

Installation Instructions

SUMMARY

The Yandina Galvanic Capacitor provides a path for low level AC leakage currents to bypass your Galvanic Isolator. It is compatible with the Yandina Galvanic Isolator, and all other manufacturer's isolators with no capacitor or those with inadequate built in capacitors.

FEATURES

- 5 amps AC at 5 volts maximum continuous rating.
- Use with any existing or new Galvanic Isolator.
- Will increase the capacity of isolators with inadequate built in capacitors.
- Waterproof - will operate underwater
- Two 18 gauge Marine Grade leads, 18" long.
- Non metallic housing with mounting tabs.
- Ignition protected for use in explosive atmospheres.
- Suitable for operation up to 185F or 85C
- Mounting hardware included.
- Very compact size, 4" x 2" x 1.5"

THEORY OF OPERATION

Boats with metal in contact with water are subject to galvanic corrosion when connected to shore power as a result of connection to the dock AC grounding conductor. This connection can influence the vessel's cathodic protection system resulting in abnormal deterioration of the zincs and it can result in damaging corrosion of the underwater equipment.

To prevent this corrosion, a galvanic isolator is placed in the ground lead to provide approximately 1.2 volts of isolation which will block typical electrolysis voltages. If necessary, the isolator is capable of carrying high AC currents in the event of a device failure, sufficient to trip the circuit breaker or sufficient to handle the full shore power current if the breaker is not tripped.

Normally no AC current flows in the ground lead and the isolator blocks DC electrolysis current. If an AC operated device on the boat develops a minor fault, the leakage current is conducted to ground so that the operator will not receive a shock. Such a situation is not uncommon with boats in salt water and high humidity. This small AC leakage current will flow through the galvanic isolator on its way to ground.

Depending on the amount of leakage it can diminish the DC blocking efficiency of the isolator and may allow varying amounts of the DC electrolysis current to ride through on the back of the AC current, in the worst case reducing the effectiveness of the isolator by up to 50%.

Ideally, the faulty device or appliance should be repaired or replaced. Continued operation with leakage will often lead to a worsening condition and arcing, sometimes resulting in catastrophic failure and possible fire.

GALVANIC CAPACITOR

For 30 or 50 amp isolators

However in the practical world we often tolerate small leakages so to diminish the detrimental effect on the galvanic isolator, a very large capacitor is wired in parallel with the isolator so it will conduct the leakage current while leaving the isolator efficiency undiminished.

The capacitor does not increase or decrease the AC fault carrying capacity of the isolator. It is only effective on small leakage currents.

TESTING YOUR BOAT FOR AC LEAKAGE

Disconnect one lead of the Galvanic Capacitor, if installed. This test cannot be performed on isolators with built in capacitors.

Place an AC voltmeter set to a low range, e.g. 2.5 volts, across your galvanic isolator. Ideally it should read zero volts. Turn on your AC devices one at a time and watch for a change in the voltage reading. If the reading goes up, that device has some leakage. So long as the AC voltage remains below about 0.5 volts you are not losing isolator capacity at this time. Above that you will need the Galvanic Capacitor. You can repeat the above test with the Galvanic Capacitor installed to witness the reduction in AC voltage.

INSTALLATION

1. Mount the Galvanic Capacitor inside the vessel adjacent to the Galvanic Isolator using the screws provided.
2. Disconnect the shore power cord to prevent electric shock while working on the connector.
3. Loosen the connector screws holding each of the main Galvanic Isolator cables and insert each of the green wires from the Galvanic Capacitor in the terminal and re-tighten so it is connected in parallel.

Make no connection to the small wire test terminal.

TESTING

The Galvanic Capacitor is highly reliable. An annual test, or after a lightning strike is sufficient. After disconnecting it you can test it with a DC amp meter and a 1.5 volt battery. Connect the battery to the Galvanic Capacitor through the meter, **starting on a high current range**. You should see an initial high charging current flow which should drop to less than 100 microamps if there are no problems. You can

disconnect temporarily to change the current range on the meter since the capacitor will hold the voltage for a long time.