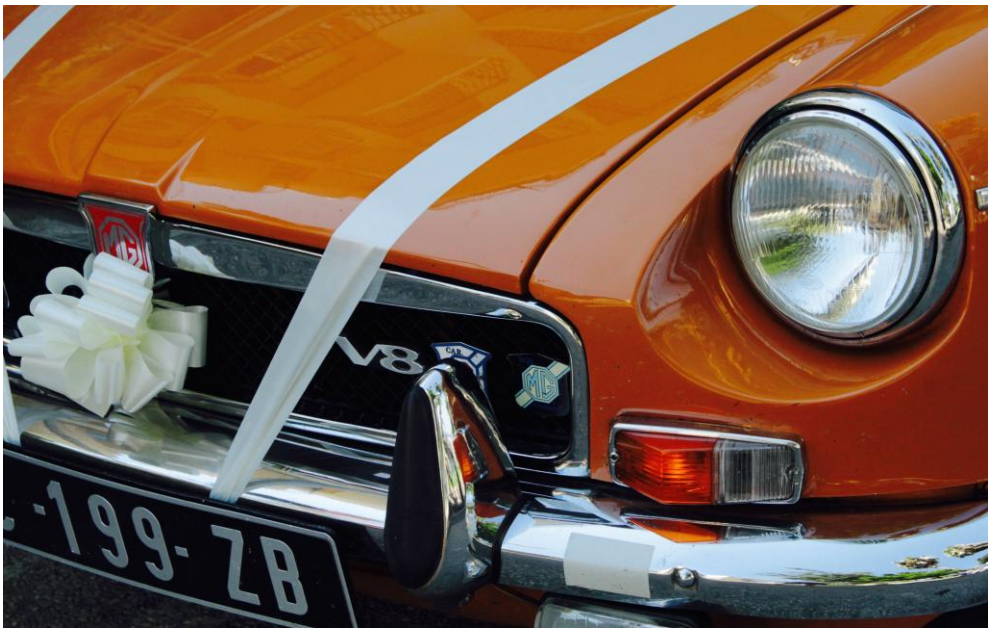
V8 NEWSLETTER
Victor Smith Tel: 0208 392 9434
Email: victorsmith@v8register.net
Web: www.v8register.net

WELCOME TO THE V8 NEWSLETTER



SORRENTO BY BGTV8

John Upton enjoyed having his MGBGTV8 in Africa when he lived there for many years before returning home and then moving to France. Here he describes another adventure taking his V8 to Sorrento for his daughter's wedding. It proved to be a trip of a lifetime.

Last year I had a call from my daughter, Frances, announcing she was getting married in July 2016. I was absolutely delighted and even happier when she asked if my 1974 V8 could be their wedding car as I have owned the car since she was born and she grew up with it. Of course I immediately agreed to make the car available, even though the wedding was to take place in Sorrento in Southern Italy – quite a journey, even from southwest France where we live.

I began planning the trip and decided I wanted to avoid driving the length of Italy so I looked at the possibility of travelling by ferry from France via Corsica and Sardinia to Naples. The decision was made to get to Sorrento as directly and simply as possible and then "tour" on the way home, in both Sardinia and Corsica.

The first leg of the journey was a short 160km trip from Dordogne to Rodez (Aveyron) where we met up our friends in their MGB and spent the night. The next day was the 400km trip to Toulon when we drove over the impressive Millau Bridge, then turned off the motorway and travelled through the southern part of the Massif Central to Nîmes. We arrived in Toulon in the late afternoon, parking in a car park right next to the ferry which left at midnight.

The following morning we arrived in the industrial looking Porto Torres and disembarked quickly and easily into Italy (Sardinia) – no queues. As our next ferry, from Cagliari to Naples didn't depart until that evening, we decided to refuel and then drive straight there – a distance of 250km. As with all the filling stations we came across in Italy there was only one grade of "benzina" with no guide as to the octane rating or ethanol content. However the V8 seemed to like it, and, judging by the speeds obtained by the local motorists, it had plenty of ummmph!

The dual carriageway from Porto Torres to Cagliari was not pleasant – high steel barriers on each side and an uneven surface, but we arrived in Cagliari in time for lunch. We had used Google Earth to obtain the coordinates of a beach at Poetto, near Cagliari, and our GPS took us there. Temperatures were well into the 30Cs but the V8 had no problems. After lunch, a swim and a lie in the shade on the beach we headed for the ferry port where we parked outside the port gates and walked over to the town. The Cagliari waterfront boasted some elegant buildings housing shops, bars and restaurants in arcades.

Arriving at Naples at 08h30 in the rush hour was quite an experience. The port area seemed to be undergoing extensive redevelopment with chaotic diversions and lane closures. Traffic was heavy between Naples and Sorrento and we were glad to arrive at our hotel, the excellent Hotel Continental, which seemed to be in an oasis of calm – it was also close to the wedding venue. The day before the wedding I took my future son-in-law, Alex, an RAF officer, for a trial run in the BV8 and he handled the narrow, steep roads with impressive care and precision.

The great day came – friend Andy and I polished and cleaned the V8 in the hotel basement car park and later attached the ribbons etc. outside the hotel - the hotel even took a photo which featured on their website. During the ceremony Andy positioned the car outside the venue. After the ceremony the bride, groom and the car, received applause from the assembled locals and off the newlyweds went to the reception. The BGTV8 had done its bit!!

Launch photo for the MGBGTV8: BL

V8 ANNIVERSARIES COMING UP

As we approach the 45th anniversary of the launch of the MGBGTV8 model in August 1973 and the 40th anniversary of the formation of the V8 Register five years later in 1978, we are planning events and website features to mark those milestones in 2018. Similarly the 25th anniversary of the launch of the MG RV8 model is another significant feature in our planning – the announcement of the model in 1992 and launch in 1993. Details of the events planned for those anniversaries will follow but we have already launched on the V8 website two series of "looking back" articles and features on the MGBGTV8 and RV8 models with reflections on many of the memorable moments, news items and photos enjoyed by fellow V8 enthusiasts over the years. Those webpages are actively growing with interesting items and links to press road tests, motor show reports, memorable adverts and marketing brochures, plus articles on Brian Field who for many years successfully competed in a rally prepared MGV8 and Robbie Coltrane in a video clip with his captivating case for the love of the sound of a V8 engine.

You can contribute to the series with photos, copies of magazine articles and notes of your recollections of the personalities and memorable events. See the "More" webpage for further details.

REBUILD SERIES REACHING 100

Rebuild and restoration reports have been a popular feature on the V8 website for many years with the restoration of an MGBGTV8 found behind a garden shed by Barrie Jones and a nut and bolt rebuild commissioned by Dr Chris Ward as two examples. A current rebuild of an MGV8 Roadster Conversion by Mike Macartney has been followed closely by many members as he has produced regular detailed reports posted to the V8 website. They usually run to eight pages and appear twice a week and sometimes every two days, so it's no surprise the series is reaching the 100th report.

In **Rebuild Report 88** Mike had a detailed note of how he dealt with a problem with fitting the plastic headlamp buckets which he had chosen to use as a replacement upgrade to avoid the rust attack that metal buckets can suffer. His report was illustrated with several photos of how he managed to fit the plastic buckets and the chrome ring. The photo alongside shows one of the two headlamp adjusting screws on the headlamp bucket. Mike notes "it can be a bit tricky to get the headlamp into both of these at the same time. Once you have slotted the headlamp into the two adjusting screws you fit the pivot screw that holds the headlamp in place. This is easy on the lefthand headlamp but not so easy on the righthand headlamp. See the Rebuild Reports links on the "More" webpage at www.v8register.net/more.htm.


Fitting the plastic headlamp buckets

Taking the lid off the RV8's 'brain'

UNDERSTANDING THE RV8 ENGINE MANAGEMENT SYSTEM

The RV8 had an early engine management system and in a comprehensive article Dave Morris explored its operation, fault detection and diagnostics. Assisted by John Anthistle, John Hale and Nic Houslip they outlined options for owners upgrading their RV8 by 'chipping' or 'remapping'. Some basic knowledge is assumed so anyone unfamiliar with Fuel Injection Systems should first read Nic Houslip's excellent article introducing the RV8 ECU which is available via the **"More"** link on the V8 website.

Introducing the 14CUX

The 14CUX 'hot-wire' was the most sophisticated in a line of Lucas engine management systems (EMS), following on from the 'flap-valve' in the Rover SD1 and eventually succeeded by the Bosch based GEMS. The RV8 ECU is very similar to that used in contemporary Range Rovers, and, in modified form, by specialist sports car makers like TVR, Ginetta and Morgan. The 14CUX differs from modern EMS as it only controls engine fuelling and not ignition. Neither does the 14CUX come with what would now be considered standard on board diagnostics (OBD). Consequently interrogating an RV8 ECU has until recently been a very specialised task.

How does it work?

Like all EMS the 14CUX uses signals from engine sensors to control the fuel delivery. During normal running it monitors air flow, throttle opening, road speed and engine revs to adjust fuel injector opening time. The basic fuel requirement is stored in a fuel map which is then moderated according to the sensor inputs. The 14CUX stores several maps and it is possible to change between them by changing the 'tune resistor', but that's another story.

In addition to normal running there are certain conditions where the ECU goes through a special sequence. It is worth knowing about these in order to spot issues early:

On startup the ECU runs the fuel pump for a few seconds to pressurise the fuel pipework. Once started the idle valve stepper motor is adjusted rapidly during warm up to reduce the air flow and maintain idle.

During warm idle the ECU monitors engine speed, temperature and electrical load and moderates the idle valve to maintain a target rpm. When the engine is turned off the stepper motor is opened fully to be ready for the next start. The base idle must be correctly set and the idle valve must be working otherwise this idle system will not function properly.

On the overrun the ECU shuts off fuel flow to reduce fuel consumption. Road speed is monitored to enable a smooth transition either back to driving or idle. If the road speed signal is incorrect idle control will become erratic and the engine will tend to stall when the car comes to a halt, a problem familiar to many 3.9litre V8 owners!

Troubleshooting & diagnosis

Fortunately for RV8 owners the 14CUX system is robust and reliable and can give many years good service. But if problems are experienced it is natural to want to find out what has gone wrong and why. Do not jump to the conclusion that every problem is ECU related – it usually isn't!

There are a nevertheless some known issues which can give the impression of an ECU or fuel injection fault which are worth mentioning here:

- **Failure of the fuel pump or starter motor** to operate on the key can occur even when they are not faulty. If so check the wiring and earth connections, the immobiliser has reset and the fuel pump relay is working. The fuel pump relay is hidden under the centre console and can suffer corroded contacts.
- **Erratic idle, hunting or stalling on the overrun** can have several causes which are difficult to distinguish. Sticking idle air valves are relatively common; cleaning is straightforward. Air leaks downstream of the air flow meter cause similar symptoms. Check vacuum pipes and seals. Check also that the road speed sensor is connected and working.

If the ECU detects an error it will set a fault code and, in some cases, switch to 'limp-home' mode. The fault codes give a pretty good indication of the likely cause of the problem as they are specific to particular sensors so we will come back to them later.

Interrogating the ECU

A lot of useful information about engine performance can be obtained from the ECU and fortunately for us Colin and Dan Bourassa in the US and Mark Thompson in the UK have pioneered the development of Rovergauge, enabling RV8 owners to see inside the fuel injection system.

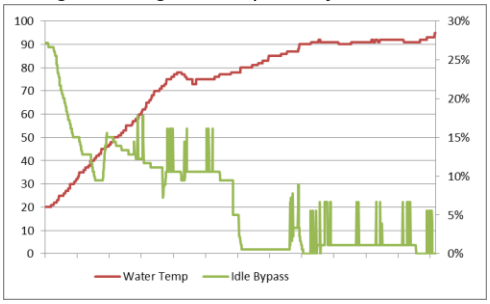
The Rovergauge plug goes here…

Rovergauge is a free, open source software package available on the internet. You will need a laptop (or similar) on which to run it and a special lead to connect to your car. You can make your own lead or they can

be purchased on the internet for a few pounds. Just make sure you buy one designed for the RV8 as the plugs for TVRs and Land Rovers won't fit! Your lead will look something like this and it plugs into the white data plug in the passenger footwell. The plug can be hard to find and on air conditioned cars it is difficult to get at, but it can be done!

Once you are connected the screen (alongside) will show you some basic data; which 'tune' you have and whether any faults have been stored. The fault screen lists the common fault codes so will give you a good idea of which sensor has caused the problem. You can clear the fault code to check if it recurs. Just be aware that fault codes do not always tell the whole story as the ECU can be confused if the engine is not running normally.

Pressing the Start Log button will record data onto your hard drive. It is then quite straightforward to analyse the parts you are interested in. As a simple example the graph below shows how the idle bypass position changes during warm up on my car:



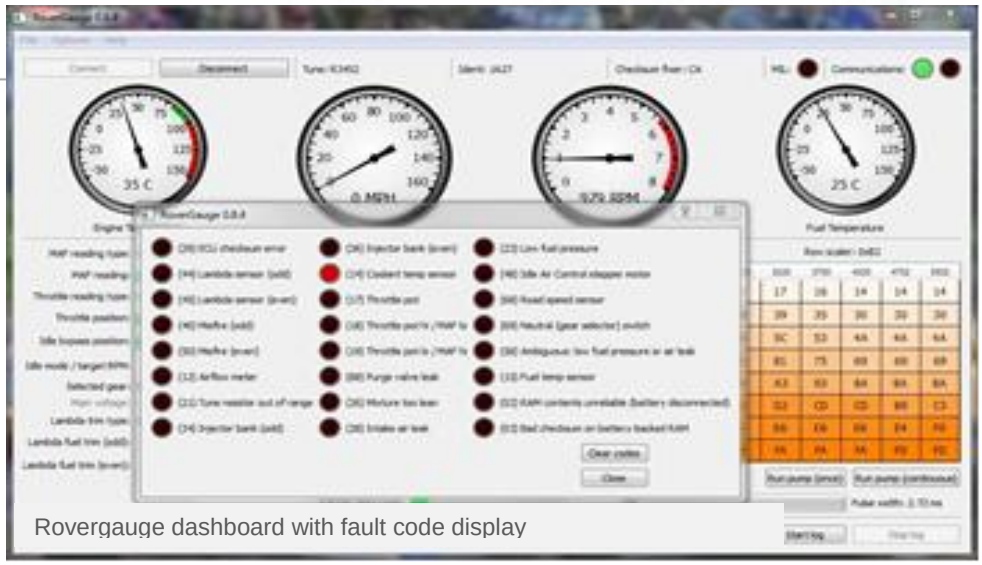
Idle valve control following a cold start.

This is pretty much what is expected and shows that the idle system is working well.

Chipping and remapping

A key component of the ECU is the 'chip' and it's 'firmware'. The firmware used in the RV8 is derived from 1990s Land-Rovers and there is a school of thought that the settings for a large, heavy 4x4 are not ideal for a much lighter MG sports car. This thinking has led to 'chipping' or 're-maps' to achieve fuelling more suited to sports car driving.

The **most popular after-market chips are Optimax and Tornad**o, developed by Mark Adams. Of these Optimax has been the most widely adopted for RV8s, being particularly



Rovergauge dashboard with fault code display

suitable for unmodified engines. The principle claims are improved part-throttle economy, better idle and freer revving. Feedback from owners who have taken this step does suggest that these claims have been fulfilled.

In practice the **benefits of re-chipping** the RV8 are limited as the closed loop control on these catalyst equipped cars forces the fuelling back to an emissions compliant mixture. Nevertheless some functions, like idle speed, cold starting and rev limit can be altered without affecting the closed loop fuelling. Importantly too for performance minded owners full power fuelling can also be changed as the ECU is open loop above 3400 RPM.

If you decide **a** 'chip' change is for you, the initial approach should be to a reputable tuning supplier such as Tornado Systems or RPi Engineering who market these upgrades. Both companies have many years of experience with these 'chips' and will help you get the correct version for your car. Alternatively it is possible, to write your own chips based on updated maps published on the internet. This is of course a much more serious undertaking and outside the scope of this article, selecting an incorrect fuel map on a catalyst equipped car like the RV8 can destroy the cats or worse!

Changing a chip requires care but is well within the scope of the home enthusiast. No other work is necessary, though advancing the ignition timing to 8 – 12 deg. BTDC and resetting the base idle is advised. A re-chip of course will not solve any underlying electrical or mechanical engine problems.

Any 'off-the-shelf' chip can only be a 'best guess', so the best way to optimise performance on an individual car is to get it remapped on a rolling road. Kits and Classics (www.kitsandclassics.co.uk/) in Derbyshire have gained a good reputation for full rolling road 14CUX remaps although there may be others.

Thanks to the **availability of Rovergauge** and accurate digital multimeters, there is no reason why fuel injection should be considered a 'black art'. Indeed with these tools any enthusiastic RV8 owner can diagnose and repair faults, and if they wish, go even further and remap their EMS using readily available software tools and instructions – although I suggest that this is not a task to be undertaken lightly!

For anyone who wants to know more than I have covered in this brief summary, the complete article is available via the "More" page on the V8 website. I would also recommend a look at:

- Mark Thompson's very informative website: www.g33.co.uk/
- Mark Adams' blog on the ACT Products website.
- Steve Sprint's guide on remapping a 14CUX www.stevesprint.com/remap-14cux
- The British V8 web site: www.britishv8.org/Articles/Rover-14CUX-EFI.htm

Finally I want to thank Steve Sprint and Steve Heath for their input, Mark Thompson for providing the connector to fit the RV8 and for his helpful comments and of course Colin & Dan Bourassa for developing Rovergauge.