern drives, large outboard motors and small jet drives, regardless of how they are operated, the anode should be mounted on the transom. For larger jet drives, sail drives and other aluminum drives that are totally immersed, the anode should be mounted under the hull. Another factor that should be considered is the boat's mode of operation. Most recreational boats spend a high percentage of their lifetime at the dock or on a trailer so mounting the anode on the transom is acceptable. Also, trailered boats risk damage to any devices mounted under the hull during launching or retrieving operations. Commercial boats and boats that make long passages are typically underway a much higher percentage of their lifetime. In order for the cathodic protection system to provide protection during the times when a boat is underway, the anode should be located under the hull.
2. The anode can be installed on either side of the drive on the transom of single drive boats but should be installed between the drives on twin drive boats. In either case, the anode should be located well below the water line. If the anode is to be mounted under the hull, it should be located near the drive(s) to be protected.
3. The minimum distance between an anode and the system reference cell is twelve inches (12").
4. If the boat is to be operated in low salinity (fresh) water, install the anode between six and twelve inches from the drive to be protected.
5. Install the anode and route the anode wire so that it will remain clear of any standing bilge water.
6. The anode requires three holes, one for the wire and two for the mounting studs. Drill holes of an appropriate diameter for clearance of these items, making sure that the hole for the wire has no burrs or sharp edges that might cut through the wire's insulation.
7. **!CAUTION!** The anode wire carries positive electrical current. Be careful to route the anode wire in a manner that will insure that it will not be damaged by normal use of the boat. Good electrical wiring practices should be followed. Refer to the ABYC D.C. Electrical System Standards for recommendations for safe electrical wiring practices.

INSTALLING THE REFERENCE CELL

1. The same criteria relative to a boat's drive type and mode of operation as discussed above for locating the anode should be used to determine the proper location for the reference cell.
2. If the boat is to be operated in low salinity water, install the reference cell as close as possible to the drive to be protected. Do not allow the reference electrode to touch the drive structure.
3. The reference cell should be located on the opposite side of the drive from the anode in transom installations. In any case, the reference cell should not be located closer than twelve inches (12") to any anode.
4. Drill an appropriate hole for clearance of the reference cell stud and insulating sleeve. Cut the sleeve slightly shorter than the thickness of the hull. Apply one part polysulfide rubber bedding compound to the fiberglass electrode shield making sure that the compound is in contact with the stud threads. Slide the insulating sleeve over the stud until it contacts the fiberglass shield. Insert the stud through the hole drilled through the hull until the bedded shield is against the hull. Install the bedded 5/8" thick poly washer on the stud on the inside of the hull, then the stainless washer and nut. Tighten the inner nut while holding the reference assembly on the outside of the hull. An accompanying drawing shows details of the reference cell installation.
5. Route a #14 AWG green marine grade D.C. primary wire from the reference cell to the #6 position on the controller terminal block.

INSTALLING THE MONITOR INSTRUMENT

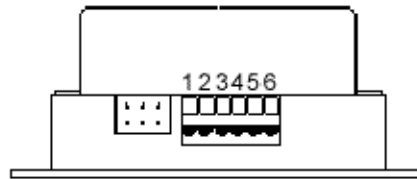
1. The monitor is designed to be installed in the boat's instrument panel. Like the other instruments, it monitors the performance of the system of which it is a part -- in this case the cathodic protection system.
2. Drill a 1-1/16" hole at the selected location in the instrument panel.
3. With the monitor mounting spring and keeper removed, insert the instrument through the hole. Slide the mounting spring and keeper over the signal cable onto the instrument housing. While holding the instrument, press the keeper to the appropriate retaining slot and rotate it 90 degrees. Make sure the raised locking tabs have snapped into their locking slots.

INSTALLING THE CONTROLLER

1. The monitor signal cable is five feet (5') long. The controller must be installed at a location that will allow this cable to be plugged into the controller. Try to locate the controller where it will be relatively easy to route the various wires to it that are needed to connect the system. **!CAUTION! Do not install the controller where it will be exposed to weather or water splash.** If the controller must be installed in a location where water splash is possible, always mount the controller with the terminal strip and monitor header pointed down.
2. After mounting the controller at the selected location, plug the monitor signal cable into the receptacle on the controller. This plug is polarized so it cannot be plugged in incorrectly.

3. Strip the insulation on the green reference cell wire 3/16" and insert it into the #6 position of the controller terminal block. The jaw of the terminal block position that will receive a wire must be opened before attempting to insert it. To open a terminal jaw, press the white lever handle down until the clamping jaw opens. Insert the wire and, while holding it in position, release the lever. The wire should now be locked into the terminal block.
4. If the feature is to be used that allows the green (SAFE) LED to be off when the boat's ignition switch is off, route an orange #16 AWG from the ignition switch to the #5 position of the controller terminal block. This feature is available for boats that do not maintain continuous battery charge -- such as boats that are kept in dry storage for lengthy periods of time. To enable the green (SAFE) LED without connection to the ignition switch, terminal 5 should be connected to terminal 4. This is the preferred configuration for boats that are kept in the water and maintain continuous charge on their batteries.
5. Route a red #14 AWG DC wire from the DC distribution panel to position #4 of the controller terminal block. This wire should be connected directly from the DC positive buss through either a panel mounted or an in-line two ampere fuse. This wire should not be connected to a circuit breaker. If there is a battery disconnect switch between the DC distribution panel and the battery, the DC positive feed to the controller should be connected directly to the battery positive output, again through a two ampere fuse at the battery end.
6. Route a black #14 AWG DC wire from the engine negative terminal (as defined in the ABYC DC Electrical System Standards) or if not available, the DC negative distribution buss or battery negative terminal to the #2 position of the controller terminal block.
7. Route a yellow #14 AWG wire from the controller terminal block position #3 to the drive housing(s) that are to be protected by the controller.
8. Connect the anode wire to position #1 of the controller terminal block. If this wire must be extended, use red #14 AWG wire. Solder the splice and insulate the splice area with heat shrinkable tubing. Remember, this wire carries positive electrical current.

MODEL 620A CONTROLLER CONNECTION GUIDE



CONNECTION:

- 1 - ANODE
- 2 - 12-
- 3 - BOND (STERN OR JET DRIVES)
- 4 - 12+
- 5 - IGNITION
- 6 - REFERENCE

NOTE: Terminal 5 should be connected to terminal 4 to enable green (SAFE) LED without connection to ignition.

OPERATING INSTRUCTIONS

- The anode, reference electrode and the metal structure to be protected must be immersed in water in order for this system to operate. Therefore, when the boat is out of the water either on a trailer, in dry storage or in a yard the system is non functional even if the electrical power to it remains on. When the boat is out of the water or any of the above mentioned elements of the system are not immersed in water the indication displayed on the monitor is meaningless and the system is non functional.
- The drives on boats that have a transom mounted anode and reference cell, for the reasons discussed just above, will not be protected by the system when the boat is on plane and the transom is dry. For recreational boats that are under way a relatively low percentage of the time, the drives will be subject to little to no corrosion attack. The indication of the monitor instrument, as mentioned, will be meaningless during the periods when the anode and reference electrode are out of the water.
- Under all other operating conditions the monitor instrument green LED indicator should be lighted. If power is available to the controller and, the drives, anode and reference electrode are all under water, and either of the red LED indicators are lighted, there is a system fault. This fault could be a failure in the controller or controller wiring or more likely an electrical fault in the boat's DC electrical system or A.C. shore line electrical system.

- If a system fault indication is observed, contact the Electro-Guard engineering department at the numbers listed below for assistance in correcting the problem.

