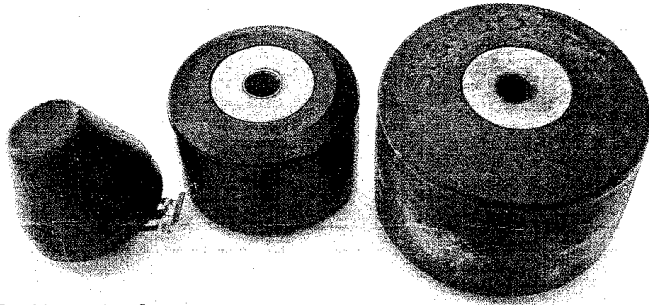


What are the concerns with biofuel for MG enthusiasts?



Set of the new plastic floats

Earlier this year a report on the compatibility of vehicle fuel systems with bioethanol from the consultancy QuinetiQ for the Department of Transport recognised the problems for older cars running on blends of ethanol and petrol. The report recommended a delay in the introduction of higher levels of ethanol in the UK. The questions on many MG enthusiasts' minds are what are those problems, what damage has been seen with SU fuel system components and what alternative materials have been used for replacement parts? So we visited Burlen in Wiltshire, the only maker of genuine SU carburetors, fuel pumps and spares, to see what damage they have seen to SU fuel system components from ethanol and what alternative materials they have used to produce replacement parts.

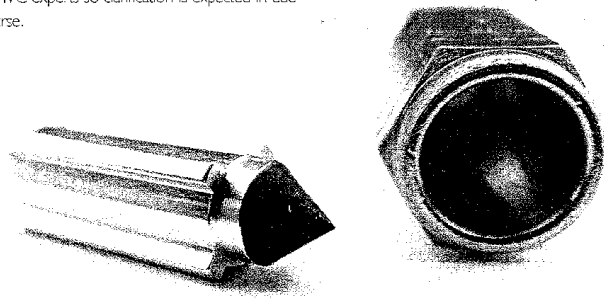
Since the introduction of ethanol in motor fuels in the UK and overseas there have been three main areas of concern – corrosion of fuel tanks, compatibility issues over the effects of biofuels on rubber components and sealants, and combustion issues. The FBHVC (Federation of British Historic Vehicle Clubs) has recognised the seriousness of the problems with the present E5 (motor fuel with 5% ethanol) and has been very actively working on them, not least lobbying Government to delay the planned introduction of E10 in the UK.

The **corrosion concerns** are that biofuels in petrol attract water which can then lead to corrosion in fuel storage tanks and supply systems, particularly when fuel is stored for lengthy periods in a classic car laid up over the winter months. A number of corrosion inhibitor additives have been produced, some of which are already available from suppliers and classic car specialists. Earlier this year the FBHVC commissioned independent tests

of commercially available additives and the results are expected by the end of 2011. Then the Federation hopes to be able to launch an endorsement scheme to assist classic car enthusiasts selecting an additive.

The **compatibility concerns** are that some types of elastomers and polymers used for moulded and flexible rubber components may swell, shrink, begin breaking down or leak and seals may not perform well. The most common complaints are that fuel tank sealants have failed and the consequential effects are leaks, blocked carburetors, fuel starvation, weak mixtures and engine damage. Biofuels also have adverse effects on some metal components in fuel systems, for example brass and copper. Unfortunately there is no quick fix or additive solution for these material compatibility problems, only replacing non-compatible materials with parts which can perform better in the ethanol/petrol blends used in commercially available motor fuel.

The **combustion and driveability concerns** with the biofuel blends currently available pumps in the UK are technically complex and in some respects controversial. They are being examined by FBHVC experts so clarification is expected in due course.



Rubber tipped needle valve

What problems have Burlen seen?

Generally Burlen has not seen many problems or complaints with SU carburetors – in fact only two in the last few years. In those cases the problem was jelly-like deposits in the carburettor bowl but Burlen feels it is likely the problem is caused by other factors, for example from drivers in other countries using various additives in their fuel which lead to SU carburettor and fuel system problems.

Damage has been seen to plastic motorcycle fuel tanks and the cause has been identified as the adverse action of biofuel on the original plastic tanks fitted to those machines. So replacement tanks, made from a biofuel-resistant plastic material, have been a necessary preventative replacement.

Burlen's tests on the rubber fuel hoses previously supplied for SU fuel systems showed some disintegration on the inside surface of the hose from E5, so Burlen now supplies an ethanol-resistant rubber fuel hose. Another replacement fuel hose option, Gates 3225 hose from Car Builder Solutions, is good for 7% ethanol.

SU carburettor bodies were made from Mazak (zinc and alloying elements of aluminium, magnesium and copper) but most recently are pressure diecast aluminium items which they hope to roll out across the SU range. The latest aluminium bodies are for MG P and J types and H4 carburetors for MG TFs and MGAs. Whilst Mazak is not recommended as compatible with biofuel in the table below produced by CONCAWE, Burlen has not seen any adverse effects or damage except the deposit of a light varnish or gum, which has not become a problem. Nevertheless, they continue to monitor the situation.