Spark Plugs

Most owners know that the spark plug ignites the compressed petrol mixture in the cylinder bores of their engines, but although most plugs look similar in appearance, there are sufficient differences in the composition designed to suit varying engine demands.

The obvious physical differences are in the diameter of the threaded fixing section, two common sizes are used in Austin Seven engines, 18mm used up to the introduction of MK2 Ruby and afterwards the 14mm modern appearance plug was universally fitted. The most important hidden difference in both types of plugs is the composition of the section that protrudes into the cylinder and is contact with the petrol mixture. Different working conditions inside the cylinder bore demand the use of plugs with a choice of heat ranges to suit,
the efficient working of the engine is almost totally dependent on the correct type of plug used. Nearly all pre-war car engines were designed with low compression ratios, under stressed and with low maximum revs per minute, but they all tended to suffer from a common problem of cylinder bore oil burning. This can quickly cause a spark plug to be fouled with oil deposits, short out the ignition spark with resultant misfiring.

To prevent this problem most pre-war cars used a plug called a hot running type, this means that the construction of tip and core are such that they allow them to reach a sufficiently high enough temperature to burn off the oil deposits before they can cause harm. Unfortunately the use of a hot running plug cannot be considered to be universally suitable for all engines because if used in a higher stressed engine that naturally develops higher temperatures, the plug tip will over heat and prematurely ignite the petrol mixture, this is, of course, more commonly known as pre-ignition or ‘knocking’ and may be very harmful to the health of the engine.

To prevent this pre-ignition occurring, a cold running plug was used, use of cold running plugs in pre-war cars is not common, their use was usually confined to the odd high performance or racing cars. Needless to say the Austin Seven engine in normal road use is ideally suited to a plug with a hot running tip.

Now the problems start to arise, for the original specification 18mm plugs ceased production many years ago and can only be obtained if old stock is lucky enough to be found. Of course it is still possible to purchase newly manufactured 18mm plugs, but while these look similar to the originals, they can very much differ in the choice of heat ranges. This heat range normally varies from normal to cold running; it is difficult to obtain a hot enough plug to self-clean oil contamination. Whilst these modern plugs will cause no problems if your car engine is in good condition, they cannot cope with any excessive oil

burning without fouling the electrode and subsequently misfiring.

We all seem to own Austin Sevens that sometime in their life suffer from cylinder bore oil burning, but provided plug misfiring can be avoided the Austin engine will perform and run quite happily for many years whilst suffering from excessive oil consumption.

Now there is an alternative to spending your life scouring auto jumbles for original 18mm plugs, and that is to purchase a set of 18mm to 14mm adaptors, these will screw into the cylinder head and allow the use of the modern 14mm plugs. These threaded adaptors are usually available from the normal Austin Seven spares special lists, or failing this, try a vintage motor cyclist specialist. The immediate advantage of being able to use modern 14mm plugs, is of course, the choice of a complete heat range to suit all types of engine working
conditions. I have found from experience that providing your engine is in reasonable condition, then a long reach plug normally used in Morris 1000's and early mini's (N9Y and N9YC) will run with no problems. If oil consumption is excessive ask your spares dealer for a hotter running plug, for information in the Champion plug range, the higher the number the hotter the plug, but please ask your supplier to check on his specification chart.

There are several things to be aware of when intending to use modern plugs. Firstly is the common use of a resistance type plug in today's car engines, these are used for the purpose of radio suppression and also tend to intensify the spark generated at the plug tip. The use of this particular type is not recommended on pre-war engines because they demand a substantially higher current from the high tension circuit. This higher current will always seek the path of least resistance, usually tracking through the Bakelite insulation in the distributor cap and base, this tracking once it is allowed to develop will inflict permanent damage which is not repairable. So always make sure you ask for a non-resistant plug, they are usually marked through their serial numbers being preceded with a letter 'R'. Needless to say the resistance type plug is absolutely forbidden in engines that have magneto ignition, unless you want to become on first name terms with your magneto rebuilders.

Secondly, the other thing to be noticed when selecting modern plugs is to be aware that some modern cars use 18mm plugs. (Mostly 0n 70s to 80s Ford cars). Whilst this looks the easy answer they are in fact not suitable for Austin engines because these plugs have a tapered base and are designed to fit into a corresponding tapered seat in the cylinder head. They will not provide a gas tight seal when
used into the Austin cylinder head. Further to writing this article, I have now found that by the use of double copper washers, an acceptable gas tight seal can be obtained between

tapered plug base and cylinder head. The advantage obtained by using these 18mm plugs is a very hot running plug, hot enough to be used in any Austin Seven that uses excessive oil.

The types to look for are:
1. Champion F7Y or F7YC
2. Bosch D9BC (the best because they have screwed top terminal)
3. Motorcraft BF22

Note of caution:-

Always try turning over the engine slowly by hand after fitting the tapered seat plugs because they extend into the combustion chamber more than a conventional plug.

I have for the last 10 years used the Bosch D9BC in my Austin 7 MK1 Ruby with no ill effects, the occasional oiled up plug is now not experienced.

For information, if the plug serial numbers and letters contain the letter 'C', then the plug has a copper plated core, this makes no difference when the plugs are used in Austin 7's.

If there is a letter 'R' apparent, then this indicates a plug with built in resistance, do not use these plugs in your Austin 7's.

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