Weber Carburettors: Choosing the correct size

Carburettors

Before deciding to buy Weber carburettors, first consider the use you are putting the car to. Webers are notorious for being difficult to tune between idle and the main jet, but are of course known to provide good acceleration and full throttle performance. As Webers were originally designed pre war it is worth considering spending the money on more modern EFI options (Phone Revington TR for further information), or in the case of a TR5 or 6, getting the mechanical petrol injection working properly.

Choosing the correct Weber size

Gas speed is all-important. Large carburettors reduce gas speed at low revs but allow large quantities of air/fuel in at full throttle.
For racing or rally purposes the following is appropriate:

TR7 V8 engine 5.2 ltr using 4 x 48 DCOE Webers would have: -
8 x 48mm throttle body tracts. CSA = 14478mm sq which is 2784mm sq per ltr

A TR2-4A 2.3 ltr rally engine using 2 x 45DCOE would have: -
4 x 45mm throttle body tracts. CSA = 6362mm sq which is 2766mm sq per ltr.
This is about as big as you would want to go

A TR6 2.6 ltr race engine using 3 x the smallest Weber, a 40 DCOE would have: -
6 x 40mm throttle body tracts. CSA = 7540mm sq which is 2900mm sq per ltr

As you will see for the cc of the engine the TR6 whilst using the smallest diameter carburettor has by far the largest tract per litre. This is therefore not ideal for a road car.

In all cases it is essential to choke down the carburettors to achieve the best balance between drivability and outright performance. This can only be properly understood and adjusted with the benefit of a steady state rolling road (An inertia brake rolling road is not ideal for this work)

Rolling road tuning

First it is necessary to understand the difference between ‘tuning’ and a ‘tune up’. I realise that there is little difference in the words but there is a world of difference in the meaning.

A Tune up is where, with the car static and hooked up to Crypton tuner or similar the technician is able to see if the engine meets all the factory criteria, and if not, adjust the fuelling and ignition timing to bring them back to factory settings.

Tuning is the process of establishing, form first principles, the fuelling and ignition requirements for a unique engine, right through the driving range from tick over to light load, right up to full throttle. Due to the full throttle full load requirements of this test, it should be obvious that it is necessary to have the car stationary in the workshop, whist the engine is driving the wheels at speed on a machine capable of replicating the load applied to the car by drag and the friction of the road surface. This is exactly what a steady state Rolling Road does.

How long does all this take? Bear in mind Ford, BMW et al spend thousands of hours with hundreds of technicians sorting out the correct ignition and fuelling requirements for a new car, in hot, cold, wet and dry climates. With this in mind it is obvious that a day on a rolling road will only

approximate to absolute correctness on your engine, which, with its own specification is unique. How close the tuning gets to perfection for that engine depends on how long you are prepared to spend on the rolling road. It is worth mentioning the 20/80 rule here. This states that you get 80% of the benefit for 20% of the cost in time/money. The remaining 20 % of perfection will cost another 80% in time/money. Suffice to say that half a day to a day on the rolling road will generally produce a satisfactory result, which may well pay for itself in short order with improved fuel economy.

If you are considering a Rolling Road exercise, ensure your engine, carburettors, distributor are all in tip top condition and that all basic stuff such as cam timing and tappet clearances are all correct before turning up, otherwise you will have to go away and fix them or pay to have them fixed on the day. Also consider the cooling system of the car. The car will have a fan placed in front of it to provide extra cooling, but this does not by any means equal the cooling effect of the passage of air on the open road. If you have a dodgy radiator, clogged up block or dodgy hoses, change those first.