

Outboard Overheat Alarm

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Within the lazarette of the Hurley 22 is an excellent place for an outboard engine but .. out of sight is also ..out of mind ... that is until cooling water stops flowing and seizure and engine damage result.

Having had it happen, I have now put together a device to warn of outboard overheat. It consists of a Temperature Switch and sensor, powered by the boat 's 12v battery and both linked to a warning device.
Total cost about £30 ...far cheaper than an engine repair !

Main Components

Temperature Switch (including remote thermistor) .. Maplin .. Kemo Temperature Switch £12.99

12v buzzer... Maplin ..High Power 12v buzzer £3.59 (A lamp indicator could also be used)

Bolt to secure thermistor to engine Pro Bolt.. 12mm long M8 alloy socket cap screw.... £ 2.49
(This suited the Mariner 5 engine's flushing port... alter to suit your situation. Existing bolt fixing was found to be too short to enable secure connection)

Short section of alloy fashioned to contain thermistor and allow it to be bolted to engine.

2 off 1m insulated electrical cables to allow thermistor extension to engine ... any insulated cable will do but do not have it too long .. see user instructions supplied with Temperature Switch

Heat shrink sleeving to insulate connection of thermistor to its length of cable .. £2.50 ... Maplin

Electrical cable as required to connect all to together and to 12v boat battery.

Screw Terminal Electrical connection block.. 3 or 4 way .. allow £5 (This is not essential but it does make connecting up easier)

12v Switch .. bulkhead mounted preferred to allow operation from outside container ..allow £3

Container to house all parts above I used a 1 litre plastic food box reinforced as required.

You should also ensure that supply from the boats' battery is **fuse protected** (fuse to suit buzzer .. 1A probably)

Operation..

With the Temperature Switch connected to its engine mounted thermistor and to a 12v supply, a set of contacts within the Temperature Switch will close when its thermistor reaches a pre-set adjustable temperature setting. These contacts are then used to connect a 12v buzzer to the 12v battery supply

The addition of a master switch enables the whole unit to be switched on and off.

Overall the fabrication is straightforward The circuit diagram and photograph shown should provide most information, although points of special note follow :-

Notes

Fabrication of a holder / engine bracket to contain the thermistor.

I used a section of thin alloy which I shaped and drilled so as to form a holder for the thermistor and enable its mechanical connection to the engine .

It will be necessary to connect/solder lengths of insulated wire to the thermistor... maximum about 1m and also to ensure that it remains insulated where it goes into the engine bracket

I inserted the thermistor into the bracket and secured it in place using an epoxy mix. Any suitable hard-setting waterproof insulating medium should be fine.

Position of Thermistor to Engine Attachment.

I used the fabricated bracket as described earlier with a sealant to secure thermistor to the engine's water flushing port. This position may be contentious particularly if you follow the handbook recommendation and flush after every use. Alternatively find another location for it.. with the engine hot, search around for a suitable attachment point !

Sea Trials

Appears to work well, so far 5 months no problems. If the temperature limit adjustment is set at too low then, the alarm will either sound with coolant running or sound shortly after engine has stopped as the removal of the cooling water flow allows temperature to rise ... Solution just keep increasing the setting slightly until this just does not occur. Alternatively you could leave it set like that .. it becomes a confirmation that it is working although you will need to switch off the system and remember to switch it back on next time the engine is used. You will also find it useful, particularly in early days, to attach within the box, a perhaps, "home made" mini screwdriver with which to adjust the pre-set on the front face of the Temperature Switch.

Circuit Diagram and Photograph of main Temperature Sensor Assembly follow:----

