

**MRT-20003 Roll-center / bump steer / angle kit, BMW E30 / E36 / E46**

Kit content:

- 2x Steering adapter (pre-assembled)
- 2x Outer joint (pre-assembled)
- (1x Thread tap)
- Mounting hardware (as in the picture)



Disclaimer:

- *Racing part with NO warranty, not for use on public roads*
- *Manufacturer disclaims all liability for direct, indirect, incidental or consequential damages, including damage or loss of equipment, cost of purchase or replacement of goods, accident or injuries, or claims of the purchaser that result from the use of the part*

### Tools / equipment required for installation:

- 10mm hex key
- 17mm / 19mm / 22mm / 24mm / 27mm / 36mm wrenches or sockets
- Torque wrench
- Wire brush / abrasives for paint removal / cleaning of the parts
- Hydraulic press for outer joint removal / installation
- Angle grinder for original outer joint removal (E30 M3 Dorman / E46 non-M / E46 M3 aluminum control arms)
- Loctite ([blue](#))

### Torque rates for the bolts / screws / nuts:

- M10x1 tie rod nyloc nuts 40Nm
- M12x1.5 tie rod nyloc nuts 45Nm
- M12 nyloc nuts / hex bolt 100Nm
- M14x1.5 nyloc nuts 120Nm
- M14x1.5 castle nuts 85-125Nm (depending on pin hole alignment)
- Outer joint retainer nuts / inserts 100Nm

### Important notes:

- Fits only 32mm / 33mm / 41mm / 48.5mm outer joint control arms
- **Control arm end may need to be ground down with aftermarket Big Brake Kits and / or rotors to allow sufficient clearance**
- **Tie rod thread may need to be cut down with E30 / E36 M3 3.2 spindles to allow sufficient clearance**
- **Tie rod length may need to be shortened for a couple of millimeters with aftermarket tie rod inner / outer ends to allow sufficient toe-in adjustment**
- **Steering rack reducers may need to be used depending of wheel specs / offset**

## **Wheel fitment chart**

Spindle / knuckle	min. Wheel inner diameter, mm	
	w/ quick steering block	w/o quick steering block
E30 non-M	370	370
E30 M3	-	400
E36 / Z3 non-M	380	400
E36 M3 3.0	390	420
E36 M3 3.2 / Z3M	380	410
E46 / Z4 non-M	380	400
E46 M3 / Z4M	420	420

Installation:

1. Remove control arm and unfasten tie rod from the spindle / knuckle, unfasten sway bar from the control arm on E30 / E36 applications.
2. Install new outer joints

**E30 / E36 control arms:**

- a. Use hydraulic press to press out the original outer joint on the control arm
- b. Clean the bore with wire brush or abrasive
- c. **Measure and confirm that outer joint diameter match control arm bore size, maximum recommended interference fit 0.4mm**
- d. Use hydraulic press to install the new outer joint from bottom side as original joint  
**NOTE: Install 48.5mm eccentric outer joints thin side out as in the picture**



- e. Insert and tighten outer joint lock nut using a soft tool and a hammer

**E46 non-M control arms:**

- a. Cut out the retaining lip of the outer joint on the bottom side of the control arm and press out the outer joint
- b. Clean the bore and flatten the surface



- c. **Measure and confirm that outer joint diameter match control arm bore size, maximum recommended interference fit 0.4mm**
- d. Use hydraulic press to install the new outer joint from bottom side as original joint  
**NOTE: Install 48.5mm eccentric outer joints thin side out as in the picture**
- e. Insert and tighten outer joint lock nut using a soft tool and a hammer

**E30 M3 Dorman / E46 M3 control arms:**

- a. Cut out the retaining lip of the outer joint on the bottom side of the control arm and press out the outer joint
- b. Clean the bore and flatten the surface  
**NOTE: Open up the oval bore on the top side of the control arm to allow adequate articulation for the outer joint**
- c. Chamfer the edge of the bore and tap it with the thread tool included in the kit



- d. Assemble the outer joint dry and confirm that the bearing retainer will index with the bearing and tightens it
- e. **Make final installation using Loctite on both bearing and the bearing retainer, secure the bearing retainer with a safety wire**

### 3. Install tie rod into the steering adapter

- a. With E30 / E36 small taper tie rod ends press the tie rod taper adapter flush with the steering adapter surface, with E46 big taper tie rods this adapter is not required
- b. **With E30 / E36 M3 3.2 spindles check tie rod thread to spindle clearance, shorten the thread if needed**



- c. Install tie rod into the steering adapter, place the washer convex side up and tighten up the nyloc nut (*M10x1 40Nm, M12x1.5 45Nm*)

### 4. Clean up and flatten the spindle / knuckle mounting surfaces

**NOTE: Paint will cause fasteners to loosen up and may lead to a failure!**



**5. Install pre-assembled steering adapter into the spindle / knuckle as in the pictures**

- a. Insert spacer between the spindle / knuckle and the steering adapter (tie rod end)

E30 non-M	none
E36 non-M	7.5mm
E36 M3 3.0	4.5mm
E36 M3 3.2	1mm
E46 non-M	6mm
E46 M3	7.5mm

- b. Tighten up the nyloc nuts (*M12 100Nm, M14x1.5 120Nm*)



## 6. Install spindle / knuckle back into the control arm

- a. Install castle nut beneath the outer joint and tighten it up (*85-125Nm, see where pin hole aligns the best*)
- b. Insert and secure the pin



## 7. Re-install control arm into the chassis and mount the sway bar

## 8. Re-align front toe geometry

## 9. After alignment check and measure whether steering rack stops are required

In simplest form steering rack stop is a sleeve made out of Delrin / plastic / soft material which slides on top of the steering rack shaft and stops against the steering rack oil seal. Approximate length for the sleeve is 15 – 30mm (general rule)

## 10. Remember to check and inspect all fasteners after first 100km and occasionally after every 500km until the fasteners have set properly. Repeat inspection before and after every trackday



If you have any questions, feedback or other comments regarding the kit please reach us via email / WhatsApp or social media direct message:



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If you have problems / issues with the kit, please state where you have bought the kit, original Order No. and / or exact model of the kit you have / you supposed to have to ensure we can give you an accurate response.

All spare parts are available on our webshop and dealerships around the world:

<https://mrtengineering.fi/collections/spare-parts>

<https://mrtengineering.fi/pages/dealers>



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