When the MMM engines were designed there was still a reliability problem with ignition systems. Part of that was undoubtedly due to poor maintenance and understanding of electrical systems in general, and part can be attributed to the components of the time. The net effect on the car buyer was a feeling that the older magneto ignition was somehow the more "sporting" option compared to coil and battery, not least because the faster the magneto went, the higher the spark energy ought to be, whilst the opposite would be true for a coil system.

In reality, mica insulated plugs probably suffered fouling from early leaded petrol deposits, and the high voltage insulation of the other parts (including inside magnetos) left a lot to be desired, especially in the wet.

When car radios were first offered (for MG in the K saloons maybe?), there was a need to suppress the radio interference produced by the ignition, and a range of resistors for the HT cable as well as capacitors (similar to the distributor capacitor) appeared on the market. This became more important after 1936 when VHF television came to London. The first television systems used positive modulation and AM sound, so ignition impulses appeared as white dots and a buzz on sound. The sync pulses were vunerable to this intererference, often leading to complete picture loss as a car or motorbike went past. Later analogue systems moved to the less vunerable UHF frequencies and used negative modulation, so the interference produced black dots and the FM sound was less vunerable.

Now, you may think digital systems are unaffected by this now, but as many MMM's now have no suppression at all, the problems can return in strange and big ways......

A typical case;

I fitted a pair of two contact BAY15 sidelight bulbs (<u>http://www.norbsa02.freeuk.com/goffyleds.htm</u>) in which one contact is for the white sidelight and the other the orange indicator. If when the white light is on the orange contact is powered, the white will go out so that the orange flashes alone giving maximum visibility. When the orange is no longer powered the white will light again after a short delay. Unfortunately, with an unsuppressed ignition system, there is so much Radio frequency energy radiated to the other car wiring, the bulbs think the orange is on and shut down completely. The flasher relay is electronic too, and that hesitates when the engine is running.

With a typical metal wired ignition system, there are really four modern options to reduce the RF emitted from the plug leads;

- 1) Use resistive plug caps.
- 2) Cut the coil lead and insert an inline resistor, or maybe fit one in each plug lead.
- 3) Fit a screw-in distributor centre resistor (Lucas 78114B)
- 4) Fit resistor plugs, such as BPR6HS

Now, personally, I like the old metal plug terminals for the ability to check the spark with a screwdriver. The Lucas distributor centre resistor looks OK, but the in-line ones have been known to cause surface leakage in the wet (think motorbikes)

The modern resistor plugs are surprisingly economical, because the most popular MMM

type was used in several General Motors engines in the 1980's in order to prevent "own goal" interference when electronic engine management was introduced.

Testing on a J1



Using an oscilloscope on the 12v coil connection, a quite frightening 200 volt spike followed by 50 volts of RF "splats" were visible after each spark. A nearby spectrum analyser confirmed the blotting out of much of the broadcast spectrum.

Fitting either the resistor plugs or the Distributor central resistor cured the RF problems.



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That just left the remaining voltage spike, caused by the inductance of the vehicle wiring and especially that of the ammeter on the dashboard. A capacitor of 100n Farads or so across the coil 12 volt terminal to firewall metal did the trick there. Similar capacitors were sold to stop dynamo "whine" when economical transistor car radios came in during the 1960's, and they may be useful as an emergency distributor capacitor.



So, at last I can pass the Neighbours houses in the evening with a clean conscience. Oh, and those magnetos don't half take engine power and wear out the drive gears.