

# Weekend Workshop - 'T' series problems

**Paul Carter had been having problems with his T turbo which had been puzzling him for weeks. He's now sorted it and thought members might be interested to read both the problem and answer.**

I have a Rover 800 Vitesse Sport which has been suffering an idle problem. The revs would drop to around 500 and then the MEMS would attempt to recover it shooting the revs up to 1400, it would then settle back to 850 before repeating the process. Sometimes it would just stall.

I noticed that several people had a similar problem on the tech pages, so I checked all the suggested causes. Plugs were fine, couldn't find any loose or dirty connections, no air leaks (though I did replace a couple of suspect pipes). The throttle body had already been cleaned thoroughly along with the throttle linkage. Lifting the bonnet in the dark revealed visible sparking from the HT leads - these were only 10 months old so I had them replaced under warranty (I'll come back to these later). All this was to no avail - I still suspected an air leak so I tried the butane test. Quite simply wave a butane torch (not lit!) around any joints and pipes in the engine bay, if there is any leak the engine should ingest some butane and you should detect a reaction in the revs and engine note. I even disconnected the vacuum pipe to the recirculation flap in the cabin to eliminate the flaps solenoid as a cause. Nothing!

I then contacted some of my old Rover mates (I'm ex Rover Design and Engineering - Door Systems). I'll now cut a long story down to reasonable proportions. It turns out that T turbos suffer from something called 'oil pull over'. What this means is that at high revs and power oil gets past the rings and during the scavenge portion of the four stroke cycle it pushes some of this oil back into the inlet manifold. This is what causes the throttle body to gum up!!! It also pushes some of this oil down all the pipes that lead off the manifold to various functions. One of these pipes leads to the MEMS unit, inside which is an absolute pressure sensor (known as a MAP sensor - Manifold Absolute Pressure). This pipe and the sensor can become blocked by the oil residues thus preventing the sensor from measuring the manifold pressure. The MEMS detects this and resorts to 'limp home mode'. When in limp home mode the

idle is disrupted along with full power delivery.

I removed the pipe and thoroughly cleaned it out with carburettor cleaner. I also removed the MEMS and took the lid off. I removed the little pipe leading to the sensor and cleaned that. Then I carefully rolled cotton wool into strands and pushed it into the sensor - this came out covered in oil. After doing this several times I dampened the cotton with cleaner to get the last out (can't guarantee how the sensor might react to the cleaner, but mine seems OK). I rebuilt the MEMS using silicon sealer to seal the lid back on (it has sealer on as original, making it hard to get off - oh, and you'll need a T20 security torx bit) and refitted everything. Before starting the car I put the MEMS through its adaptive idle sequence. Turn on the ignition, wait 5 seconds and turn back off. Wait 10 seconds for the MEMS to go to sleep then turn the ignition back on. Now gently take the throttle peddle from rest to full throttle and back again five times - you will hear the stepper motor come to life when it adjusts itself. Now start the car. The car is now running fine. Here, however, is the sting in the tail. It turns out I sabotaged the car myself!! I noticed that the oil I was removing was red in colour. Strange I thought, until I remembered that about 3 weeks previously I had used an engine treatment that is also red in colour. I had followed the instructions on the bottle and dribbled some of this product into the throttle opening. The theory appears to be that it passes through the inlet tract cleaning as it goes. Some of this product must have remained in the manifold (it is quite thick) and under boost and over time it got forced down the MAP sensor pipe. Moral? If using any kind of engine treatment in this way disconnect the map sensor pipe whilst doing so and follow up with something fluid like carb cleaner to ensure there is no residue - better still, don't do it at all.

My learned ex-colleague also informs me that non turbo T and K series engines can suffer from this problem. So, if you have rough idling

check out the MAP sensor and pipe. On later cars (1997 model year on) Rover apparently introduced a filter into the MAP sensor pipe in an attempt to stop oil reaching the sensor. Can't comment on how effective this was, nor can my local dealer find a part number but you could buy a filter and fit it to earlier cars. I'm not going to bother - you remember that item in the service schedule that says 'ensure all breather pipes are clear'? It really does mean ALL pipes. If you drive your car hard, worth checking more frequently than the 24K miles suggested.

Now, as promised, back to those HT leads. Around 10 months ago I replaced the HT leads (with OE ones) because the set on the car were sparking all over the place (lift the bonnet in the dark). The car ran much better with the new leads. In the course of my above investigations I discovered the problem again, so had the leads replaced under warranty. After fitting the new leads the car is again much better, however, there is still some very slight visible sparking even from the new leads. My experience leads me to believe these leads will deteriorate in about a year. Assuming that this does happen, I can only conclude that the OE leads are not up to the job. It is my intention to keep an eye on this and if the leads deteriorate as I expect them to, I will just have to replace them with a super dooper set from somewhere. Fortunately there seems to be plenty of choice, so I guess it will be down to looking at which leads can spark the highest voltages and have the highest operating temperature limit. There are leads capable of firing 70kV at 250C. Expensive? Of course, but if the OE ones are as poor as I think, well worth the money. Anyone else had a similar experience?

Unfortunately I did not take any pictures this time. It would also be interesting to hear if anyone else experiences the same problems - especially the one about the HT leads. (05/03)