

Disclaimer:

These parts are intended for race use only. The parts are not certified for use on public roads, and as such may not be legal for highway use. Wilhelm Raceworks LLC is not liable for any damage directly or indirectly related to the use or mis-use of these components.

A note on rod ends:

This kit replaces several OEM components with rod end spherical bearings. Please be aware that these are wear items, and depending on the conditions of their use may have a shorter lifespan than the OEM components that they replace. They must be inspected periodically for wear or looseness and replaced if necessary. Part numbers for both standard and premium rod end options are listed below.

	FK Part #
Front Tie Rod	JM10T
Front Tie Rod (High Misalignment)	HJMX10T
Rear Tie Rod, Chassis End	JM10T
Rear Tie Rod, Knuckle End	RSML8T

Replacement rod ends can be purchased through any FK rod end dealer (Summit Racing, Jegs, Off Road Warehouse, etc) or through Wilhelm Raceworks, LLC. If you wish to substitute alternate rod ends please contact me for suitable alternatives.

Parts list:**Front:**

- 2x 1.75" thick front roll center adjusters (RCA)
- 2x Tapered tie rod studs
- 2x Aluminum tie rod spacers
- 2x Tie rod end assemblies
- 4x .2" bump steer spacers (2x with high misalignment option)
- 4x .3" bump steer spacers (2x with high misalignment option)
- 2x 5/8-18 nylock nuts
- 2x 7/16-20 nylock nuts
- 2x 7/16 lock washers
- 4x M10 x 1.25 x 70mm bolts

Rear:

- 2x 1.25" thick rear RCA
- 2x Welded steel rear tie rod brackets
- 2x Rear tie rod press in steel "slugs"
- 2x Rear tie rod assemblies
- 4x Stepped rod end bushings
- 2x 1/2-20 x 2.25" bolts
- 2x 1/2-20 x 3" bolts
- 4x 1/2-20 nylock nuts
- 4x M12 x 1.25 x 65mm bolts
- 8x 1/2" Washers

NOTE: The hardware is bagged in groups according to it's application. Taking note of what parts are bagged together will help determine what parts are installed together.

Installation Instructions:

A Toyota Factory Service Manual may be helpful to have on hand to reference during the installation process.

Front:

1. Set the parking brake and chock the rear wheels. Jack up the front of the car and support securely with jack stands. Remove the front wheels.
2. Remove the two bolts holding the ball joint to the knuckle. Install the thicker (1.75") front Roll Center Adjuster (RCA) between the ball joint and the knuckle and secure using the 10mm bolts. Torque to the OEM specification of 59 ft-lb.
3. Break loose - but do not move - the jam nut holding the outer tie rod end to the inner tie rod. Remove the cotter pin and nut from the top of the outer tie rod, and remove the outer tie rod end. A 2 jaw puller or pickle fork may be required.
4. Install the new outer tie rod end to the inner tie rod and torque the jam nut.
5. Install front tie rod stud to the knuckle and secure using the 7/16" lock washer and small Nylock nut. Torque the top nut to 30 ft-lb. You may need to temporarily install the large lower nut to provide a means to hold the stud while installing the top nut.

DO NOT use an impact gun on the tie rod studs!

Install large black spacer, .2" bump steer spacer(s), tie rod end, .3" bump steer spacer(s), and large Nylock nut.

With the standard front rod end you will use two .2" spacers above the rod end and two .3" spacers below the rod end. With the high misalignment rod end option you will only use one in each location.

6. Torque the bottom Nylock nut to 30ft-lb.



Figure 1: Front Tie Rod Installation

7. Reinstall the front wheels.

Rear:

1. Chock the front wheels. Jack up the rear of the car and support securely with jack stands. Remove the rear wheels.
NOTE: You may be able to accomplish steps 2-4 without removing the knuckle by the use of a 3 jaw puller or ball joint press.
2. Remove the rear knuckle: First, remove the cotter pin and axle nut. Next, remove the two bolts holding the brake caliper and support the caliper with a zip tie or otherwise so as not to put excessive stress on the brake line. Remove the brake rotor. Loosen the two bolts holding the knuckle to the strut, loosen the two bolts holding the ball joint to the knuckle, and remove the two bolts holding the rear tie rod. Remove the knuckle.
3. Using a press, remove the tie rod spherical bearing from the rear knuckle. If you ever plan to put the stock parts back on it is best to devise some way to press on the bearing outer race only to avoid damage to the bearing.
4. Press in the steel slug to replace the bearing.
NOTE: This must be a secure press fit. If it slips into place without much resistance please contact me.
5. Install the rear tie rod drop brackets with the shorter of the two ½", ½" Nylock nuts, and ½" washers on both sides, and tighten until snug.
6. Match the alignment tabs on the bracket to the casting line on the top of the knuckle, as shown in Figures 1 & 2. 91/92 rear suspension users should install the brackets angled in toward the center of the car. 93+ users should install the brackets vertically, using the top alignment mark.



Figure 2: 91 Bracket Install



Figure 3: 93+ Bracket Install

7. Torque the ½" bolt attaching the bracket to the knuckle to 80 ft-lb. Adding a bead of black RTV to the joint between the knuckle and the bracket will help keep water from collecting in the bottom of the bracket.
8. Reinstall the knuckle (if you removed it earlier). It may be easier to torque all of the bolts at the end of this procedure once everything is attached. Install the rear RCA between the knuckle and the rear ball joint and secure with the four 12mm bolts.
9. Install the rear tie rod as shown in Figure 4 using the stepped bushings and the OEM bolt. Torque to the OEM spec of 76 ft-lb.



Figure 4: Rear Tie Rod Installation

10. Insert longer 1/2" bolt through the outer rod end, one of the 1/2" washers, the tie rod bracket, another 1/2" washer, and finally secure with one of the 1/2" Nylock nuts on the forward side. Torque to 40 ft-lb. See Figure 5.



Figure 5: Rear Tie Rod Installation

Note: The left hand threaded end of the rear tie rods is marked with notches on both the tie rod and the jam nut.

11. Torque all remaining bolts to OEM specs:
 - Ball joint to knuckle bolts: 83 ft-lb.
 - Brake caliper bolts: 43 ft-lb.
 - Knuckle to strut bolts: 188 ft-lb.
 - Axle nut: 137 ft-lb non-turbo axles, 217 ft-lb for turbo axles.
12. Reinstall the rear wheels.

Get a good alignment, and enjoy!

If you have any questions about the installation process please contact me on mr2oc.com, or via email at wilhelmraceworks@gmail.com, or give me a call at (406) 261-0111.