

# Raptor Tie Rods Kit

## Installation Guide

Rev 1B



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Tech Support: 866-691-7750 ext 2

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Laguna Hills, CA 92653

Install Videos: YouTube "Raptor Performance Group"

**COMPLETELY READ INSTALLATION INSTRUCTIONS PRIOR TO  
INSTALLING PRODUCT and WATCHING VIDEOS**

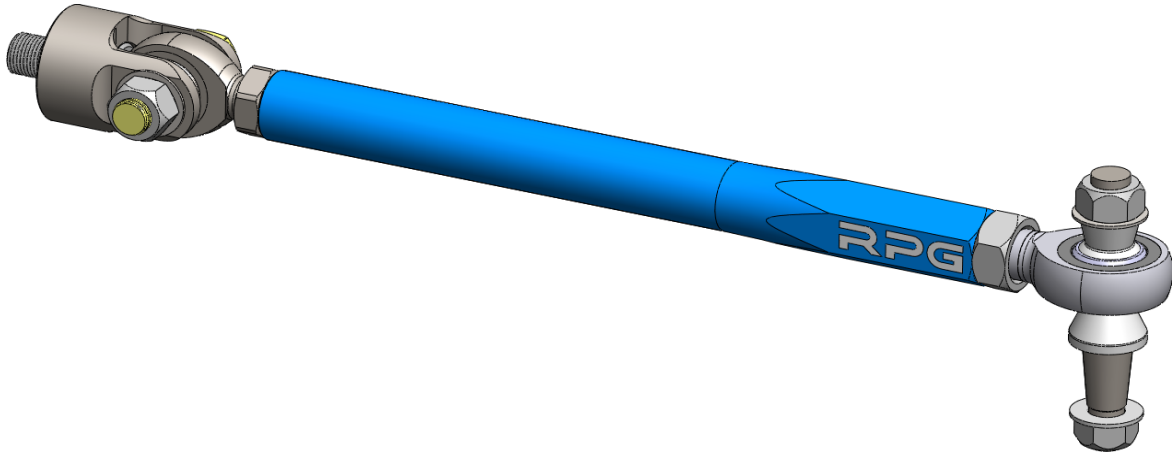
**WARNING: Failure to follow these instructions may lead to serious personal injury and/or property damage.**

Due to the extreme and punishing nature of offroad use, Raptor Performance Group has no implied or expressed warranty. Raptor Performance Group components are designed and manufactured for offroad use only. Installing most suspension products will raise the center of gravity of the vehicle and can increase the susceptibility to a rollover and alter the handling characteristics. Raptor Performance Group may void the vehicles warranty, check with your local dealer. The loss of use of the product, loss of time, inconvenience, removal, shipping costs, commercial loss or consequential damages are not covered. Raptor Performance Group reserves the right to change the design, material or specifications of any product without assuming any obligation to modify any product previously manufactured and without prior notice. Every effort has been made to avoid printing errors and specifications. By installing and/or using these products you are accepting these stated conditions and accept all liability and responsibility.

Prepared by: Engineering Innovations INC for Raptor Performance Group

**Engineering Innovations INC DBA**

**RPG - Raptor Performance Group**



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### 1. General Information

The Kit is designed with the utmost consideration for safety, quality and ease of installation. The kit comes complete with all necessary hardware and fasteners. However, it is assumed that the installer has advanced/professional skills automotive vehicle servicing. It is recommended that installer obtain an OEM service manual for the vehicle.

#### 1.1 Installation Information

The information contained in this Installation Guide is intended for use by technicians of advanced to professional skill levels. Attempting installation without the proper training, tools and equipment could cause injury to you or others. It could also damage the vehicle or cause an unsafe condition.

#### 1.2 For Your Safety

Because this guide is intended for technicians of advanced to professional skill levels, we do not provide warnings about many basic shop safety practices. If you have not received shop safety training or do not feel confident about your knowledge of safety practices, we recommend that you do not attempt to perform the procedures described in this guide. Some of the most important general safety precautions are given below. Engineering Innovations cannot warn you of every conceivable hazard that can arise. Only you can decide whether or not you should perform a given task.

#### 1.3 Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you wear appropriate clothing and use safety equipment. Be especially careful of the following:

- Read all directions before you begin, and make sure you have the tools, the parts and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles or face shields anytime you hammer, drill, grind, pry or work around pressurized air or liquids, and springs or other stored-energy components.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts.
- Protect yourself and others when you have a vehicle up in the air. Anytime you lift a vehicle, either by hoist or a jack, make sure that it is securely supported.

Make sure the engine is turned off and battery disconnected before you begin work.

- Carbon Monoxide poisoning from exhaust gases: Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts: Let the engine and exhaust system cool before working on those areas.
- Injury from moving parts: If running the engine, keep hands, fingers and clothing away from moving/rotating parts.

Gasoline vapor and hydrogen gases from batteries are explosive. To reduce the possibility of fire or explosion, be careful when working near gasoline and batteries.

Use only nonflammable solvent, not gasoline, to clean parts.

Never drain or store gasoline in an open container.

Keep all cigarettes, sparks or flame away from the battery and all fuel related parts.

## 2.0 Removal of Original Parts

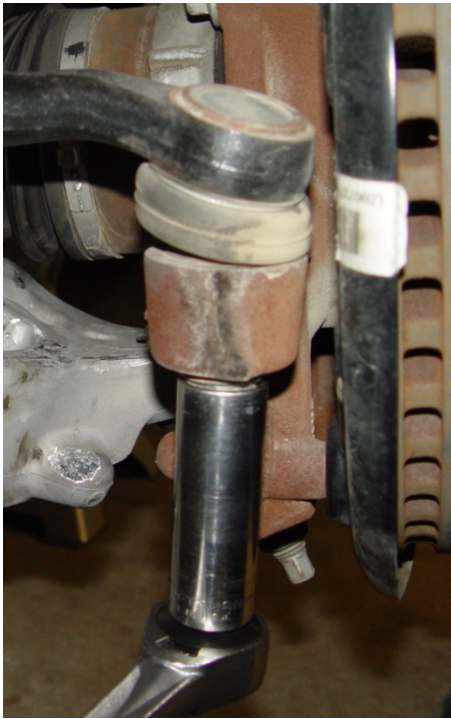
See OEM manual for detailed instructions. Items to be retained for re-installation are noted.

- Wheels and Tires (to be re-installed)
- Tie-Rod assembly

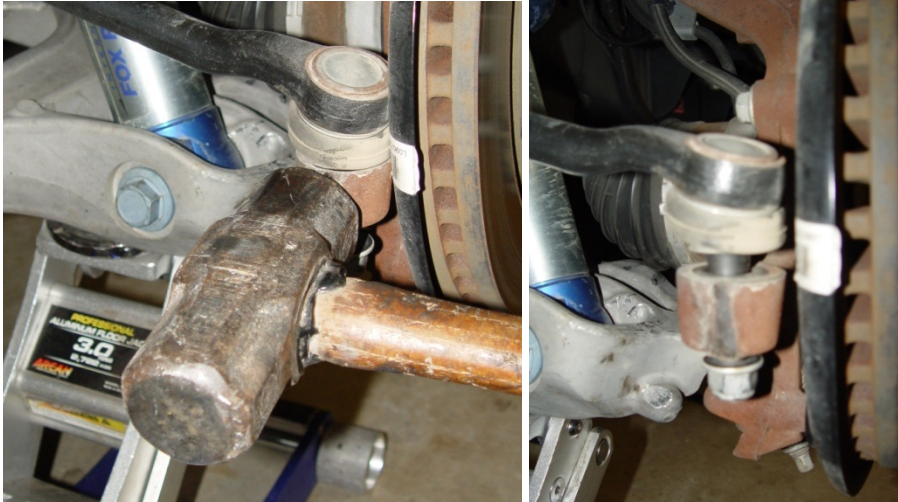
to Simplify, perform this on the driver's side first

Turn the steering wheel all the way to the Left

Loosen Tie-Rod Nut 21mm or 13/16" Socket. Do not remove completely.



To Loosen, Tap on Knuckle and bottom of ball joint with Hammer



Loosen Inner Boot clamp. To be reused



Loosen Inner Ball Joint. If you don't have the appropriate size wrench, just use a pipe wrench or channel locks to remove. The ball joint will not be reused. Be careful not to scar the Wrack.



- Measure Overall Length of Tie-Rod as shown

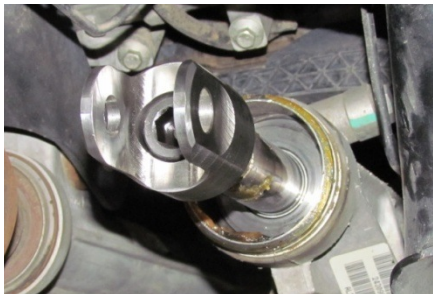


- Tie Rod Boots (to be re-installed)

### 3.0 Installation of Kit

#### 3.1 Install Clevis

- clean grease off of internal threads with brake cleaner
- clean supplied SHCS with brake cleaner
- apply RED thread locking compound to SHCS
- torque SHCS to 70 Foot Lbs (note 14mm allen)
- ensure that post torquing that the clevis is rotated as shown otherwise the rod-end may bind in operation.



#### 3.2 Modify OE Tie-Rod Boot

- Remember that we are working on the driver's side first. Therefore look at both tie rods and Remove the inner rod end from the RGP tie rod.

## DRIVER'S SIDE



## PASSENGER'S SIDE

- Cut off the end of the stock boot



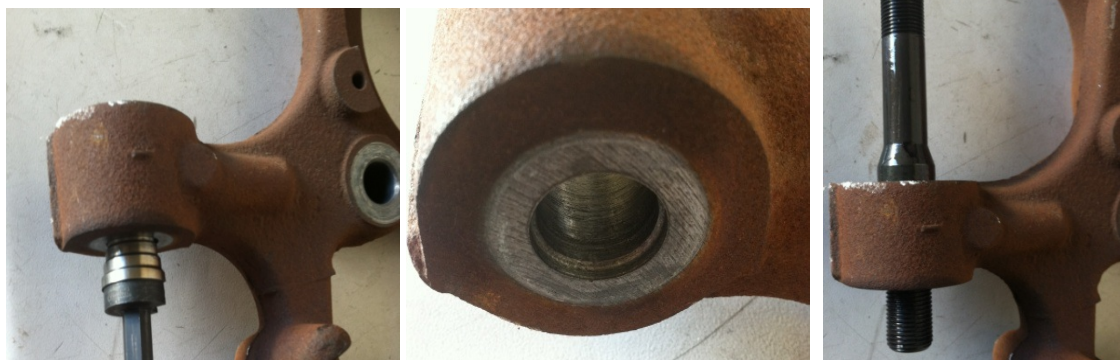
- Use a heat gun to stretch the stock boot over the Driver's Side RPG tie-rod. It is much easier to pull the boot over the tie rod therefore temporarily rotate the boot backwards. Allow the boot to cool prior to rotating the boot back around the correct way. You may want to watch the installation video to help clarify this process.

3.3 Adjust Tie Rod Length minus 2 Inches as shown above.

- Hand tighten the jam nuts. Note the outer is a Left Hand Thread

3.4 Drill out Knuckle for Pin

- 5/8" Drill Bit or File. You need to remove very little material out of the bottom of the taper only.



Drill

After Drilling

Pin Inserted

### 3.5 Install Tie Rod Pin into Knuckle.

- Clean all grease off 300M pin and the inside of the taper of knuckle to ensure a good friction fitment.
- Do not use a thread locking compound.
- Install THICK 5/8 washer
- Temporarily use the 5/8-18 UNF Grade 8 nut to seat the taper between the Pin and Knuckle. Torque to 100 Foot Pounds. 7/8" Socket
- Remove the temporary nut and install the 5/8 Thread locking nut. Do not use a thread locking compound. When tightening apply gradual pressure onto the wrench. Failure to do so, may cause the tapered pin to release. If the pin does come loose, remove the pin and start step 3.4 all over. Torque to 100 Foot Pounds. 7/8" Socket

### 3.6 Attach Tie Rod onto Knuckle to Tie Rod Pin

- Install mis-alignment spacers into outer rod end. The small mis-alignment goes on the top. Large mis-alignment goes on the bottom.
- Install the outer rod end with mis-alignment spacers onto the knuckle tie rod pin.
- Install THIN 5/8 stainless steel washer and 5/8 -18 Stover metal locking nut. Do not use a thread locking compound. When tightening apply gradual pressure onto the wrench. Failure to do so, may cause the tapered pin to release. If the pin does come loose, remove the pin and start step 3.4 all over. Torque to 80 Foot Pounds. 15/16" Socket



### 3.7 Attach Tie Rod to Clevis

- Install 5/8" stainless steel washer over 5/8-18 bolt and insert bolt into clevis. Install 2nd 5/8" SS washer over the 5/8 bolt. Apply red thread locking compound onto bolt. Install 5/8 -18 Stover metal locking nut.

-torque to 100 foot pounds 15/16" Socket

### 3.8 Torque down Jam nuts

-Inner is 1 1/8"

-Outer is 1 1/4" LEFT HAND THREADS

### 3.9 Attach Tie Rod Boot and Clamp

### 3.10 Perform the same operation to the Passenger's Side

### 3.11 Install rear wheels and tires

Torque to Factory Specification of 150 Foot-Pounds.

### 4.0 Inspection of complete installation.

### 5.0 Maintenance

- Lubricate rod ends with DuPont Teflon Non-Stick Dry-Film Lubricant available at Lowes 4oz. for \$5  
Lowes Item# 363776

Re-torque complete installation post

- 100 - 500 miles of driving
- as per manufactures recommendations

\*\*\*Your installation should look identical to the figures below with the exception of the boots. The pictures were taken for visual purposes only.

