marine corrosion products

salty doggs

INSTRUCTIONS FOR *SALTY DOGGS*™ SILVER-SILVER CHLORIDE REFERENCE ELECTRODE

The *SALTY DOGGS*™ Reference Electrode is designed to allow you, the boat owner, to determine the corrosion status of the submerged metallic parts of your boat such as the thru-hull fittings, aluminum outdrives, keel, shaft and propeller, etc. In a majority of the boats manufactured in the U.S. with fiberglass hulls, all submerged metallic parts are bonded together with a bonding wire. **These instructions pertain to these types of boats**.

A. CHECK FOR ELECTRICAL CONTINUITY OF THE BONDING SYSTEM

1. Deploy the reference electrode in the water. The electrode should be completely submerged. Wait for 3 - 5 minutes for the electrode to stabilize. Leave the reference electrode at this location for the duration of this test. ***Make sure that that you rinse the electrode with fresh water after you are done with the measurements.***
2. Turn the selector switch of a digital multimeter (with a minimum input impedance of 10 M Ohm, most digital meters will have it) to 2 Volt DC (2 V scale). Connect the reference electrode lead (black banana plug) to the common (COM) or black terminal of the multimeter. Connect a red test lead with an alligator clamp to the red (V) terminal of the multimeter.
3. Connect the alligator clamp of the red test lead to the negative terminal of the battery and record the reading, note both the magnitude and polarity (+/-).
4. Repeat step 3 and alternately make connection to the engine block, prop shaft and all thru-hull fittings. Make sure that you are making a connection to a clean (uncorroded) metallic surface. Use a file to clean a spot if necessary. Record all readings. All readings should be the same as in step 3.This will indicate that all your thru-hull fittings, battery negative and prop shaft are electrically continuous. This is the desirable situation.
5. If you find that one of the fittings is significantly different than the others, this indicates that either the bond wire is broken or the bolted wire connection has gone high in resistance. You need to correct the situation unless the fitting was left unbonded purposefully. It is not uncommon for bronze fittings to be unbonded from the prop shaft and other fittings.

B. CHECK FOR CORROSION PROTECTION STATUS OF YOUR BOAT

This procedure assumes that you have a **fiberglass or steel hull** and electrically continuous (bonded) system containing a combination of stainless and or carbon steel as well as brass submerged fittings. The use of this chart is not appropriate for individual unbonded bronze or brass fittings. Please contact us at www.saltydoggs.com for instructions for this situation.

Repeat steps A-1 to A-3 and compare the readings to the chart below
Be sure to keep you boat in the Adequately Protected Range!

SILVER-SILVER CHLORIDE REFERENCE ELECTRODE

Meter Reading (volt)	Cathodic (Corrosion) Protection Status
More positive than (-0.70)	No Protection
Between (-0.70) & (-0.80)	Inadequate protection
Between (-0.80) & (-0.95)	Adequately protected
Between (-0.95) & (-1.05)	Adequately protected – High Range – not recommended for Aluminum!
More negative than (-1.05)	Over protected

C. CHECK FOR GALVANIC ISOLATOR/ISOLATION TRANSFORMER

This test is for boats equipped with a galvanic isolator or isolation transformer. The purpose of these devices is to electrically isolate the DC wiring of your boat from the ground wire of the shore power. This ensures that the "galvanic corrosion" cell between your boat and other adjacent boats as well as the electrical grounding system is broken. This also ensures that if your boat is equipped with zinc anodes or our special aluminum alloy *SALTY DOGGS*™ anodes, the current from these anodes will not be wasted on other boats.

1. Repeat Step B-1with shore power connected.
2. Repeat Step B-1with shore power disconnected.
3. If the two readings are significantly different, it indicates that your galvanic isolation system is not working. Either the device is shorted or it is bypassed with some other electrical device on your boat such as your cable TV, telephone, etc. You need to correct the situation and repeat steps C-1 and C-2.