

# Mango Tutorial:

## Steering Geometry 2.0

This simple tutorial describes how you can update your Mango with the new steering plates. The result is very stable steering and a little narrower turning radius.



*Illustration 1: The tools needed*

- 5 mm allen key (normal and extra-extra long)
- Tape measure
- Special wedge (see Illustration 16)
- 10 mm spanner with ratchet
- 10 mm spanner
- 8 mm spanner
- Hacksaw (& grinder or file)



*Illustration 2: Mango Sport with the original steering*

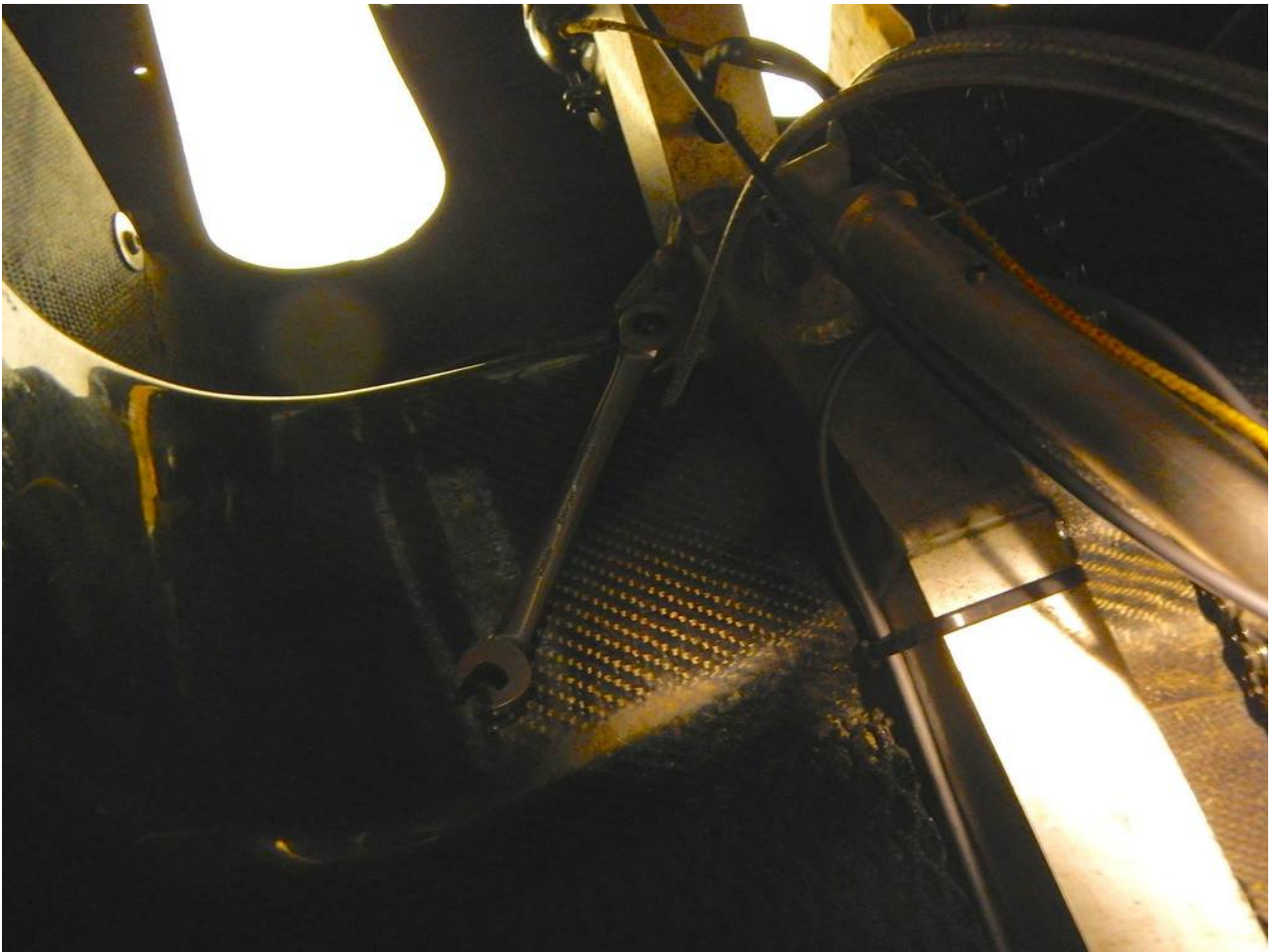


*Illustration 3: Loosen all ball joints from the original steering plate*

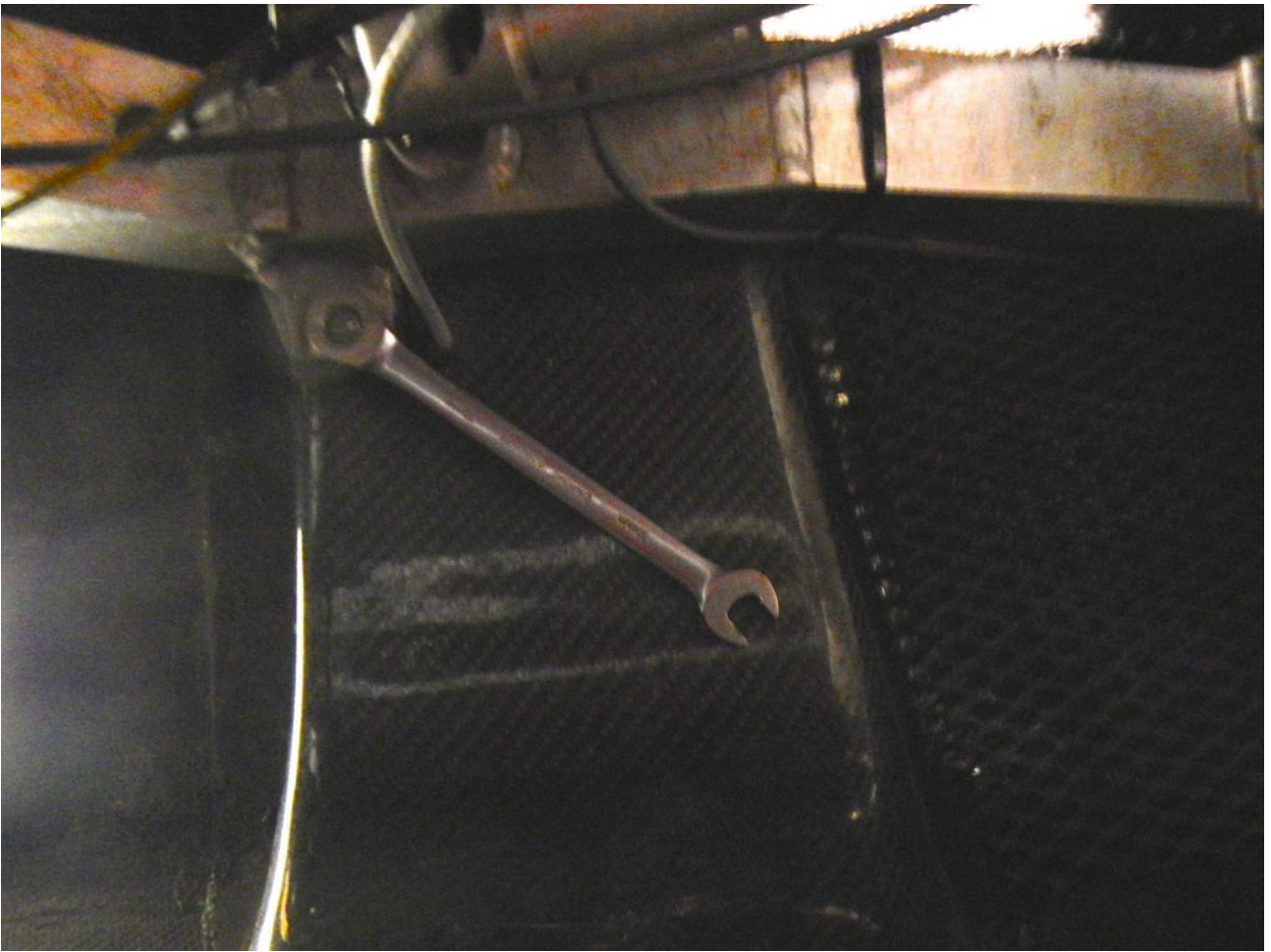




*Illustration 4: Unscrew the steering plate from the suspension strut. The bolts are glued with loctite, so you may need to apply heat (heat gun) to get these loose.*



*Illustration 5: Unscrew the anchor plate that hides inside the bridge.*

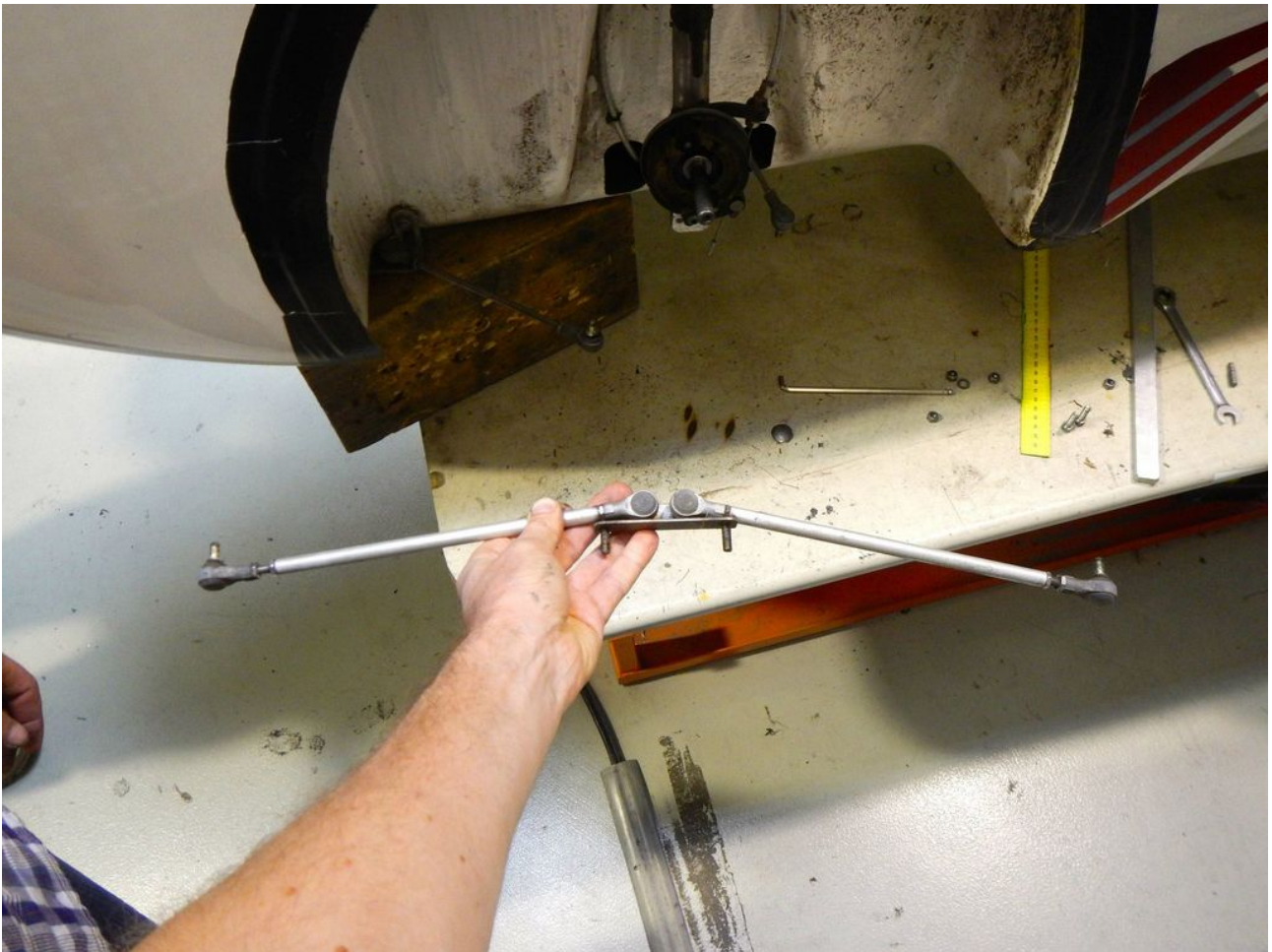


*Illustration 6: The (invisible) anchor plate attaches also to the frame.*





*Illustration 7: Take out the anchor plate by pulling the rod sideways. A lamp makes it easier to negotiate it out.*



*Illustration 8: This is the anchor plate and M6 rods with aluminium tube around it, together with four ball joints. The rods are too short for the new steering plates.*

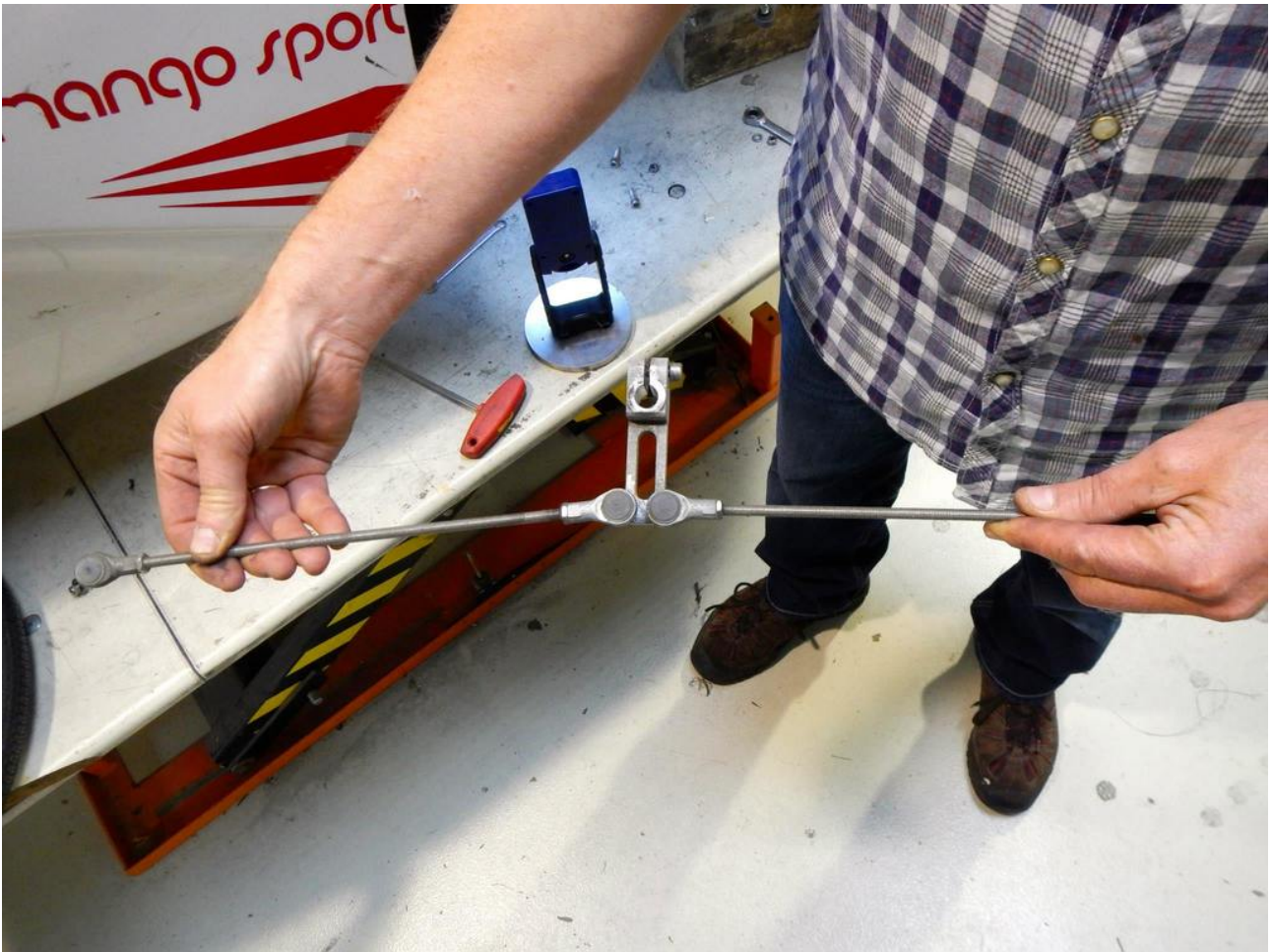




*Illustration 9: Next is to loosen the clamp of the steering lever with a very long 5 mm allen key*



*Illustration 10: Pull and twist the steer upwards while holding the steer rod. Then take out the steering rods with steering lever.*



*Illustration 11: This is the steering lever with rods and again four ball joints.*



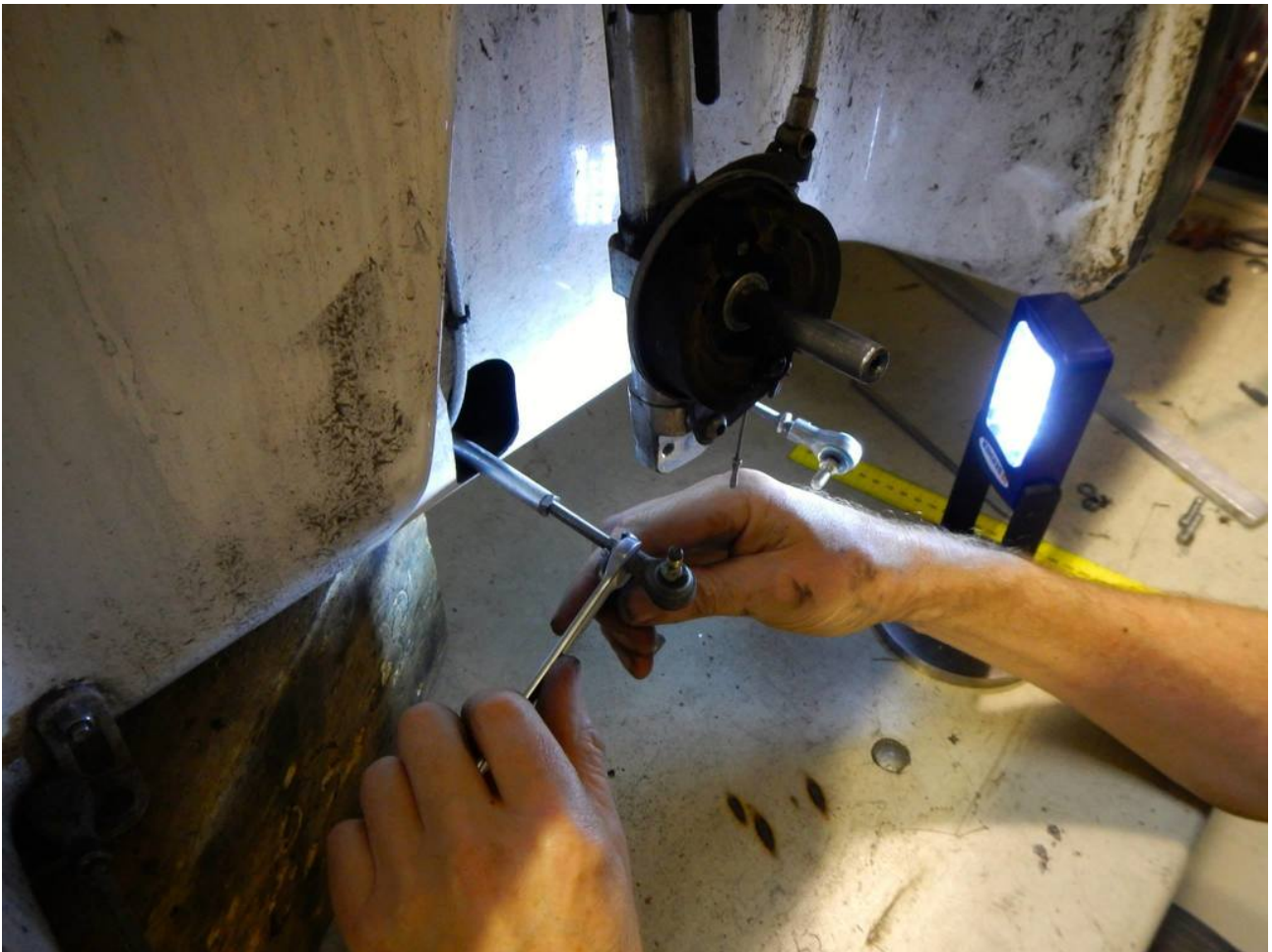


*Illustration 12: Use the rods of the Steering Geometry 2.0 set instead of the original rods. Put the anchor plate with new longer rod inside the bridge and screw the M6 nuts back on, tightly. The distance from body to begin of the ball joint needs to be 73 mm.*

**Note:** The 73 mm is rather critical. You need to have the rods at least five turns inside the ball joints to make sure it does not strip the thread on impact.

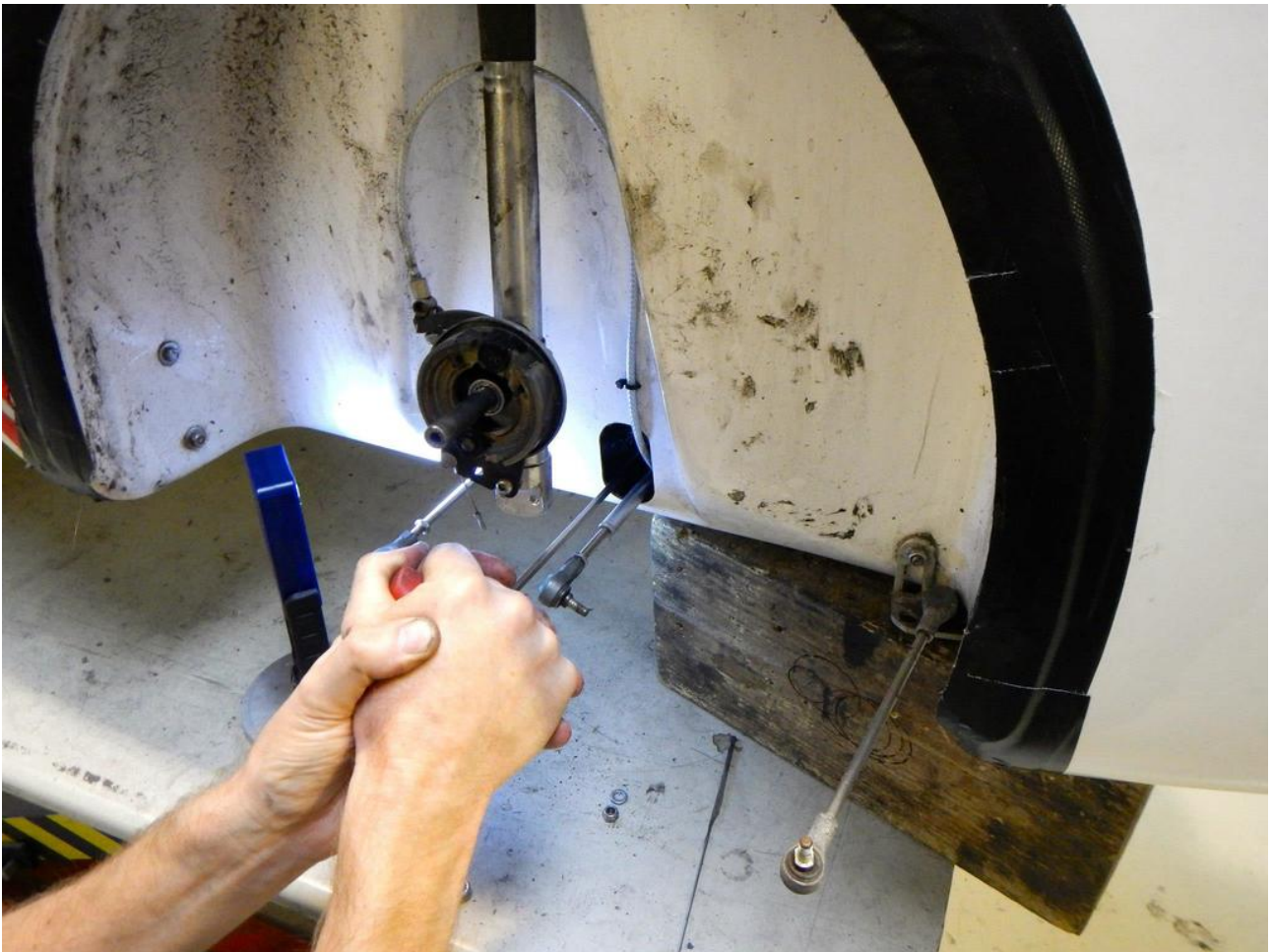


*Illustration 13: 73 mm from the body to the start of the ball joint*



*Illustration 14: Tighten the counter nut with two 10 mm spanners. Make sure the ball joint is vertical with the thread pointing up.*





*Illustration 15: The steering rods have to be counter turned 4 revolutions from completely in! Tighten the steering lever clamp again. Make sure the steer is in the middle, there is no vertical play and the rods are the same distance to the body on both sides before you tighten the allen screw. Yeah, I did not say it was easy... ;)*



*Illustration 16: This wedge makes it a whole lot easier to keep the clamp in position while you work to get both rod ends symmetrical and the steer central*

*Tip: If you do not have the wedge, a long chisel or a suitable piece of wood may serve the same purpose.*





*Illustration 17: It's time to fix the new steering plate. Use strong loctite on the thread, because this is a very important connection that you do not want to get loose while riding.*





*Illustration 18: Something I thought of later but not in this photo: Consider drilling a small hole in the steering plate to let the inner brake cable run through. Please, humor me.... it simply looks better and it nullifies the chances of the cable getting into the spokes*



*Illustration 19: Put a bit of grease on the ball joints' thread. Makes it easier to get loose the next time.*



*Illustration 20: Fitting the ball joint*





*Illustration 21: Nuts go on top of the plate*



*Illustration 22: Use a thin 8 mm spanner and a 10 mm spanner to tighten the nuts.*

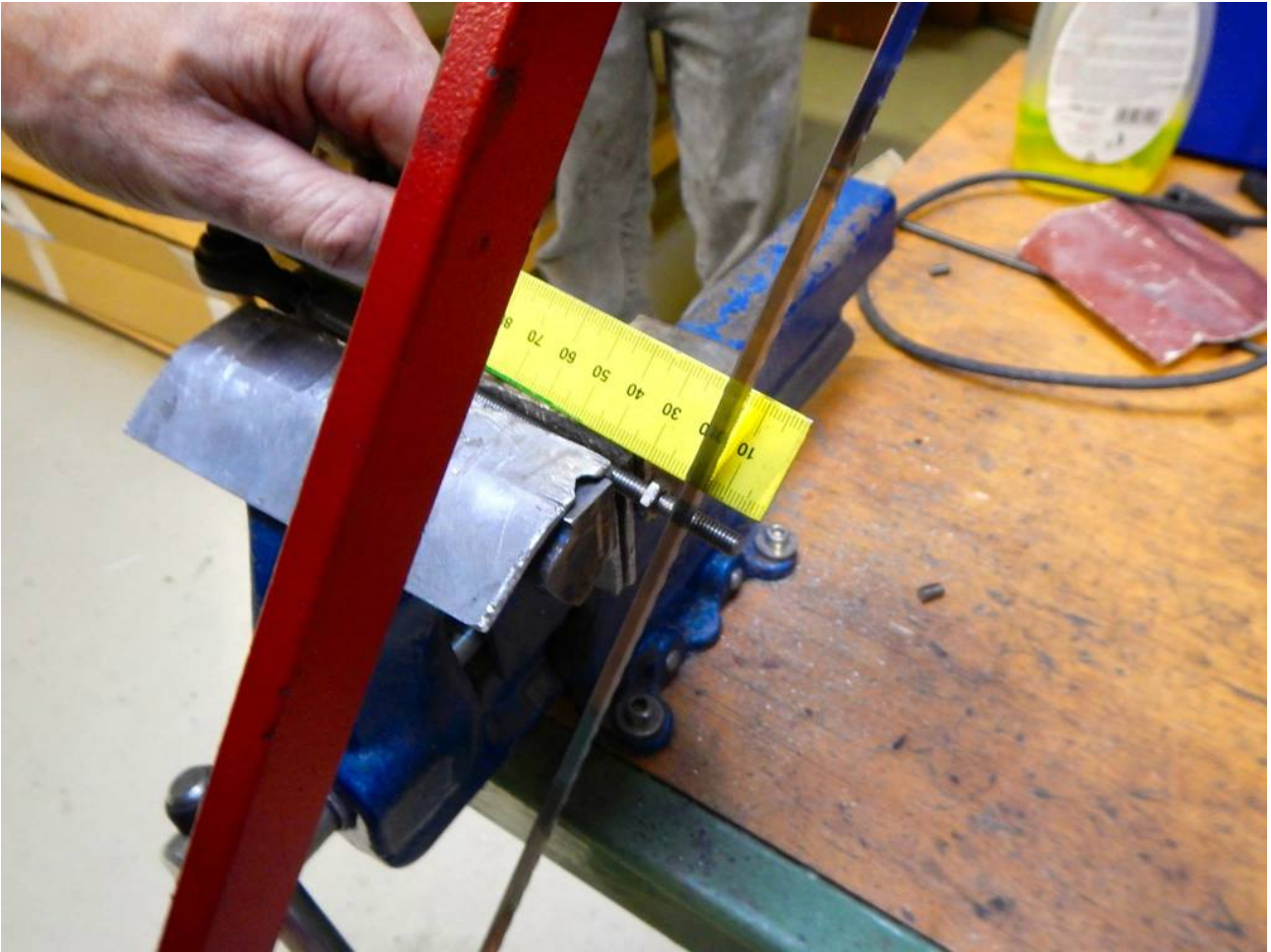


*Illustration 23: The original short rods are too long. They need to be shortened.*





*Illustration 24: Hence, take off the short rods...*



*Illustration 25: ...and shorten it by 15 mm*

*Tip:* In the end, the length of the rod must be such that you can properly center the wheel in the wheel arch – see also Illustration 32. Some users have reported that they needed to trim off more than 15 mm to achieve this.



*Illustration 26: Make the end of the smooth again. First at a straight angle...*





*Illustration 27: ...then at a slight angle...*



*Illustration 28: ...until it looks like this.*

Tip 1: If you do not have a grinder, you can also use a file – just takes a bit more work.  
Tip 2: Having an old nut on the rod *before* you shorten it allows you to turn over the end several times afterward. This also helps to get the thread back into shape.



*Illustration 29: Put the shortened rod back on.*





*Illustration 30: Counter nut tightening. Watch out not to turn the ball out of the socket. That is why you need two spanners to tighten the counter nut.*



*Illustration 31: Connect the ball joints to the steering plate. The ball joints have to come from below. If there is not enough space, you may have to enlarge the holes where the rods come out of the bridge.*

*Tip: This is a good moment to consider lowering the body of the Mango by 2 cm by either shortening the steel spring or installing ICE elastomer springs (medium hardness, cut to 100 mm length – this is the recommended option).*





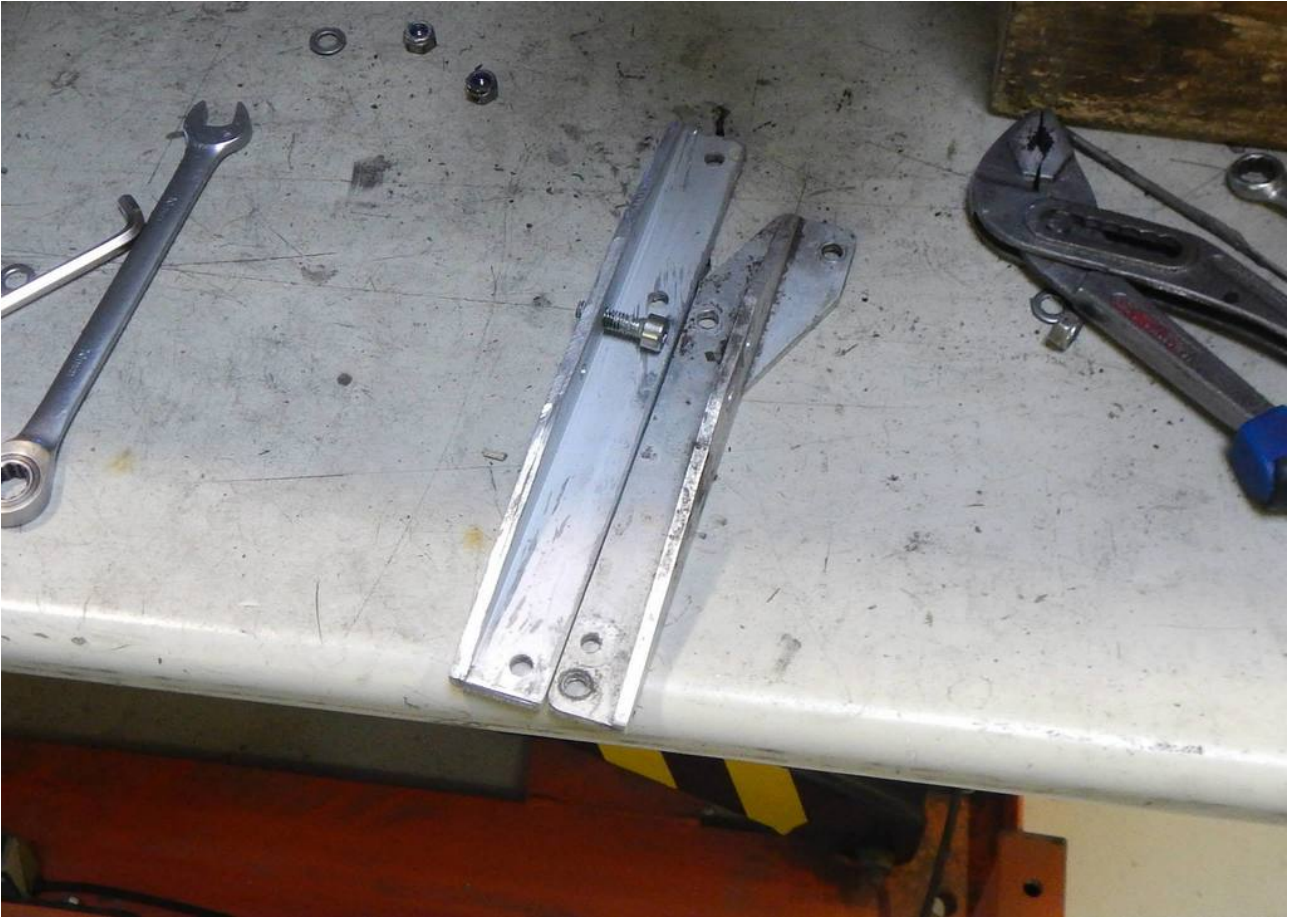
*Illustration 32: Make sure the tire winds up in the center of the wheel arch. Adjust with the short rods.*





*Illustration 33: The distance between wheel and wheel arch should be approximately the same on both sides of the arch.*

**Note:** Don't forget to check wheel alignment and check whether the brakes need adjusting!



*Illustration 34: New steering plate on the left, the original on the right.*