



# 2.5" DUALSPORT SUSPENSION™

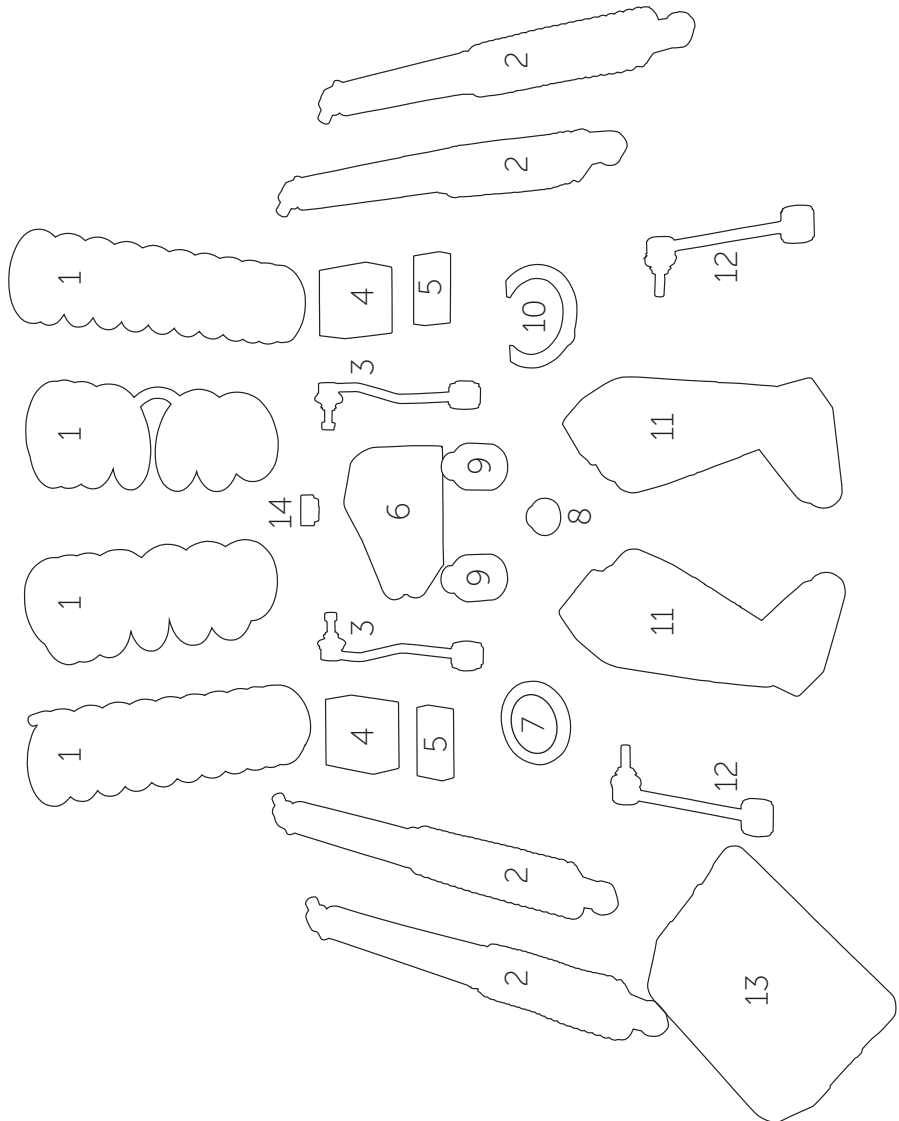
FOR JL WRANGLER



AEV30344AL  
Last Updated: 05/03/24

INSTALLATION GUIDE

1. FRONT AND REAR SPRINGS
2. FRONT AND REAR SHOCKS
3. REAR SWAY BAR END LINKS
4. REAR LOWER BUMPSSTOP SPACERS
5. REAR SWAY BAR SPACERS (GAS ONLY)
6. REAR TRACKBAR RELOCATION BRACKET
7. REAR SPRING SHIM (GAS ONLY)
8. TRACKBAR BRACKET ALIGNMENT PUCK
9. FRONT UPPER BUMPSSTOP SPACERS
10. FRONT SPRING SHIM (GAS ONLY)
11. GEOMETRY CORRECTION BRACKETS
12. FRONT SWAY BAR END LINKS
13. JACK BASE
14. PROCAL SNAP





## PLEASE READ BEFORE YOU START

To guarantee a quality installation, we recommend reading these instructions thoroughly before beginning any work. These instructions assume a certain amount of mechanical ability and are not written nor intended for someone not familiar with auto repair.

INCLUDED PARTS	QTY	REQUIRED TOOLS
Springs	4	Basic Standard and Metric
Shocks	4	Hand Tools
Front Sway Bar End Links	2	Torque Wrench
Rear Sway Bar End Links	2	Jack and Jack Stands
Front Upper Bumpstop Spacer	2	
Rear Lower Bumpstop Spacer	2	
Rear Sway Bar Spacer	2	
Front Spring Shim	1	
Rear Spring Shim	1	
Rear Track Bar Tower Bracket	1	
Track Bar Tower Alignment Puck	1	
Geometry Correction Bracket Kit	1	
Hardware Pack	1	
AEV Jack Base	1	

**Vehicle Applications:** 2018-Current Jeep JL Wrangler and Unlimited

**Vehicle Assumptions:** Stock JL frame and axles with all stock brackets intact Stock Front and Rear Driveshafts

**NOTE:** Aftermarket units with double-Cardan joints will require a rear axle pinion angle adjustment that is NOT provided in these systems.

**NOTE:** 32–35 PSI is AEV's recommended tire pressure with our DualSport Suspension™ Systems.

**Aftermarket Wheels:** These are recommended both for adequate width to mount large tires and decreased backspacing for chassis and steering clearance. AEV JL wheels are optimized to work with this suspension system for maximum clearance to chassis components and vehicle body/flares.

**NOTE:** Wheels with extremely negative offset may negatively affect ESP.

**Install Time:** Approximately 5 hours.



## REAR SUSPENSION

1. Raise Jeep and support the frame using jack stands or a hoist, such that the rear axle can be lowered enough to remove the springs. Support the axle by placing the floor jack under the center of the axle. Remove the wheels. (Fig. 1)

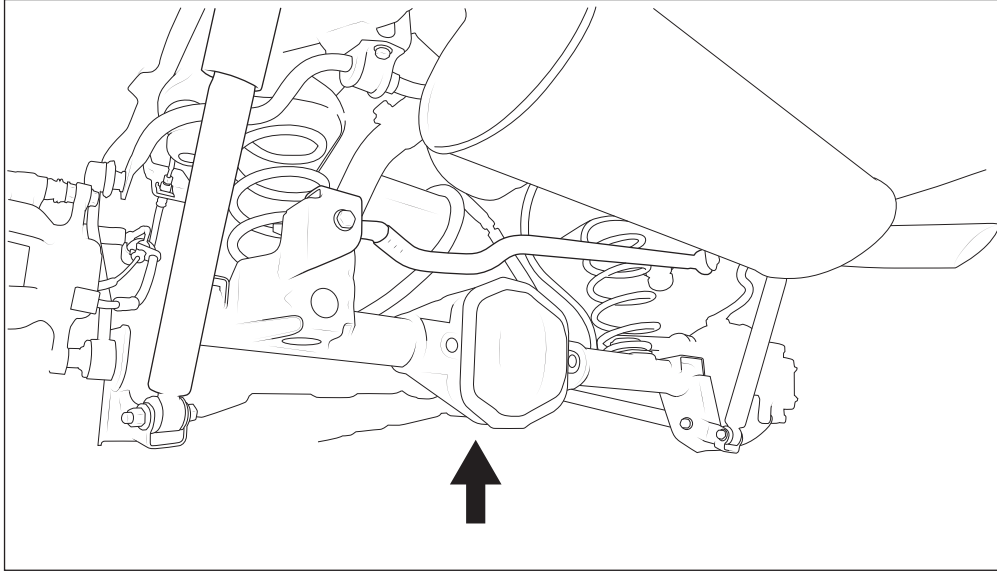


Figure 1

2. Remove the shocks and save hardware (Fig. 2).

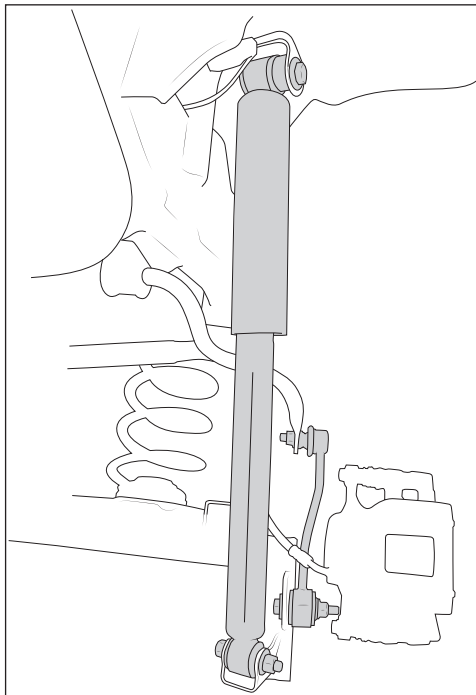
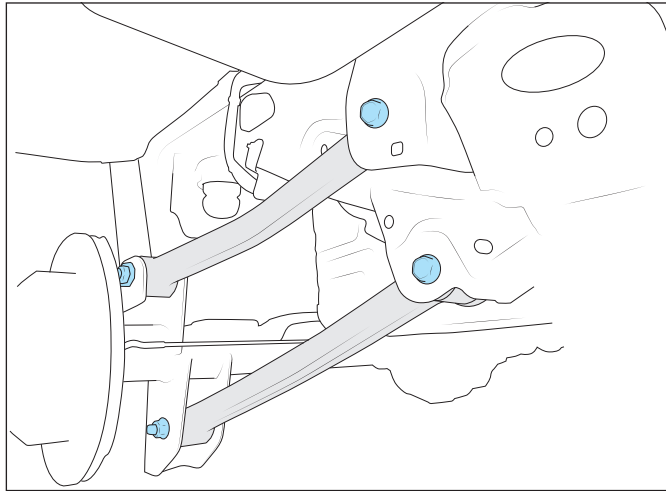


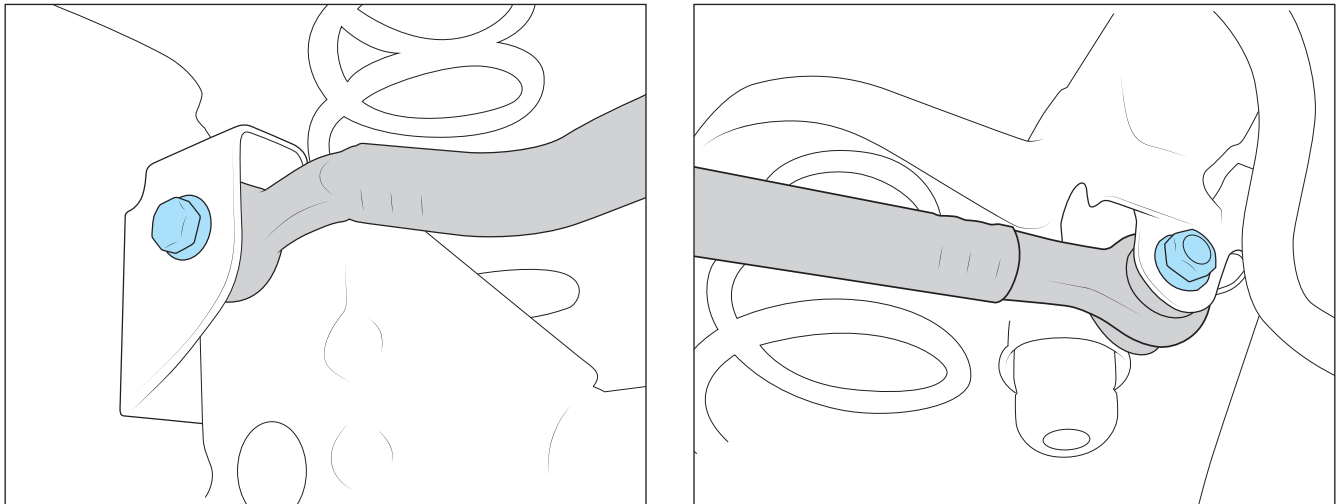
Figure 2



- Loosen but DO NOT remove all 8 control arm bolts and both track bar bolts (Fig. 3).



*Figure 3A: Control Arm Bolts (Left Side Shown)*



*Figure 3B: Track Bar: Axle Side (left) Frame Side (right)*

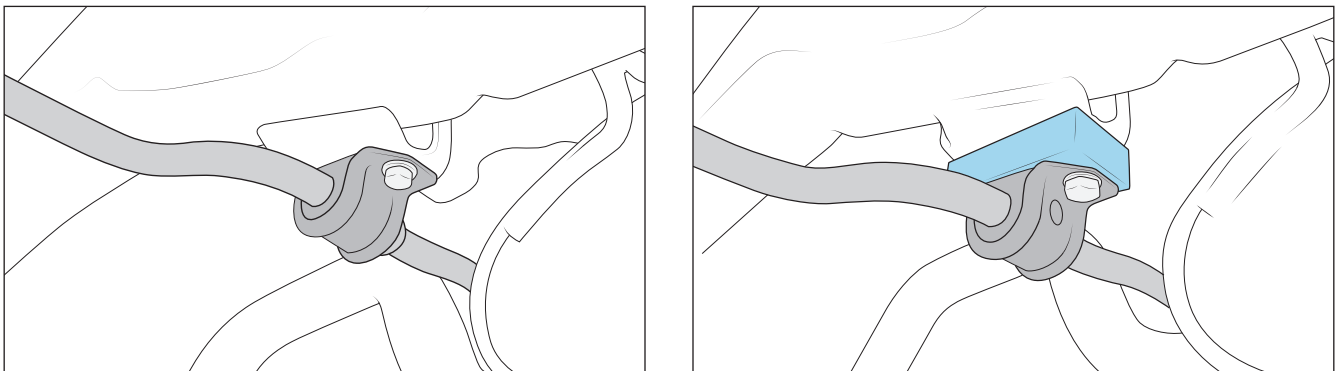
- Remove the sway bar end links and save mounting hardware. End links will not be reused. Note the orientation of the end links, the new end links will be installed in the same way (see Fig. 2).



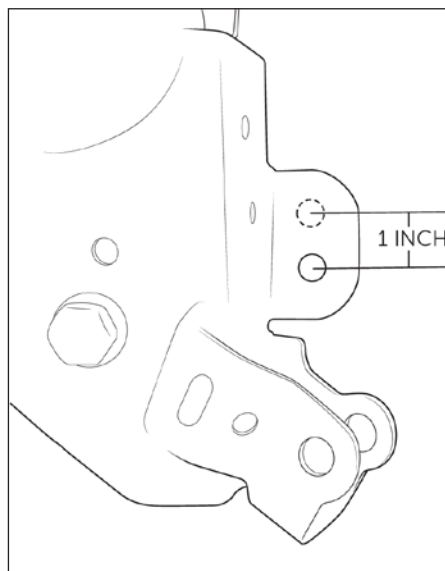
**Gas engine vehicles only:** Remove the sway bar from the frame and discard hardware (see note below for 392 Hemi and Xtreme Recon models). Reinstall in same orientation using supplied M10 bolts and spacer blocks

**392 Hemi and Xtreme Recon vehicles only:** In addition to sway bar spacers noted above, sway bar also needs to be flipped in vehicle. The saddle block brackets and bushings do not need to be removed. Flip the bar along the vehicle axis(driver side of bar will become passenger side of bar and vice versa), then rotate bushings and brackets onto bar so it can be mounted in this new orientation. Flipping the bar will lower the arms that attach to the endlinks and prevent contact with wheel/tire at full suspension rebound.

**EcoDiesel vehicles only:** Mark hole 1" above existing endlink holes on axle brackets and drill new 1/2" hole in that location on both sides of vehicle. This is required because the DEF tank does not allow the sway bar to be lowered like the gas engine vehicles (fig. 5).



*Figure 4: Gas Engine Vehicles Only*



*Figure 5: EcoDiesel Vehicles Only*



5. Carefully lower the axle using the floor jack enough to remove the springs. DO NOT overextend the wheel speed sensor, locker wiring, or e-brake cables. We recommend detaching the plastic fir tree cable ties from the axle and frame to allow sufficient movement. This pertains to wheel speed wiring and locker wiring if equipped. RH e-brake cable will be tight but does not need to be disconnected to remove/install springs.
6. Remove the factory springs.
7. Install rear track bar tower. NOTE: Not used on 392 Hemi or Xtreme Recon models due to raised factory mount. Skip to step 8
  - A. Disconnect axle end of track bar and save hardware NOTE: Not used on Ecodiesel, proceed to step 8-B.
  - B. Install the track bar tower in the orientation shown (Fig 6).

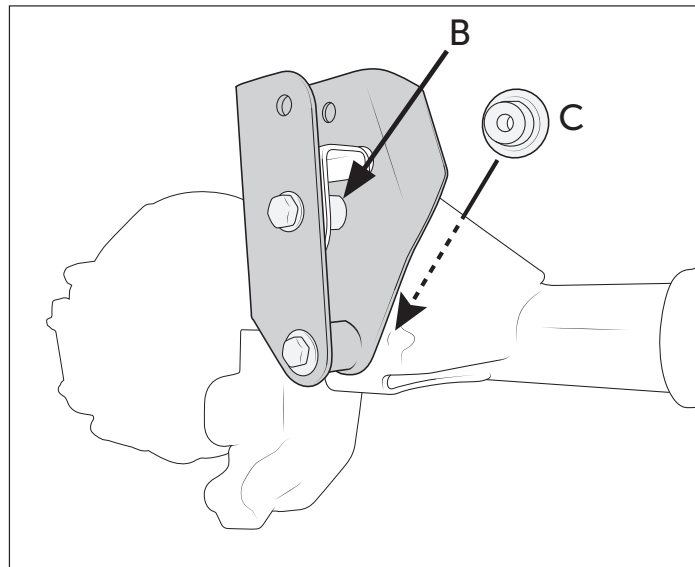


Figure 6

- C. Place supplied tube spacer between AEV bracket and factory axle bracket in original track bar location. Reuse factory bolt in this location (Fig 6-B).
- D. Install alignment puck into back side of factory axle bracket (side facing toward front of vehicle) and through the lower tube on track bar tower. Some resistance is normal to fully seat the alignment puck. Install M12x90mm bolt and washer from outer side of bracket, through alignment puck, and install flange nut (Fig 6-C). Nut may need to be tightened to fully seat alignment puck.
- E. Reinstall track bar to top hole using supplied M14 hardware (Fig 7).
- F. Tighten bottom M14\* and M12\*. Do not tighten track bar bolts yet.

**NOTE:** There's an extra hole on the outboard side of the track bar tower. Testing has shown this is not necessary, but if desired you can drill through the factory bracket and add an additional bolt here. Hardware is not provided for this location (Fig 7).

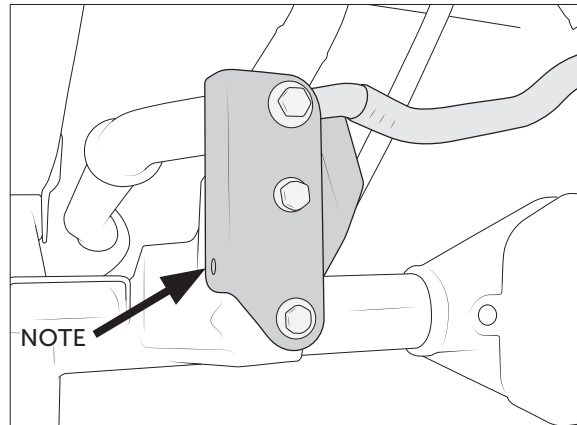


Figure 7

8. Install springs.

- A. Install rear spring shim to passenger side axle spring seat (Fig 7). JL has more weight on right side of vehicle than left, so this helps it sit level. Shim sits on top of isolator on axle.

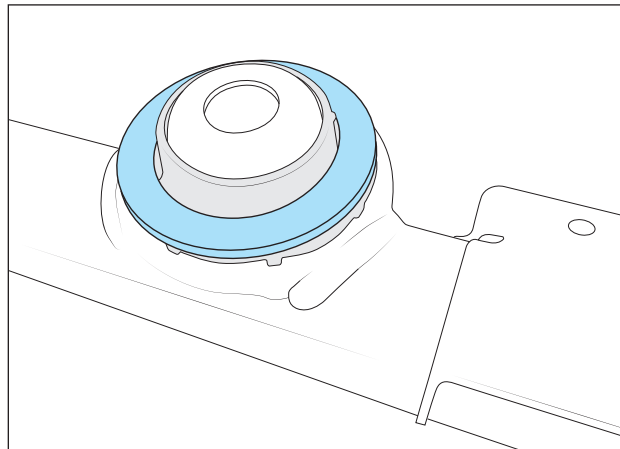


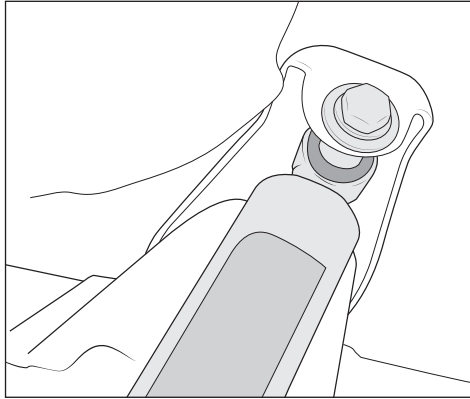
Figure 7

- B. Install rear AEV springs making sure to properly index them on the upper isolators. If the isolators fall out during assembly or disassembly, reinstall them by making sure the top locating post passes through the hole in the frame pad.



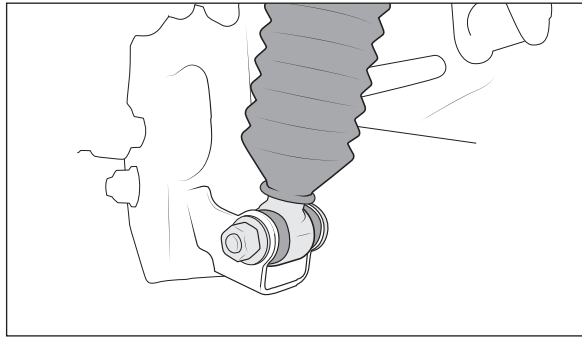


9. Install new rear shocks at upper mount using factory hardware (5100 PN 33-310480). NOTE: Refer to separate XP8100 big bore shock instructions if using those. Shock body sits at the top with AEV graphic facing outward at vehicle (Fig 9).



*Figure 9*

10. Raise axle slowly and guide springs into position.
11. Re-install lower shock nut and bolt and tighten\* (Fig 10). Install AEV sway bar end links (the longer of the 2 versions supplied in the kit) using factory hardware and tighten\* (see Fig 2).



*Figure 10*

12. Rear bump stop spacers will not be installed until after control arms are torqued at ride height.
13. Reinstall wheels and tighten lug nuts, working in a star pattern.\*

It is time to install the front suspension, however **DO NOT** tighten track bar or control arms at this time. These will be torqued **AFTER** the front suspension is complete.



## FRONT SUSPENSION

1. Raise Jeep and support the frame using jack stands or a hoist, such that the front axle can be lowered enough to remove the springs. Support the axle by placing the floor jack under the center of the axle. Remove the wheels.
2. Loosen but DO NOT remove all 8 control arm bolts (Fig 11).

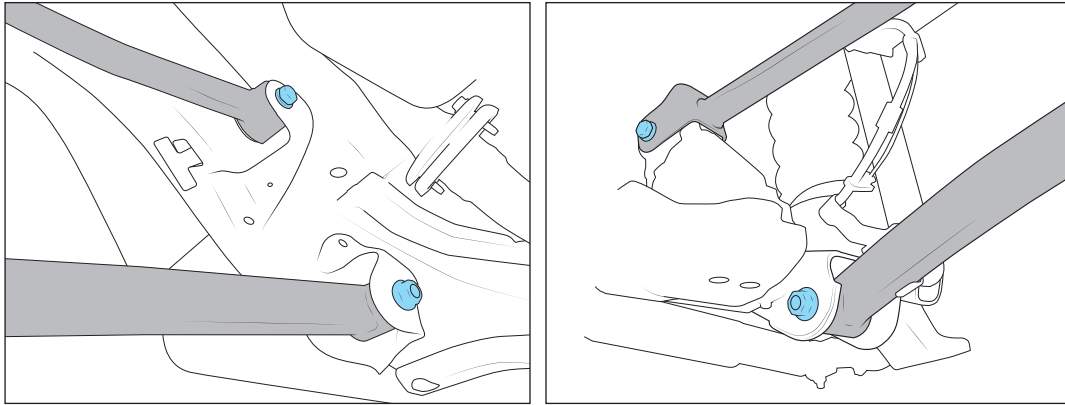


Figure 11: Frame-side (left) Axle-side (right)

3. Loosen but DO NOT remove both track bar bolts (Fig 12).

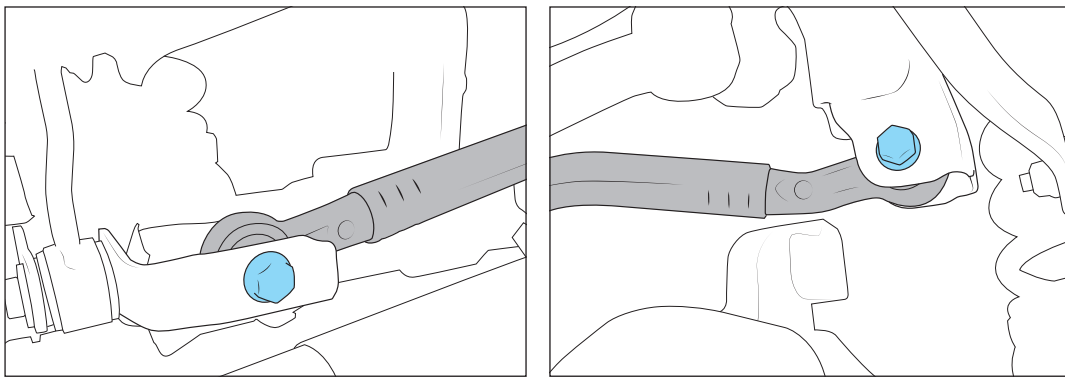


Figure 12: Axle-side (left) Frame-side (right)

4. Disconnect brake line brackets at frame, electrical connector for axle disconnect, and push fastener for axle disconnect to allow extra droop (Fig 13).

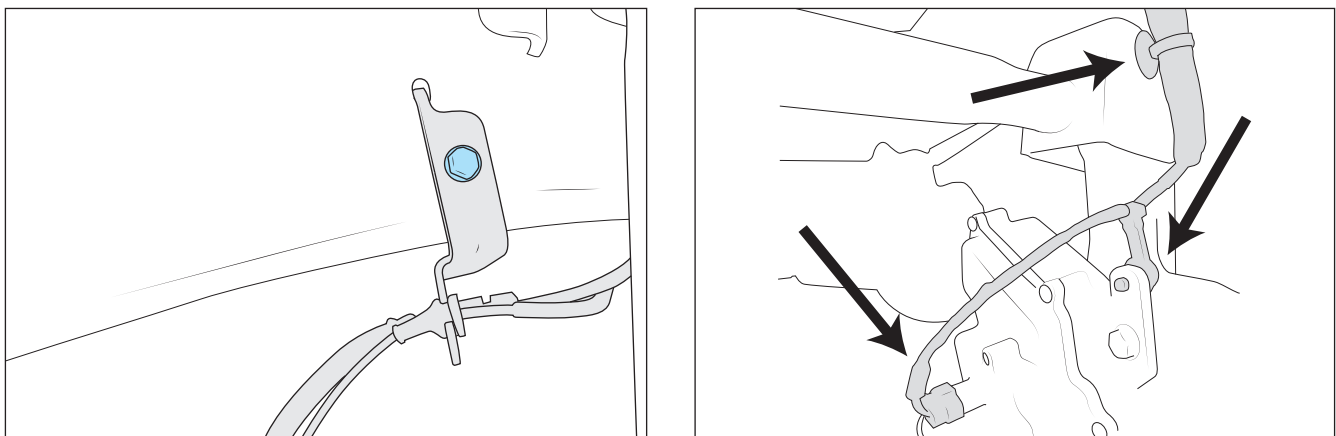


Figure 13: Brake Line Bracket (left) Axle Disconnect (right)



5. Remove both sway bar links and hardware, save hardware. Note orientation, new links will be installed in the same way (Fig 14).

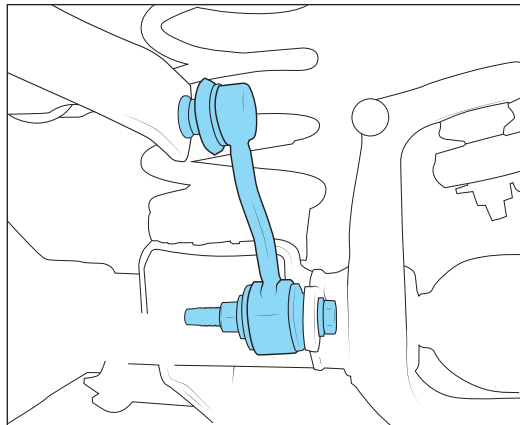


Figure 14

6. Remove shocks and save all shock mounting hardware.
7. **IMPORTANT STEP PLEASE FOLLOW CLOSELY.** Bend brake line brackets on lower control arms flat/up to allow extra travel relative to frame (Fig 15). Be sure to check brake line to control arm clearance again at ride height. Bracket can be adjusted further to ensure proper clearance; see page 11 step 17. On vehicles that will be rock crawling, AEV suggests trimming off the bottom tab of these brackets below the mounting hole to eliminate a snag point.

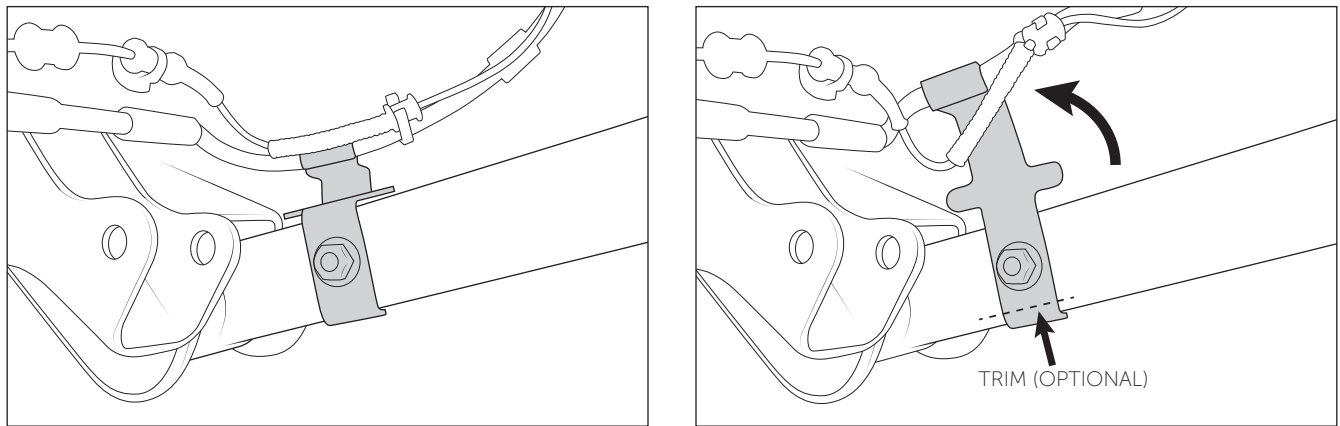


Figure 15: Before (left) After (right)

8. Lower axle and remove springs. **DO NOT** remove factory isolator.



9. Install upper bumpstop extensions. **NOTE:** Not required on 392 or Xtreme Recon models, factory bumpstops can be retained.
  - A. Remove urethane bumpstops from inside spring towers. These simply press into place, so remove them by wiggling them downward and sideways, or carefully prying with large channel locks (Fig 16).
  - B. Reinstall urethane bumpstops into new aluminum extensions (Fig 17). Lube them with glass cleaner or detergent to make install easier.

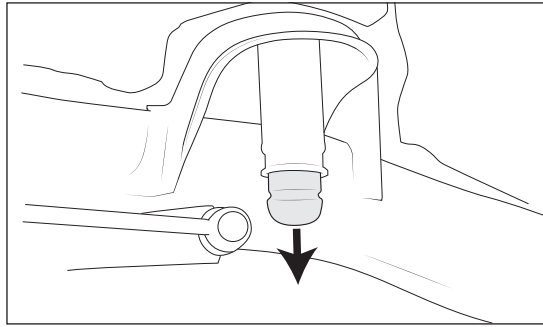


Figure 16

- C. Install extensions into factory bumpstop mounts. Using magnet or socket extension, install M12x25 flange bolt from top of spring tower (Fig 17). Torque bolts to 40 ft-lb

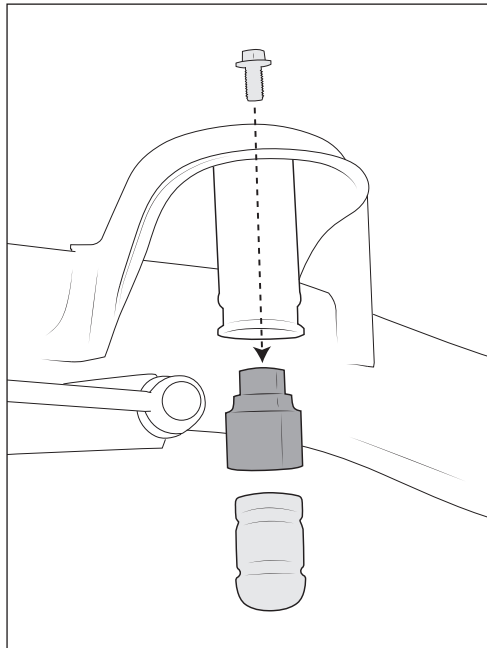


Figure 17



10. Install springs

- A. Remove passenger lower spring isolator by carefully prying it upward away from axle. Install front spring shim to bottom of isolator, passing molded stud through hole in shim. Reinstall assembly onto axle spring seat (Fig 18). JL has more weight on right side of vehicle than left, so this helps it sit level. Shim sits underneath isolator on axle. NOTE: Not used on Ecodiesel. Proceed to step 10-B.

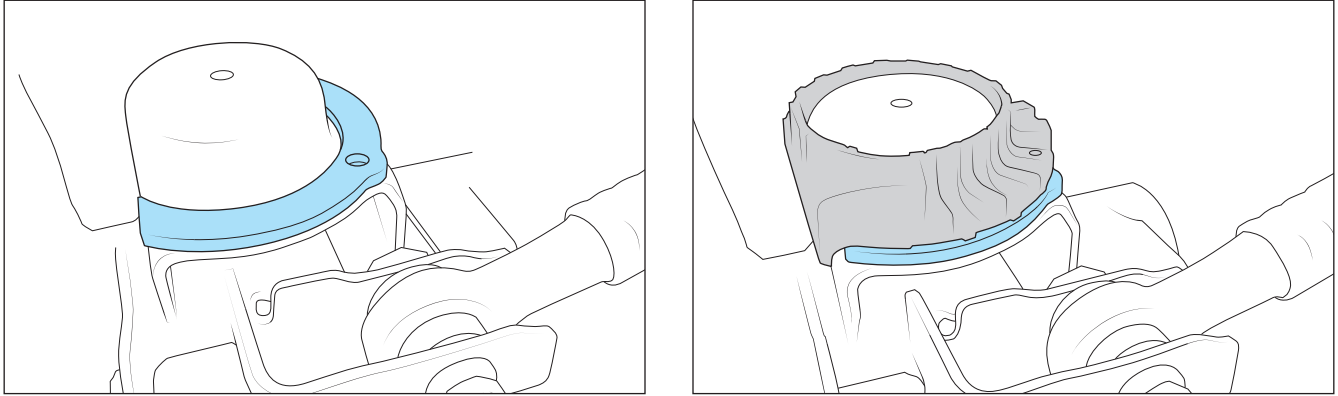


Figure 18

- B. Install Front AEV springs making sure to properly index them on the lower isolators. Be careful the springs don't snag the thin outer lip of the isolators. If the upper isolators fall out during assembly or disassembly, reinstall them by making sure the top locating posts pass through the holes in the spring tower. Raise axle to retain springs in place.
11. Install new front shocks at upper and lower mounts using factory hardware (PN 33-310473). Shock body sits at the top with AEV graphic facing outward from vehicle.
12. Install sway bar end links
- A. For each side attach the upper end stud to the sway bar in the same manner as the original front links had been (nut on frame side of bar). NOTE: The upper stud has a different thread than the rest of the M12 fasteners in the suspension—it is a "standard" pitch versus a "fine pitch." Tighten to 40 ft-lbs. (Fig. 19).
- NOTE: 2024 and newer vehicles come from the factory with M14 upper end link studs. AEV fastener packs include spacers to adapt to this larger hole in the sway bar. Rubicon models with the electronic sway bar disconnect will use the wider spacers, non-Rubicon with the fixed sway bar will use the narrower version. 1 spacer goes on each side of the vehicle, front sway bar only.
- B. The lower ends of the links will attach in the factory location using the original hardware, with AEV-provided washer added to the inboard side of driver side link only (Fig 19). Washer is not needed on passenger side because it has brackets on both sides of bushing. Torque to 40 ft-lbs.

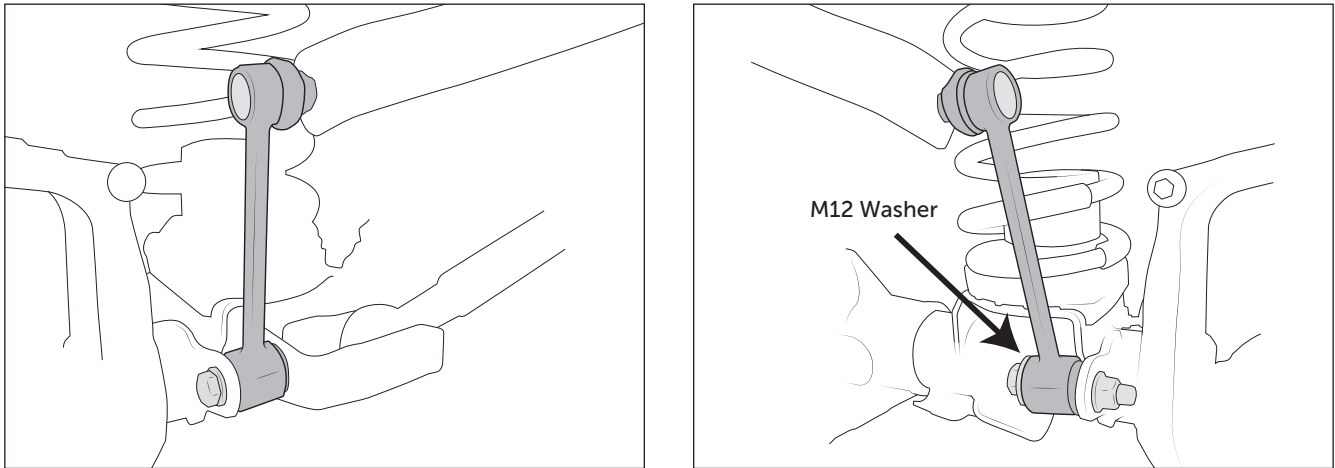


Figure 19

13. Reinstall wheels and tighten lug nuts, working in a “star pattern.”
14. Install Stamped Geometry Correction Brackets (refer to the Instructions for this product, pn:AEV30413)

**NOTE:** If the Jeep has an aftermarket front driveshaft and/or is going to be used for significant rock-crawling, it is recommended to swap the upper control arms side-to-side. They are normally bent down and inboard to clear the frame, but once lifted this bend gets closer to the front axle pinion/yoke on the driver’s side. Swapping is possible once lifted and will improve clearance to the pinion yoke area. The control arms are switched between sides and flipped. **THIS STEP IS REQUIRED ON 392 Hemi models to clear the vibration damper on the pinion.**

15. Install rear lower bumpstop spacers onto axle pads. Feed countersunk M10 bolts through spacers and existing holes in axle pads. Install flange nuts to bottom side of axle pads. Torque until there’s only slight deformation of material at top of holes in spacer blocks (Fig 20). **NOTE:** Not required on 392 or Xtreme Recon models, factory bumpstops can be retained.

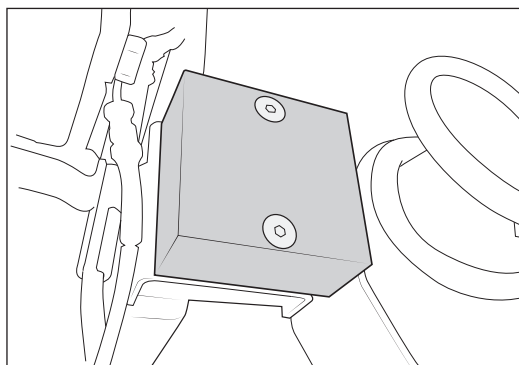
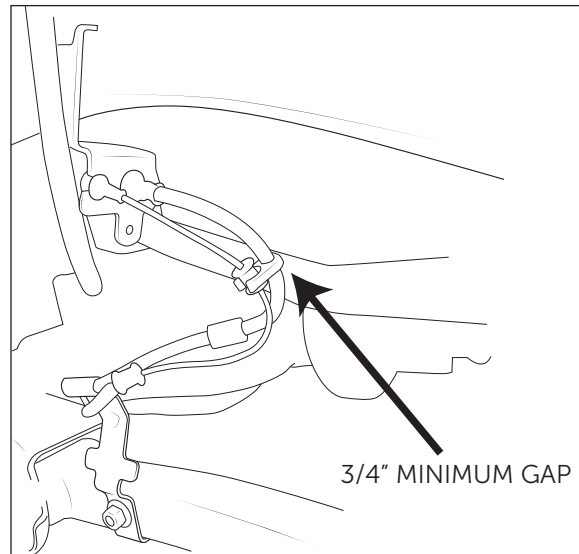


Figure 20

16. You may now tighten all fasteners to factory specifications.\* Too tight is NOT just right.
17. **IMPORTANT STEP PLEASE FOLLOW CLOSELY.** With vehicle sitting at ride height, check clearance between brake hose and upper control arm. Minimum 3/4” gap should be maintained, too little clearance could allow rubbing of brake hose and eventual leak. If gap is too small, use a crescent wrench to twist rear edge of brake hose bracket on lower control arm and bracket mounted to the frame outward until desired clearance is met (fig. 21).

\*Refer to Appendix for proper torque specs



*Figure 21*

TIP: It is good practice to mark each major bolted suspension connection such as these with a paint pen. Draw a line that runs from bolt head or nut to the adjacent bracket material. This will allow a visual inspection to easily catch bolts that work loose. After approximately 100 miles, you should perform a complete visual inspection and re-torque any suspect bolts as well as your wheel lug nuts.

AEV recommends having a professional alignment done at this point.

AEV recommends the use of the provided ProCal SNAP to calibrate for the new tire size. Please follow the instructions that come with your ProCal SNAP.

AEV recommends 32–35 PSI tire pressure with our Suspension Systems.

# APPENDIX

## JL FACTORY TORQUE SPECIFICATIONS

JOINT	TORQUE (FT-LB)
Front UCA to Axle	80
Front UCA to Frame and AEV Brackets	80
Front LCA to Axle	190
Front LCA to Frame and AEV Brackets	190
Front Brake Hose to LCA	15
Front Track Bar to Axle	110
Front Track Bar to Frame	110
Front Sway Bar Link to Axle	60
Front Sway Bar Link to Sway Bar	60
Front Lower Shock to Axle	75
Front Upper Shock to Frame	80
Rear UCA to Axle	95
Rear UCA to Frame	120
Rear LCA to Axle	90
Rear LCA to Frame	90
Rear Track Bar to Axle and AEV Brackets	90
Rear Track Bar to Frame	90
Rear Sway Bar Link to Axle	60
Rear Sway Bar Link to Sway Bar	50
Rear Lower Shock to Axle	75
Rear Upper Shock to Frame	80