V8NOTE260

Engine stabiliser bars

This note is prepared from the various postings on the V8 Bulletin Board, part of the V8 Register website, with the initial query from Brian Marshall (Teal Blue 4180) from Surrey and then contributions from Mike Barnfather (Green Metallic 3056) from Lancashire, John Bourke (Cavalry Blue 3056) from London N, Daniel Heyer (Damask 0987) from Germany, Keith Rowson (Tahiti Blue 2383) from Hertfordshire and Dave Wellings (Black 0974) from Yorkshire. (August 2002)

Brian Marshall (Teal Blue) from Surrey posted a message "has anyone any experience or advice on fitting an engine stabiliser bar to an MGBV8. I hear it helps prevent the lump moving around and cracking the exhaust manifolds. Any help or recommendations would be welcome". Well the response to this seemingly simple enquiry produced many postings with comments and views from V8 Register members. In chronological order the responses posted on the bulletin board were: Keith Rowson (Tahiti Blue 2383) a longstanding member from Hertfordshire responded that his 1975 MGBGTV8 had a bar fitted when he bought it ten years ago but it did not stop the manifolds cracking. He felt it hindered the engine and might have affected the handling. His conclusion was the bar was a waste of time. With the cast iron manifolds, he feels the best advice is to use the correct torque setting on the bolts – it's not very much and he feels the stresses on the manifolds are increased by over torqueing. He recommended contacting either Geoff Allen (V8 Historian who was in Rectifications Department at Abingdon for over 27 years) or Clive Wheatley the V8 spares specialist for best advice.

Mike Barnfather (Green Metallic 3062) with an MGBGTV8 conversion from Lancashire posted a comment he had fitted a bar to his V8 Roadster conversion which has tubular manifolds and found it **"held the engine much steadier"** and that "it is not a difficult modification as the P5 (or is it P6) tie bar fits between the nearside rear head and the corner where a LHD master cylinder would fit".

Dave Wellings (Black 0974) from Yorkshire expressed the bold view "the bar will transmit more noise and vibration to the shell and is not likely to reduce the incidence of cracked manifolds". He felt it would be better spending money on renewing the engine and gearbox mountings.

Mike Barnfather response was clearly based on his experience of the stabiliser bar fitted to his car. "The Rover bar has substantial hard rubber bushes at each end, presumably to cushion noise and vibration. My engine, which moved considerably before fitting the bar and has had new mountings, is now held steady. I do not know what the cause of the cracked manifolds is but I suspect a reduction in engine movement has got to be beneficial to the exhaust system".

Dave Wellings was back in a matter of days – "the cracking of exhaust manifold flanges and downpipe flanges is thought to be where the cast manifold and downpipe flanges do not exactly match up, creating tension. Progressive thermal shock finds theweakest point – the flimsy manifold flange". This probably cause is mentioned in the footnote to this note.

Paul Wiley (Tartan Red 4223) with a V8 Roadster conversion from Surrey posted a brief comment that his "problem with engine movement has been the gasket, now solved by using a high temperature silicone but also fitting a steady bar".

Daniel Heyer (Damask 0987) from Germany posted a comment saying he had just stumbled over the bulletin board on the new V8 Register website "so these comments come a little late I am afraid. I cannot say anything to the manifold cracking problem as this is not my main concern, but the steady bar I fitted to my 1974 MGBGTV8 certainly solved another problem. I went through two sets of engine mountings in two years, although I must confess I tend to stress the car a little more than under daily driving conditions – during track days on the Nuerburgring Nordscleife or elsewhere. When the gearbox packed up and the engine had to come out, I first had the idea of changing the standard engine mountings to Jaguar XJ6 ones as they are roughly the same size and a little more sturdy but they proved too high. So I decided to fit the stabiliser bar and have not had a problem since – travelling to north of Scotland, Sicily and Spa-Francorchamps included".

Daniel Heyer (Damask 0987) from Germany at speed in his V8 on the banking at Nuerburgring. (Photo: Daniel Heyer)

John Bourke (Cavalry Blue 3056) with an MGBGTV8 conversion posted a comment that he has designed his own steady bar which can be seen on www.mgcars.org.uk/v8_conversions and "my opinion is that it is worth fitting as it will reduce the stress on the engine mountings. You only have to fit slightly higher compression ratio pistons and an improved cam during a rebuild to put even more stress on the mountings". He added that "another important point if you are running with cast iron exhaust manifolds or the tubular equivalent, a steady bar reduces the chance of contact with the steering shaft as the engine rotates under load. There is even a risk of contact with the bonnet as the engine/bonnet clearance on the original MGBGTV8 installation is very tight. In my view a bar at the rear of the block will also help reduce the load on the gearbox mountings". John feels that cracked manifolds might not be helped much by a steady bar unless the mountings are already weak and thereby allow excessive engine movement and strain on the exhaust system. The "cast iron manifolds must be free to expand on the block and not bind sideways on their mounting holes because we are talking of a design with inbuilt weaknesses and 25 plus year old cast iron cycling through 400oC".

Footnote from Victor Smith (Harvest Gold 1089): The subject of the cast iron exhaust manifolds cracking is well covered by the early volumes of the V8 Workshop Notes series produced back in the late 1970s and mid 1980s – see **Note 33** (Peter Laidler) in Volume 1 and **Note 95** in Volume 3 provided by Jerry Bright (ex Citron 1956) with probably the key to the exhaust cracking topic.

In essence he suggests a major cause of exhaust flange cracking is that when new exhaust systems are fitted, the front ends of the pipes of the system have to be very carefully adjusted using cramps or jacks to ensure they **mate exactly** with the cast iron manifold tails. They **must not** be forced to fit and most certainly you should not pull up any mismatch by forcing the pipes onto the manifold tails and tightening up!

If you take your MGBGTV8 to a garage or exhaust replacement depot not familiar with this car, **you must ensure the fitter is fully briefed and understands that the pipe and cast iron manifolds must fit perfectly before tightening up. This will ensure the fitter is aware of the risk of flange fracture ruining your cast iron manifolds.** If that does happen then at best it will leave you with the problem of getting them welded up - if that is possible. Finding a replacement cast iron manifold is not easy and certainly costly if you can find one! A later note, **Note 158** in Volume 4 from Ken Dodds in Australia from their "Pieces of Eight" journal, also stresses the need to use the correct torque on the exhaust manifold bolts of 18ft/lbs maximum plus the use of an anti-seize compound on all threads.

Footnotes from Roger Parker (Green 4092):

- **Cast iron manifolds**. My experience is limited to the times which have involved the removal and refitting of the exhaust system in connection with other work, such as a starter motor replacement. The issue that has cropped up repeatedly is that I have seen the poor alignment of the exhaust system to the manifolds and how the systems have to be bent slightly to ensure the flanges of the manifolds and the pipes on the system align. I feel this has, and probably still has, been overcome by levering the system to get it into alignment which then leaves tensions and stress on the connection and components.

- **Fitting a steady bar**. I have found when doing the first V8 conversion 20 years ago that the torque twist on the more powerful engines was a significant problem for the mountings and with contact between the engine and the steering. It made no difference how new or firm the engine mountings were. A simple steady bar was made between the left chassis rail and a bracket attached to the front of the left cylinder head and the result was control of that excess movement. That set up is still in place today on that first GTV8 conversion. On my own car (a V8 Roadster conversion) I created a similar arrangement from day one and in the same position. I also had a rose jointed threaded stabiliser bar from a competition application that was to hand and this was fitted directly between the head and the double mounting lugs welded to the chassis rail. It was my intention to create a bracket at the head onto which the bar would mount via a more compliant bush as fitted to the first conversion.

- **Vibration from a steady bar.** I was expecting the degree of engine vibration and harshness being transmitted through this solid link to be excessive and demand an early modification, but now some 17 years on I still have the same arrangement fitted. In use I was very surprised that I could detect no noise or vibration that could be attributed to this connection. It is no different to the GTV8 conversion and as a quick rough and ready test, I unbolted it and drove a few miles to compare. I felt there was no gain in noise or vibration terms from the removal of the bar, but I did get some steering to exhaust contact as the torque twist was very much greater and plainly visible even by just blipping the throttle. It is interesting that I have not seen any fatigue or other damage from the solid mounting.

- **Engine mountings.** Both cars I have referred to are 3.5 litre conversions with fairly mild modifications both of which are confirmed as giving well in excess of 200bhp. Here we are seeing the effect of torque but both these engines, whilst better than the original 3.5 carburetted engines, do fall short of now more common 3.9 or 4.6 litre engines. The torque from these engines, especially the 4.6 can best be described as "stump pulling" and as such there is no way the standard engine mountings fitted to the original MGBGTV8 can be expected to provide adequate control of that extra torque. The RV8 saw some changes, not least of which is the thinner engine mounting rubber which, with the composition of the material, sees less compliance and better control. As the 3.9 litre engine in the RV8 is a fairly low performance specification, it is almost certainly going to be hard pushed to live with a modified engine and will almost certainly fall short when a 4.6 litre engine is fitted.