



Immersion Heaters - Common Faults

This document provides an overview of common faults which arise on immersion heaters. We recommend going through these check points before installing a Solar iBoost to an existing immersion and to assist in fault finding if you experience an issue with the operation of your Solar iBoost.

An immersion heater is made of three working parts; the heating element, a thermostat and usually a secondary thermal cut out.

Immersion faults can usually be diagnosed by testing 3 resistances:

- Across the 2 heating element terminals
Should be in the region of 20 ohms but can vary slightly.
- Across the 2 thermostat terminals
Should be far below 1 ohm when cold.
- From the heating element terminals to casing.
Should be open circuit.



Insulation breakdown is a common fault causing current to flow from live to earth in the element.

This can create the following problems:

- RCD will trip if its on an protected power feed.
- Current flow is often increased, which can blow fuses, MCB tripping or burnt accessories
- A tripping MCB may prevent it starting.

This fault can be detected by measuring resistance between the element connections and its casing. The only solution is to replace the element.

Element splitting may occur during the last phase of their life. Rapid corrosion of the resistance wire then occurs, breaking the element circuit. However the element continues to operate for a fair time by conducting through the water.

- Resistance testing from element terminals to the casing shows low resistance
- Heating may be faster or slower than usual due to less well controlled current
- Element may cycle on & off due to excess heating
- A heater on an RCD feed trips the RCD immediately.

The only solution is to replace the element.

Burnt thermostat connections is another common failure, and results in failure to function. To test for this, resistance test across the thermostat connections. Resistance should be less than 1 ohm with a cold element. If higher, the thermostat contacts could be damaged.

If this occurs, the possible solutions are:

- Replace element & thermostat in one
- Replace thermostat only, if possible

More information can be found on the following website: http://wiki.diyfaq.org.uk/index.php?title=Immersion_Heaters