

# ADDICTIVE DESERT DESIGNS

## 2017 – Current Ford Raptor Front Suspension Kit Installation Instructions

### PREPARATION

1. Disconnect the negative terminal on the battery. Park the vehicle on level ground and set the emergency brake.
2. We recommend reading through the installation instructions in whole before performing the work.

### Kit Includes:

#### Lower Control Arm Kit

- 2 - Lower Control Arms
- 8 - Misalignment Spacers for 7/8" Heim (Zip-Tied into Control Arms)
- 2 - 1.5" Misalignment Top Spacer for 5/8" Bolt
- 2 - 1.5" Misalignment Bottom Spacer for 5/8" Bolt
- 2 - M20-2.5 x 120 Grade 10.9 Bolt
- 4 - Narrow Washer for M20 Bolt
- 2 - M20-2.5 Metal Lock Nut
- 2 - 5/8-18 x 4" 12-Point Flanged Cap Screw
- 2 - 5/8-18 Metal Lock Nut
- 2 - 5/8" Flat Washer
- 4 - 9/16-12 x 1 1/4" Grade 8 Hex Head Bolt
- 4 - 9/16-12 Conical Lock Nut
- 8 - 9/16" Flat Washer
- 2 - Weld on Limit Strap Tabs
- 2 - 11" Limit Straps
- 2 - Sway Bar Adapter Bracket
- 2 - Assembled Sway Bar End Links (1/2" Heim x2, Jam Nuts x 2, and Strut Tube per Link)
- 4 - 3/8-16 x 2 1/2" Grade 8 Hex Head Bolt
- 4 - 3/8-16 Conical Lock Nut
- 8 - 3/8" Washers
- 2 - 1/2-20 x 1 1/2" Grade 8 Hex Head Bolt
- 2 - 1/2-20 Metal Lock Nut
- 4 - 1/2" Washer

#### Upper Control Arm Kit

- 8 - Misalignment Spacers for 7/8" Heim (Zip-Tied to Control Arms)
- 2 - Misalignment Top Spacer for 1/2" Bolt
- 2 - Misalignment Bottom Spacer for 1/2" Bolt
- 2 - 1/2-20 x 5" 12-Point Flanged Cap Screw
- 2 - 1/2-20 Metal Lock Nut
- 2 - 1/2" Washer

#### Tie Rod Kit

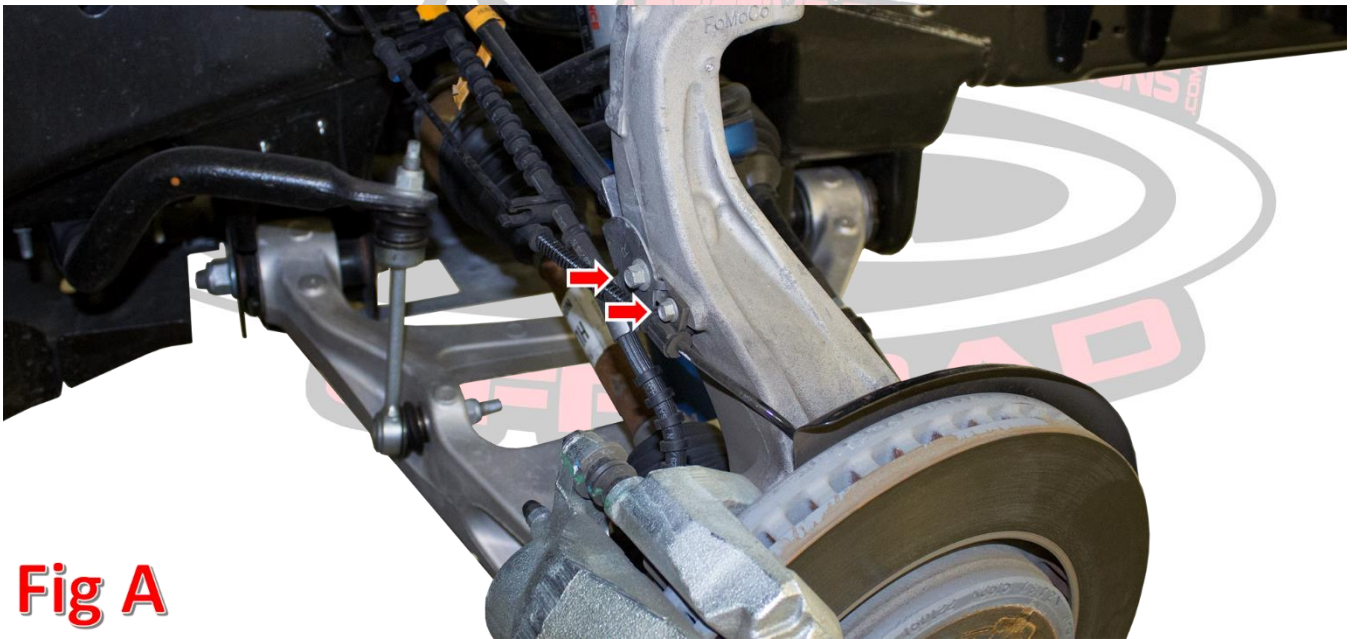
- 2 - Assembled Tie Rods (Inner & Outer)
- 2 - Steering Rack Clevis
- 2 - Clevis Mounting Bolts
- 2 - 1/2-20 x 2 1/4" Grade 8 Bolts
- 2 - 1/2-20 Narrow Nylon Lock Nuts
- 2 - 5/8-18 x 3 3/4" Grade 8 Bolts
- 2 - 5/8" Washer
- 2 - 5/8-18 Flex Nut
- 2 - Tie Rod Rubber Boots

#### Spindle Kit

- 4 - Caliper Mounting Spacers (only used with aftermarket brakes)

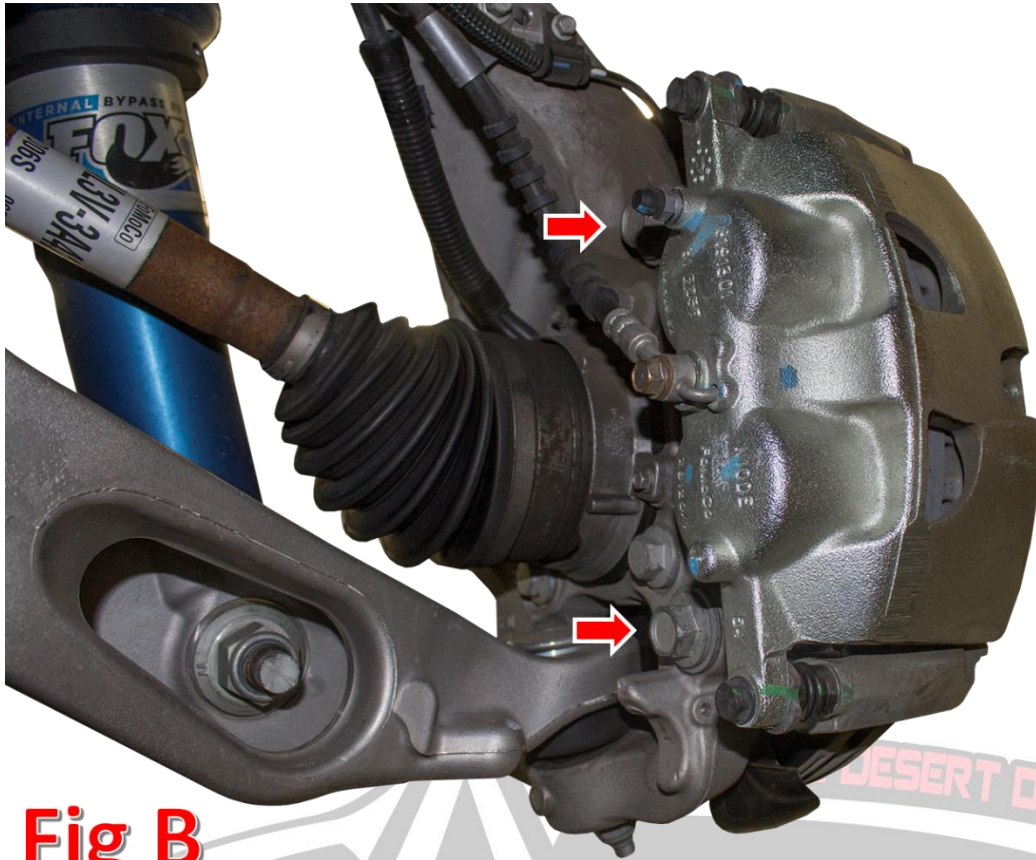
## REMOVAL

1. Place vehicle on jack stands and remove the front wheels.
2. Remove the two brake line bracket bolts on the side of the spindle. (Fig A)



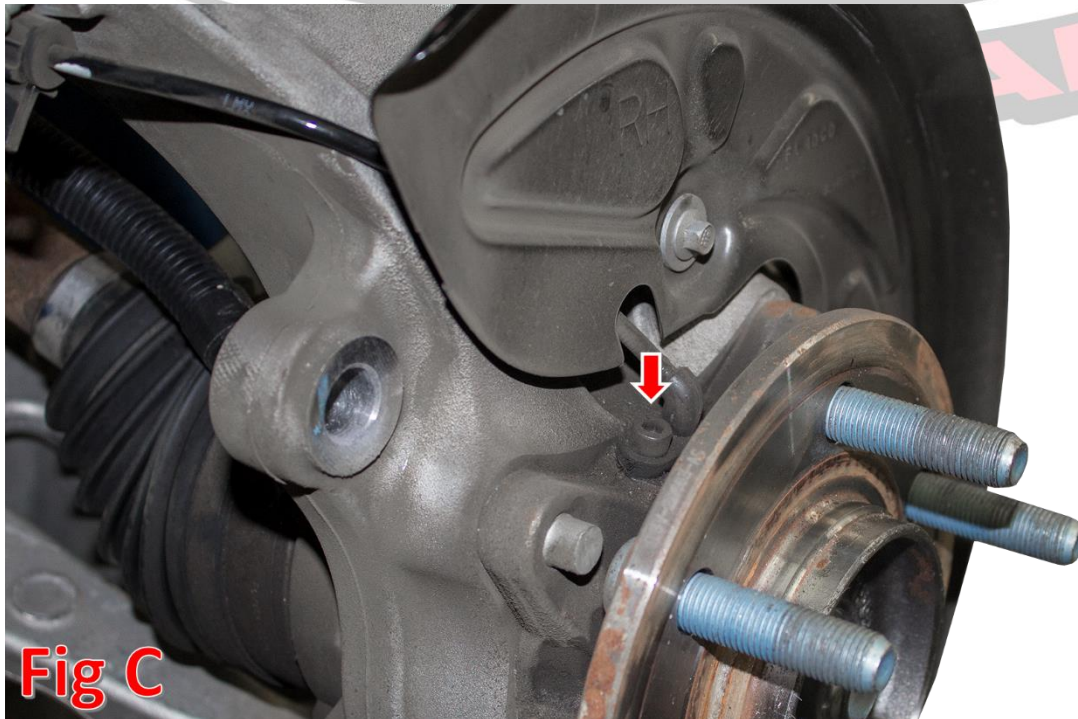
**Fig A**

3. Remove the two caliper bracket mounting bolts. Then, secure the brake caliper/bracket safely out of the way. (Fig B)



**Fig B**

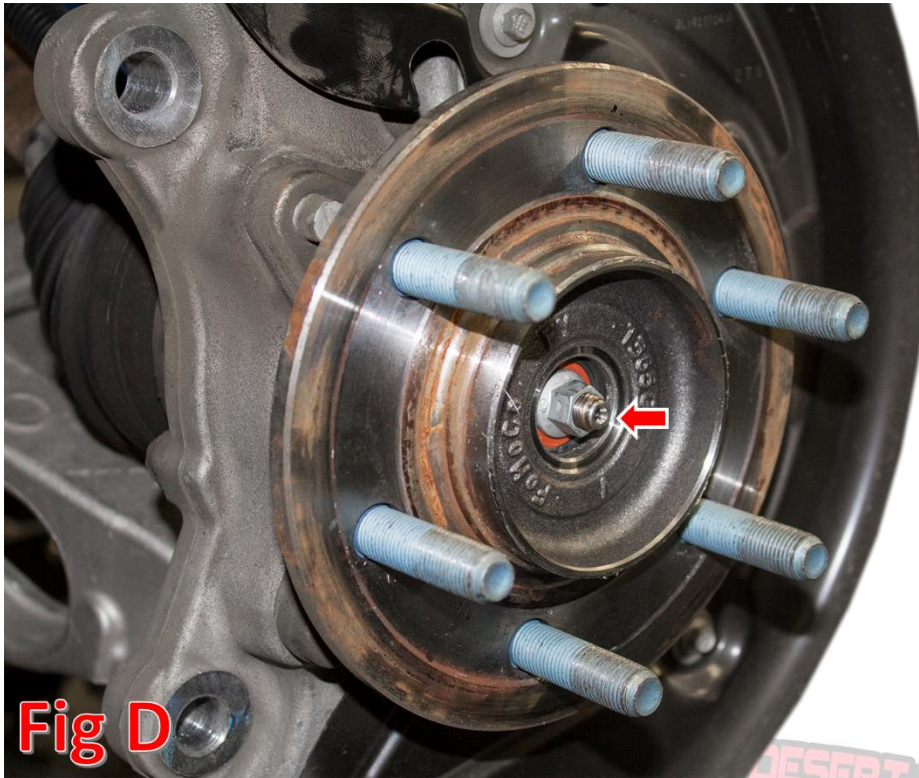
4. Remove your brake rotor.
5. Remove the ABS line from the front hub using a 5mm Allen Wrench. (Fig C)



**Fig C**

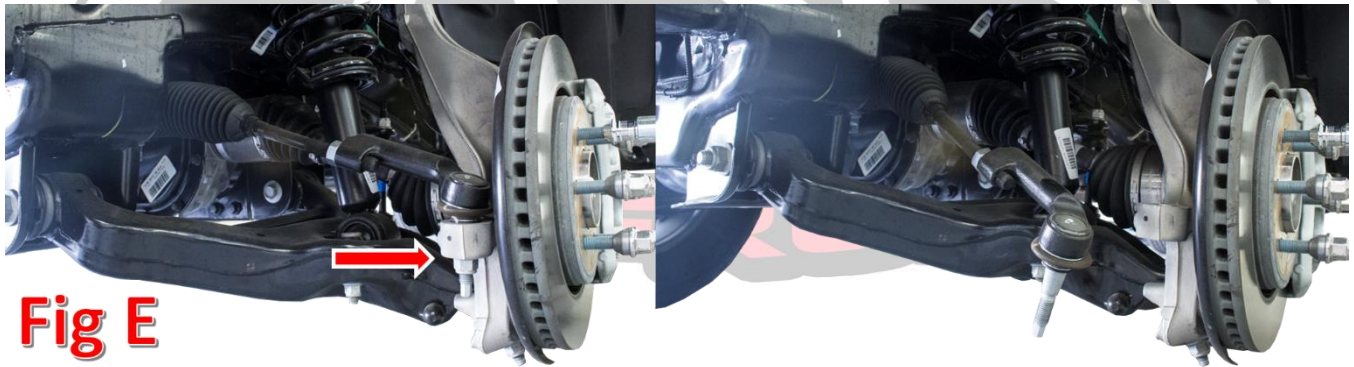
6. Remove the axle nut dust cap. Using a 15mm Socket, remove the axle nut. (Fig D)





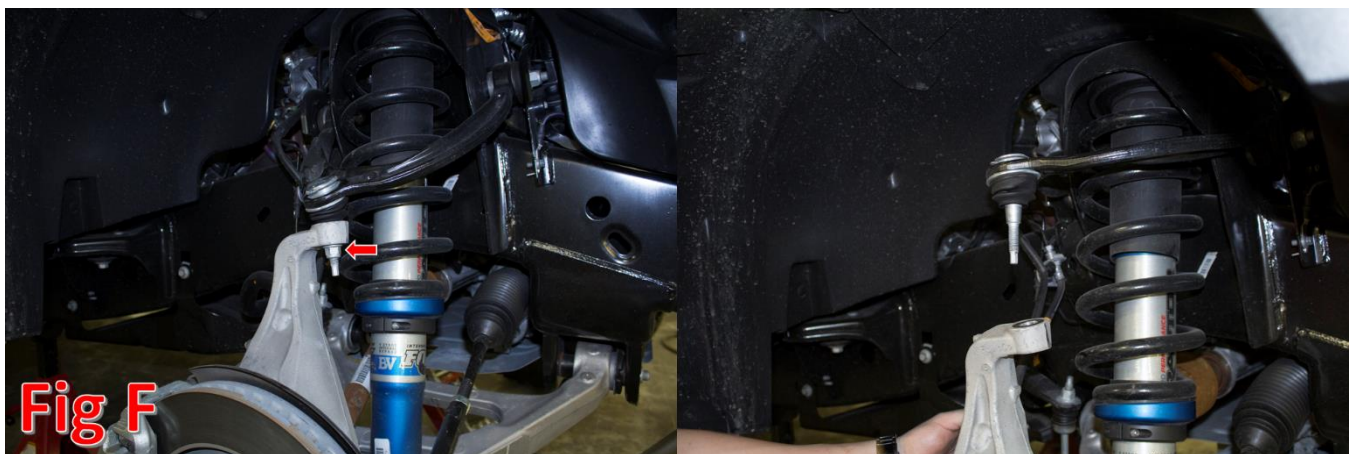
**Fig D**

7. Using a 21mm Socket, remove the outer tie rod end nut. Then pop the outer tie rod free from the spindle. (Fig E)



**Fig E**

8. Using an 18mm Socket, remove the upper ball joint nut. Then, pop the upper ball joint free from the spindle. (Fig F)



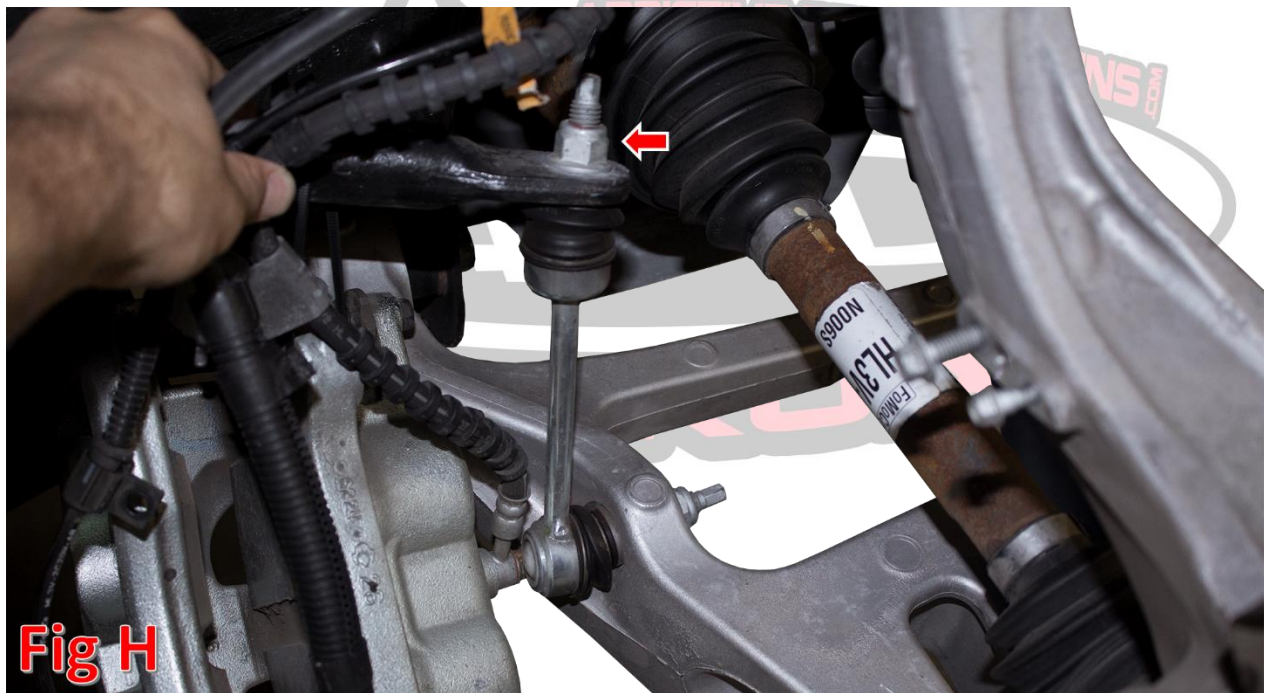
**Fig F**

- Using a 1 1/16" Socket and a 1 3/16" Wrench, remove the lower shock mounting bolt. (Fig G)



**Fig G**

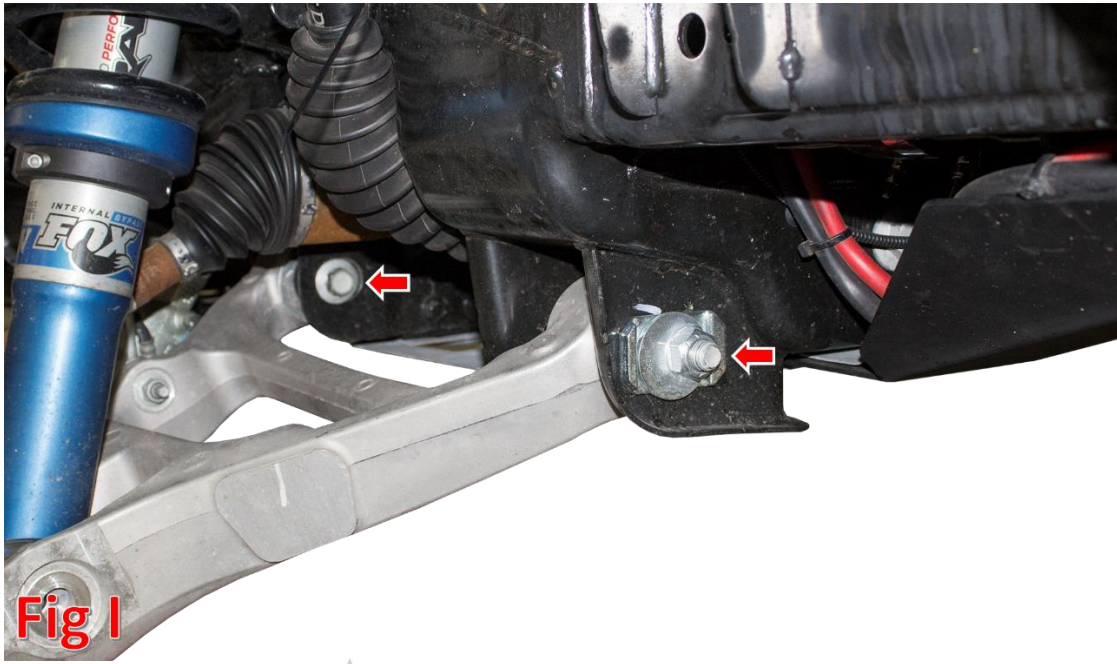
- Remove the upper sway bar end link bolt. Then, pop the sway bar end link free from the sway bar. (Fig H)



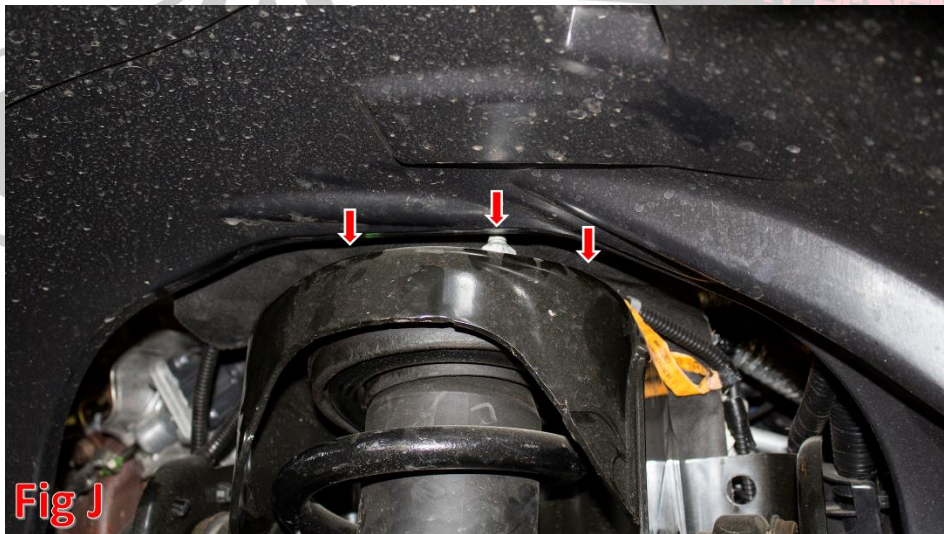
**Fig H**

- Using a 1 1/16" Socket and Wrench, remove the lower control arm mounting bolts. Then, remove the lower control arm/spindle assembly from the vehicle. Be sure to remove the vacuum line from the back side of the spindle as you pull this assembly off the vehicle. (Fig I)





12. Using an 18mm Socket, remove the upper shock mounting nuts. Then, remove the shock from the vehicle. (Fig J)



13. Using an 18mm Wrench and a 21mm Socket, remove the upper control arm mounting bolts. Then, remove the upper control arm from the vehicle. (Fig K)



14. Remove the metal band holding the tie rod boot over the inner tie rod/steering rack union. Do this by cutting the crimped section of the band. (Fig L)



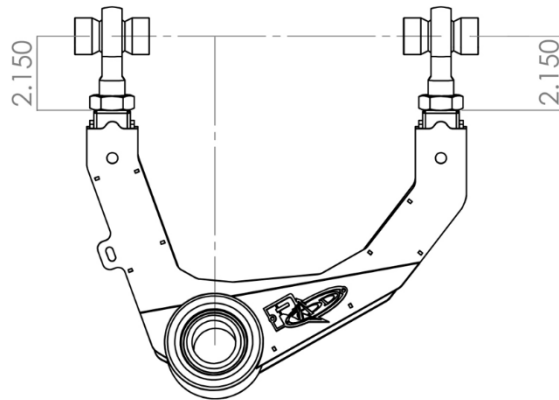
15. Push back the white plastic ring around the outer edge of the inner tie rod end, then use a crescent wrench to spin the inner tie rod off your steering rack. Once the inner tie rod is removed, slide the plastic ring off the steering rack shaft. (Fig M)



## INSTALLATION

1. Set the length of your upper control arm Heim Joints. For a 2017 Raptor, the Heim joints should measure 2.150 inches from the center of the mounting holes to the bottom of the jam nuts. Once the length is set, tighten the jam nuts. **\*\*DO NOT SKIP THIS STEP\*\*** (Fig N)





**Fig N**

2. Bolt the supplied Clevis to your steering rack. (Fig O)
  - a. Use the supplied Clevis Mounting Bolt and make sure to apply red threadlocker to the threads before installing.
  - b. Make sure the Clevis is straight up and down as shown. We use a crescent wrench to hold the clevis in place as we tighten the Clevis Mounting Bolt.



**Fig O**

3. Slide the boot onto the tie rod assembly. The two Heim Joints on the tie rod assembly are different sizes, 3/4" and 7/8". The 3/4" Heim Joint will be the inner tie rod that gets bolted to the steering rack. Make sure to face the larger opening of the rubber boot towards that 3/4" Heim. (Fig P)



**Fig P**

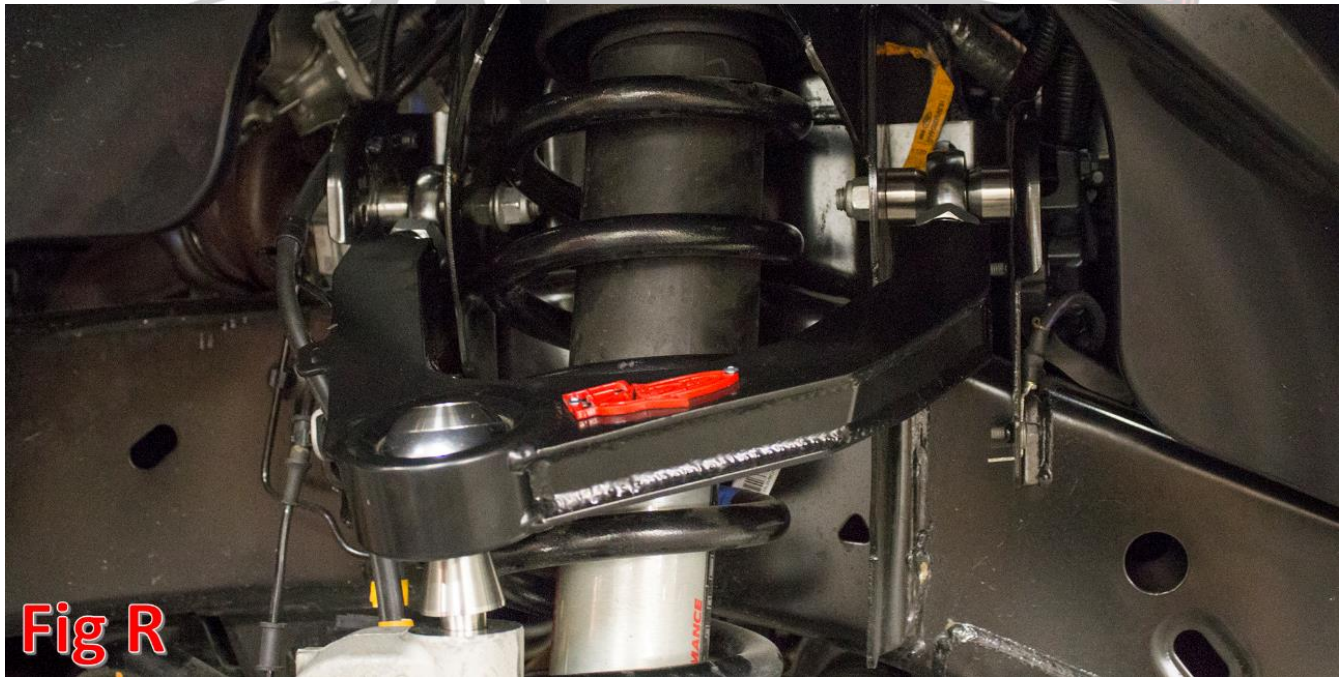
4. Secure the inner 3/4" Heim to the newly installed Clevis using the supplied 1/2" x 2 1/4" Bolt (x1) and 1/2" Narrow Nylon Lock Nut (x1). Tighten this bolt to 70 foot pounds. (Fig Q)





**Fig Q**

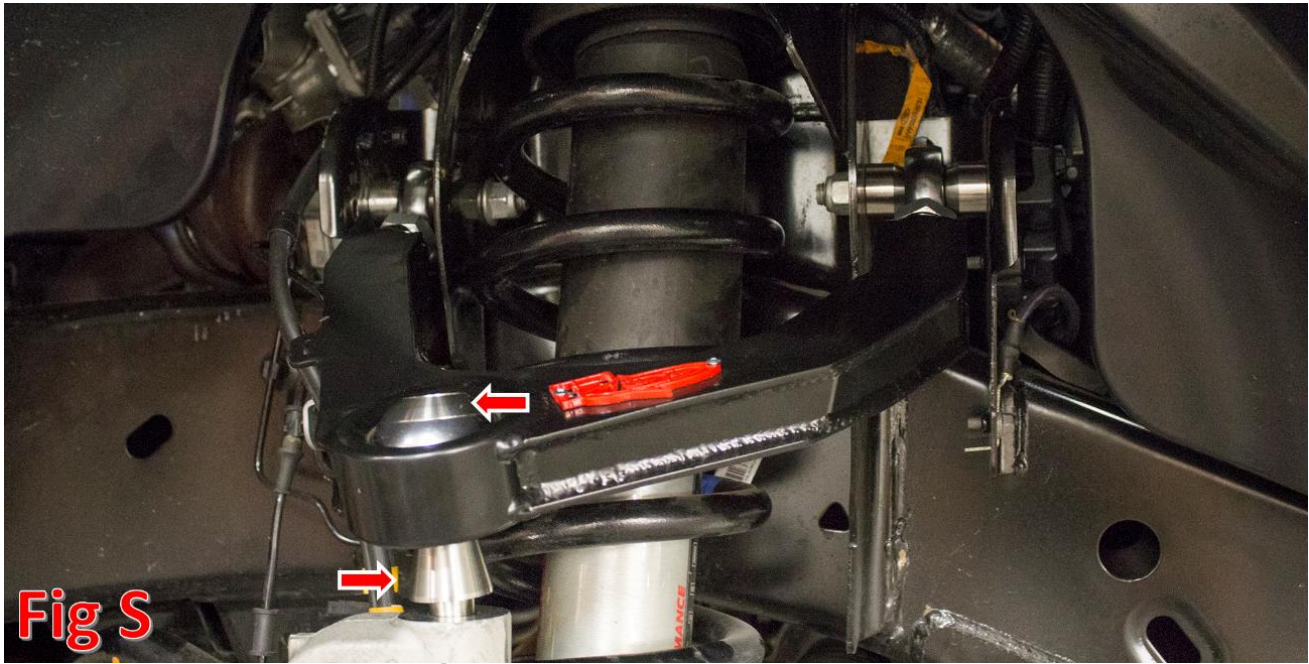
5. Set your new upper control arm in place on the vehicle using the supplied misalignment spacers for 7/8" Heims in the frame side heim joints. (Fig R)



**Fig R**

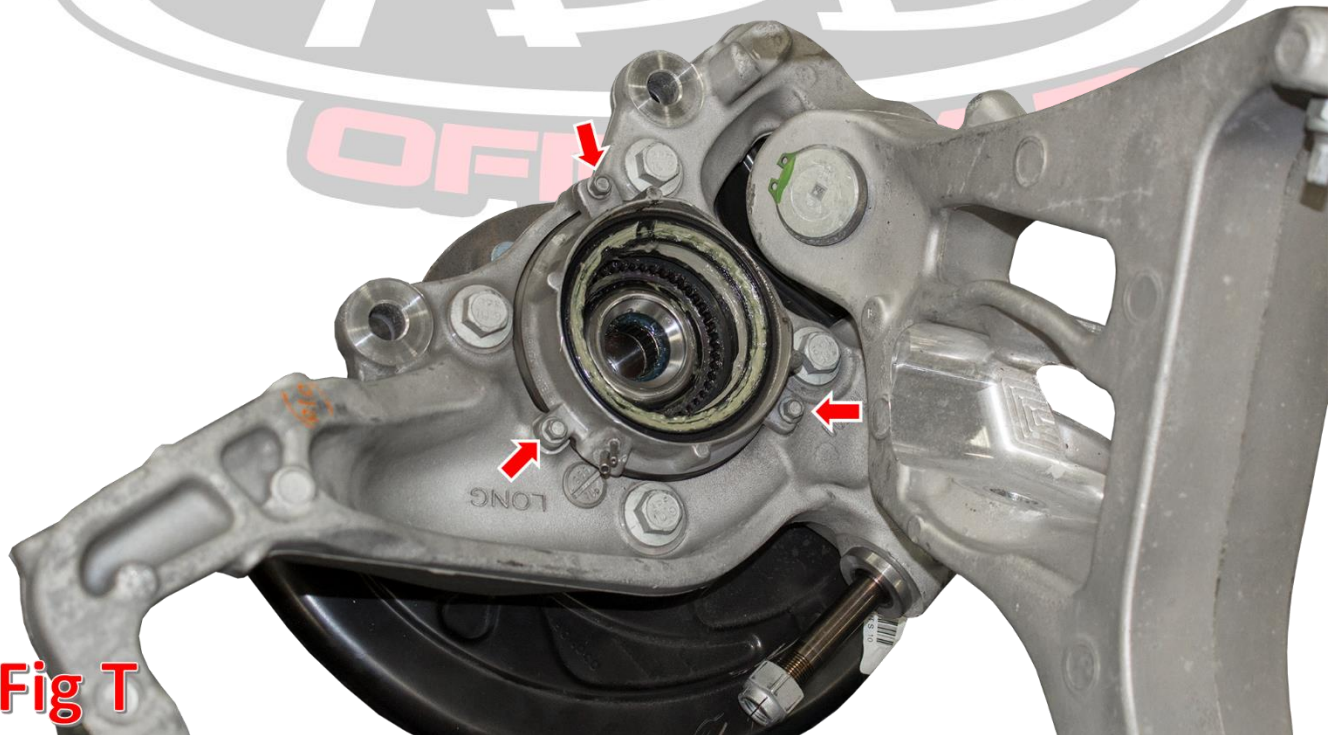
6. Use the OEM Bolts to secure the upper arm to the vehicle. Tighten these bolts to OEM torque spec.
7. Set the Top and Bottom 1 1/2" Misalignment spacers for 1/2" Bolt in place on the upper control arm uniball. (Fig S)





**Fig S**

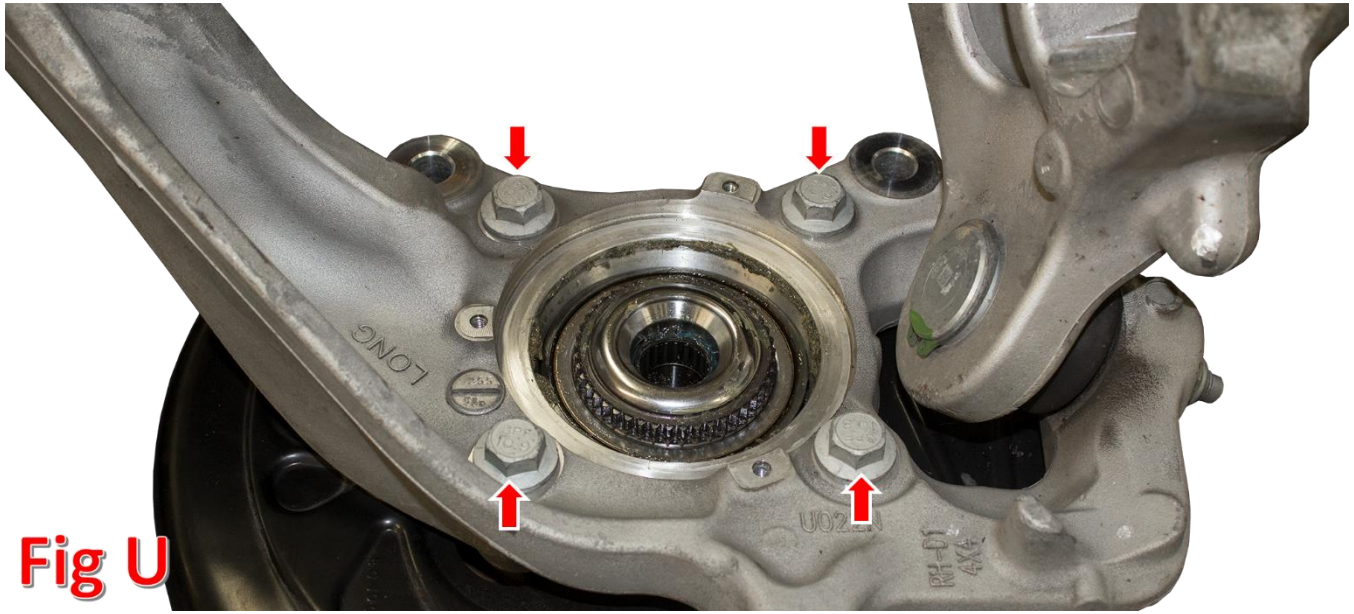
8. Set the OEM shock back into place on the vehicle. Then, reinstall the OEM upper mounting nuts. Leave these loose for now.
9. Swap your OEM hub from the OEM spindle to your new fabricated spindle.
  - a. Lay your OEM spindle on the ground with the hub face down.
  - b. Using an 8mm Socket, remove the bolts (x3) holding the vacuum actuator hub to the spindle. (Fig T)



**Fig T**

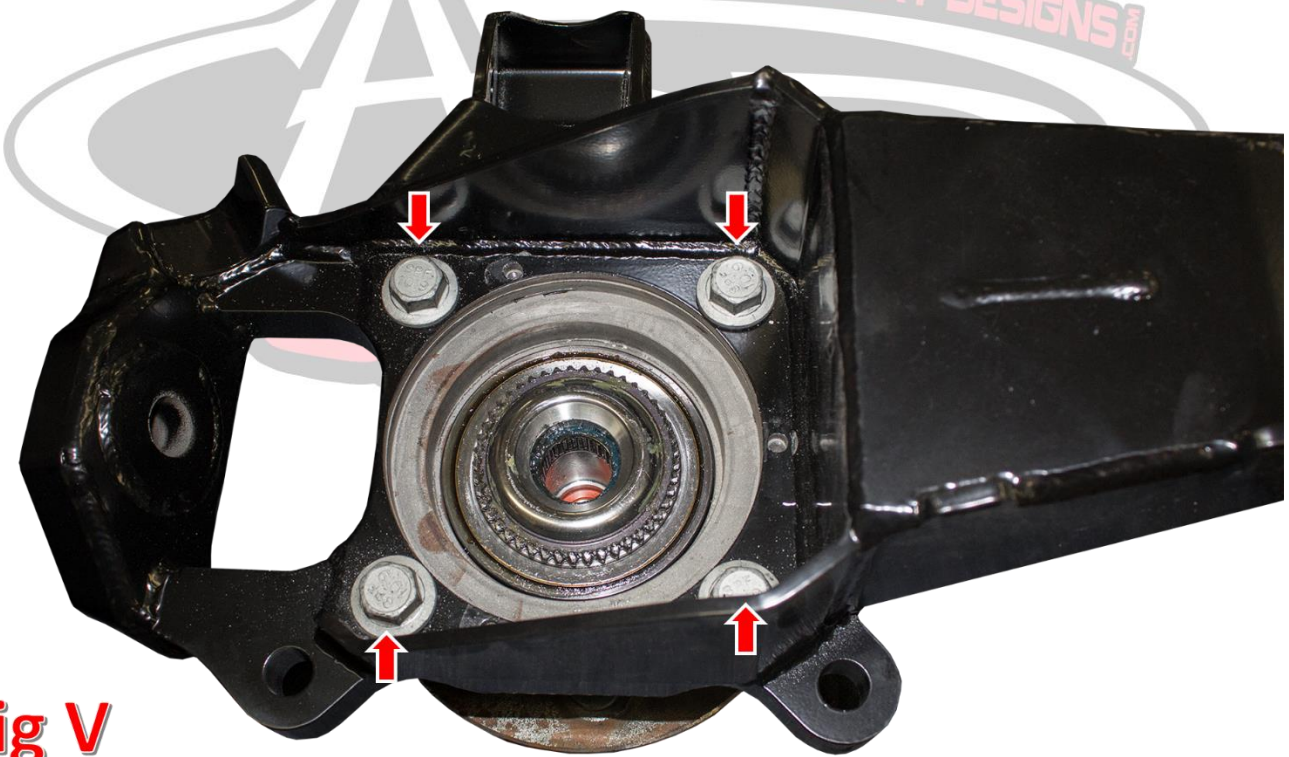
- c. Using an 18mm Socket, remove the bolts (x4) holding the hub to the spindle. (Fig U)





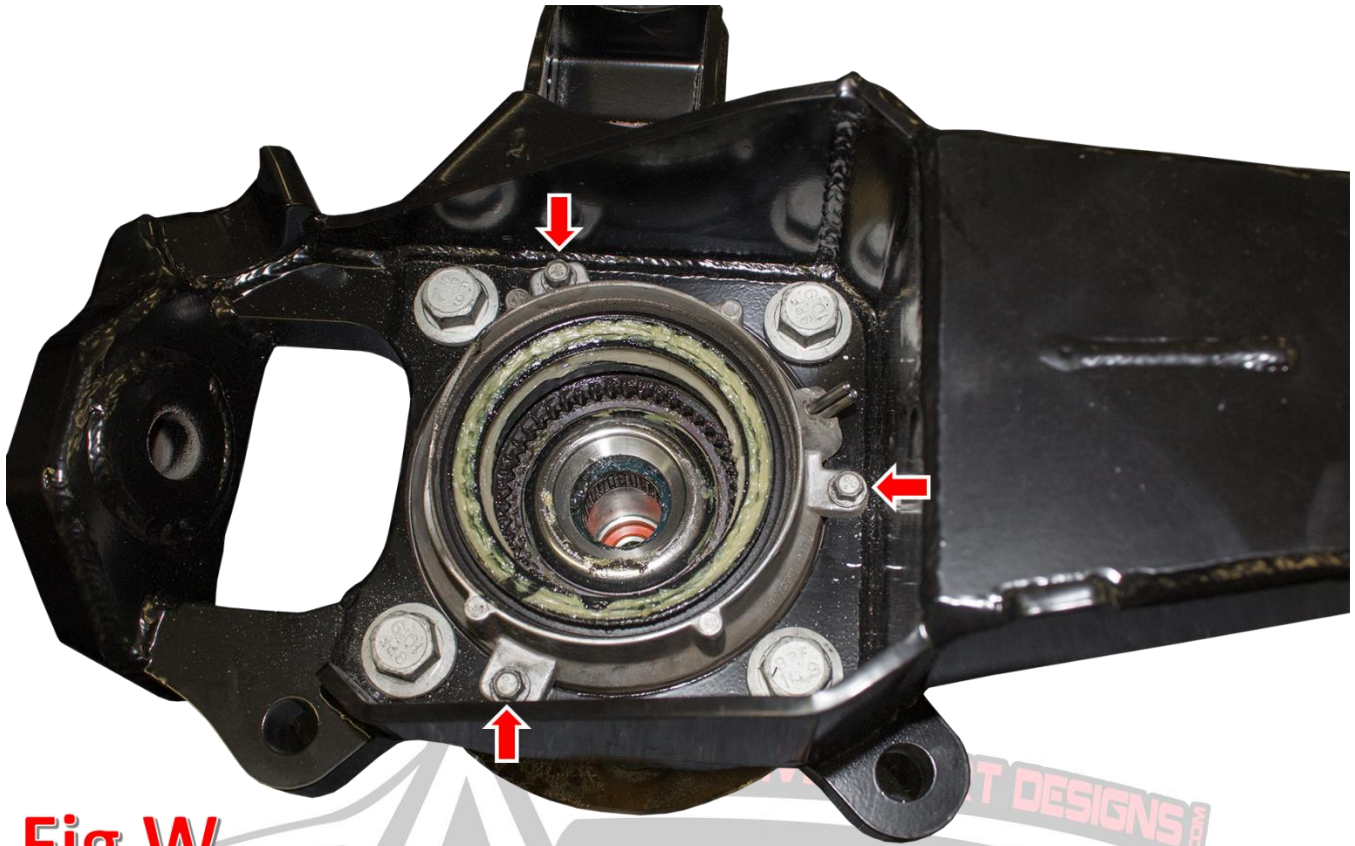
**Fig U**

- d. Place the hub onto your new spindle. Be sure to orient the ABS mounting location just like it was on the factory spindle. Place red threadlocker on the 4 bolts that secure the hub to the new spindle. Then, tighten them to factory torque spec. (Fig V)



**Fig V**

- e. Place vacuum actuator on hub. Be sure to orient the vacuum lines just as they were on the factory spindle. Using an 8mm Socket, tighten the mounting bolts (x3) to factory spec. (Fig W)



**Fig W**

10. Using a 13/16" Socket and Wrench along with the OEM Lower Control Arm bolts, mount the Lower Control Arm to the vehicle. Tighten these bolts to the OEM torque spec. (Fig X)



**Fig X**

11. Place the Top and Bottom Misalignment Spacers for 5/8" Bolt into the 1.5" Uniball on your new lower control arm. (Fig U)





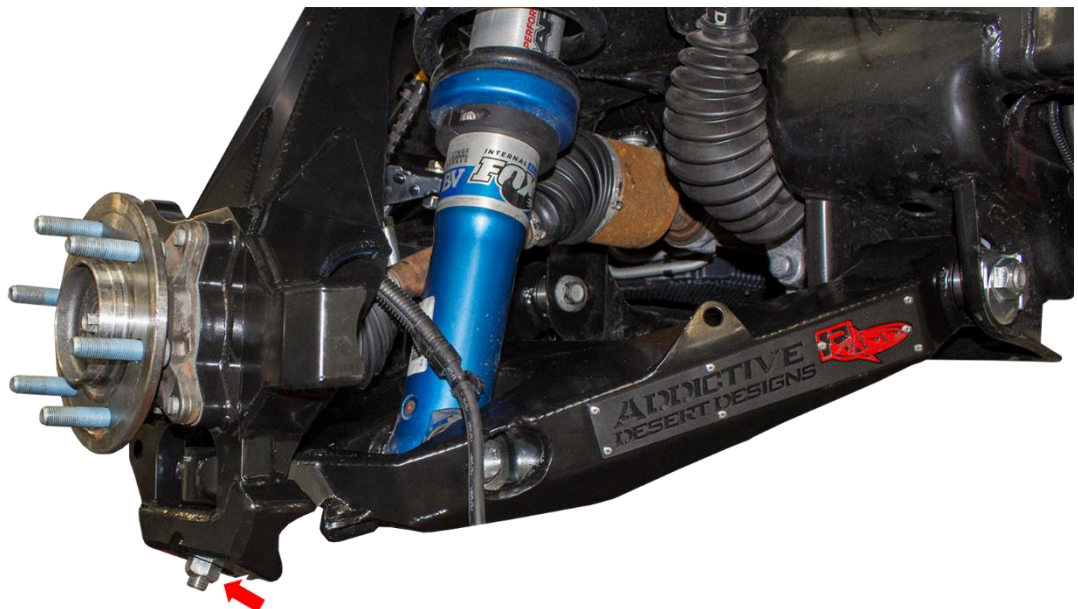
**Fig Y**

12. Remove the vacuum line referred to in Fig Z from the vehicle. Then, connect that vacuum line to its original position on the back of the hub that is now attached to your new spindle. (Fig Z)



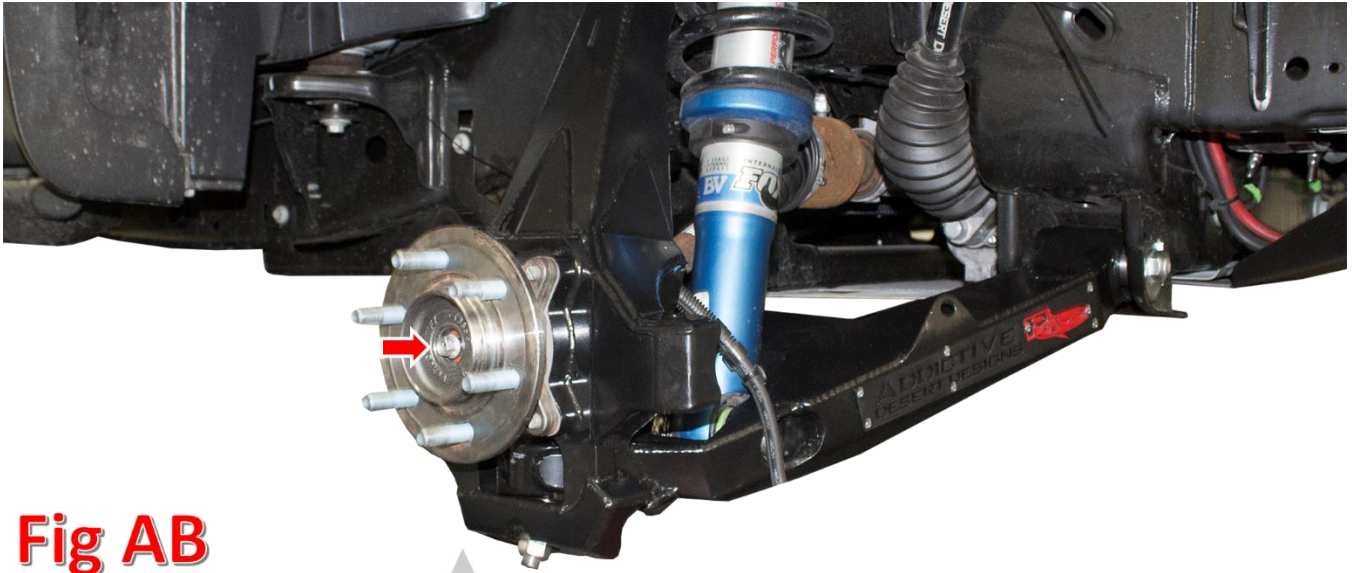
**Fig Z**

13. Mount the lower control arm and the spindle together using the supplied 5/8" 12-Point Flange Cap Screw (x1), 5/8" Washers (x1), and 5/8" Metal Lock Nut. Tighten this bolt to 70 foot pounds. (Fig AA)



**Fig AA**

14. Raise the lower control arm assembly and guide the CV axle back into the hub. Start the axle nut on the CV axle but do not tighten at this time. (Fig AB)



**Fig AB**

15. Raise the lower control arm/spindle assembly while aligning the upper control arm misalignment spacer taper with the mounting hole on the top of the spindle. Secure the upper arm to the spindle using the supplied 1/2" Flange Cap Screw (x1), 1/2" Washer (x1), and 1/2" Metal Lock Nut (x1). Tighten this bolt to 70 foot pounds. (Fig AC)



**Fig AC**

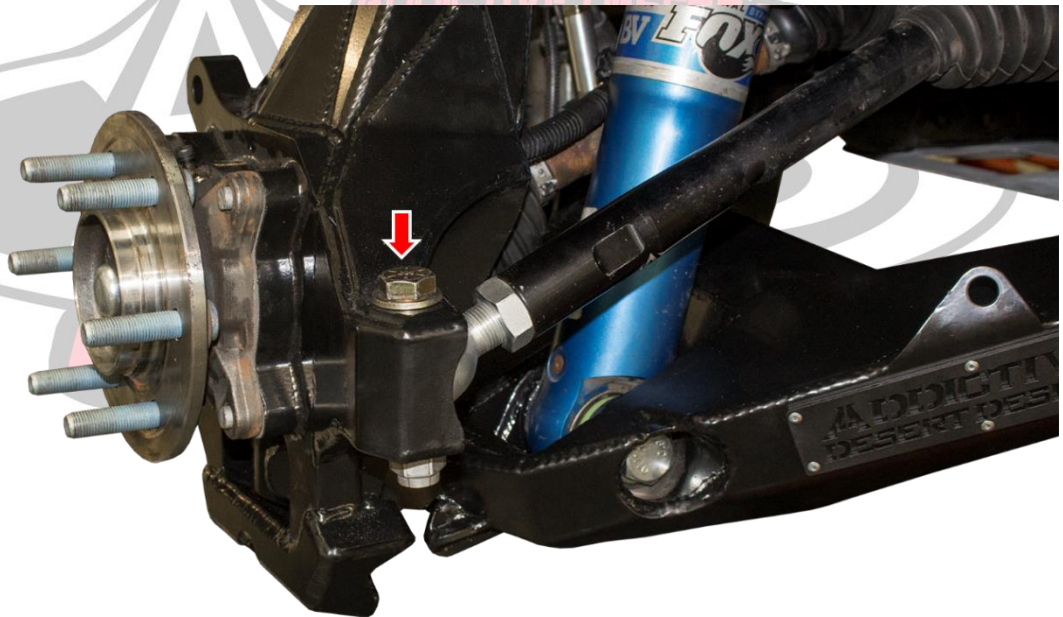
16. Raise the lower control arm assembly until the shock enters the shock pocket. Then, use the supplied M20 bolt (x1), M20 Washers (x2), and M20 Nut (x1) to secure the shock to the arm. Leave this bolt loose for now. (Fig AD)





**Fig AD**

17. Attach the outer tie rod Heim to the spindle using the supplied 5/8" Bolt (x1), 5/8" Washers (x2), and 5/8" Flex Nut (x1). Tighten this bolt to 70 foot pounds. (Fig AE)



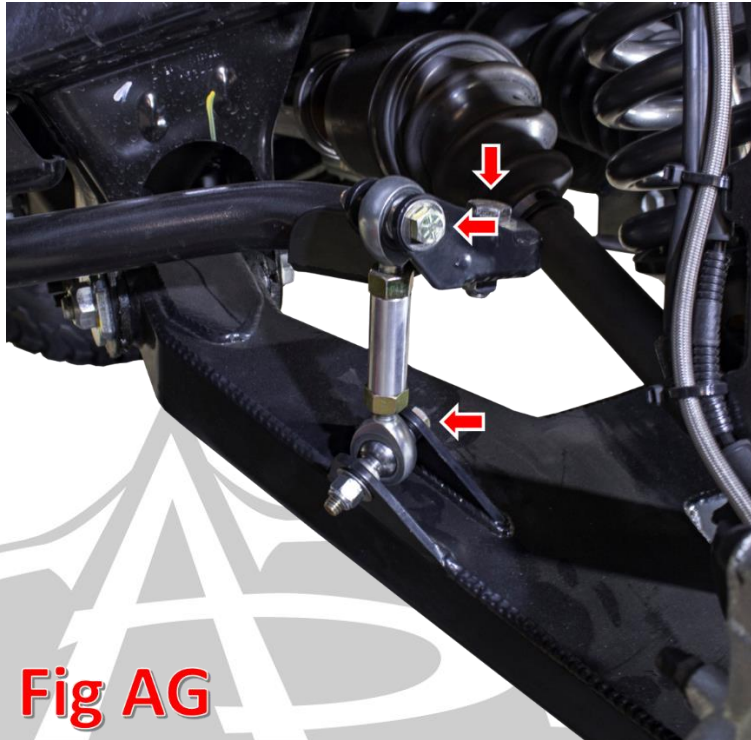
**Fig AE**

18. Set the sway bar end link to 6 1/4" total length. Leave the jam nuts loose for now, so you can line the heims up with the mounting points as you install the end links. (Fig AF)



**Fig AF**

19. Set the sway bar adapter bracket in place on the sway bar and loosely hold it in place using the supplied 1/2 x 1 1/2" Bolt (x1), 1/2" Washers (x2), and 1/2" Metal Lock Nut (x1). Then, set the assembled sway bar end links in place. Secure the sway bar end links to the sway bar adapter bracket and the lower control arm mounting points using the supplied 3/8 x 2 1/2" Bolts (x2), 3/8" Washers (x4), and 3/8" Lock Nuts (x2). Tighten these bolts to 30 foot pounds. Then, tighten the sway bar adapter bracket bolt to 70 foot pounds. Tighten the sway bar end link jam nuts. (Fig AG)



**Fig AG**

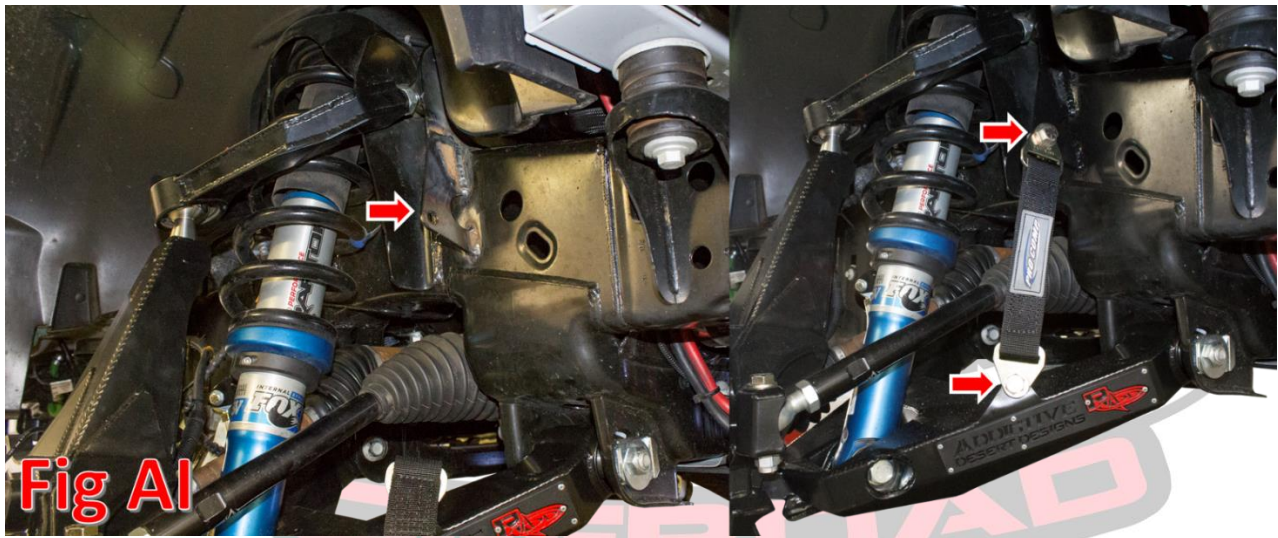
20. Using a 15mm Socket, tighten the axle nut to OEM torque spec. Make sure to use caution when tightening this nut. The axle splines will slide/line up with the vacuum actuated 4WD hub. Once the axle nut is tightened, reinstall the factory dust cap. (Fig AH)



**Fig AH**



21. Install the limit strap and limit strap tab. (Fig A1)
  - a. Using the supplied 9/16" Bolts (x2), 9/16" Washers (x4), and 9/16" Lock Nuts (x2), attach the supplied limit strap to the lower control arm and the supplied weld on strap tab to the other end of the limit strap.
  - b. With the lower control arm at full droop, place the tab against the frame where the upper control arm mount meets the frame. The tab should lay against the upper control arm mount. Using a sharpie, mark the location of the bottom edge of the tab on the frame.
  - c. Unbolt the tab from the limit strap. The tab will be welded 1" higher than the mark you just made. Measure 1" vertically up from the mark you just made and weld the tab to the frame at that mark. Make sure to prep the frame for welding before you weld and make sure to paint the limit strap tab after you've welded it.
  - d. Raise the lower control arm and bolt the limit strap to the newly welded tab using the same hardware from Installation Step 20a. Tighten both limit strap bolts just until they are snug, but the limit strap can still move freely.



22. Reinstall your brake rotor, brake caliper mounting bracket, and brake caliper. Tighten all hardware to factory torque spec.  
**\*\*IF YOU ARE INSTALLING AFTERMARKET BRAKES, YOU MAY HAVE TO USE THE SUPPLIED CALIPER MOUNTING SPACERS BETWEEN THE SPINDLE AND THE CALIPER MOUNTING BRACKET TO CENTER YOUR AFTERMARKET BRAKE CALIPER\*\***
23. Reinstall your ABS line.
24. Reconnect the vacuum line you disconnected in Installation Step 12.
25. Zip tie your brake lines, ABS lines, and vacuum lines to the spindle using the slots that are cut into the spindle. Make sure the lines are out of harm's way at all points of suspension and steering cycle.
26. Repeat this entire procedure on the other side of the vehicle.
27. Reinstall your front wheels and take your vehicle off its jack stands.
28. Your vehicle needs to be aligned after this installation.
29. Stand back and enjoy your new ADD Front Suspension Kit.
30. Check and re-tighten if needed, all mounting bolts after 100 miles and periodically thereafter.

**For Additional Support or Technical Questions,  
Please Call 480.671.0820 or  
Email [info@addictivedesertdesigns.com](mailto:info@addictivedesertdesigns.com)**