



Not all suspension modifications on an RV8 are a good idea

The release from the traffic of Norwich to the open A146 is a joy. The morning is dry and bright and the long gentle left curve simply beckons the RV8. The big V8 laughs lazily at my puny attempt at acceleration. Ahead the traffic moves into my lane, the outside lane. No need to brake, just lift off quickly. "Expletive!" – the right front wing dips and the right front wheel bites, tucks in and I swerve across towards the nearside lane.

Snap oversteer when lifting off the throttle mid-corner. This scenario is also known as: lift off oversteer, snap-oversteer, trailing-throttle oversteer, throttle-off oversteer and lift-throttle oversteer. Take your pick, it's frightening. I like to think that I did the right thing. I think I had steered in the direction I had originally intended with a firm foot on the accelerator again. In truth, I was not sure but of two things I am very certain – had the road been wet I would have spun with a

horrible result and secondly, this car has to be sorted out! Here Angus Munro explains what he found and decided to do.

When I was looking for an RV8 I sought the advice of owners, all of whom confirmed that the ride and handling of the car was good but inevitably wasn't comparable to that of a modern car with respect to the suspension. Eventually I found a car that was advertised with various suspension modifications supplied by a reputable company. I test drove the car at modest speeds on local roads near the owner's house and agreed to purchase the RV8. During the drive home at motorway speeds the nature of this particular beast became apparent. It was terrifying. A drive the following day through the bumpy lanes of north Norfolk was equally worrying with the rear axle crashing about noisily. What had I done? Surely an MG RV8 was not this bad?

After I had raised many questions by email and on the bulletin board I finally came to

the conclusion that the castor angle on my RV8 was wrong. The MGB was designed with 7 degrees of positive castor and the aluminium castor reduction wedges that are available as simple kit simply rotate the front crossmember to reduce the castor angle by 3 degrees. The effect is to lighten the steering effort required. While this may work on the MGB, the crossmember designed by Rover for RV8 has only 4 degrees of positive castor – well, 3 degrees 48 mins plus or minus 54 mins if you want to be picky. By having my RV8 fitted earlier with these wedges they had removed 3 degrees of castor. So with less than one degree, and possibly zero degrees of positive castor angle, I was driving a 3.9 litre supermarket trolley. I had the wedges removed, as did several other RV8 enthusiasts with whom I was in contact, and the result was a dramatic improvement. But my car was still awful.

At the time of my purchase the previous owner offered me two rusty tubes of steel, each with a bush at each end, saying "these are no longer required because the Panhard rod now does the job". I nearly said I didn't want them but then thought, "hey they might be something I should have . . ." Later I discovered they were in fact torque control arms and they were fitted to the RV8 as original equipment! For quite a while my chums suggested that I should refit those arms to my RV8, I resisted because the Panhard rod was doing their job - well wasn't it?

I wanted some clarification on this matter so I telephoned the firm which had supplied the modified suspension equipment that had been fitted to my RV8 for the previous owner and spoke at length to one of their specialists. He confirmed, quite clearly, that the torque control arms were redundant and no longer needed to be fitted to my RV8. My chums insisted however that was not right *Differential with the impact marks from the Panhard rod: a long mark to the right and a*



spot mark which was shiny two months earlier. (Photo: Angus Munro)

Torque control arms

These days most people refer to torque control arms as anti-tramp bars. They were fitted as standard equipment on the RV8 to prevent the leaf springs winding up during acceleration. Due to torque it is always the right hand spring that shortens in an "S" shape in front of the rear axle. The righthand side suffers more because the torque reaction in the propshaft applies force to lift the righthand rear wheel off the ground. So unless a limited slip differential is fitted, the righthand wheel always spins first. The RV8 has a type of LSD fitted - a Quaife - which is known as a torque biasing unit and it will only work when both wheels are in contact with the ground. As soon as one wheel is in the air it loses the opportunity to bias the torque.

Without torque control arms fitted, what are the effects on the handling of an RV8? Well under acceleration the shortened 'S' shape of the spring results in fore and aft movement of the back axle which tries to try to steer the rear of the car to the left. A sudden lift off would have the opposite effect, causing the rear of the car to try to steer to the right and causing the car to swerve to the left of track. That is the effect Angus Munro describes above as his experience when driving with the suspension modifications fitted to the RV8 he had bought. With the combined effect of no torque control arms and only minimal positive castor angle worth speaking of, he is thankful the results were not more calamitous!

Panhard rod

A Panhard rod as a component of the suspension system which provides lateral location of the axle and stops the springs deflecting sideways under cornering forces. It is a simple device, consisting of a rigid bar running sideways in the same plane as the axle, connecting one end of the axle to the car body or chassis on the opposite side of the vehicle. The bar is attached on either end with pivots that permit it to swivel upwards and downwards only, so that the axle is, in turn, allowed to move in the vertical plane only. This does not effectively locate the axle longitudinally, therefore it is usually used in conjunction with trailing arms which locate the axle in the longitudinal direction. This arrangement is usually used with coil spring suspension set up rather than with a leaf spring suspension, where the springs themselves supply enough lateral rigidity.



Panhard rod polished from friction contact with the diff casing. (Photo: Angus Munro)

and that they should be put back on the car. So as it was only four bolts after all I eventually gave in and refitted them. The car was, as they say, "transformed" and I had to submit to a lot of "I told you so" comments – even to this day.

However, that is not the end of the story. With peace and quiet from the now restrained rear axle, a "donk" became audible and the car also "chuntered" around the area of the rear axle at low speeds. An unexpected revelation occurred a few weeks ago when I went to a local garage for an estimate to have the RV8 professionally cleaned and Waxoyled underneath. "Have you seen this?" inquired my mechanic pointing out a bright and shiny spot on the rear differential case. "And this?" pointing out a bright and shiny flat on the inside of the Panhard rod. Clearly the Panhard rod was in contact with the differential casing. So as there is no position adjustment possible, I got my eagle eyed mechanic to remove the Panhard rod.

At this point I will confess that I had secretly hoped that the rear axle might be about to fail as then I would then have had the opportunity to go for the wonderful Hoyle IRS upgrade that I have long thought about. But the story has a happy ending for my bank balance as I am now left with a car that is a delight to drive. No "donk", no "chuntering" and in fact an RV8 that is as it had left the factory with none of the strange and very unwelcome characteristics I had inherited when I bought the car fitted with those two suspension modifications and with the torque control arms removed.

Contributed by Angus Munro

Note: RV8 rear suspension sketch is from the Technical Reveal for the RV8: Rover.