

Instructions Created by an:



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1986-1995 Toyota Pickup | 4Runner | Hilux Front Ball Joint Spacer Kit - 2.5" | 64mm Lift by Low Range Off-Road (SKU# TSP-BJS-1.5 & TSP-BJS-1.5-W/Shocks)

Revised 4-4-17

Installation Instructions



Notice: We recommend that the vehicle be professionally aligned after being fitted with this kit.

CAUTION: Safety glasses should be worn at all times when working with vehicles and related tools and equipment.



FOR ADDITIONAL COPIES OF THESE AND OTHER INSTRUCTIONS GO TO:
www.lowrangeoffroad.com and click on the "INSTRUCTIONS" tab.

Suggested Tools:

- Ball Peen Hammer, 32oz
- 3/8 Impact Wrench
- Impact Socket: 2-24, 23,22 & 21mm
- Combination Wrench: 22, 21,15,14,12 & 6 mm
- Ratcheting Box End Wrench: 14 & 15mm
- Needle Nose Pliers
- Twin Post Lift (or Floor Jack and 2 Jack Stands)
- Under Hoist Jack Stand (if Twin Post Lift is used)
- Tie Wire, 5'
- Torque Wrench (up to 150 ft. lbs.)



Item #	Qty	Discription	Size	Part Number
1	2	Pro Comp ES3000 Shocks	Stem/Loop 15.69 Ext/10.02 Collapse/ 5.67 Travel	EXP 315510
2	2	Ball Joint Spacers		TSP-LR-BJS-1.5
3	8	Bolts	M8X1.25X65	
4	8	Nylock Nuts	M8X1.25	
5	2	Nylock Nut (See Feed back Report Item 1)	M16X1.5	FAS-M16X1.5-Nylock



Front Suspension Parts

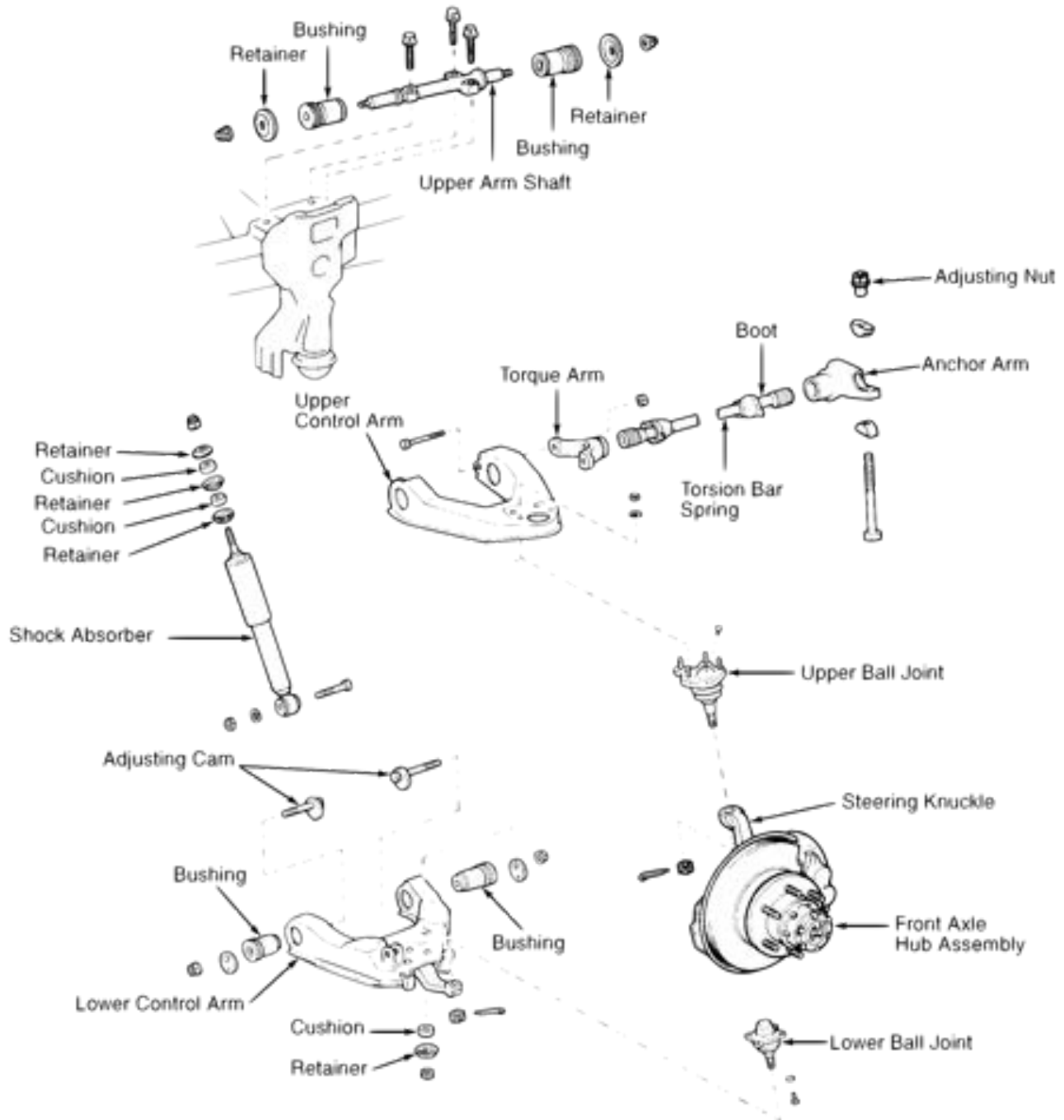


Figure A





Step 1

Beginning on the passenger side, place a spacer between the frame and the upper control arm. It should be placed at the rear of the control arm, just inboard of the bump stop. The spacer should be as large as possible, yet still fit in the space. A 24 mm deep socket works well for this purpose.



Step 2

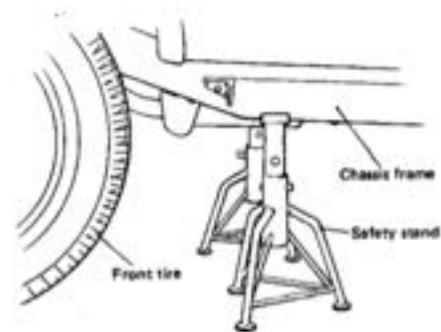
Place a second spacer in the same location on the driver side.



Step 3

Lift and support the vehicle on a twin post lift.

CAUTION: Follow the manufacturer specified lift points and always follow the safety guidelines associated with the lift you are using.

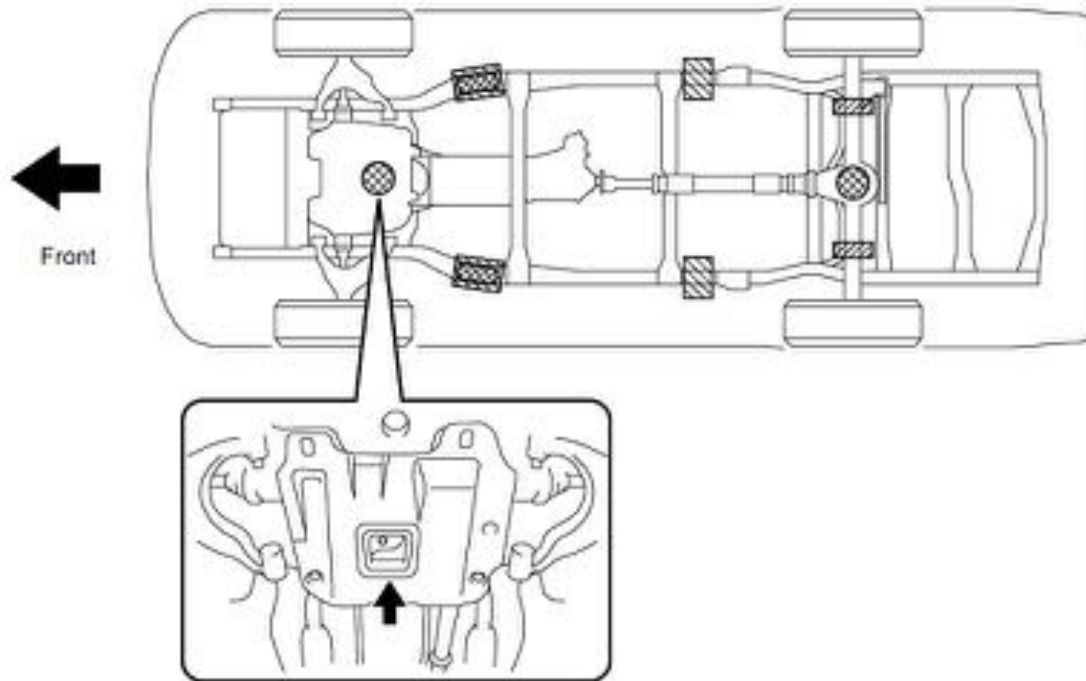



Step 3 (Optional)

Raise the front of the vehicle using a floor jack and support it using (2) safety stands placed under the frame. Remove the floor jack



CAUTION: Never work under a vehicle that is supported solely by a floor jack. Always use safety stands to support the vehicle.

Lift Points & Safety Stand Positioning



- JACK POSITION** 
- Front Center of crossmember
- Rear Center of rear axle housing

CAUTION: When jacking up the front and rear, make sure the vehicle is not carrying any extra weight.

- SUPPORT POSITION**
- Safety stand 
- Swing arm type lift 



Step 4

Remove the driver side wheel assembly using a 21mm socket.



Step 5

Remove the passenger side wheel assembly.

Disconnecting the Stabilizer Links



Step 6

Disconnect the passenger side stabilizer using a 14mm box end wrench.

Note: It may be necessary to hold the stud with a 6mm allen socket while turning the nut.



Step 7

Disconnect the driver side stabilizer in the same way.

Disconnecting the Upper Ball Joint from the Steering Knuckle



Step 8

Straighten the ends of the cotter pin using needle nose pliers.



Step 9

Remove the cotter pin using needle nose pliers.



Step 10

Remove the castle nut using a 22mm box end wrench.

Note: There was not room to fit a socket on this nut.



Step 11

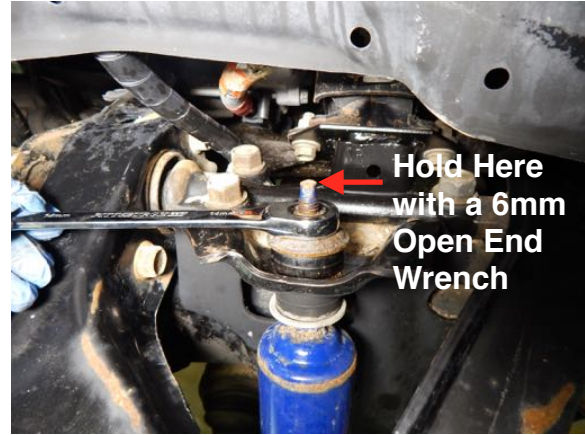
Separate the steering knuckle from the ball joint by striking the steering knuckle with a 32oz. or larger ball peen hammer.





Tech Tip 11

Don't be shy. Hit it hard.



Step 12

Loosen 5 or 6 turns (BUT DO NOT REMOVE) the top nut of the shock absorber using a 14mm ratcheting box end wrench.

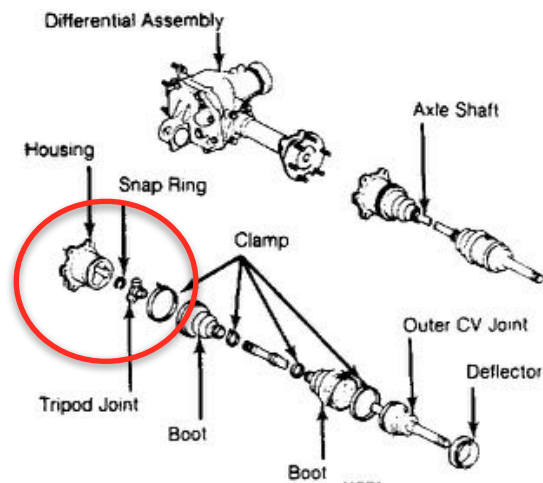
Note: It may be necessary to keep the shock absorber from turning by holding the shock with a 6mm open end wrench.



Step 13

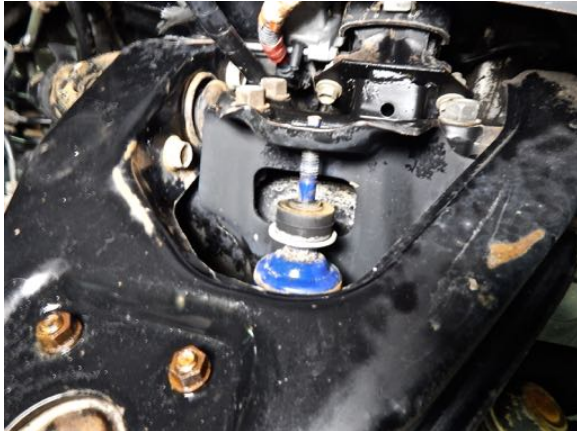
Once the top shock absorber nut is loose, stop loosening and tie the rotor, steering knuckle, hub and brake assembly up to keep it from dropping too far down.

Caution: Failure to tie this assembly up could cause the inner tripod joint of the drive axle to pull out of the housing (See Next Tech Tip), and in some cases this joint can be very difficult to put back together.



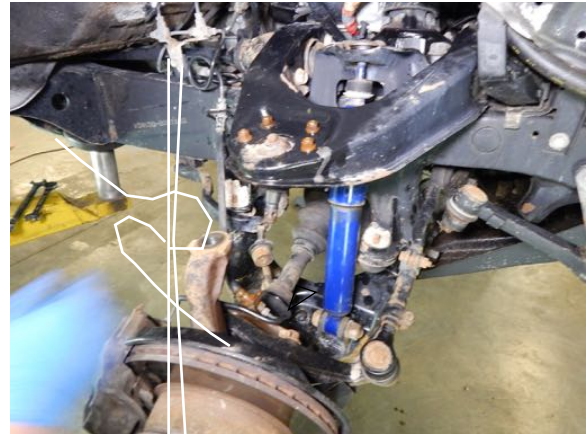
Tech Tip 28

This shows the tripod joint



Step 14

Once the steering knuckle assembly is tied up, remove the upper shock nut, washer and bushing.



Step 15

Let the steering knuckle drop just enough to disengage the ball joint stud, but no further.



Step 16

Remove the (4) nuts & lock washers securing the upper ball joint, using a 12mm socket.



Step 17

Remove the upper ball joint.

Modifying the Upper Control Arm



Step 18

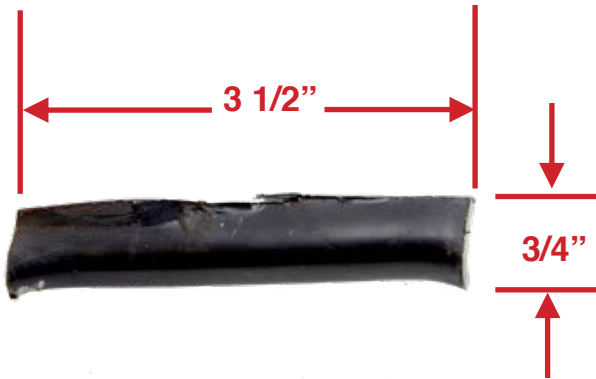
Mark the upper control arm where cuts are to be made using a white permanent marker. See the next steps for dimensions.



After Being Cut

Tech Tip 18 A

The dimensions are 3 1/2" by 3/4"



Tech Tip 18 B

This is the piece removed from the control arm.

Caution: Do not remove any more material from the upper control arm than is absolutely necessary. Removing too much material could reduce the strength of the control arm.



Step 19

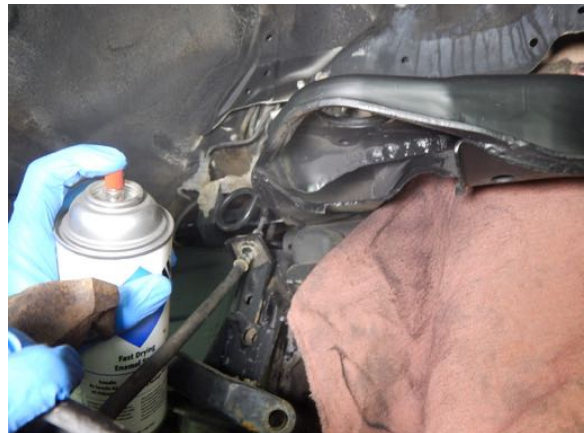
Using a cut-off wheel, cut out the section of the upper control arm.

Caution: Be sure to wear appropriate safety equipment such as: Safety glasses, gloves, etc.



Step 20

Test fit the supplied ball joint spacer. If more of the upper control arm needs to be removed, continue grinding (or cutting) until the spacer fits properly with no gap between the top of the spacer and the bottom of the upper control arm.



Step 21

Once you are sure the ball joint spacer fits properly, paint any exposed metal of the upper control arm to reduce the risk of rust.





Step 22

Remove the studs from the ball joint by placing the stud over a 15mm deep socket and pounding the stud out with a hammer.

Note: We opted to install a new ball joint. If there is any question as to the condition of the old ball joint, we recommend replacing it, since it is already out.



Tech Tip 23

If the ball joint has a grease fitting, you may want to grease it before installing it. After it is installed is a bit more difficult in some cases. and in other cases it is impossible. It may also be a good idea to install a 45° fitting like the one shown in the next picture.



Step 23

Position the ball joint under the spacer as shown. Be sure the drain hole of the spacer is oriented downward and the holes align properly.



45° Grease Fitting





Step 24

Position the spacer and ball joint under the control arm and align the holes of the ball joint, the spacer and the upper control arm.



Step 25

Install the (4) supplied bolts.



Step 26

Install the (4) supplied nylock nuts.



Step 27

SNUG the nuts using 12mm socket and a 12mm box end wrench.



Step 28

Tighten the nuts in an increasingly tighter criss-cross pattern until 20 ft. lbs. is reached.



Step 29

Lift the steering knuckle back on the ball joint stud.



Tech Tip 29

It may be helpful to lift up on the brake rotor with an under hoist jack stand (or a floor jack if you are working on jack stands) to hold the steering knuckle in place.



Step 30

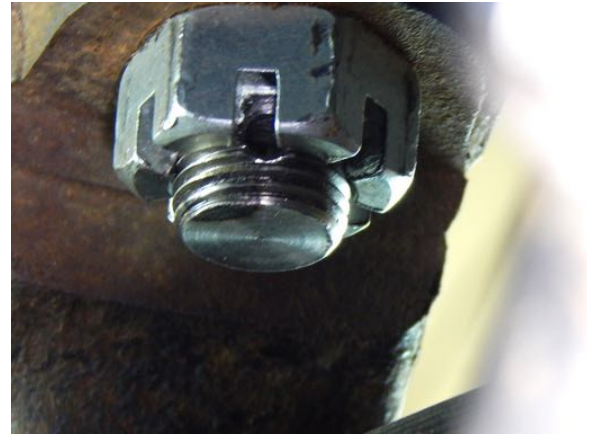
Install the castle nut.



Step 31

Tighten the castle nut until an estimated 105 ft. lbs is reached. If the grooves in the castle nut and the hole in the ball joint stud align, continue to the next step. If the hole in the stud and the slot in the nut do not align, continue **TIGHTENING** the castle nut until they do align.

Caution: Never **LOOSEN** this castle nut to align the grooves and hole.



Tech Tip 31

Hole and grooves aligned.



Step 32

Once the holes in the stud and the slots in the castle nut align, install a **NEW** cotter pin.

Caution: If you are reusing the existing ball joint, you will need to secure a **NEW** cotter pin. Used Cotter pins should **NEVER** be reused in steering and suspension parts.



Step 33

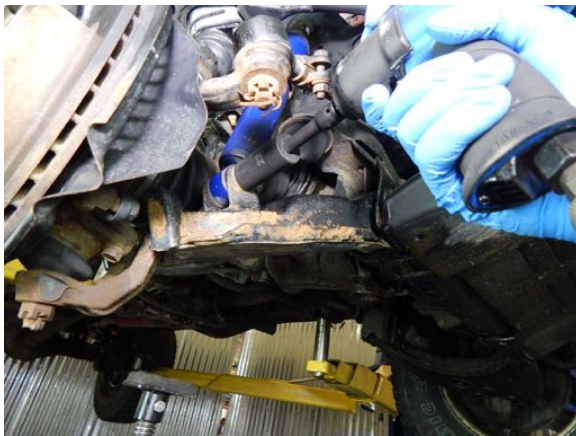
Bend one of the ends over to prevent the cotter pin from coming out.



Step 34

Remove the support wire (or cord).

Notice: If you are **REUSING** the existing shock absorber, install it in reverse order of removal. If you are **REPLACING** the shock absorber, follow the instructions that are supplied with the shock absorber. If there are no instructions supplied with the new shock absorber, these instructions will come pretty close to meeting your needs.



Step 35

Disconnect the lower shock mount by holding the bolt with a 22mm box end wrench and removing the nut using a 22mm socket. Remove the lock washer and bolt.



Step 36

Remove the shock absorber.



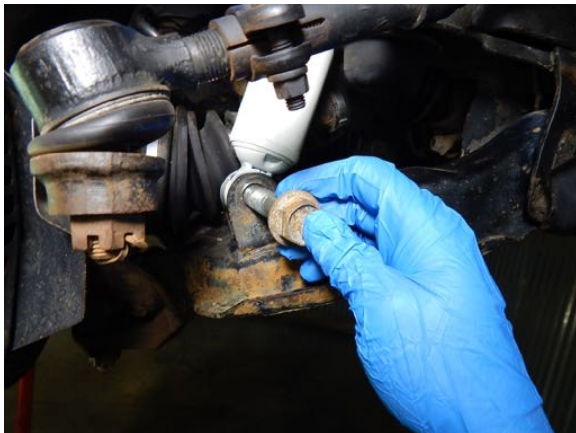
Step 37

Ready the shock absorber by installing a washer and then a bushing as shown.



Step 38

Position the top of the shock in the upper mount.



Step 39

Position the lower shock in the lower shock mount and install the bolt as shown.



Step 40

Install the original lock washer and nut if there is a sleeve in the shock absorber bushing. (See Tech Tip 40A) If there is ***NO*** sleeve (See Tech Tip 40B) in the shock absorber bushing, install the supplied nylock nut instead of the original lock washer and nut.



Nylock Nut



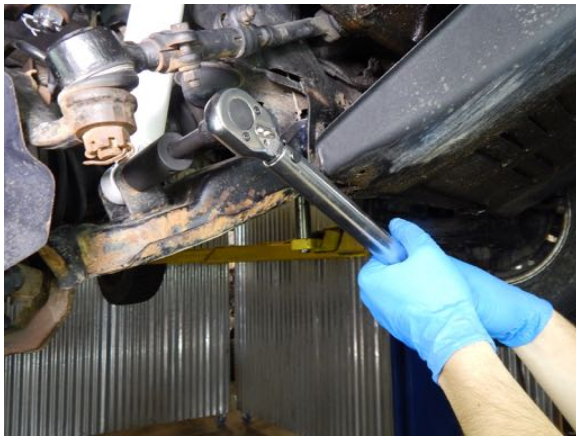
Tech Tip 40A

This shows the lower shock bushing **WITH** a sleeve.



Tech Tip 40B

This shows the lower shock bushing **WITHOUT** a sleeve.



Step 41

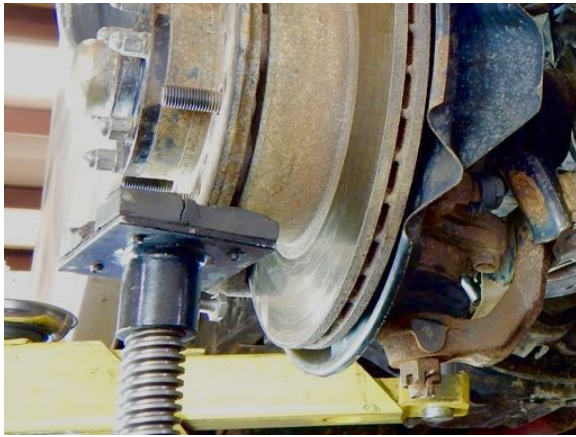
Torque the nut to 101 ft. Lbs. if the lower shock bushing has a sleeve.

If there is no sleeve, tighten the nut until the lower shock mount bushing is compressed.



Step 42

Install a bushing and washer on the top of the shock absorber.



Step 43

Lift up on the brake rotor (or lower control arm) while tightening the upper shock nut.



Step 44

Install the nut and tighten using a 15mm ratcheting box end wrench until the rubber bushings are compressed.

Note: It may be necessary to hold the upper shock rod using a 6mm open end wrench to keep the shock from turning while tightening the nut.



Tech Tip 44

The rubber bushings should compress and bulge until they are about the same diameter as the metal washers.



Step 45

Repeat **Steps 4 through 44** to install the ball joint spacer and shock absorber on the passenger side.



Step 46

Grease both upper ball joints if not done previously.



Step 47

Reconnect the torsion bars on the driver and passenger side and torque the nuts to 19 ft. lbs.



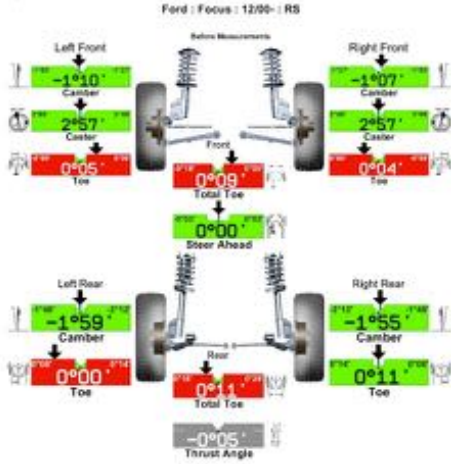
Step 48

Reinstall the wheel assemblies on both sides and torque the lug nuts in an increasingly tighter criss-cross pattern until 76 ft. lbs. is reached.



Step 49

Lower the vehicle to the floor and remove the spacers from under the upper control arms on the driver and passenger sides.



Tech Tip 49

Changing the ride height of this vehicle will always effect wheel alignment. Incorrect wheel alignment will negatively affect handling, braking and tire tread wear. We recommend the vehicle be professionally aligned as soon as possible after completing this installation.

Congratulations!

You have successfully installed the Ball Joint Spacers. We hope these instructions have been helpful. If you have suggestions on how to make these instructions (or products) better, please email us at: sales@lowrangeoffroad.com



As always, If you experience any difficulty during the installation of this product please contact Low Range Off-Road Technical Support at 801-805-6644 M-F during regular store hours. Thank you for purchasing from Low Range Off-Road.



These instructions are designed as a general installation guide. Installation of many Low Range Off-Road products require specialized skills such as metal fabrication, welding and mechanical trouble shooting. If you have any questions or are unsure about how to proceed, please contact our shop at 801-805-6644 or seek help from a competent fabricator. Using fabrication tools such as welders, torches and grinders can cause serious bodily harm and death. Please operate equipment carefully and observe proper safety procedures.

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