K-Mac Eccentric Trailing Arms Bushings

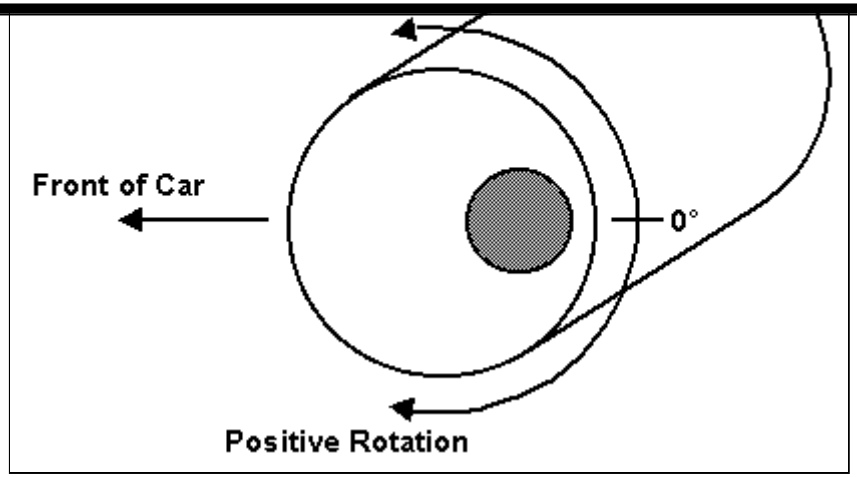
K-Mac offers a nice set of poly-urethane eccentric trailing arm bushings for BMW E30's. This is one of the easiest ways that an E30 owner can actually adjust the rear suspension alignment. From the factory, the E30 rear suspension is non-adjustable. Thus if you pay for a 4-wheel alignment on your E30, keep in mind that you are merely paying the technician to "measure" your rear alignment. If it is out of spec', or not where you want it you are out of luck. The eccentric bushings offer a way out of this dilemma (other than replacing expensive parts in hope of getting the settings you want).

The main disadvantage is that with an eccentric bushing it is impossible to adjust camber and toe individually. One cannot say "I want 1/16" total toe in with 2° negative camber". The eccentric bushings do not work that way. You can adjust the eccentrics to get the camber setting you desire, but then you may have to tweak them some more to get the toe setting you want. And this messes up the camber setting you just dialed in etc.

Once the E30 owner accepts that getting "exact" camber AND toe settings will be tricky, then it comes down to determining what possible settings are offered by the eccentrics. This is where the graphs in this section come in handy. The general methodology is to decide which of the parameters is more important to you. More than likely this will be the rear toe. You enter the toe-chart to see which settings on the eccentrics will give you your desired toe.

You then take these eccentric settings over to the camber-chart to see what camber you might end up with. If you do not like the camber settings available then you might have to compromise on the toe setting and repeat the procedure.

When using the charts it is very important to understand the definition of the "baseline" setting for the eccentric bushings. This is the "zero position". You rotate the bushings either clockwise or anti-clockwise from the zero position. Many possible baseline settings are possible, but I based the charts on a particular baseline position. The zero position for the eccentric bushings is shown below:



Zero position for the eccentric bushings

With all four eccentric bushings set to the zero position you will get a very small reduction in your wheelbase and an even smaller reduction in rear track width. But unless you are tuning an F1 car this is of little consequence.

Note that if BOTH bushings on a trailing arm are rotated through the SAME angle then there is NO change in camber or toe. It is only when one bushing is rotated RELATIVE to its partner that one can effect a change in camber or toe.

So far so good. One more thing to cover. There were two ways that I could have set up these charts. I could have had them give absolute camber and toe settings or I could have them give relative camber and toe settings. I chose the relative route. This means that the camber and toe readings that you obtain from the charts must be added to (or subtracted from) your existing alignment settings. I obviously did this because everyone out there is already running slightly different baseline settings, depending on if and how much the car was lowered, whether the suspension parts are all perfectly straight (unlikely on many cars), and whether the frame has been tweaked at all. Note that none of these imperfections are all that bad. It would be nice to have the car perfectly straight, but with unibody construction this is often wishful thinking. Nonetheless, once the alignment is adjustable we can get the settings pretty darn close to "dead nuts" with a little patience.

OK, enough theory. Let's move on to the charts...

- Friction effects (page 2)
- Go to the Camber-Chart (page 3)
- Go to the Toe-Chart (page 4)