

## Lightening The Load

A while ago I replaced the king pin assemblies on my MGB with the type that have needle roller bearings in the upper mounting in place of the standard bronze washers (arrowed in Fig 1). These are supposed to last longer, and also lighten the steering load.



Fig 1. New king pin assemblies. Roller bearing assembly arrowed

The steering was then marginally lighter but still 'loaded up' when turning a tight corner. This is due to the comparatively large castor angle of the B's front suspension, which is approximately 6.5 degrees. This castor angle was part of the original MGB design, and was deemed necessary because the cross-ply tyres used at

the time required this castor angle to self-centre the steering when exiting a corner. With this castor angle, when you turn into a corner you are effectively jacking up the front of the car using the steering wheel. Modern radial-ply tyres do not need such a large castor angle and it is possible to reduce the castor angle to a more modern 3.0-3.5 degrees in various ways, and thus lighten the steering.

One way is to remove the front cross-member and front suspension components in one piece and then put appropriate washers between the front cross member and the chassis members, so that the angle of the cross-member to the body is altered, thus altering the king pin angle. I believe Brown and Gammons supply a kit of this type. Another way is to use castor correction wedges of the type supplied by Frontline Developments, which achieve the same result but can be fitted with the cross-member in situ.

My brother had just fitted the Frontline wedges to his B and reported a significant reduction in steering load. (He has a small diameter steering wheel and wide wheels fitted to his B, so any reduction in steering effort would be more noticeable). Not to be outdone, I ordered a set of wedges from Frontline. They are not cheap (about £90

with VAT and postage, although considerably cheaper than power steering of course) and I expected a big box to arrive in the post. They in fact came through the letterbox in a Jiffy Bag and I was somewhat underwhelmed by the kit at first. Besides the two tapered aluminium wedges, there was just a bag of assorted washers and lock nuts (more of this later).



Fig 2. Castor correction kit

Fitting is straightforward. First the four lock nuts holding the steering rack to the car are slackened. Then the four lock nuts holding the front cross-member to the car, which are visible inside the engine bay (arrowed in Fig 3), are slackened but not removed, whilst supporting the cross-member on a jack.



Fig 3. Cross-member mounting bolts

Before doing this it is advisable to put a long screwdriver or small diameter rod through the holes on the back and front of the cross member, to stop the mounting bolts from disappearing inside the box section of the cross member when the original lock nuts are replaced.

Then the jack is lowered slightly so that the wedges can be slid in between the cross-member and the chassis member. Because the length of thread on the mounting bolts is now shorter, Frontline supply special low profile locking nuts which can now be used to replace the original nuts, one at a time.



Fig 4. Old (on left) and new (on right) locking nuts

In fact, although I fitted all four modified locking nuts, I'm pretty sure the original pair of nuts will fit the back bolts, as the protruding thread length is only decreased in length by the 'thin end of the wedge'.

As a Metallurgist I am not usually in favour of mixing different metals in an environment that might see moisture and road salt. Frontline suggest smearing the surface of the wedges with silicone sealant before fitting, in order to minimise any galvanic effects between the aluminium wedges and the steel cross-member. I also carefully sealed round the perimeter of the wedges with mastic after fitting to further reduce the problem. Once the wedges are fitted it is necessary to put packing washers in the steering rack mounting bolts, since the rack will now be at a different angle to the steering column. If you are really keen you can use a kit from Moss to line up the steering column exactly, otherwise 'feel' how many washers are required.



Fig 5. New washers on steering  
column alignment



Fig 6. Steering  
rack mounts

The final thing is to get the steering toe in checked since this might have altered. My fairly crude calculations and measurements suggest this change might be minimal, so for now I have not done this.

Well, was it all worth it? We did our first long run in the car and I found there was a difference, although I'd say it was not dramatic under normal driving conditions. The main benefit is felt when getting a good lock on, as when turning tight corners, doing a three point turn etc. The steering is obviously still not as light as it would be with power steering, but on balance a worthwhile improvement.

I'm glad of this result, otherwise I would have been a cross member (groan groan).

Thanks to Kevin Prosser for an interesting article as always.