

TUNDRA RACK Install Guide

For V8 & V6 vehicles

- GX470
- GX460
- 4th & 5th Generation 4Runner
- 1st & 2nd Generation FJ Cruiser
- 2nd & 3rd Generation Tacoma



Parts Supplied

Qty	Description
1	Tundra Rack and Pinion
2	Tundra Inner Tie Rods
2	Tundra Outer Tie Rods
2	Tie Rod Jam Nuts
2	Cotter Pins
2	R&P Bellows w/ clamps
4	Aluminum Offset Bushings
1	Intermediate Shaft
2	Stainless Steel Tie Rod Spacers
2	SAE ½"-20 x 6" Grade 8 bolts
2	SAE ½"-20 Grade 8 Nylon-Insert Locknuts
4	SAE ½" Grade 8 washers
1	Blue Thread Locker
1	1" hole saw*
1	Hole saw bushing*

*Needed for further modifications on V8 engine vehicles.

Thank you for purchasing our Tundra Steering Rack kit for your vehicle. Please follow all instructions. If you are not installing these yourself have a qualified shop do so. This kit is designed to work with OEM spindles and any aftermarket suspension. However, some modification is required on the spindles to accept the larger Tundra Tie Rods. Make sure to check the parts list to make sure you have every component prior to starting. Toyo-Steering has made every attempt to ensure you receive the highest quality components in the most complete manner. This is a guide to help you through the process with recommended torque specs. It's your responsibility to ensure parts are being installed correctly using the correct tools and procedures. We recommend reviewing a service manual for more details and torque specs. For any questions or concerns, email us at info@toyo-steering.com.

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Tools Required

Eye Protection | Jack | Jack Stands | Assorted Metric Wrenches | Assorted Metric Sockets | 35mm Axle Nut Socket | 12mm Hex Driver | 10mm Hex Driver | Drill | ½" Drill Bit | 1:10 Reamer | Pipe Wrench | Flat Head Screwdriver | Pry Bar | Pliers | Mini Sledgehammer | Rubber Mallet | Torque Wrench | Bungee/Mechanics Wire | Brake Cleaner | Oil Catch Can | Tall Oil Funnel | Shop Rags | Black Paint* | Welder* | Angle Grinder*

*Needed for further modifications on V8 engine vehicles.

Fluids Required

ATF oil for Steering System Refill | Front Differential Oil (Reference Owner's Manual)

1. Setup

Park the vehicle on level ground and set the parking brake and chock both rear wheels. Jack up the front end from the chassis until the front tires are off the ground. Place jack stands under the front frame rails and set down. Make sure the vehicle is supported correctly and the front tires are still off the ground. Place the jack under the driver side lower arm and raise the tire 1/2", then remove the wheel while keeping jack under lower a-arm to support the suspension. Place the wheel under the frame rail. Read these instructions start to finish before moving forward and review diagrams.

2. Removal

Remove any skid plate or belly pans that will interfere with the removal of the rack and pinion. The front differential must be removed to maneuver the much larger Tundra Rack & Pinion into place. Drain the front differential oil by removing the drain plug with a 10mm hex driver. Make sure you have an oil catch ready with the cap removed so that there is no spillover.

With a flathead, remove the axle nut dust cover. Remove the cotter pin and the axle nut with a 35mm socket. Tap the axle splines with a rubber mallet to ensure it is not seized.

Disconnect the tie rod from the spindle by removing the cotter pin. Loosen the castle nut but do not remove. Hammer the spindle to shock the outer tie rod out of the spindle. It may take some heat to remove if there is significant rust. Remove the rack & pinion bellow to expose the inner tie rod. With a pipe wrench remove the inner tie rod. Finally, disconnect the lower control arm by removing the two 19mm bolts. Ensure that there is not any tension on the brake lines by tying the spindle with a bungee or mechanic's wire. Push the CV axle out of the hub assembly. Pull on the CV axle to create a small gap between the inner CV and the differential. Use the pry bar to release the axle from the differential. Place a shop rag in the openings of the differential to mitigate some oil spill (Differential oil must have been drained prior to removing the CV axles).

Using a 14mm socket, disconnect the front drive shaft from the front differential. Disconnect any electrical plugs on the differential, if applicable. Disconnect the differential breather hoses on the top side of the differential. Remove the rear differential mount nut with a 12mm hex driver. Loosen the two front differential bolts without removing them completely. With the jack under the differential, remove the bolts and free it from the vehicle.

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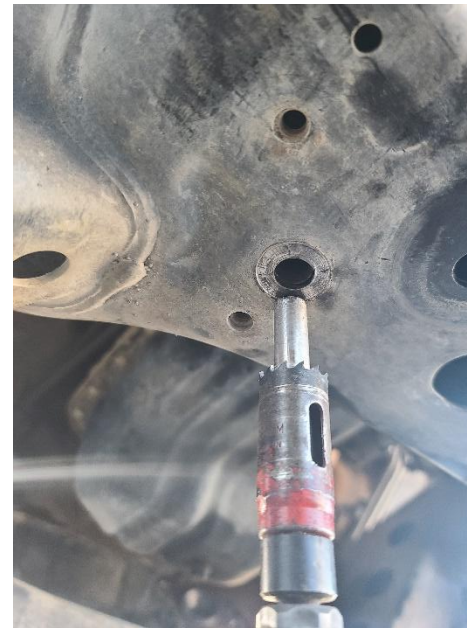
Before disconnecting the intermediate shaft, ensure that the steering wheel is held firmly in the center position. Disconnect the intermediate shaft. Remove the supply and return oil lines from the pinion with an oil catch under the working area. Once disconnected, remove the two mounting bolts from the rack and remove it.

3. Pre-Installation

- For V6 vehicles: Drill both Rack & Pinion mounting holes to ½". This will prepare the frame to accept the larger grade 8 hardware.

- For V8 vehicles: Before drilling out the bushing you must remove some material with the provided hole saw and hole saw bushing. From the bot of vehicle in to essentially expose the bushing to accept some weld bead: After this is done, drill the bushing before welding so that the material dc not harden with the heat. Finally weld the bushing to the frame and grind down flush.

The topside of the bushing must be flattened flush to the frame. This is accomplished with a cut off wheel and a flap disc. Make sure that only th bushings for the rack & pinion are cut. Do not cut the bushings for the differential mount.



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4. Installation

Begin by inspecting the Tundra Rack & Pinion to ensure there are no obvious defects that may have occurred during shipment. Ensure that the aluminum offset bushings are oriented so that the holes align with the frame mounting points. Also, make sure that the bushing with the thinner flange is placed on the bottom. Place the rack & pinion onto the mounting holes and insert the ½" Grade 8 bolt and one washer. Use the rubber mallet or mini sledge to tap the bolt in if it does not go in easily. Place another washer and the nylon locknut. Torque ½"-20 bolts to 85 ft/lbs.

Reinstall the front differential, connect the differential breather and all electrical plugs if applicable. Connect the power steering supply and drain lines to the pinion.

Ensure that the steering wheel did not move and place the lower intermediate shaft on the pinion and the upper intermediate shaft. The lower intermediate shaft only slips onto the upper intermediate shaft splines in one direction because of the flat that is machined on the splines to allow the bolt to pass through. Torque the bolts to 26ft/lbs. **At this point there might be some interference with the frame due to the intermediate shaft hitting when rotated. It is a good idea to notch out a relief on the frame in the area that the u-joint hits. This is more apparent on series 150 front ends where the frames are about 5/8" narrower than the 120 series frames.**

Install the inner tie rod with the provided blue thread locker and torque to 55 ft/lbs. Install the bellow and secure it with the large and small clamps. The outer tie rod jam nut should be torqued to 65ft/lbs. The outer tie rod castle nut should be torqued to a minimum of 65ft/lbs.

The spindle on the vehicle needs to be reamed out with a 1:10 reamer to accept the larger outer tie rod. Do not attempt to install this kit without enlarging the taper on the connection at the spindle.

Begin to reassemble the front end of the vehicle and remember to refill the oil in the differential.

Bleed the power steering system.

5. Alignment

Some amount of material may be needed to be removed on the outer tie rod to bring in the toe of the vehicle. You will need to have your vehicle aligned by a qualified shop. Have your alignment shop increase/maxout positive caster, then set camber and toe to factory OEM specifications. Having an increase in caster helps with straight line stability and cornering precision for performance driving on and off-road.

6. Maintenance & Care

Inspect and re-torque all hardware and components after 500 miles and whenever using the truck off-road.

7. Notes

Our Tundra kit is paired with modified OEM 2007-2010 Tundra Tie Rods that have been machined to fit our Rack & Pinion and your vehicle. The spindle on the vehicle needs to be reamed out with a 1:10 reamer to accept the larger outer tie rod. Do not attempt to install this kit without enlarging the taper on the connection at the spindle.