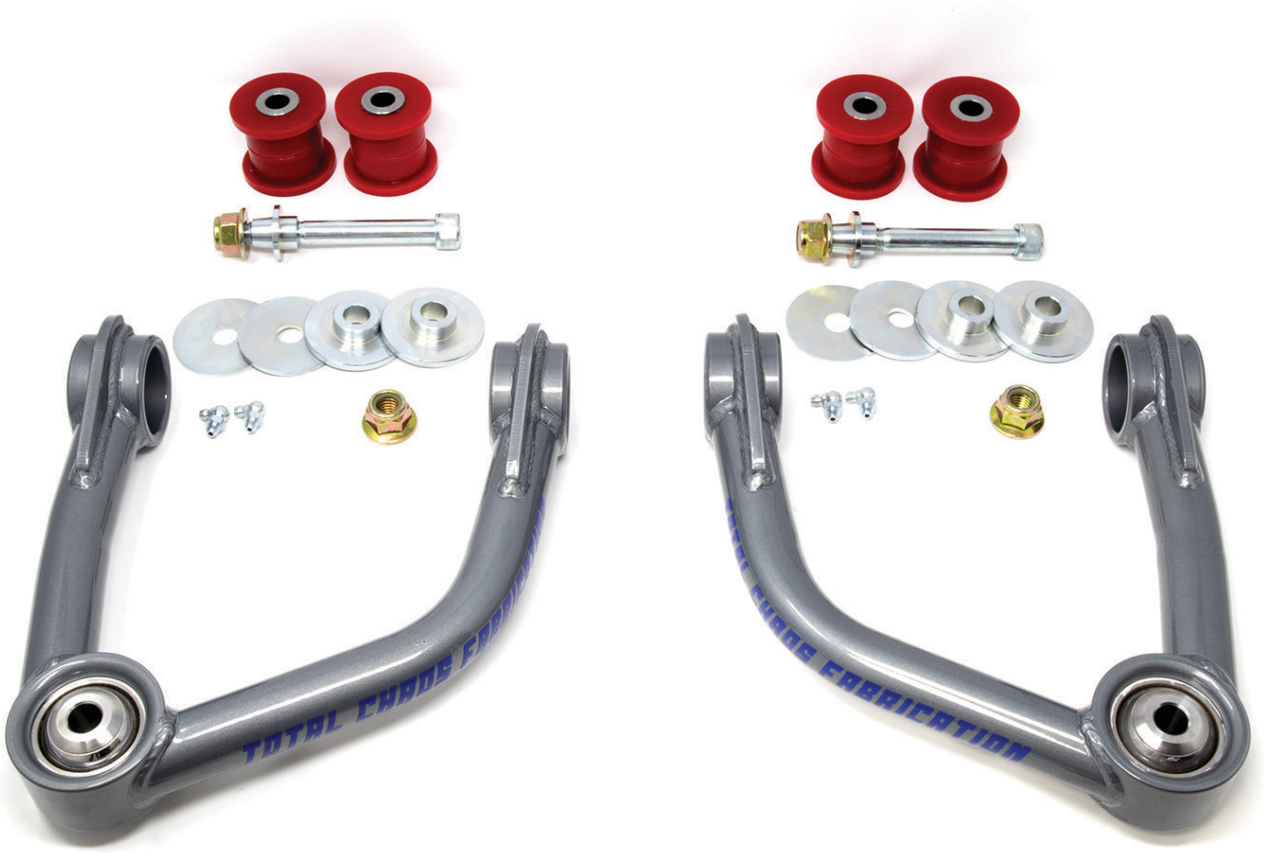
TOTAL CHAOS FABRICATION

# INSTALLATION INSTRUCTIONS




## COMPONENT: UPPER CONTROL ARMS
## 2019-CURRENT FORD RANGER

## PART #: 80520

| PARTS LIST: | | | |
|---|---|---|---|
| ITEM # | PART # | QTY | ITEM DESCRIPTION |
| 1 | 99852L | 1 | Upper A-Arm: Left - 2019+ Ford Ranger (domestic) |
| 2 | 99852R | 1 | Upper A-Arm: Right - 2019+ Ford Ranger (domestic) |
| 3 | 10619 | 2 | 14mm - 2.0 x 120mm Grade 12.9 |
| 4 | 100916-C | 2 | Hi-misalignment Spacer: 1"-9/16" - Custom |
| 5 | 10034-TCF | 2 | Hi-misalignment Spacer: 1"-3/4" - TCF |
| 6 | 11141 | 4 | Nut: 14mm - 2.0 Flange Nylock (Zinc) |
| 7 | 30004 | 2 | Tapered Spindle Adapter: 9/16" ID (For use with raw silver aluminum spindles) |
| 8 | 30005 | 2 | Tapered Spindle Adapter: 9/16" ID (For use with painted black steel spindles) |
| 9 | 10005 | 4 | Zerk Fitting: 1/4"- 28 90 degree |
| 10 | 69601 | 4 | Inner Sleeve: Upper A-Arm |
| 11 | 60684 | 8 | Bushing Universal Half - Urethane: Red |
| 12 | 69624 | 4 | Washer: Upper Arm 2 1/4" x 10 Ga x 9/16" ID |
| 13 | 69630 | 4 | Stepped Washer: Upper Arm 2 1/4" x 3/16" |
| 14 | FK-WSSX16T-1 | 2 | 1" Uniball Stainless w/ PTFE Liner |
| 15 | 30604 | 2 | Snap Ring: 1" Uniball |

## IMPORTANT

- Before starting install, make sure the vehicle is supported securely on jack stands.
- The factory manual is recommended for removal and re-installation of all factory components.

## REQUIRED TOOLS

- 8mm wrench
- 18mm wrench
- 21mm wrench
- Phillips head screwdriver
- Plastic clip tool or flat head screwdriver
- 12mm allen wrench
- Drill
- 9/16" drill bit or step bit
- Hammer

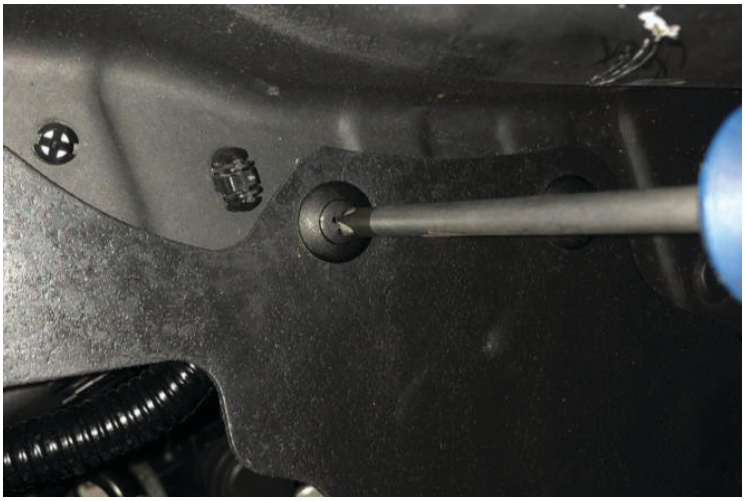
## TAPERED SPINDLE ADAPTER GUIDE

Raw Aluminum Spindle
**Tapered Adapter**
**PN: 30004**

Black Steel Spindle
**Tapered Adapter**
**PN: 30005**

## STEP 1

Clip the cable ties that hold the wheel speed sensor wiring to the upper control arm. Then remove the clips that hold on the rear fender well apron using a Philips head screwdriver and pull the apron back.

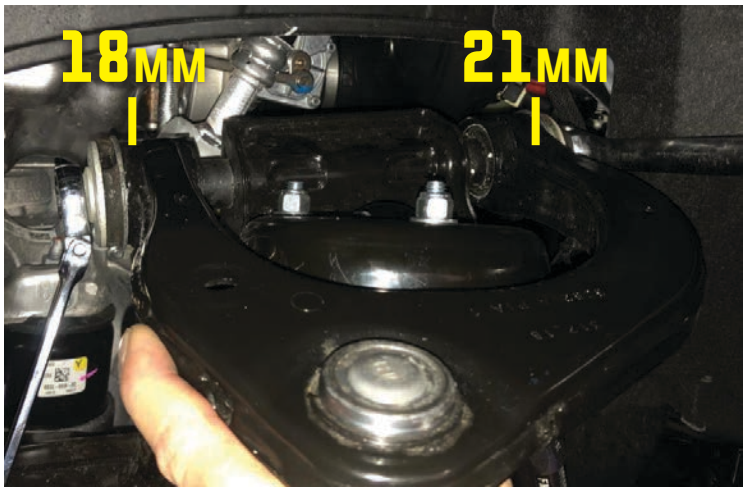


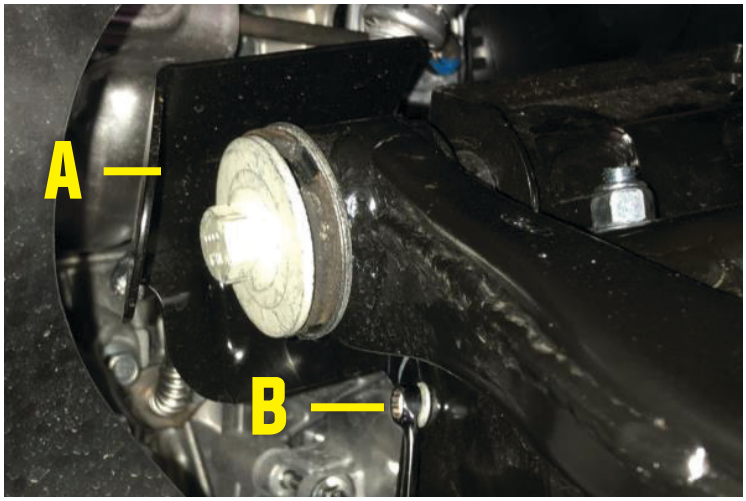
## STEP 2

Using a 18mm wrench, loosen the stock upper ball joint nut (if the joint spins it may be necessary to hold the stud with an 8mm wrench). Do not completely remove the nut, only make it finger loose.

## STEP 3

Using an 18mm and 21mm wrench, loosen the upper control arm through bolt and remove the nut. The passenger side has a heat shield that covers the rear control arm pivot, this heat shield (A) needs to be removed using an 8mm wrench (B). The shield will be reinstalled after the new Total Chaos UCAs are installed.



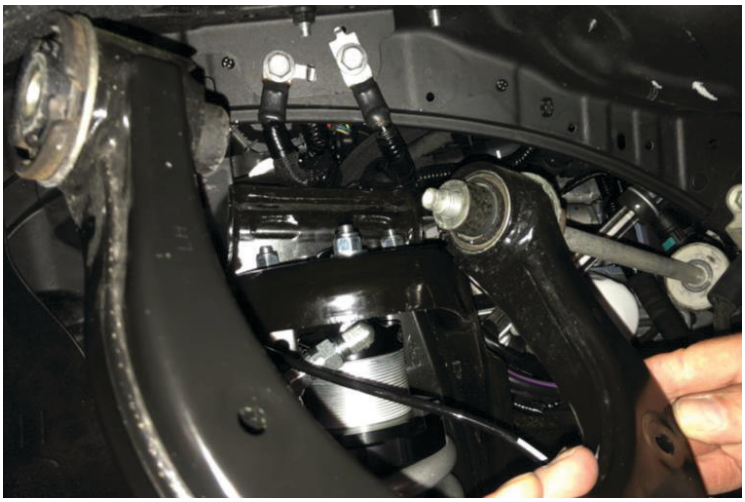




## STEP 4

Remove the stock upper ball joint nut and carefully lift the arm out of the spindle making sure the spindle doesn't lean too far outward and dislodge the inner CV joint.

## STEP 5

The only thing holding the stock upper control arm on the car is the through bolt. Slide the through bolt rearward out of the stock arm and remove the arm.



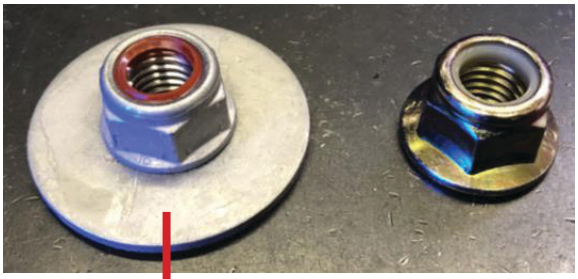
## STEP 6

With the bolt removed and on the bench, use a hammer and tap off the washer that is splined onto the bolt (Pic 1). You will replace this washer with a supplied 1/8" thick plated washer (Pic 2). The stock through bolt nut will also be replaced with the provided 14mm nylock flange nut and another 1/8" plated washer (Pic 3).

1.

2.

3.



**DO NOT RE-USE THESE!**

## STEP 7

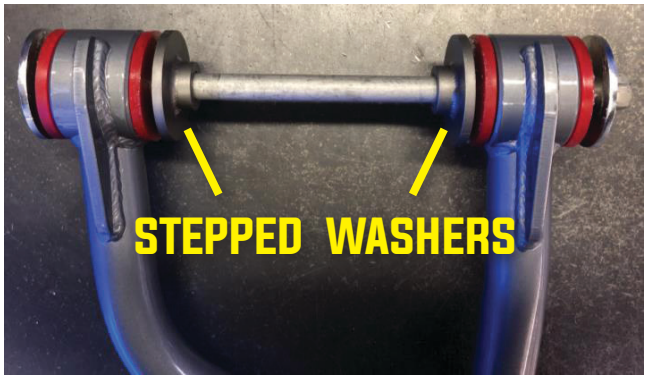
Remove the bracket that holds the brake line to the spindle (8mm). Using either a 9/16”drill bit or step bit, drill out the bottom of the spindle so the new uniball bolt will go through the spindle. After the hole is drilled, re-mount the bracket.

## STEP 8

FOR ALUMINUM SPINDLES ONLY - Using either a 9/16”drill bit or step bit, drill out the bottom of the spindle so the new uniball bolt will go through the spindle. After the hole is drilled, re-mount the bracket.

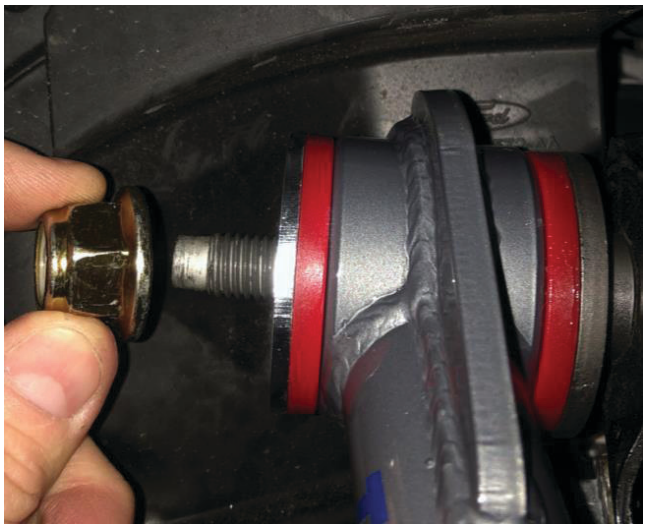
## STEP 9

With the bushing, inner sleeves and zerk fittings installed and generously greased, its time to put the UCA on the vehicle. There are two styles of washers provided in the kit (four 1/8" thick flat washers and four 3/16" thick stepped washers). The thinner washers go on the outside of the pivots, and the stepped washers go to the inside with the large side facing the inner bushing. Slide the bolt through the rear washer and bushings, then through the frame, then through the washers and bushings on the front of the UCA.



## STEP 10

Once the arm is installed put the new nylock nut onto the through bolt and use a 21mm wrench and 18mm wrench to tighten the through bolt (101 ft/lb).



## STEP 11

To connect the UCA to the spindle, slide the 14mm 2.0 socket head bolt through the upper misalignment, lower misalignment, tapered adapter, spindle, washer, and into the supplied 14mm 2.0 flange nylock nut. Tighten the bolt using a 12mm Allen wrench and a 21mm wrench (130 FT/LB).

Tip: Put anti-seize around the tapered spindle adapter before inserting into the spindle to make future disassembly easier.

## STEP 12

Replace the inner fender well flaps using the stock hardware. Using the supplied zip ties, attach the ABS wire to the upper control arm zip tie tabs.

## STEP 13

With the install complete, re-check all hardware before taking the vehicle to an alignment shop. After 500 miles re-check all hardware for tightness.

**FOR INSTALL QUESTIONS OR CUSTOMER SERVICE INQUIRIES:**

Call 951.737.9682 or email info@chaosfab.com

# HOW TO GREASE TOTAL CHAOS POLYURETHANE BUSHINGS

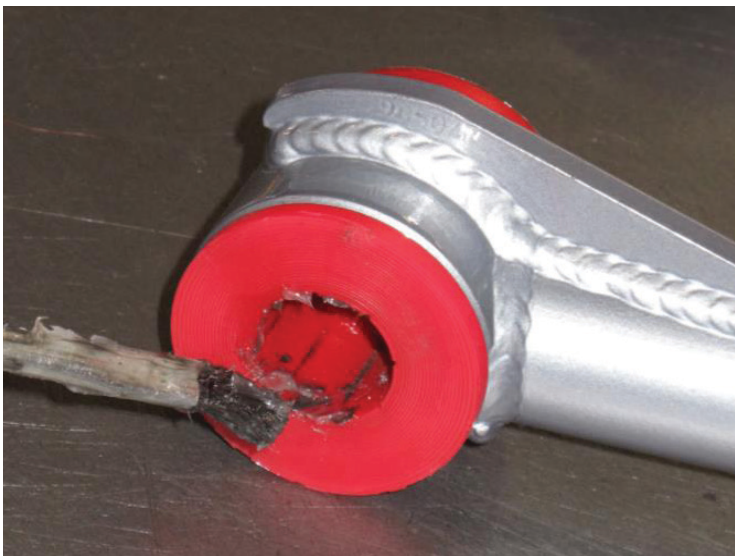
Polyurethane bushings are prone to squeaking and have the potential of making slight noise even if maintained properly. The reason TOTAL CHAOS uses polyurethane is that it is far stronger and has much less flex than stock rubber bushings. TOTAL CHAOS recommends using Super Lube® Part Number 41150 (or an equivalent PTFE marine grade water proof grease). Avoid using lubricants such as white lithium, any type of penetrant, or spray style lubricant.

## STEP 1

Using a mallet, install the dry bushings into the control arm pivots.

## STEP 2

With the bushings installed in the control arm, generously apply grease to the inner diameter of the bushings trying to fill the bushing grooves completely with grease.



## STEP 3

Generously grease the outer diameter of the supplied TC metal inner sleeves.

## STEP 4

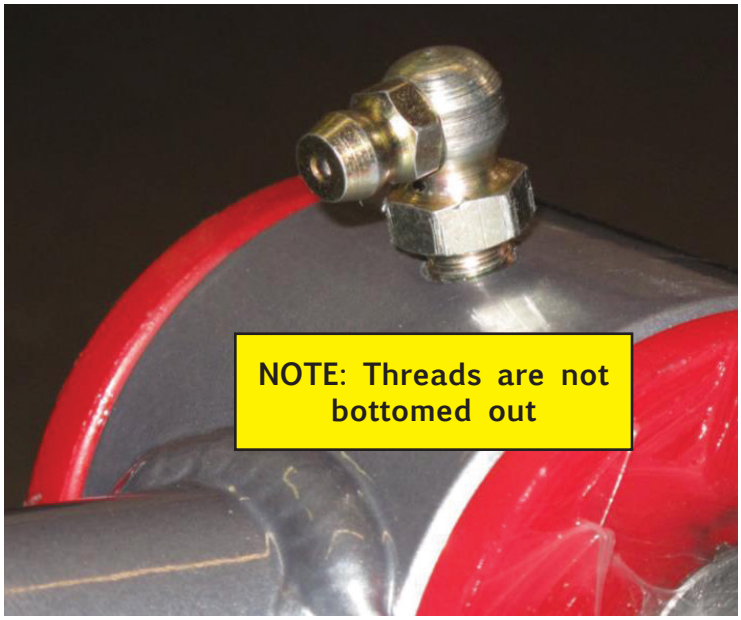
Using a mallet, arbor press, or smooth jawed vise, install the metal inner sleeve into the bushing.

## STEP 5

Using the excess grease, use your finger or a small brush to lubricate the outsides or “hats” of the bushings where they make contact with the plated end washers or control arm pocket.

## STEP 6

When installing the zerk fittings, it may be necessary to use a knife or sharp object to clean out the top of the threaded hole so the ¼”-28 NTP threads will catch. When tightening the zerk, DO NOT try and tighten the zerk to the bottom of the thread. It is only necessary to turn the zerk until it gets snug. Then rotate as far as necessary to make the fitting accessible for a grease gun.



# ONGOING BUSHING MAINTENANCE

**NOTE**: The following procedure is applicable to most modern Toyotas and vehicles that utilize our zinc plated end washers on both sides of the pivot bushings. This procedure DOES NOT apply to the following:

- 1998-2007 Land Cruiser 100 Series
- Mitsubishi Montero
- All Ford F150s and Raptors
- All Chevrolet/GMC models
- All Dodge models
- All Nissan models

If you are unsure of the correct procedure to properly grease your bushings, please contact us by calling 951-737-9682 or emailing info@chaosfab.com.

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To maximize performance and the lifespan of your polyurethane bushings, some maintenance is required. TOTAL CHAOS recommends greasing your bushings every 5,000 miles (similar to an oil change interval). Greasing more frequently may be required if the vehicle sees dirt and adverse conditions on a regular basis.

## STEP 1

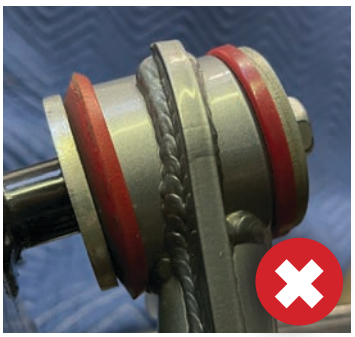
To grease TOTAL CHAOS control arms on the vehicle, it is not mandatory to have the vehicle jacked up with the wheel off, although it will make the process much easier.

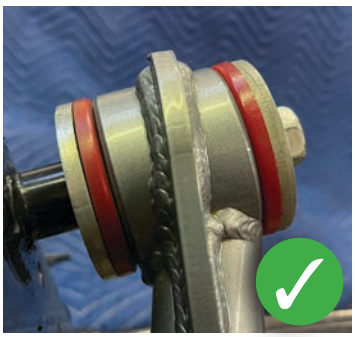
## STEP 2

First you MUST loosen the through-bolt holding the bushings together. This opens an area for the grease to expand when being pumped into the zerk fittings. Loosen, but do not fully remove the nut from the bolt.

## STEP 4

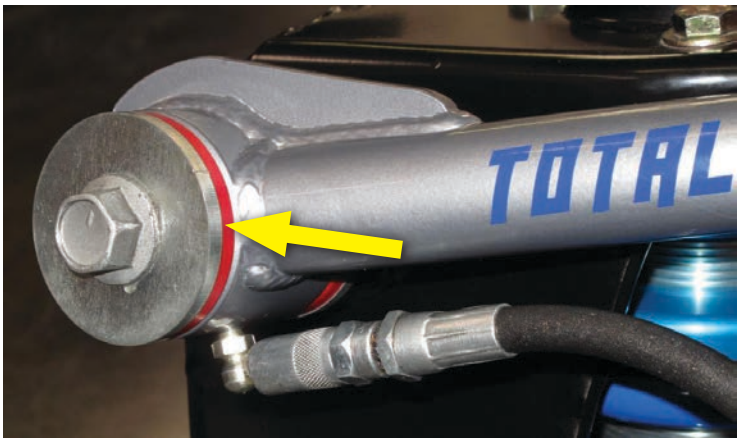
If you do not loosen the bolt, the grease being pumped into the bushing has nowhere to go. The pressure will cause the bushing to mushroom and be destroyed. If you see the bushing start to deform, immediately stop pumping in grease, grab a small pick, and push in the ball on the zerk fitting to release the excess pressure.





## STEP 3

With the bolt loose, pump grease into the zerk fitting until you can see the excess grease bleed out from between the bushing “hat” and the plated end washer (yellow arrow).




## STEP 4

Torque the nut to factory spec and wipe away any excess grease from around the bushings.

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# RECOMMENDED ALIGNMENT PROCEDURE

All vehicles equipped with TOTAL CHAOS suspension systems should be taken to an alignment shop that is familiar with off-road suspension systems.

There is increased caster angle built into most TOTAL CHAOS suspension systems. When setting alignment, camber and toe should be set as close to factory spec as possible. Caster will usually be higher than factory specifications. Attempting to bring caster to factory spec will likely result in camber and toe being out of factory specifications, which will result in poor drivability and uneven tire wear. The caster that is built into TOTAL CHAOS suspension systems is sufficient, attempting to add excessive caster into the alignment may result in the inability to adjust camber and toe.

Alignment specifications will vary depending upon:

- Vehicle model
- Suspension kit purchased
- Prior vehicle modifications
- Desired coilover spring pre-load and or ride height

TOTAL CHAOS' suspension products are designed to align with aftermarket shocks that are set to the recommended amount of lift. Some vehicles may not correctly align if the ride height is altered from the recommended settings. If you have followed all of the instructions and the vehicle still won't align correctly, it's likely that there is something installed wrong, or the frame mounting points and/or knuckles may be bent or damaged.

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# Frequently Asked Questions & Important Things To Read About TC Equipment and Parts

## UNIBALLS

TC uses a 100% stainless steel uniball and race for maximum corrosion resistance in all our equipment. The uniballs feature a military grade PTFE Liner that makes much less noise than the standard lined uniballs used in competing brands. This military grade PTFE liner is self-lubricating and does not require any additional lubrication or grease. If you have a ball that is making some noise apply either a layer of Tri-Flow Superior Dry Lubricant (No. TF21013) or CRC Dry PTFE Lube (No. 03044). Uniballs are a consumable item and will need to be replaced when the military grade PTFE Liner wears away. Grabbing your wheel and applying force to see if the ball is moving in the race will determine their maintenance schedule. Each uniball is retained in the uniball cup at the end of the arm with a large snap ring. . Wiping the uniballs down with a damp cloth to remove any built up dirt and debris will help extend the life of these parts Replacement parts are available directly from TOTAL CHAOS Fabrication Inc.

## POLYURETHANE BUSHINGS

Poly bushings can and will make some noise. They offer many benefits vs. a factory style rubber bushing. To reduce as much noise as possible, TC uses a synthetic grease that contains PTFE called Superlube (No. 41150). If Superlube is not readily available use a good synthetic grease (Mobil 1, Valvoline, etc.).When greasing your pivot bushings on the vehicle it is very important not to force too much grease into the zerk fittings. This will cause excess pressure to become trapped in the pivot and will result in mushrooming the bushing shoulders out of the pivots. To prevent this, first loosen the factory bolt that holds the arms to the frame and separate the washers from the face of the bushings when applicable. This will allow any excess pressure and grease to escape. Don't forget to re-torque the factory bolt when you are finished to a factory torque specification!

## ZERK FITTINGS

The grease nipples or zerk fittings that are supplied with our arms are ¼"-28 in size. Should you have a tapped hole that has an excess amount of powder coat in it, use a ¼"-28 tap to clean it up. When installing the zerk fittings take care not to over tighten them as they are hollow and can snap off. When fully installed they will not sit all of the way flush with the pivot, just insert them two or three rotations until they are snug. Don't forget to have them pointing in the right direction so you can get a grease gun onto them once the arms are installed onto the vehicle.

## ANTI-SIEZE

To aid in future disassembly of components, we recommend that you liberally apply an anti-seize to all metal on metal contact surfaces such as the ID of the uniball, hi-mis spacers, and inner sleeves. Also, apply it to the threads on any C-lock or Stover nut. This will prevent the C-lock portion of the nut from galling onto the bolt.

## BLACK OXIDE COATED PARTS

Some components (such as 4340 axle shafts and lower uniball conversion cups) are coated with Black Oxide. While this will help to prevent rust, depending on your climate you may want to further coat these parts. For axle shafts we wrap a layer of electrical tape the length of the shaft (excluding the splines). For lower uniball conversion cups you can use black spray paint, just be sure to mask of the uniball before painting.

## HARDWARE TORQUE

All hardware should be re-torqued after an initial break in period of 50 miles and again at 500 miles. Periodically after that you should inspect your suspension to ensure that nothing is loose, worn, or damaged.

## UNIBALL CAPS

We do not use any sort of cap or cover over our uniballs as these actually lead to premature wear and corrosion. With a cap installed moisture and containments work their way up through the underside of the uniball and then become trapped. With no cover this moisture can evaporate and you have easy access to wipe down the uniball periodically.

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# WARNING

TOTAL CHAOS FABRICATION's aftermarket suspension products and accessories modify a vehicle for uses which exceed conditions anticipated by the vehicle manufacturer. The uses include the high-performance demands required during off-road. These conditions vary in the degree of severity and cannot be controlled by the vehicle or product manufacturer. If the components within the suspension system or accessories become worn due to frequent on-road and/or extreme off-road use, the safety and reliability of the vehicle is at risk. The maintenance of aftermarket equipment to ensure the vehicle occupants safety is entirely your responsibility. Do not purchase TOTAL CHAOS manufactured products or components unless you are willing to accept this responsibility. Do not install any TOTAL CHAOS suspension products or accessories unless you are certified and/or competent at installing the product without causing present or future injury to yourself or other vehicle occupants, other vehicles and their occupants, pedestrians and motorcyclists; seek an authorized installation center.

TOTAL CHAOS FABRICATION long travel suspension systems were designed for off-road use only. This suspension system is not to be modified from its original design in any way. TOTAL CHAOS is not liable nor held responsible for any injury's or death that can occur from off-road use or as the result of product failure. Customer/driver assumes all liability in assuring that the suspension system is properly installed, maintained, and operating in safe conditions. The following are guidelines for maintaining a safe operating vehicle. Safety and reliability are our number one concern.

Visually inspect all equipment for clearance and unusual wear.

Regularly clean and inspect equipment such as suspension components, heim joints, polyurethane bushings and all hardware. Replace items as necessary. All suspension components are available for individual replacement direct from TOTAL CHAOS. We strongly recommend the suspension system be installed by an authorized installation center. TOTAL CHAOS FABRICATION reserves the right to warranty any components that we have determined to be product or material defective. Off-road abuse can damage suspension components.

BREAK IN PERIOD. After every installation we recommend checking the torque of all nuts and bolts to assure that the torque has taken after driving 500 miles. Some minor adjustments may need to be made.

The customer assumes all responsibility for the use of all equipment and the proper maintenance of said equipment. This equipment will alter the center of gravity of your vehicle and also the handling characteristics that you may be accustomed to. Even though your vehicle may have a wider track width it is capable of rolling over. Please wear your seat belt and demand that all passengers do so as well.

Please remember that no matter how well your vehicle is built it is only as safe as you drive it. This equipment is designed to improve the performance of your vehicle. **INCREASING PERFORMANCE ALSO INCREASES YOUR RISK WHILE OPERATING THIS VEHICLE**. The operator must know and understand the vehicles handling characteristics. None of this equipment is guaranteed to be free of defect or to protect the driver or occupants from death or injury in the event of a collision. Please drive in a safe and sane manner.