

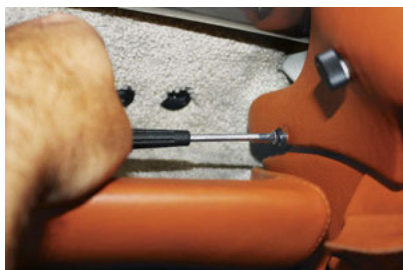


IGNITION ON...TICK, TICK, TICK...



I have had my 2002 Tuscan for approaching eight months now, and have enjoyed every minute of it. However not long after I got it I started intermittently getting a Code C when I turned on the ignition. Eventually this happened every time.

This code means that during the dashboard start up sequence the temperature gauge is not able to reset itself properly.



Before going any further, I should point out that I already knew that the temperature gauge worked properly and moved normally. I should also say that although in my case it was a Code C, this process could also be used for all the diagnostic codes from A through to F as they could all potentially be caused by a similar problem, provided that the relevant gauges are moving. The codes in question are:

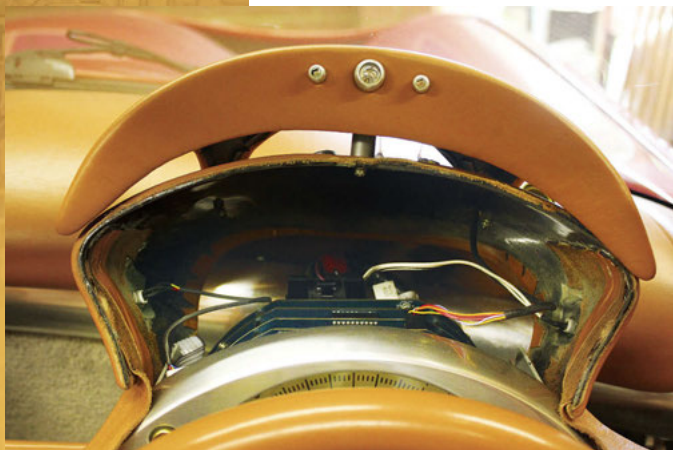
- A - Speedo sensor not activating zero switch or switch broken**
 - B - Speedo sensor not releasing zero switch or switch broken**
 - C - Water level sensor not activating zero switch or switch broken**
 - D - Water level sensor not releasing zero switch or switch broken**
 - E - Fuel level sensor not activating zero switch or switch broken**
 - F - Fuel level sensor not releasing zero switch or switch broken**
- (A full list of codes is available on the club website under the model areas)*

There are two causes of these diagnostic codes that I believe are within the capabilities of a normal mechanically competent TVR owner, with the necessary tools. The first is that a connector has come loose or has a dodgy connection, and the second is that a micro switch has failed. Therefore if you feel like having a go at this yourself, this is how I went about it.

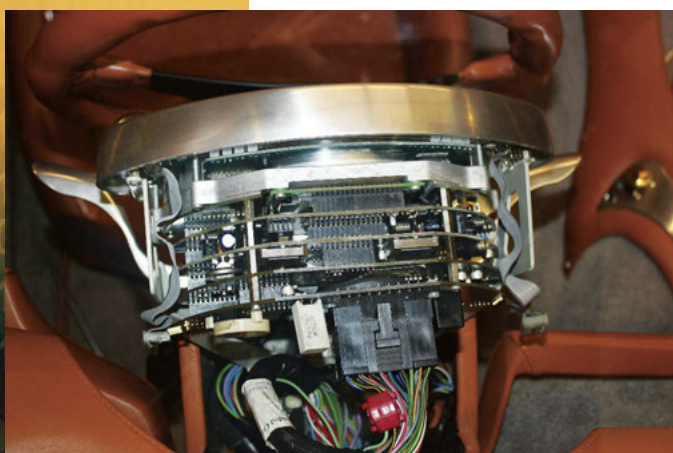
My first job in both cases was to remove the instrument pod (*which I will just refer to as the pod from now on*). This is a relatively simple job and only requires a Phillips screwdriver, although a long one and a shorter one make this easier. Start by lowering the steering wheel as low as it can go. I find it much easier to sit in the driver's seat first as otherwise my legs don't go under it in this position very easily. In all cases, where mentioned in the rest of this article, left and right refer to my left and right when I am sat in front of the pod (*i.e. the driver's seat*).



The tools required are a few screwdrivers (*flat and Phillips of varying size and length*), a small Allen key, a continuity meter (*most multi-meters have this function*) and a soldering iron (*and electrical solder*).



At each side of the pod top cover at the back, just above the join between the top and bottom covers, there is a screw. I undid these two screws but did not take them right out (*although there is no reason why they could not be removed and put in a safe place*). In mine there was no additional fastening of any sort, which means that sometimes it has come loose (*and this is something that I will be looking at further in the future*). I am aware that some owners may have glued the front top or used other methods to stop this happening, so if you have a go at this, watch out for that. Once the pod top cover was unfastened I was able to lift it up slightly to reveal the stack of circuit boards on the back.



Before I was able to lift it right off there were some cables that needed to be disconnected. These are the change up/rev lights on the top, which has a multi plug into the top of the circuit boards, the windscreen wiper timer, which has a connector along the wire (*which in my case was tucked down the back of the circuit boards*), and finally the pod backlight dimmer, which connects into the right hand side (*I am aware that not all Tuscons, especially the earlier ones, have this fitted*). I made sure that I made a note of how all the connections go, as for example in my car there is nothing to stop you connecting the pod backlight the wrong way around. Once the cables were disconnected I removed the top cover and put it somewhere safe, which in my case was upside down on the passenger seat.

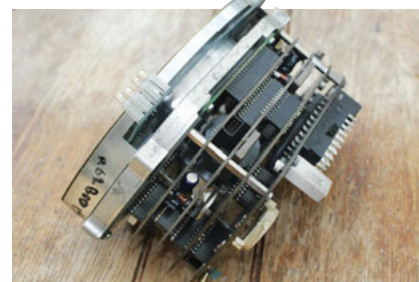
Before going any further I disconnected the large connector in the middle at the back; there are two clips that secure this one. One is visible on the top and there is an identical one on the bottom. I disconnected this to isolate it so that I could not accidentally short anything. I actually disconnected it before doing anything, only connecting it back up to test and when I put it all back together.

The next thing that I did was to check the connections from the micro switches where they join the circuit boards. The speedo and water temperature sensors connect to the circuit board just below where the backlight dimmer lead connects (*the circuit board that screws directly onto the metal bit behind the temperature gauge on the left hand side*) and the fuel gauge sensor connects to the board that screws to the right hand side of the metal bit (*behind the fuel gauge*). These are small plugs with two wires in a single sleeve going to them. After checking and reseating them (*removing and putting back*), reconnecting the main connector and turning the ignition on, the fault was still there.

The next stage was to get the pod out from the car to work on. I found this a lot simpler than I first thought. To start with, I disconnected the ribbon style cables that lead from the light switch assembly and screen control knob to each side of the back circuit board by gently pulling them off. Then I removed the four screws (*two each side*) from the light grey support brackets that come up each side of the pod from below and behind.



There are then four screws that go through the pod display into the back of the pod front; I found it easier to start with the lower ones, then do the top two. I found that doing the support bracket first made it a lot easier to get to the pod front screws. The pod fits into a slight recess in the back of the pod front so I had to move it away from me a little first. The easiest way that I found to get the pod out was to twist it slightly first before lifting it clear. It is imperative that you take it out and put it down carefully as there are some components on the rear circuit board and some LEDs at the top of the speedo that could easily be damaged.

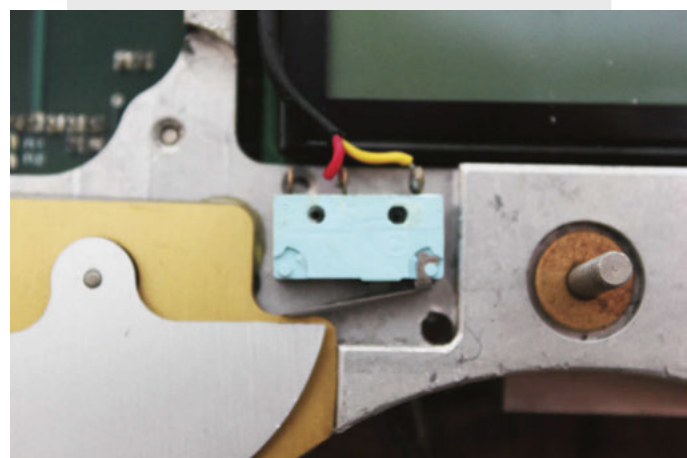




After looking at it further and getting some help from people on the club forums I worked out that the first thing that needs to come off is the speedo needle. This is held onto the spindle by a grub screw, however this was not pointing in a suitable direction to get to with an Allen key. It is important that the needle is not pushed around by hand as this may damage it. I moved it by rotating the worm drive screw (this looks like a white cylinder with a thread going around it) on the back, which turned the needle. I took the grub screw right out as this will stop the needle coming off.



If you have a Code A or B then the micro switch that you want to get to is behind the gold plate with the speed markings on it. On mine this was just lightly glued on and just lifted off with a little light persuasion (fingers only). The glue was only just enough to hold it in place as you mount the pod, as the speedo plate is actually held in place anyway when you put it all back together.



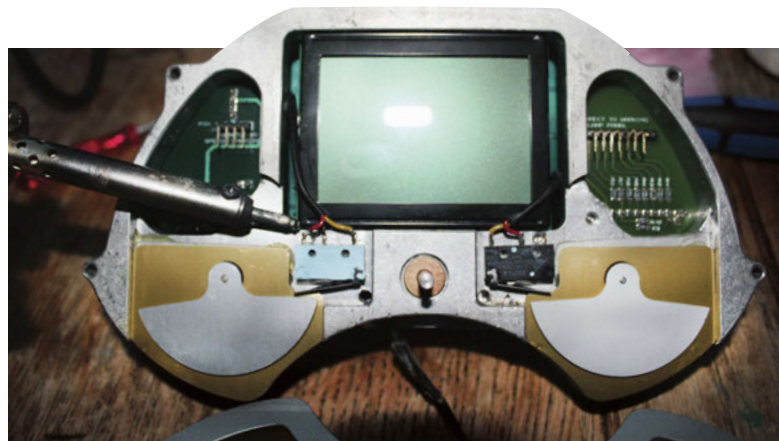
As it was my temperature gauge that had the problem, I had to separate the two metal bits of the pod. These are not actually secured together with screws, but held in place via two roll pins, and I used a flat bladed screwdriver to slowly and gently prise the two parts apart. This was a little unnerving the first time I did it. When the two halves came apart I had to disconnect the two ribbon cables that connect between the backlight circuit board and the rest of the circuitry.





There is one other cable which connects the speedo micro switch to the main circuitry, but I found that by lying the two halves on the table carefully there was no need to disconnect it. The suspect micro switch was now in reach and the first thing that I did was check the continuity across the two terminals which have the wires going to them. By testing whilst pushing the lever up, I should have got a closed circuit (*0 resistance or in my case a beep from my multi-meter*), however pressing the lever made no difference, which indicated that the micro switch was faulty. I used a small flat screwdriver to prise the switch out, which is only held in with the smallest blob of glue and pressure. The two wires were then removed and the hunt for a new switch started.

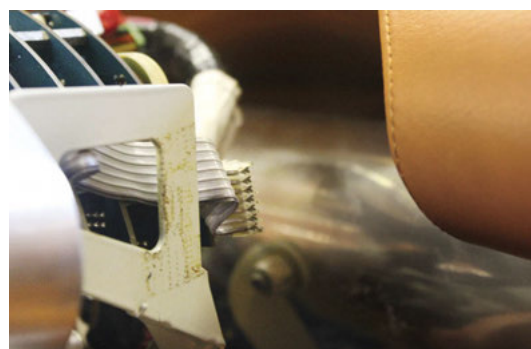
I originally went to Maplin's and purchased one. However, whilst this fitted and had the correct functionality, I found out when testing that it required more force than the gauge can supply to trigger. Luckily I tested it before putting it all back together. Research pointed to the same original switch being available from RS Components (*RS part number 161-6640 but please note that the lever comes separately and is part number 161-6684*). When the switch and lever arrived, I had to cut the lever down slightly as it was too long.



Fitting the switch is a case of soldering the two wires on, then pressing the switch onto the fittings, which I easily achieved by pressing it with my fingers. I did have to lift the lever when fitting the switch so that it cleared the back of the temperature gauge.

Then I carefully connected the two cables that go from the main circuitry to the speedo backlight board, pressed the two metal halves together lightly and, holding it carefully, plugged the main electrical connector back and switched on the ignition. Unnervingly I now got a Code A, but after thinking about it, this was right as the grub screw on the speedo needle presses the speedo micro switch and I had not fitted the needle yet. Back on the table the two metal halves were pressed together properly, just using my hands and a slight rocking motion. I then replaced the speedo needle and repeated the test, only to get a beep, which was disconcerting until I realised that it was now telling me that the door was open. Another test with the door closed showed all was well again. I did notice that the pod backlights did not work at this stage, and testing showed that as I have a backlight dimmer they do not work until the dimmer control is connected.

Before mounting the pod properly I removed the main electrical connector and cleaned the display, speedo backing and the back of the pod glass. Refitting is, as they say, the reverse of removal, but I found that it took a little care lining up to get the pod back in its recess behind the glass. I then put in the top two pod to pod top screws to hold it in place initially, then the bottom two. In mine one of these screws is slightly shorter and with experimentation I found that this goes in the lower left position. Once these were tightened, which I found took longer than I initially expected as they clamp the two pod metal halves (*that were separated to get to the switch*) together as well, the two side supports were then screwed back into the main dash panel. The light and multi-function control and the main cables were also replaced at this point.



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I then put the pod top back on slightly and connected up the gear shift/rev light, wiper intermittent speed and pod backlight cables. I then tested every control to make sure everything worked, including the pod backlights. In my car all the gear shift/rev lights blink briefly when you turn the ignition on which makes them easy to check. My final job was to put the pod back on, making sure that the flaps are back down beside the wiper and indicator stalks neatly, and the front is under the top of the metal, and then fix it in place with the two screws at the back.

That's it, I had finished and it was all properly working again. In total the actual replacement of the switch took me less than an hour and most of the time was getting a replacement micro switch of the correct specification with costs (*including delivery*) less than ten pounds.

MIKE HARDY