

The following explains the function of a float switch.

The image below shows the float positioned on the stem of a float switch assembly. The stem contains a reed switch. The float contains a magnet. See reed switch description below.

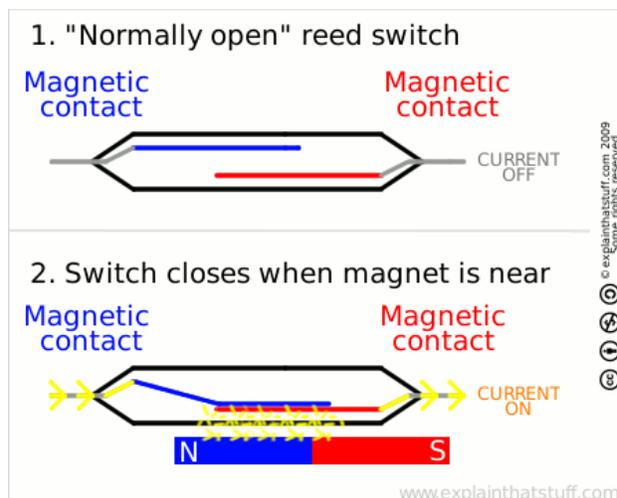
The switch depicted is of a switch that has been immersed in diesel in order to determine float immersion and point of reed switch change of state. The 'wet' fuel line can be seen. In this case the reed switch changes from normally open (NO) to closed contact 3/8" from the lower hex head to fuel level. Switch hysteresis is 1/16th meaning switch changes from closed to NO, 7/16th from lower edge of hex head to fuel line. Fuel level has to fall 1/16th after level before switch re-opens.

Actual float switch assy.



Reed switches

The reed switch consists of two contacts (which look like metal reeds) made from magnetic material and housed inside a thin glass vacuum envelope. (see 1.) As the magnet approaches the reed switch (see 2), it magnetizes the contacts in opposite ways so they attract and spring together.





Take the magnet away and the contacts, made from fairly stiff and springy metal, separate and return back to the original open position.

Note - Inverting the float on the stem shifts the magnet position which is in one end of the float, changes contact configuration from normally closed (NC) to NO contact configuration.

Reliability notes.

Reed switches being encased in glass are protected from environmental effects, i.e contact corrosion. The glass switch is encapsulated in the stem of the float switch using resin based potting compound. By virtue of simplicity and degree of mechanical protection afforded to them are inherently reliable.

Reed switch failures tend to be associated with:

- Damage to wiring as a result of mechanical intervention.
- Contact overloading. Max reed switch contact rating is 50 watts. Please ensure that switch loads near or above use an interposing relay where high currents are seen by the relay contacts and not the float reed switch.
- It is possible that the magnet in proximity to a neutralizing energy source could lose its magnetic strength however we have not seen this condition.

The float on the stem has a generous clearance and is retained by a spring clip, as can be seen on the photo above which requires personnel intervention to dislodge the clip. The magnet in the float is 'cast' into the float and cannot dislodge. The Buna float material is impervious to diesel fuel. The simplicity of float action on the stem makes for an inherently reliable level control solution. Failures to float switch operation have been experienced where pipe dope has become attached to the stem causing the float to stick. Cleaning the material from the stem will clear the stiction however investigation as to source of pipe dope is recommended.

Please make sure that any application of pipe dope on a tank fitting is minimalist and that the pipe dope is suitable for use with diesel, (dB(i) exclusively use Loctite 567). Some pipes dopes 'soften' in diesel which dilute, resulting in excess material floating on the top of fuel. Action of rising and falling fuel will result in float switch stem becoming contaminated with this or similar 'foreign' material.