

Galvanic Isolator.

ELECTRICALLY INDUCED CORROSION.

There are three types of electrically induced corrosion (sometimes called electrolytic corrosion), that can occur, when a vessel is immersed in salt or polluted fresh water (the electrolyte).

- i. Whenever two dissimilar metals are connected together, if the circuit is completed, through conductive water, a voltage is generated and a current will flow from one metal to the other and one of the metals will begin to corrode. This is **cathodic corrosion**. The fitting of a sacrificial anode ensures that the corroded metal is the anode and not the hull of the boat.
- ii. If the hull of the vessel is connected to the negative terminal of the battery, usually via the engine, it is important to ensure that there are no other points on the hull that are connected to battery negative. This is because if there are two negative points on the hull and one is slightly different potential to the other, current can again flow from one point to another, resulting in corrosion. This is **stray current corrosion**. It can also be avoided by isolating all negative connections from the hull but, in this case, double pole circuit breakers are required in the DC distribution panel, isolating both positive and negative lines in a case of circuit overloads. There should also be an indicator that an insulation fault has occurred if either positive or negative had come in contact with the hull.
- iii. When a vessel is connected to a mains (230v AC) shore supply, the earth conductor should be taken to the same single earth point on the hull as the DC negative. The other end of the earth conductor is taken, via the generating companies distribution grid, to a sub-station where it is physically bonded down to planet earth. If a second vessel is then connected to the shore mains supply adjacent to the first vessel, a circuit exists between the two vessels via the common earth connection to the sub-station and through conductive water.

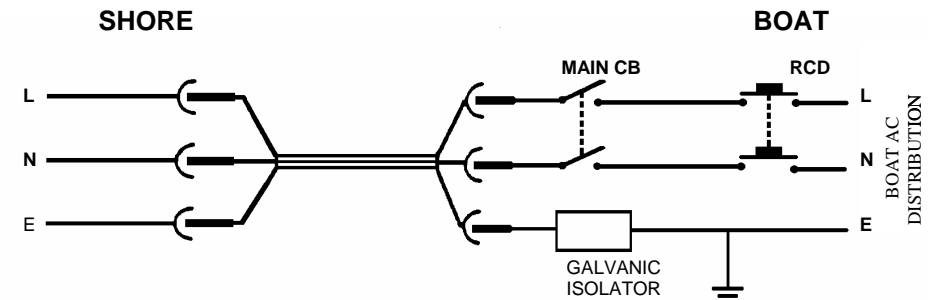
Alternatively, if the vessel connected to the shore mains supply is adjacent to a metal object (i.e. a jetty) that is driven to planet earth, again a circuit has been completed. If the potential between the two vessels or one vessel and the jetty is slightly different, a current will flow and corrosion can occur. This is **galvanic corrosion**. This type of corrosion can be prevented by fitting an isolation transformer in the mains supply immediately after the input plug on the vessel. Alternatively, a galvanic isolator can be fitted in series with the AC earth conductor to block low voltage DC galvanic current flow, whilst permitting the passage of alternating current associated with the earth conductor.

Galvanic isolators only protect against electrolysis or galvanic action.

It will not protect against a fault condition where a voltage differential greater than 1.6 volts DC exists.

Installation Instructions.

1. A Galvanic Isolator must only be used in conjunction with an RCD. The isolator is installed in the earth safety circuit and should it fail, there is no protection when connected to shore power.
2. Mount the Galvanic Isolator adjacent to the AC distribution panel.
3. Connect the incoming shore mains earth cable to either terminal on the Galvanic Isolator. Ensure that this connection is the only one made in the shore mains earth line and comes directly from the bulkhead input plug.
4. Connect the other terminal on the Galvanic Isolator to the earth buss of the AC distribution panel and from there to the common DC negative / earth stud on the hull.



IMPORTANT NOTICE:

This device interrupts the earth safety circuit. It must be routinely checked using a multimeter before connecting to shore power and after any RCD trip.

TEST PROCEDURE -This should be carried out every six months.

1. Unplug any connections to the shore power before commencing the test.
 2. Remove both leads from the Galvanic Isolator.
 3. Using a multimeter, set to the diode test function, test continuity across both terminals using positive and negative probes.
 4. Note the reading on the display.
 5. Short both terminals with a metal object such as a small screwdriver, to discharge an internal capacitor.
 6. Repeat 3, with the multimeter probes reversed.
 7. Note the reading on the display. This should be the same as 4 give or take a few digits e.g. 1032-1029, 783-786.
 8. Re-connect the original earth leads to the Galvanic Isolator terminals, as before.
- The readings can vary, depending on the multimeter used. For a successful test, it is essential that both readings, with the probes reversed, are virtually the same.

DIMENSIONS: 96L x 71W x 56Hmm. WEIGHT: 250g

EC/73/23/EEC, 89/336/EEC and ISO 13297 compliant.

PRODUCTS FROM ADVERC BM LTD:

- Adverc Battery Management System
- Alternators 12v and 24v up to 175amp
- Batteries
- Battery Selector Switches
- Mains Chargers
- DC-DC Converters
- DC-AC Inverters – Sinewave
- DC-DC Generators up to 100amps
- Charger/Inverter Combinations (Combi) - Switchmode
- Digital Circuit Monitors (DCM)
- Shunt Ammeters
- Clip-on Ammeters
- Portable LCD Multimeters
- Galvanic Isolator – Zinc Saver
- Isolating Switches – Heavy Duty
- Generator Sets
- Low/High Voltage Alarm, Protection and Shut-Down (Guardian LVPM)
- Over-voltage shut-down modules (OSM)
- OSCA DC-DC Charger (On-Board Supplementary Charger)
- Solar Panels
- Wind Chargers
- Split Charge Diodes



NEW

Galvanic Isolator

(Zinc Saver)

For Marine use in shore-power situations.



ADVERC BM Ltd.,
245 Trysull Road, Merry Hill, Wolverhampton,
West Midlands, WV3 7LG.
Tel: 01902 380494 Fax: 01902 380435
email: techsales@adverc.co.uk
<http://adverc.co.uk>