

Corrupted Fuel Consumption Reading on Rover SD1 Efi Cars



For the first two years of owning my Twin Plenum Vitesse I experienced an intermittent corrupted "Instant" mpg fuel consumption reading on the trip computer. Basically, the normal readings intermittently showed a much lower figure than was either possible or likely.

For example, at a steady cruising speed of about 55 mph in fifth gear, the "Instant" mpg would intermittently read 25-28 (corrupted) rather than 35-45 (normal). Even on engine over-run, the figure would never show more than 28 (corrupted) versus 60-90 (normal).

For months I presumed there was an intermittent fault within the fuel management system, testing the ECU, all the sensors, throttle potentiometer, injectors and wiring but with no resolution. Even after replacing the ECU for a different reason the fault remained, so I turned my attention to the trip computer readout system itself.

With limited knowledge and information, I looked for the most obvious causes, wiring, connectors etc. I even borrowed a spare trip computer unit but could not locate the cause.

To preserve my sanity I eventually gave up the search until I acquired a second Efi car (Vdp) and found that it had exactly the same intermittent fault. This was not a total surprise because I had in the meantime corresponded with other SD1 owners who had experienced the same fault, so there had to be an endemic problem. With renewed determination I set about tracking down the cause.

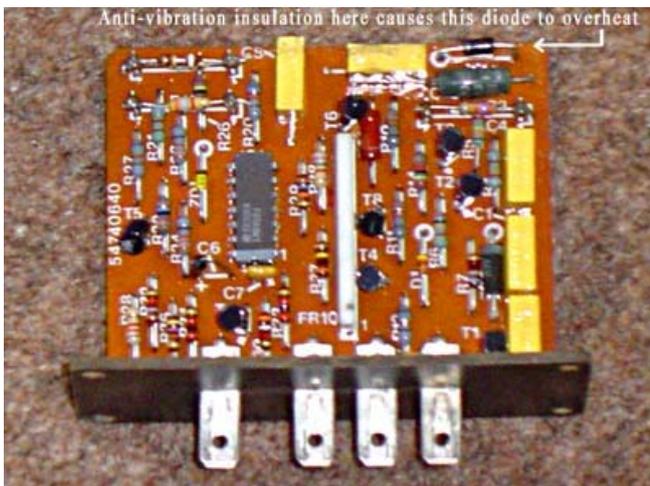
On Efi cars the normal (ex-carburettor) fuel flow meter signal to the trip computer is replaced or emulated by an interface unit (see above image) which calculates fuel usage using a signal derived from No 8 injector. Fuel usage, of course, is directly proportional to injector "open time", so electronic conversion was an obvious and accurate design solution.

The trip computer fuel flow interface is located behind the gauges in the instrument binnacle and I substituted it with a unit obtained at a Rover SD1 Club spares day. The problem immediately disappeared but after a few weeks the intermittent corruption mysteriously re-appeared.

Next, I dismantled one of the units by drilling out the four rivets that secured the cover, exposing the internal printed circuit board for inspection. At the end of the board an anti-vibration foam pad glued to a large yellow capacitor also covered an adjacent diode that appeared to have overheated.

In doing so it had crystallised the adhesive, the foam and its own paint and markings leaving the diode effectively coated with carbonised junk. I cut away the offending foam, thoroughly cleaned up the diode, re-soldered all the local joints for good measure and reassembled the unit using screws in place of the rivets. Back in the car, the intermittent fault on that unit was cured.

Both my other units were found to be in identical condition so I repeated the procedure and the faults on them also disappeared. Flushed with success, for an experiment, I collected interface units from spares days or junked cars. They all showed the same fault and from a total of eight units, just two failed to respond to the curative treatment described. So what was going on?



I believe the component concerned is a Zener Diode, which is used as a reference voltage within the electronic circuitry. If true, this type of diode is known to be temperature sensitive.

On sunny days the interface location, below the windscreen, gets very hot and the combined effect of this hostile temperature and the foam pad trapping heat within the unit, with no means of cooling, causes the component to operate outside its temperature tolerance or even to fail completely. This might explain why some subsequent interfaces remained unrepairable using the above method.

Alternative solutions could be tried.

- Replace the faulty diode with a higher rated device. (Without a circuit diagram or component list, I don't have a specification).
- Relocate the interface, perhaps below the fascia, but this would require a cable extension.
- Coat the diode with electrical heat sink gel/grease to further reduce the local overheating effect.
- Drill ventilation holes in the plastic cover adjacent to the diode.

So there you have it! If you own a Rover SD1 Efi car and have experienced intermittent low "Instant" mpg readings on the trip computer, as described, have a look at your fuel flow interface! My experience showed beyond doubt that the diode overheats and removing the anti-vibration insulating foam from the end of the board, cleaning up and resoldering the diode can cure the fault.

I would be interested to learn of other owner's experiences with this problem and of any technical information relating to the interface circuit or components that throws further light on the subject.

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