**Toe-in / Toe-out**

Recently while greasing the front suspension I noticed that the front tyres were scuffed on the inside, after only about 10,000 miles. I sent a message to the membership asking whether this was toe-in or toe-out. I had three replies, one saying toe-in, and two saying toe-out. As I thought about it, I thought that toe-out was the more likely explanation. But it didn’t matter: tyre scuff was unacceptable at any level, and it had to be adjusted.

But how? And what should it be?

My workshop manual says there should be zero toe-in. But the consensus on the web seems to say 1mm +/- 1mm toe-in.

As to how, Ewan Ward had the answer: set a piece of string parallel on each side, and measure the difference at the front and rear of the front rims. Thank you, Ewan.

To set it parallel, the web explanations I found recommended taking a measurement off the rear wheels, at the front and rear of the rim, and make it the same each side. This is not easy to do, and a 1mm error on the rear wheels gives exactly the same error – 1mm – on the front wheels, and there goes all the tolerance. As I thought about this, I realized that as long as the string was parallel each side, it didn’t matter whether or not it was parallel to the car: because I would be measuring *differences* at the front, it would average out. For the same reason, it didn’t matter whether the front wheels were exactly straight ahead, as long as they weren’t so far out that castor or camber (I can never remember which) didn’t come into play. If the string is parallel along the length of the car, within say 1mm over 4m, then because the rim is about 400mm, the error at the front rims is much smaller: 1/10 mm.

So what I did was set the front wheels more or less straight ahead, then on each side stretch a line front to back, between nails, more or less parallel with the car, and make the two strings parallel with each other. This was much easier than taking a datum off the rear rims, as well as being more accurate. Then measure and adjust the front wheels to give the right toe-in. The toe measurement is the sum of the front measurements, minus the sum of the rear measurements, +ve for toe-in, and –ve for toe-out. I ended up with toe-in of 1.05 mm measured, which I am happy with. I don’t expect to write about this for another 10,000 miles, when I expect to have to try to explain why, after all, this didn’t work!

 