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3" DUALSPORT SUSPENSION RAM TRUCK 2500/3500





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
Spring Spacer & Bumpstop Kit – Front	1
Radius Arm & Track Bar Bracket Kit – Front	1
Draglink & Track Bar Kit – Front	1
Shocks Kit – Front	1
Rear Axle Kit	1
Driveshaft Spacer Kit	1
Power Hop Bracket Kit (optional)	(1)

NOTE: Installation on a Powerwagon requires the purchase of new Coil Springs, Mopar PN: 68172091AA (front) and 68091216AA (rear).



I. FRONT SUSPENSION 2500/3500

A. FRONT SUSPENSION PREPARATION

NOTE: SAVE ALL HARDWARE UNTIL INSTALLATION IS COMPLETE.

1. Support the vehicle by the frame until the front wheels are off the ground.
2. Remove the front wheels and tires.
3. Remove the drag link.
 - a. Loosen the jam nut on the pitman arm side of the drag link just enough to separate it from the adjuster sleeve. **Leaving this jam nut as close to factory position will help in getting the new drag link close to proper adjustment.**
 - b. Loosen the other jam nut.
 - c. Remove the drag link at the axle end.
 - d. Thread adjuster sleeve out until separated from drag link (fig. 1).

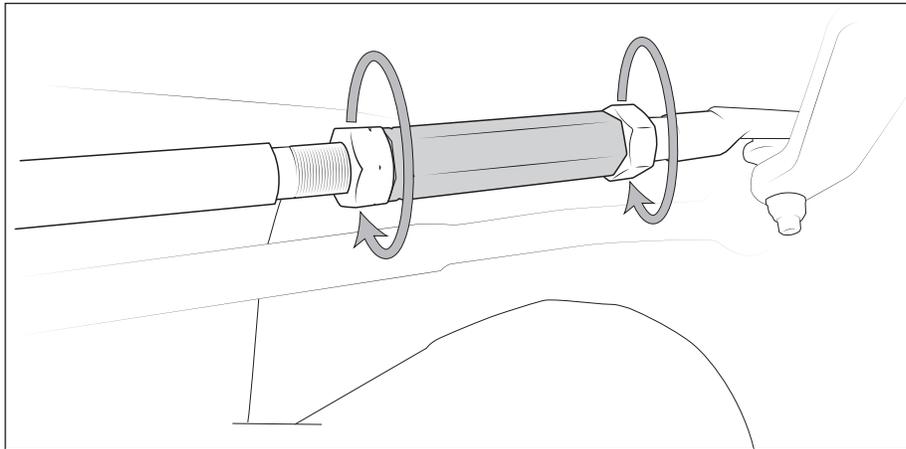


Figure 1

- e. Remove the jam nut off of the drag link and save for the new AEV drag link.
4. Remove the track bar and save the hardware.
5. Remove the sway bar links at the axle end only.
6. Remove the steering dampener bolt at the axle. Leave attached at the tie rod.



7. Remove the front brake lines.
 - a. Clamp off the flexible brake lines (fig. 2).
 - b. Remove the steel brake lines between the two flexible lines (fig. 3).
 - c. Remove the flexible line brackets at the top of the radius arms and let hang (fig. 4).

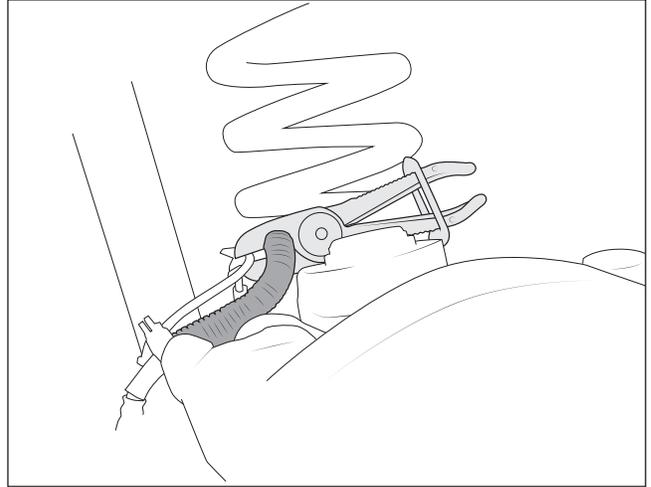
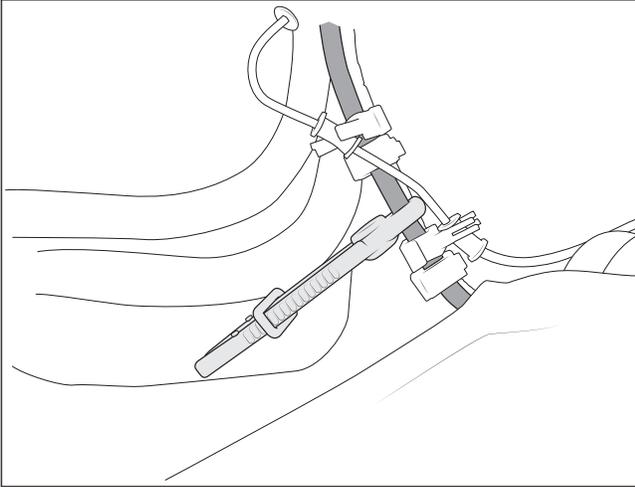


Figure 2

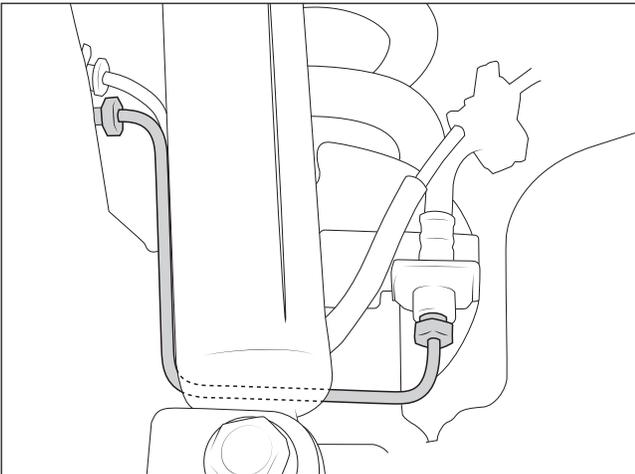


Figure 3

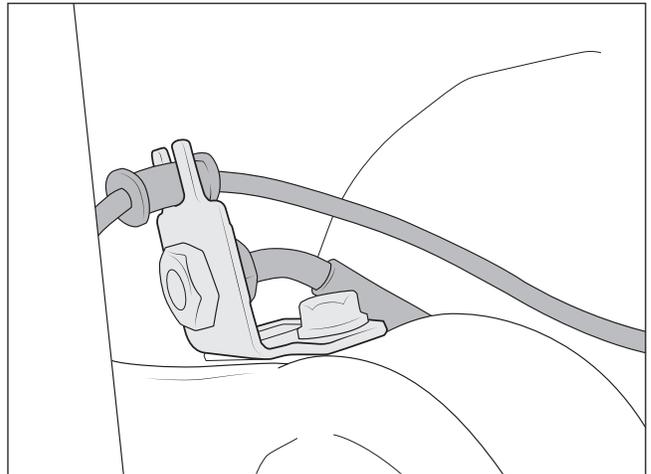


Figure 4



8. Unplug the central axle disconnect and remove the zip tie (fig. 5).
9. POWER WAGON ONLY – Disconnect the front locker plug and remove the zip tie from the axle (fig. 6).

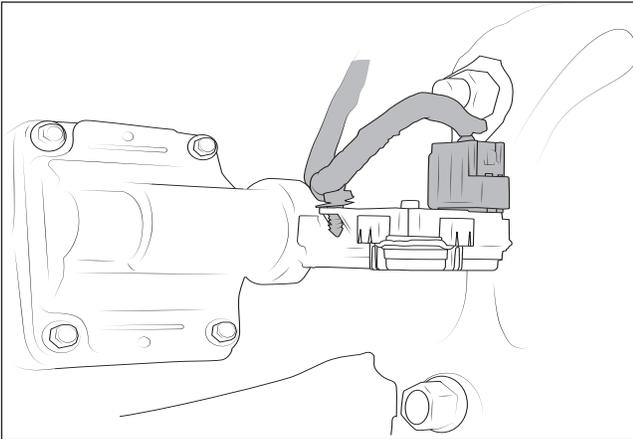


Figure 5

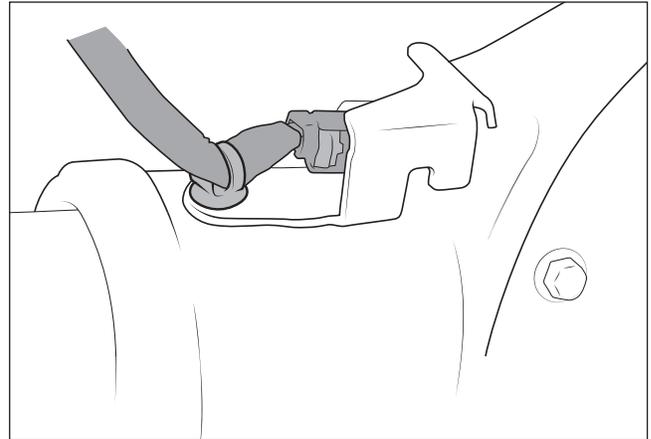


Figure 6

10. Remove the axle vent from the brake line bracket and shock tower (fig. 7).

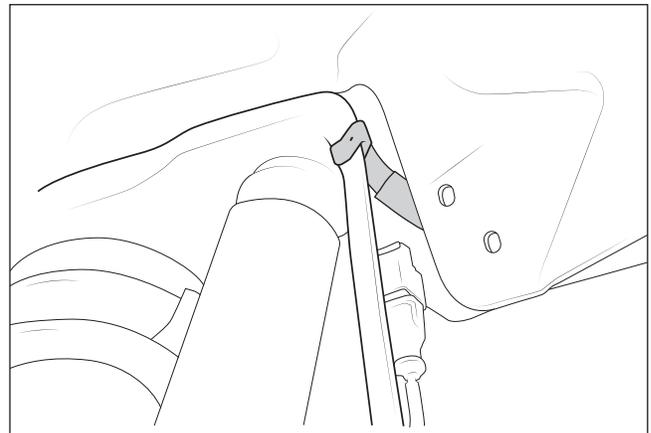
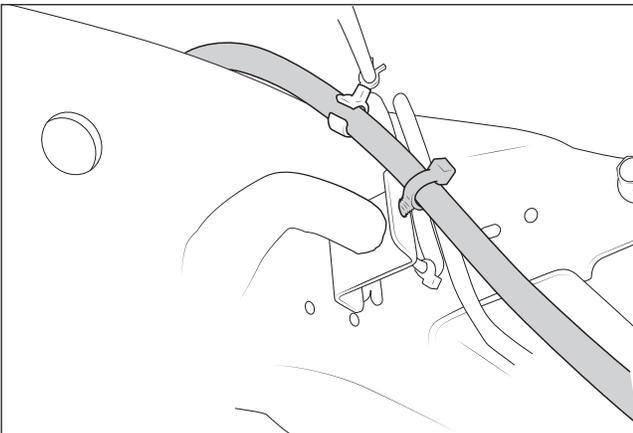


Figure 7

11. Disconnect the front drive shaft at the axle end. **Make sure to mark both sides of the connection so you can properly align it when you reconnect it.** Tie loose end of the drive shaft up so it will not hang down. **Failure to follow this step may result in damage to your drive shaft.**
12. Support the front axle and remove the shocks.
13. Lower the front axle enough to remove the front coil springs. Check to make sure the brake lines are not catching on anything.
14. Remove the lower coil spring isolators from the axle.



15. Using the AEV right side coil spacer (NRM51000AB) as a template, mark and trim the factory coil bucket as shown (fig. 8). Paint bare metal for corrosion protection.

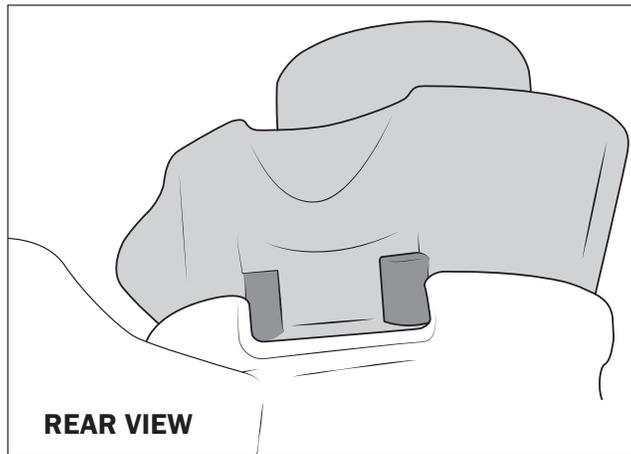


Figure 8-A: Center Coil Spacer in Bucket Using Rear Tab

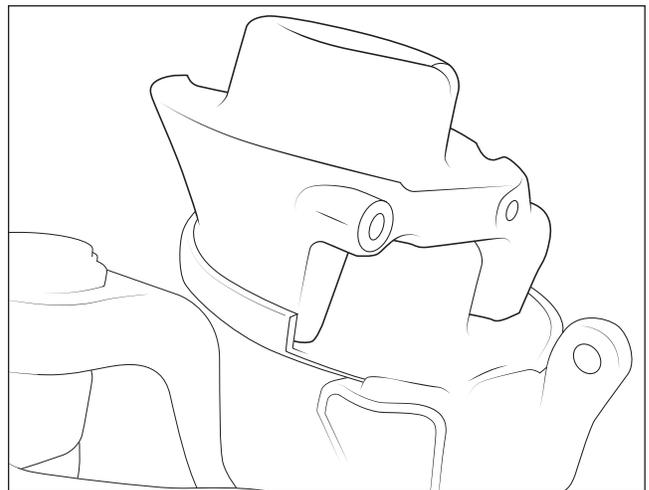
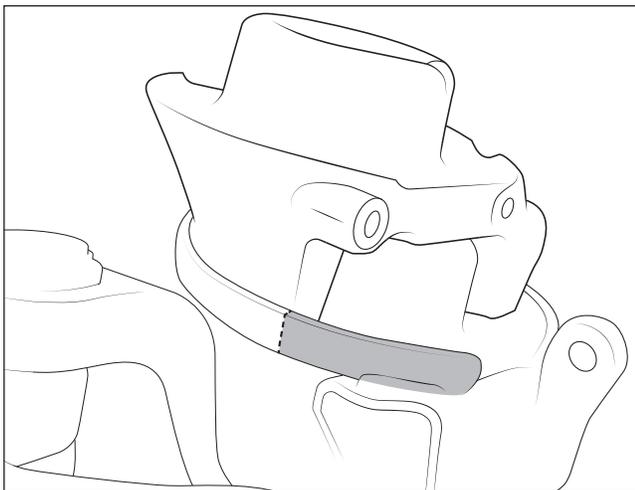


Figure 8-B: Remove Shaded Portion



B. FRONT SUSPENSION INSTALLATION

1. Install the radius arm relocation brackets using hardware bag #1.
 - a. Preassemble the AEV radius arm brackets for installation (Fig. 9).

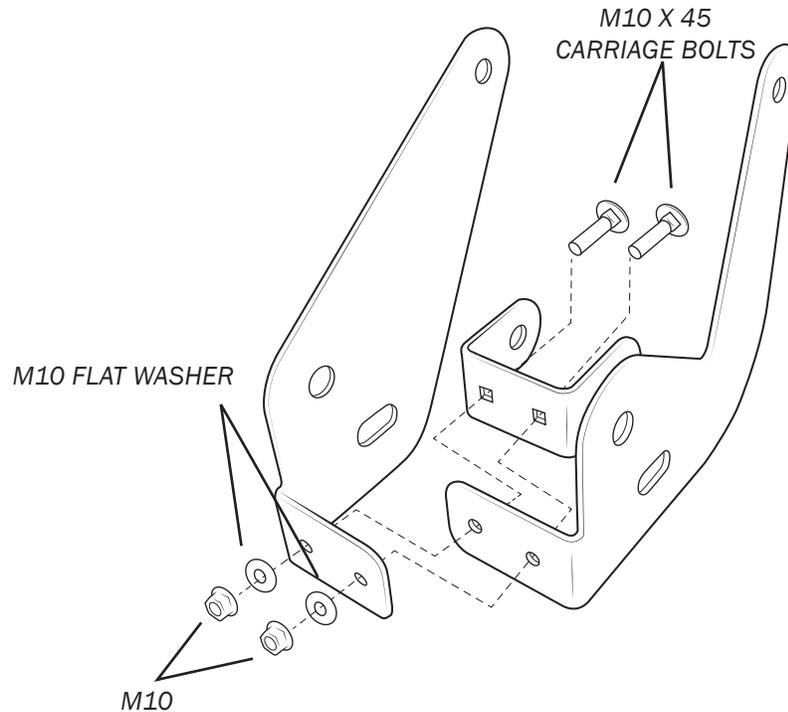


Figure 9

- b. With the front axle still supported, remove one radius arm bolt at the frame.
 - c. Lower the radius arm enough to put the radius arm brackets and spacer in place.
 - d. Install the supplied spacers on each side of the frame rail as shown (fig. 10).

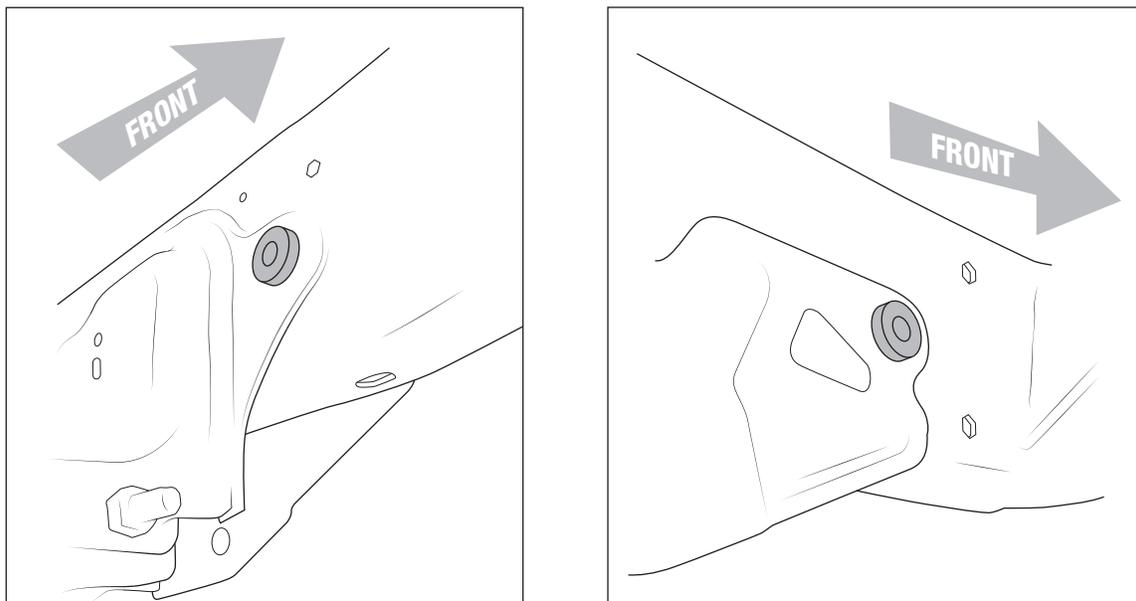


Figure 10 – Left: Inside Right: Outside



- e. Install the brackets to the frame with the supplied hardware (leave loose at this time) (fig. 11).
NOTE: The M18 X 130 bolts MUST go in the original radius arm hole. The M18 X 140 will interfere with the cross member.

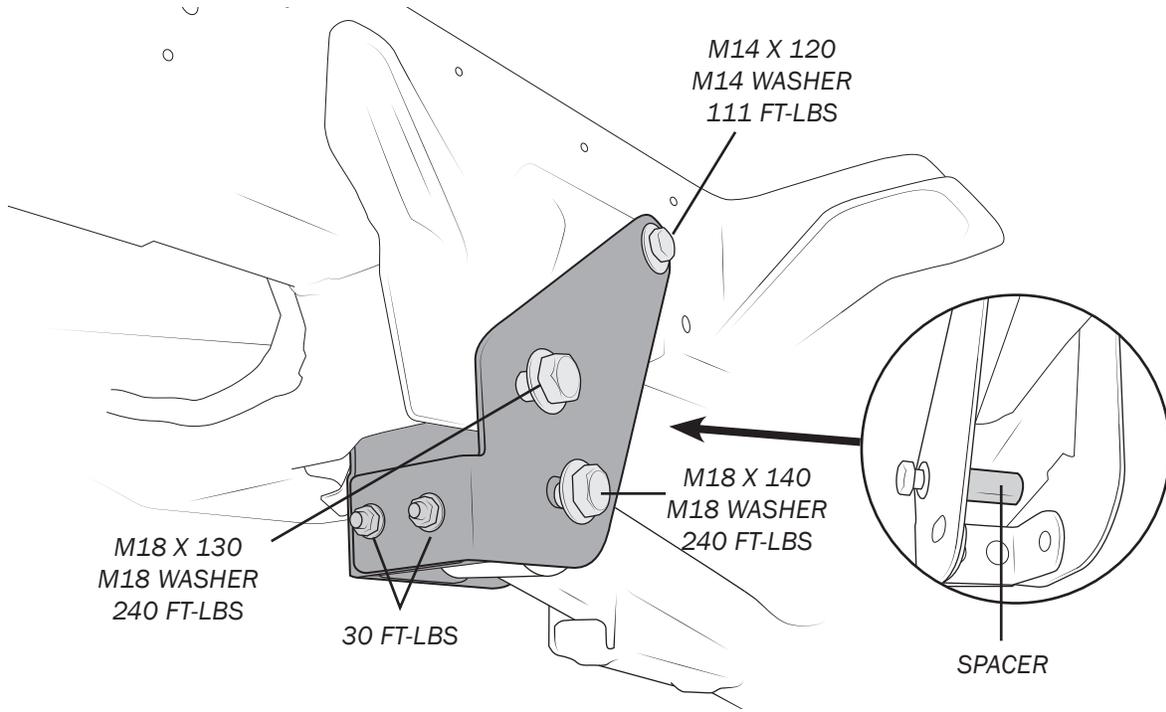


Figure 11-A

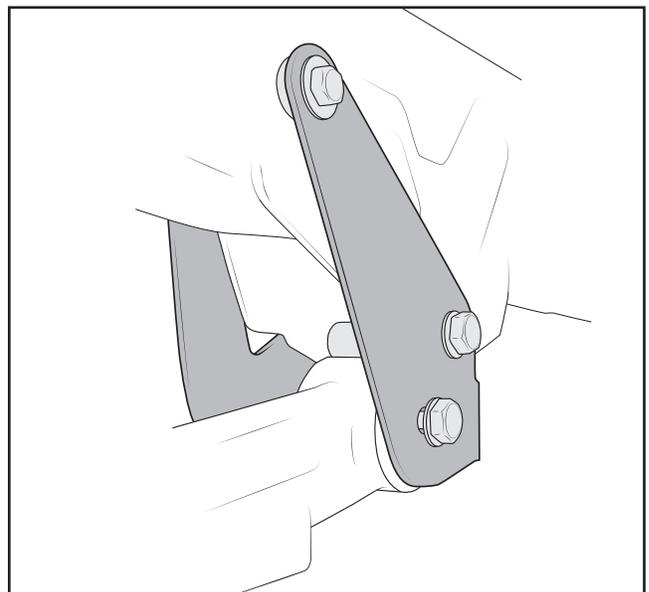
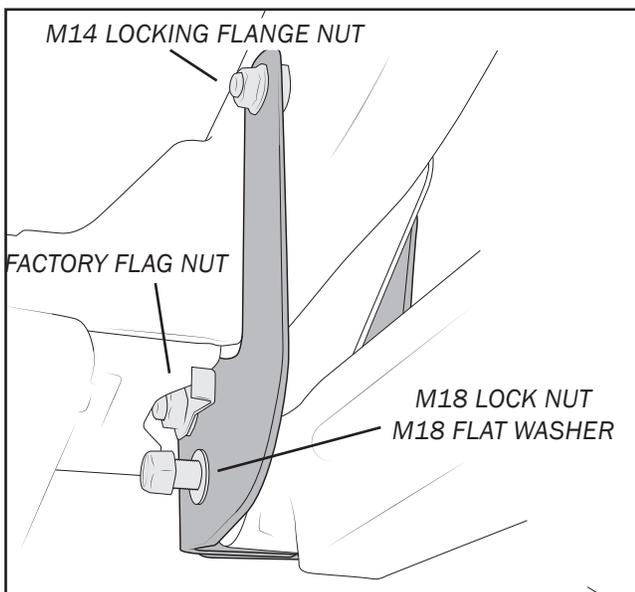


Figure 11-B

- f. Insert the M18 X 140 bolt through the radius arm.
g. Repeat the process on the other side.
h. Tighten and torque all hardware except the radius arm bushing through bolts (These will be tightened later at ride height). Refer to figures 11-A and 11-B for torque specifications.



NOTE for 3500 Trucks with the AISIN AS66RC Transmission upgrade: The chassis wiring harness will contact the front drive shaft at full extension (fig. 12) and must be relocated. Disconnect the wiring harness from the frame so it can be moved further to the rear of the vehicle. Zip-tie in place using existing holes in the frame.

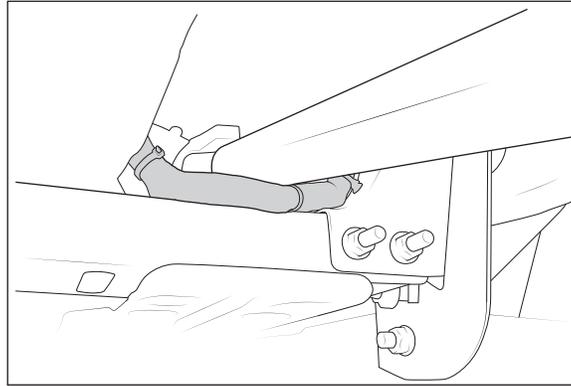


Figure 12

2. Install the sway bar relocation brackets using hardware bag #3 (fig. 13).
 - a. Remove one side of the sway bar at the frame and loosen the other side.
 - b. Install one side at a time and torque all fasteners (fig. 13).

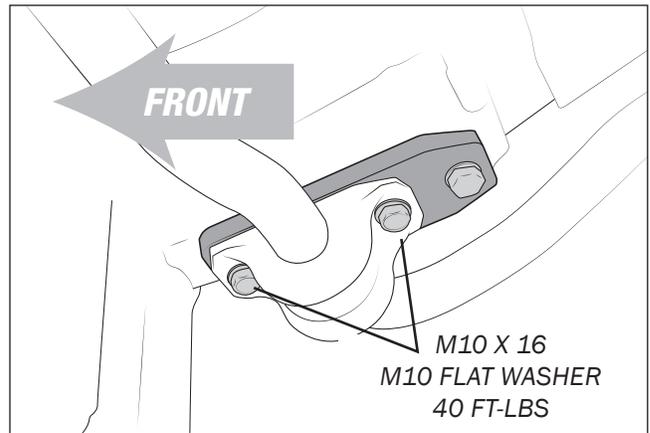
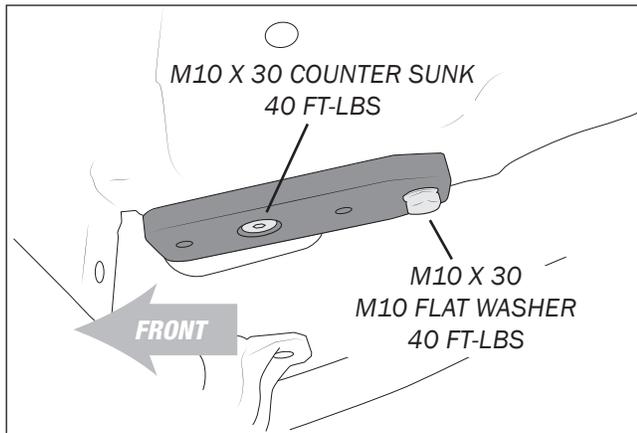


Figure 13



3. Remove any debris in the factory coil bucket.
4. Install AEV coil spacers to the axle using hardware bag #2. Leave loose at this time (fig. 14).

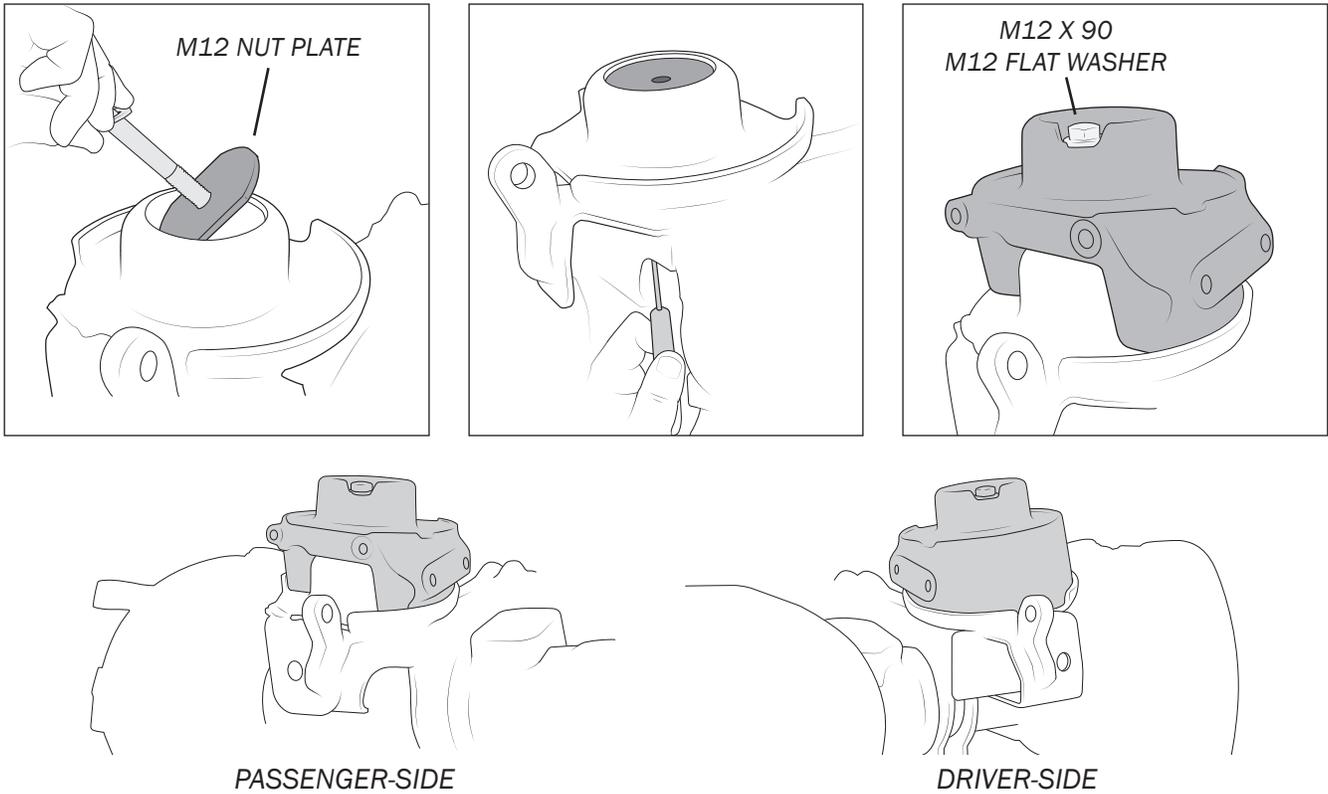


Figure 14

5. Install the track bar relocation brackets using hardware bag #4.
 - a. Remove the two upper bolts from the steering dampener bracket at the axle (fig. 15).

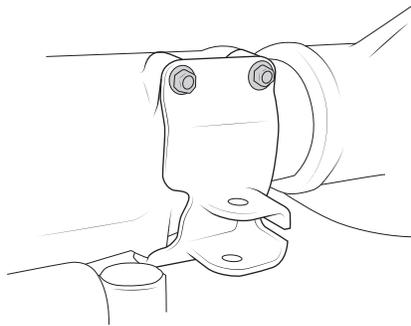


Figure 15



- b. Install the rearward track bar bracket to the new coil spacer and axle using the supplied hardware. Leave loose at this time (fig. 16). NOTE: snug the M10 x 25 button head bolts as far as possible while still allowing for movement.

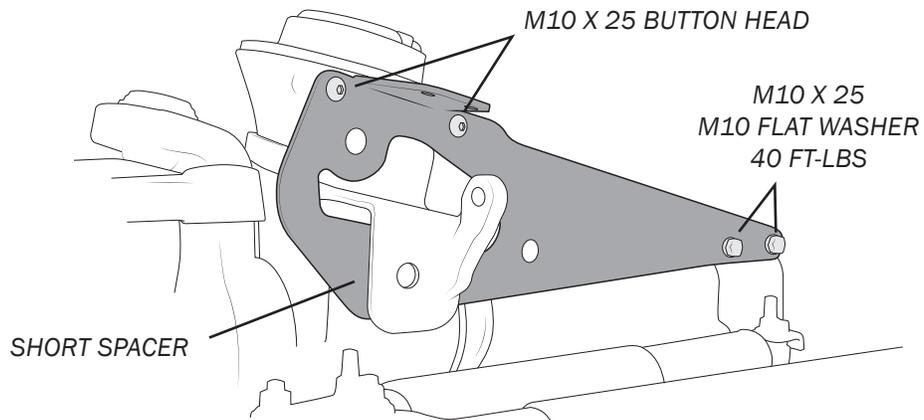


Figure 16

- c. The tab nut off of the frame side track bar bolt will be used for the axle side track bar bolt. The edge will need beveled to fit. Hold it up to the hole and check for clearance and bevel as needed (fig. 17).

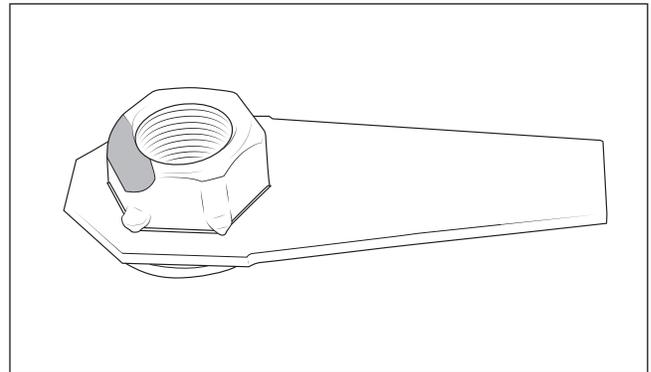
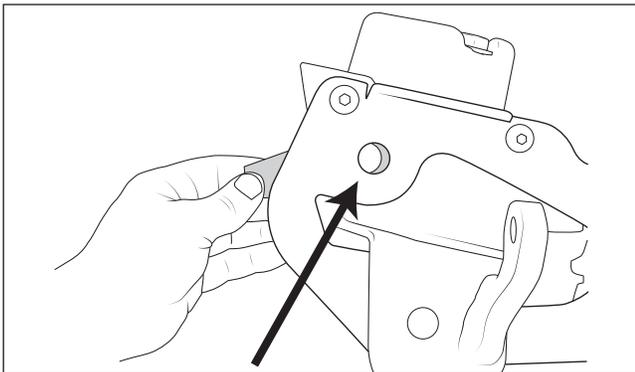


Figure 17

- d. Position the forward track bar bracket and insert the sway bar links back in the factory location and torque to **110 ft-lbs** before installing any hardware (fig. 18).

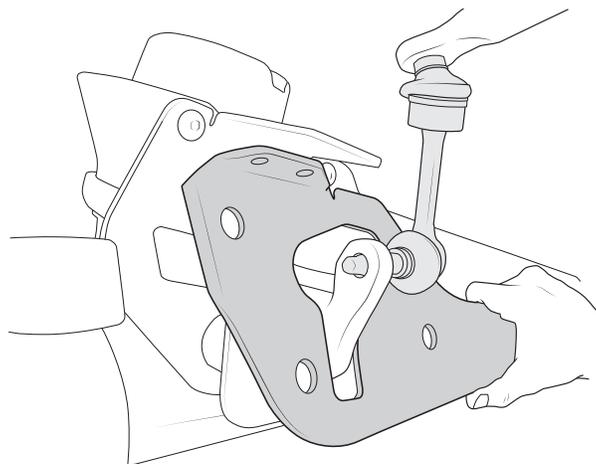


Figure 18



- e. Install the supplied hardware, factory hardware, and spacers into forward track bar bracket. Leave loose at this time (fig. 19).

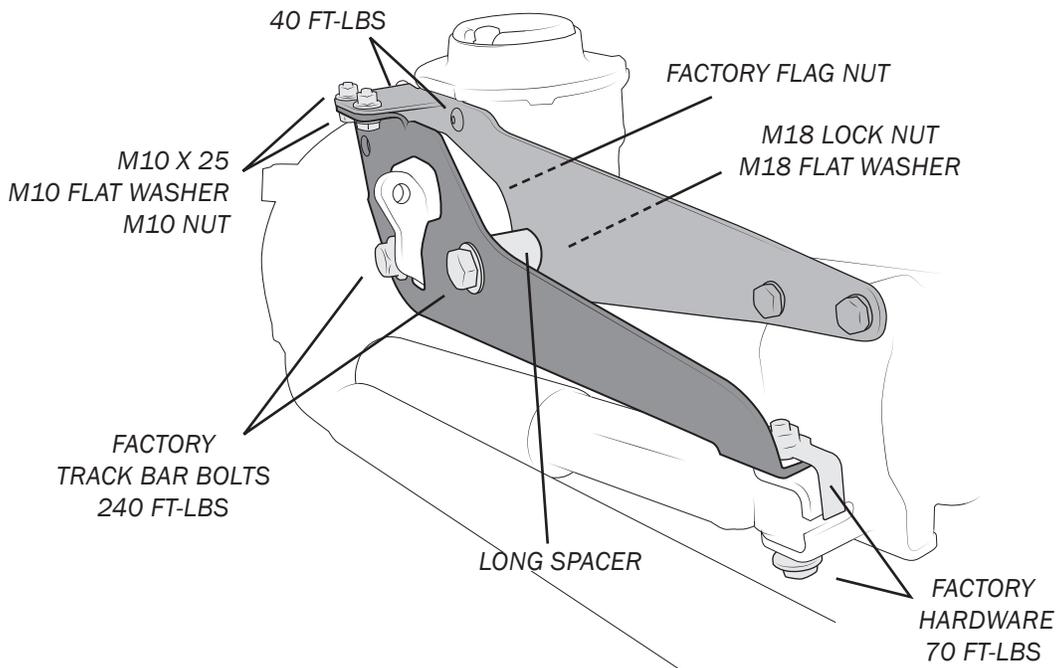
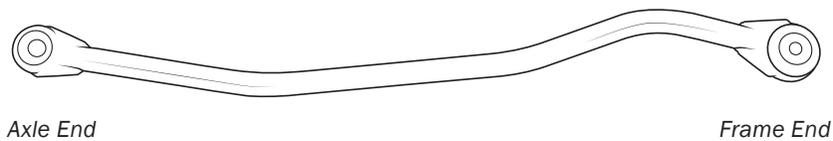


Figure 19 (sway bar link removed for clarity)

6. Install the AEV track bar.



- a. **POWER WAGON ONLY** – Modify the track bar bracket as shown (fig. 20). Measure 3/4" up to mark the center, then drill a 3/4" hole. Remove remaining material.

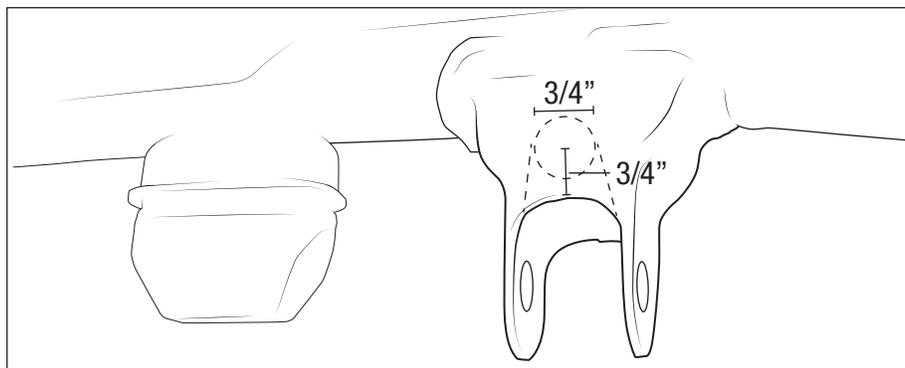


Figure 20

- b. Install the supplied M18 X 70 bolt and washer at axle using the factory frame-side tab nut (leave loose at this time).
- c. Install the supplied M18 X 80 bolt, washer, and locking flange nut on the frame side, passing through from the rear of the vehicle to the front.



d. Torque all hardware at this time (fig. 18) **EXCEPT: Coil Spacer hold down bolts and frame-side track bar bolt.**

7. Install the brake line/bump stop brackets and the bump stops.

a. Pre-assemble the brake line/bump stop brackets to the bump stops as shown (fig. 21). Only snug bolts at this time, you will need movement to adjust position on vehicle.

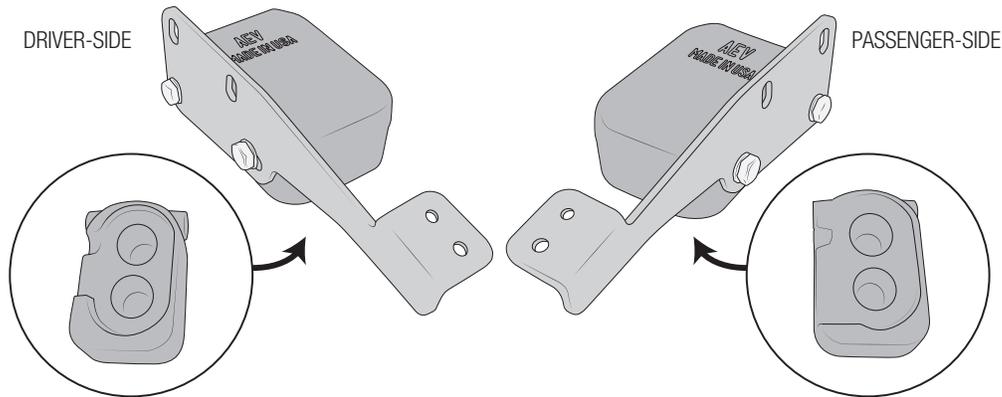


Figure 21

b. Place the bump stop/bracket assemblies on the axle and start the bolts into the coil spacers. Secure with M10 X 25 bolts and M10 Washers but DO NOT tighten (fig. 22).

NOTE: Due to some variations in axles modification of the driver-side coil bucket MAY be required. If the coil bucket is making contact with the brake line bracket and not allowing for proper seating, then it is necessary to remove that portion of the coil bucket (fig. 23).

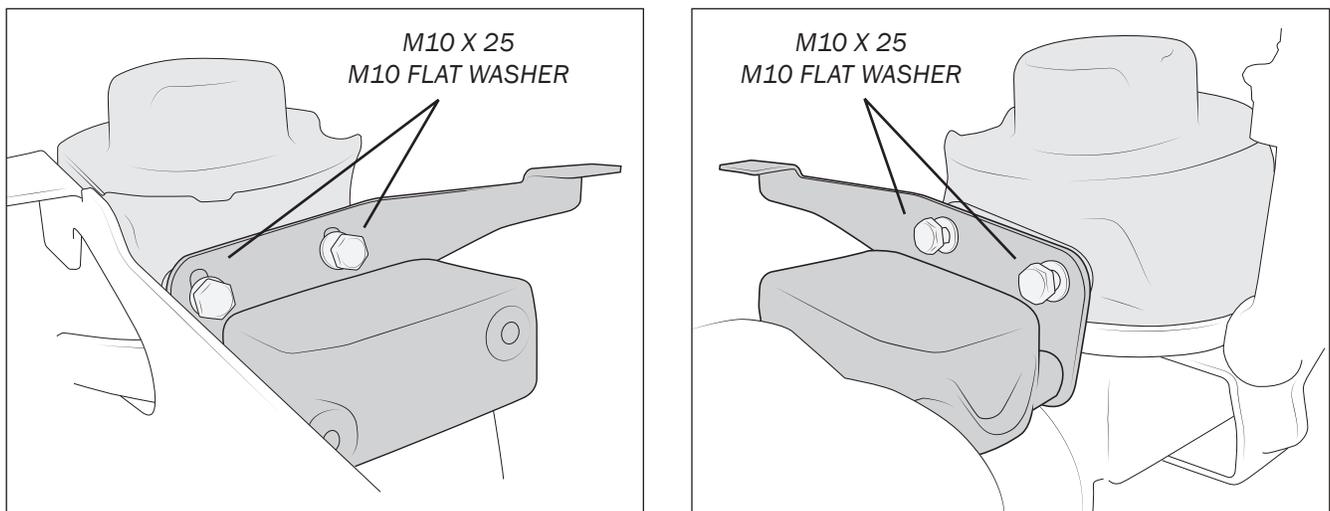


Figure 22

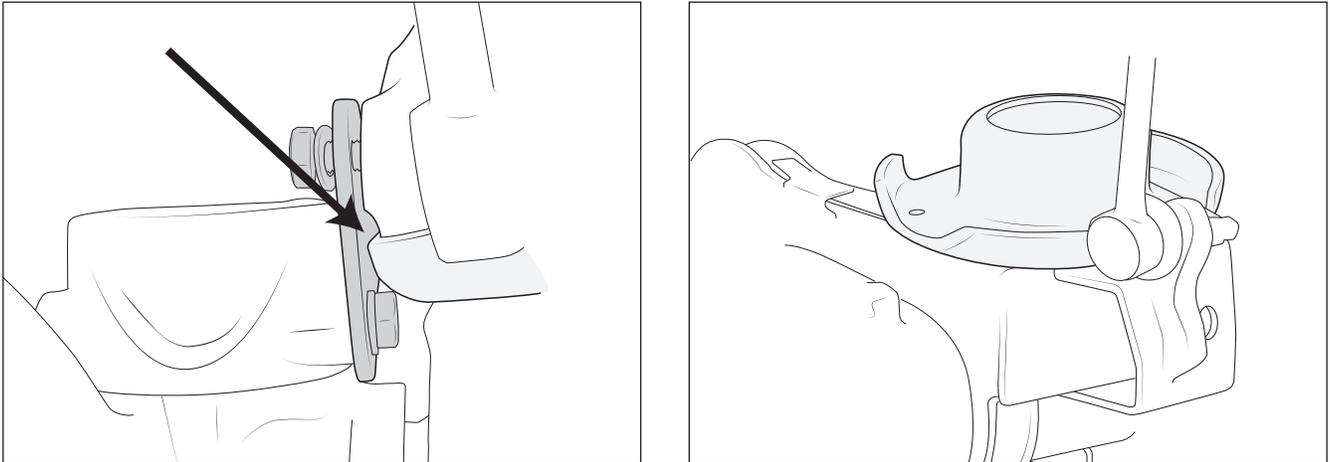


Figure 23: Trim driver-side coil bucket IF NECESSARY

- c. Rotate the coil spacer to make the mating surface of the bracket parallel to the coil spacer.
- d. Snug one bracket to bump stop bolt one each side making sure bump stops are seated properly.
- e. Remove the bump stop/bracket assemblies and torque BOTH bolts to **40 ft-lbs**. Return assemblies to the axle once tight.
- f. Start the rearward bolt into the coil spacer.
- g. There may be a gap between the bumps top and coil spacer. Use the supplied shims to shim as shown (fig. 24).
- h. Start the other bolt through the shim.
- i. Tighten both coil spacer to the axle. NOTE: Only snug these by hand, overtightening will deform the nut plate.
- j. Torque the bump stop/bracket assemblies to the coil spacers to **40 ft-lbs**.
- k. Repeat shimming process on other side.

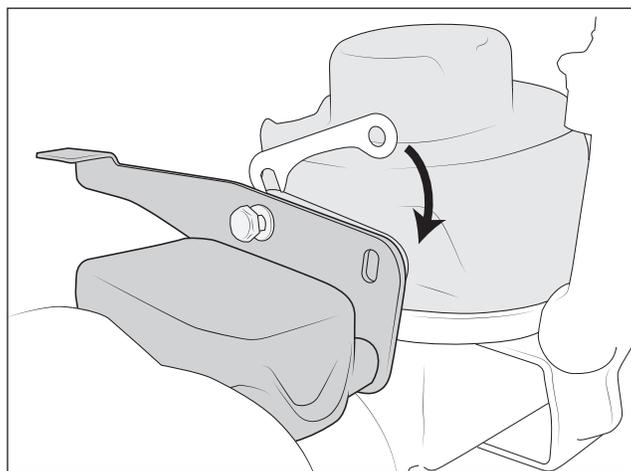


Figure 24



8. Install the factory coil spring isolators to the AEV coil spacers (fig. 25).
9. Install the factory coil springs.

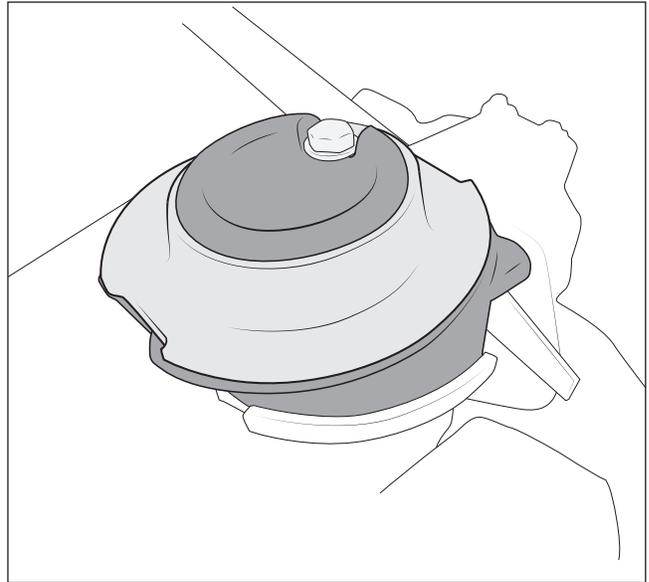
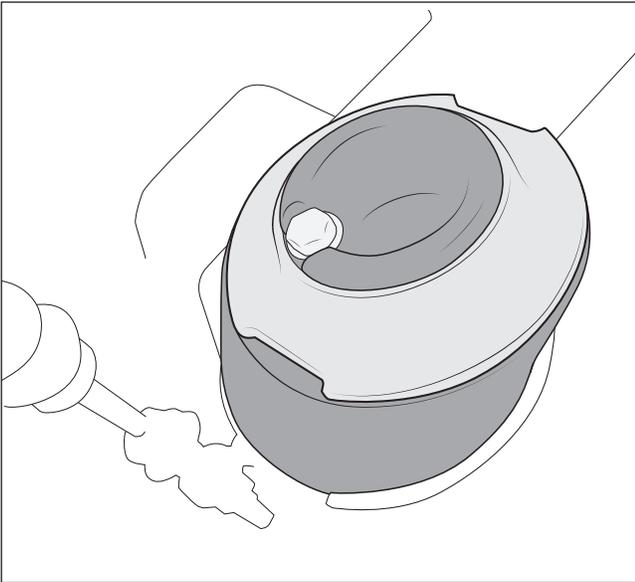


Figure 25

10. Assemble the shock bushings as shown (fig. 26) then install AEV shocks.
Torque the lower bolt to **89 ft-lbs.**

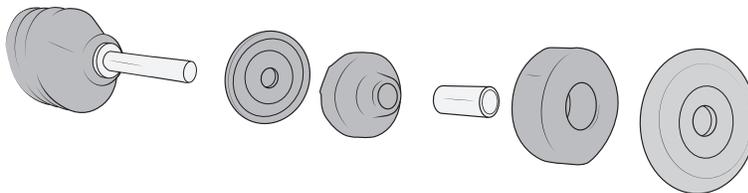


Figure 26

11. Install AEV drive shaft spacer and drive shaft to axle using supplied hardware (fig. 27). Be sure to align using the markings from disassembly. Use blue thread locker and torque to **85 ft-lbs.**

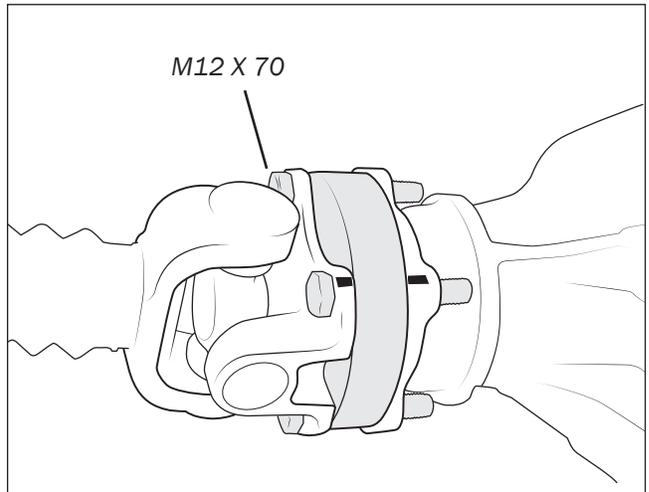
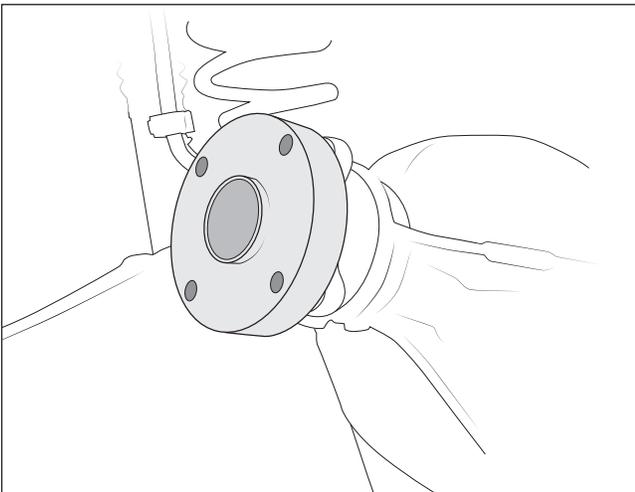


Figure 27



12. Trim the factory soft brake line bracket as shown (fig. 28).
13. Attach the factory soft brake line bracket to the AEV brake line bracket. Use the supplied P-clip to secure the wheel speed sensor wire to the brackets (fig. 29).

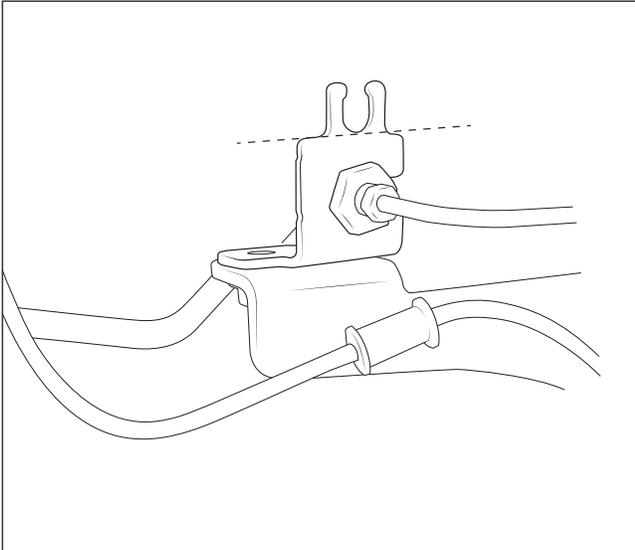


Figure 28

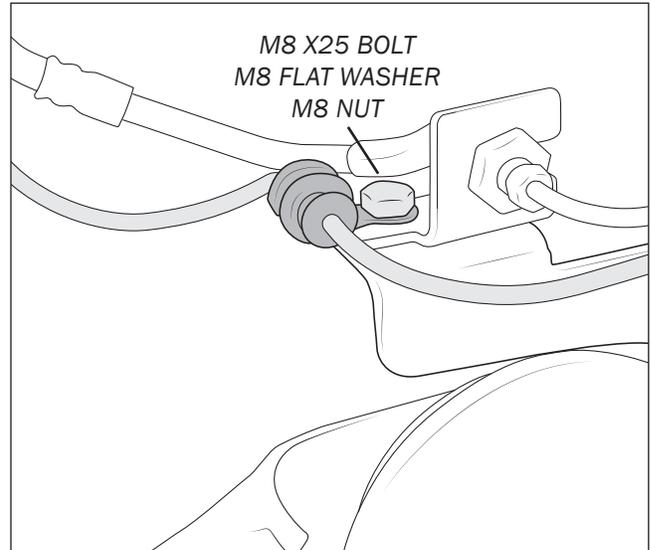


Figure 29

14. Install AEV steel brake lines between the factory flexible lines (fig. 30). **NOTE: On POWER WAGON, slight bending of the brake lines may be necessary for proper drive shaft clearance.**

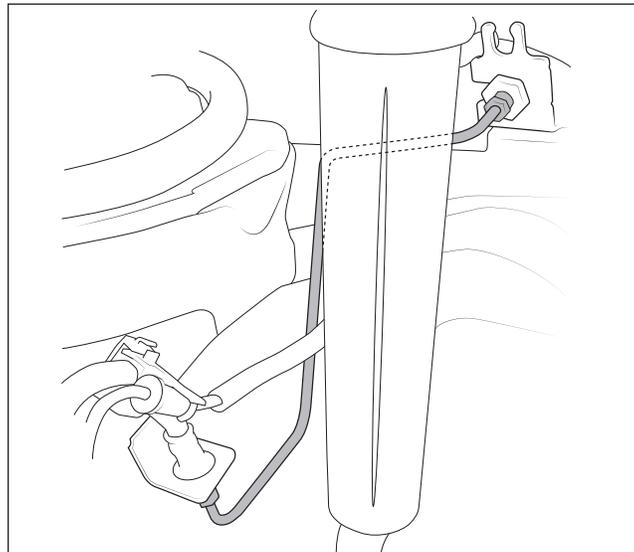


Figure 30

15. Plug the central axle disconnect back in.
16. POWER WAGON ONLY – Plug locker wiring back into axle.



17. Reattach the central axle disconnect and wheel speed sensor wire with zip ties as shown (fig. 31).

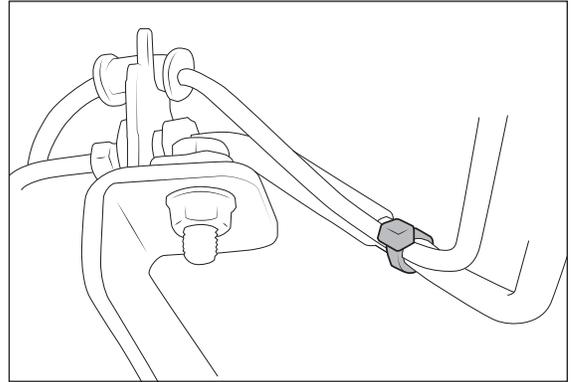
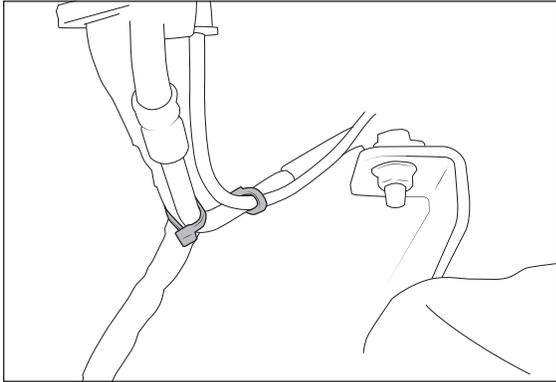


Figure 31

18. Reattach the axle vent hose. Pull slack out of the hose and secure with zip ties as shown (fig. 32).

19. Drill the hole in the knuckle to 7/8" for the new drag link tapered bushing and insert supplied tapered bushing (fig. 33).

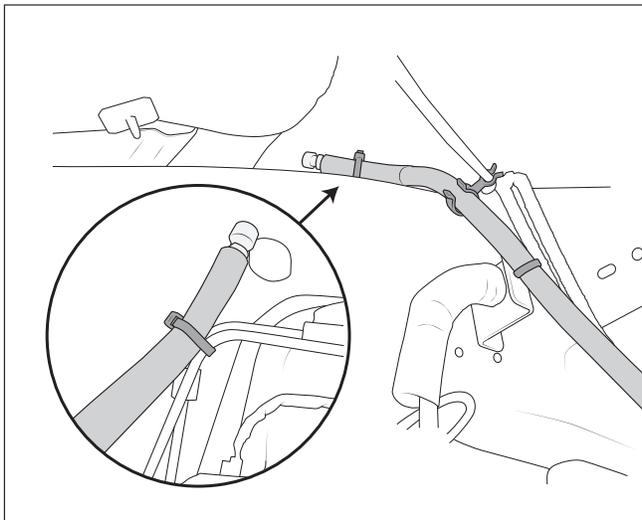


Figure 32

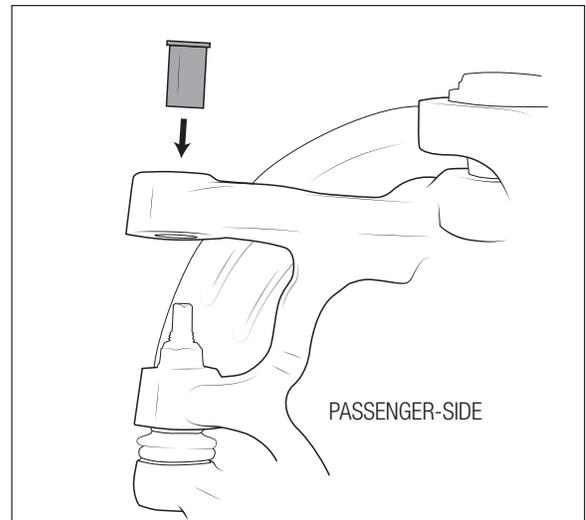


Figure 33



20. Install the drag link.

- a. Thread the factory jam nut onto the AEV drag link
- b. Thread the adjuster sleeve onto the AEV drag link and the drag link end at the pitman arm end at the same time. Thread it all the way to the jam nut that was left in position on the pitman arm side (fig. 34).
- c. Install the new drag link into the knuckle and torque to **100 ft-lbs** (fig. 35).
- d. Tighten both jam nuts.

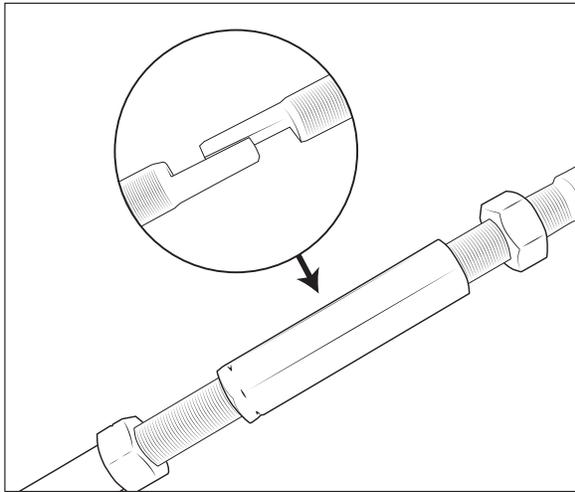


Figure 34

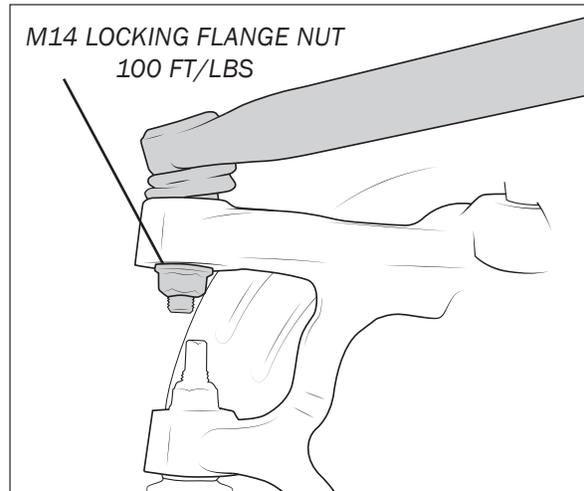


Figure 35

21. Bleed brakes.

22. Install the wheels and tires.

Once the Rear Suspension is completed and the vehicle is on the ground at ride height, you will need to torque the following:

Front radius arm bolts at the frame end – **240 ft-lbs**.

Front track bar bolts – Frame side: **324 ft-lbs**, Axle side: **285 ft-lbs**.



II. 2500 REAR SUSPENSION

A. REAR SUSPENSION PREPARATION

1. Support the vehicle by the frame until the rear wheels are off the ground.
2. Remove the wheels and tires.
3. Remove the rear sway bar links.
4. Remove the axle vent tube and clip from track bar bracket (fig. 34).
5. POWER WAGON ONLY – Remove locker wiring from the parking brake cable.
6. Remove the power hop bracket and save the hardware – if equipped (fig. 35).
7. Remove the track bar at the axle end only.
8. Support the axle and remove the shocks and coil springs.
9. Remove the bump stops from the frame. POWER WAGON—Discard cast bump stop spacer.
10. Remove the left side sway bar bolts from the axle (fig. 36).
11. Remove the left side brake line bolt at the axle (fig. 37).

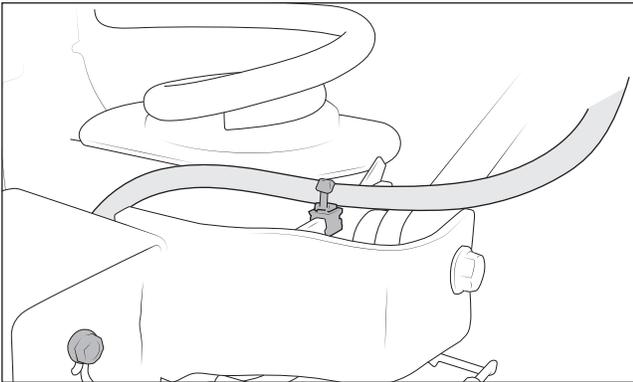


Figure 34

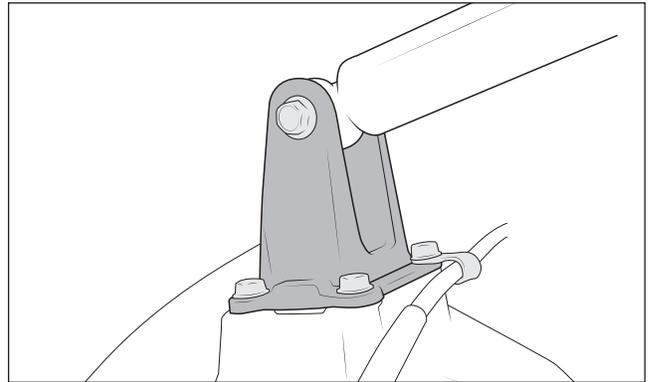


Figure 35

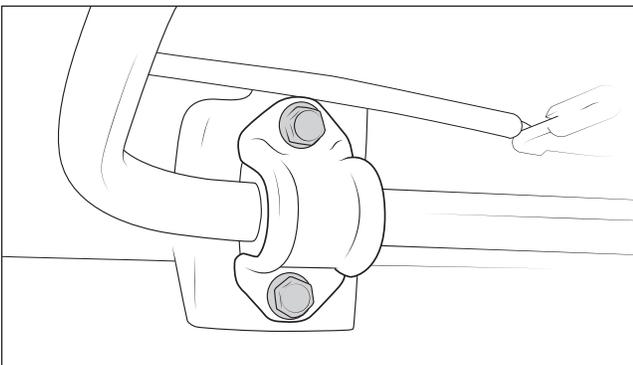


Figure 36

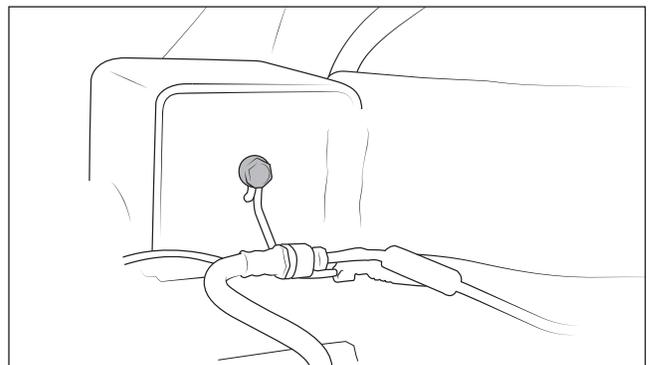


Figure 37



B. REAR SUSPENSION INSTALLATION

1. Install the track bar relocation bracket.
 - a. POWER WAGON ONLY – Drill out an additional hole for the track bar 1” higher than existing (fig. 38). Treat for corrosion.
 - b. Drill the existing hole in the control arm bracket to 1/2” and treat for corrosion (fig. 39).

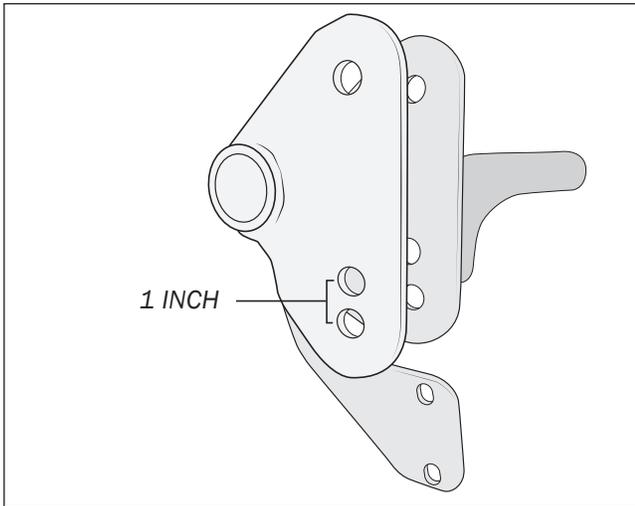


Figure 38

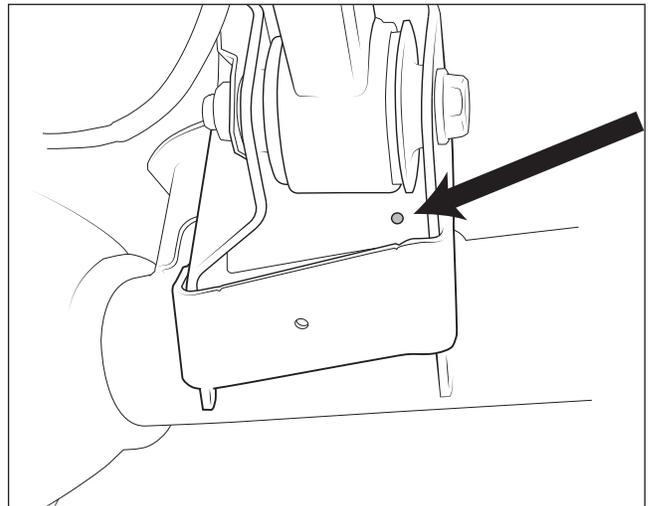


Figure 39

- c. Position the rear track bar relocation bracket on the axle and secure using the supplied hardware (fig. 40). NOTE: You will still have one hole to drill before all hardware can be installed.

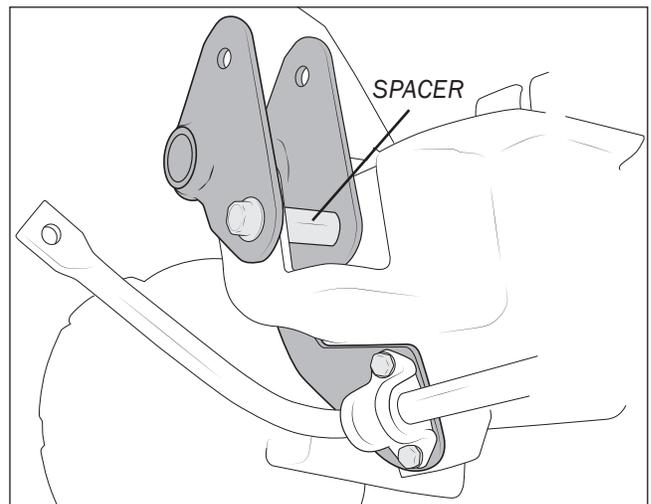
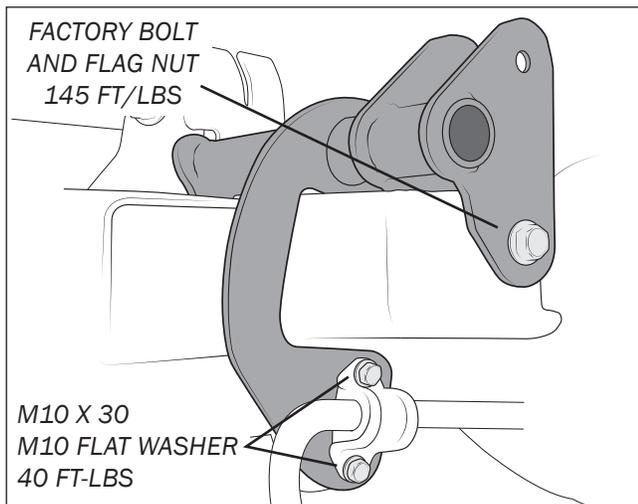


Figure 40



- d. Drill the remaining hole in the control arm bracket and treat for corrosion, then install the remaining bolt (fig. 41).
 - e. Tighten all the track bar bracket bolts and torque to spec (fig 40–42).
 - f. Re-install the brake line bolt at the axle.
 - g. Install the track bar into the track bar relocation bracket passing the bolt through from front of the vehicle to the rear (leave loose at this time).
2. Install the sway bar spacer plate behind the right side of the sway bar with supplied hardware and torque to **40 ft-lbs** (fig. 42).

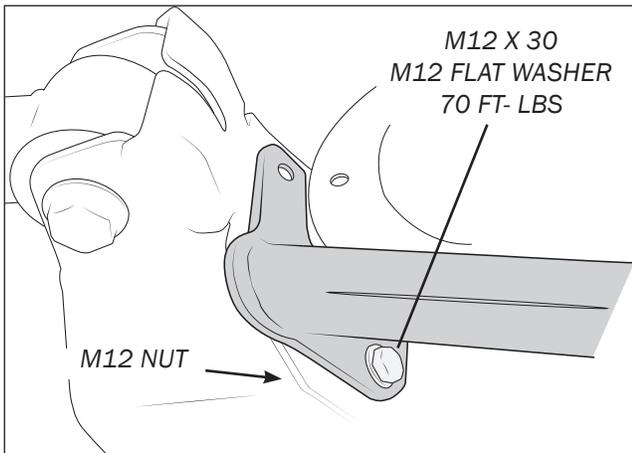


Figure 41

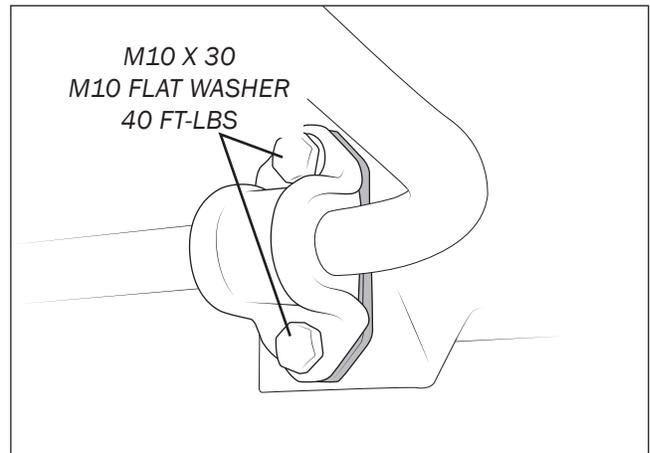


Figure 42

3. Install AEV Power Hop bracket with factory hardware (if equipped). Attach the parking brake cable to the power hop bracket with supplied hardware and torque (fig. 43).
4. Install the bump stop spacers and factory bump stops with supplied hardware and torque to **40 ft-lbs** (fig. 44).

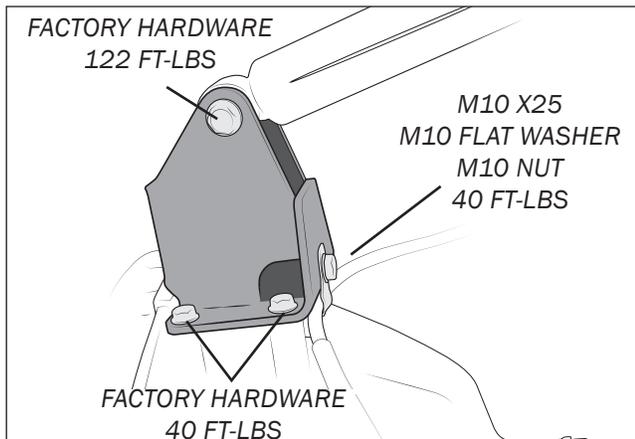


Figure 43

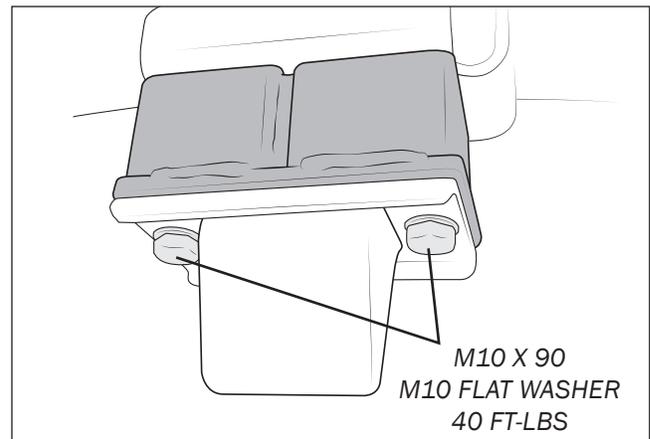


Figure 44



5. Install AEV coil spring spacers with supplied hardware and nut plate (fig. 46).
6. Install the factory coil springs with the factory isolators. **Be sure springs are properly seated.**

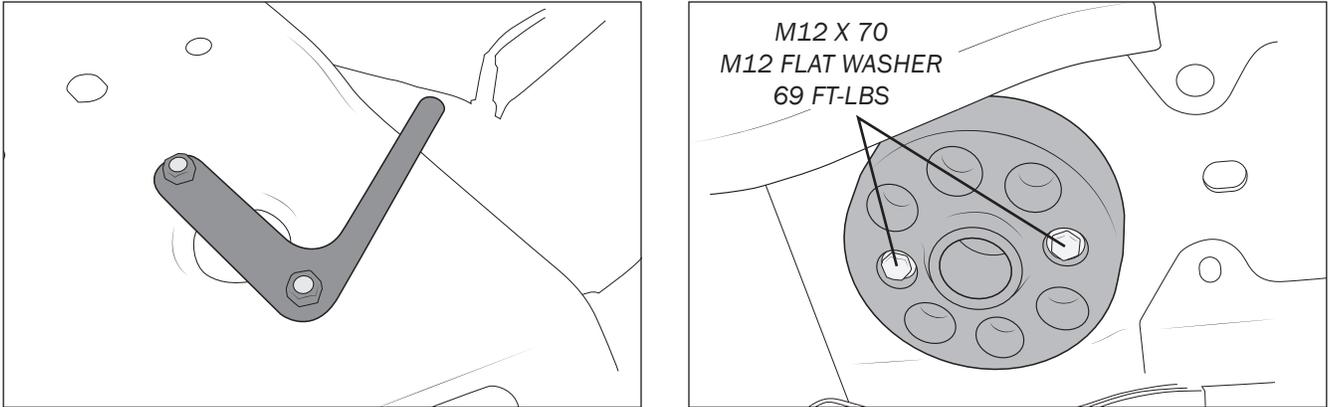


Figure 46 – Left: Tabbed nut-plate, Right: AEV Coil Spacer

7. Assemble the shock bushings as shown (fig. 25) then install AEV shocks. Torque the lower bolt to **136 ft-lbs.**
8. Install AEV sway bar links with the factory nut at the axle end and the supplied hardware at the frame Torque as specified (fig. 47).

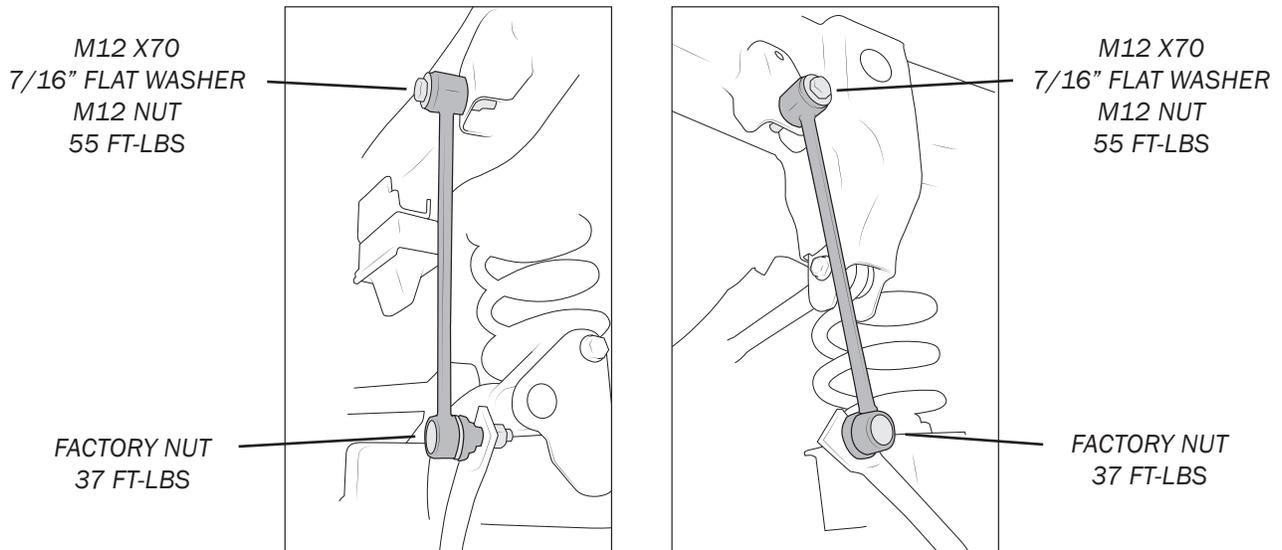


Figure 47



9. Reattach the axle vent to new track bar tower (fig. 48).

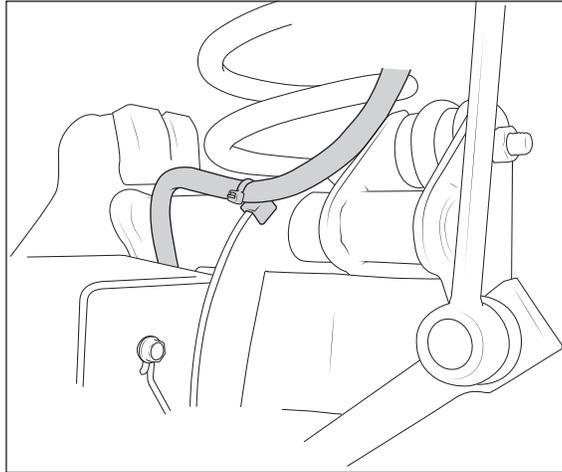


Figure 48

10. POWER WAGON ONLY – Zip tie the locker wiring to the parking brake cable.
11. POWER WAGON ONLY – Check the clearance from the drive shaft to the skid plate. If necessary lower the skid plate brackets as shown and reconnect drive shaft (fig. 49).

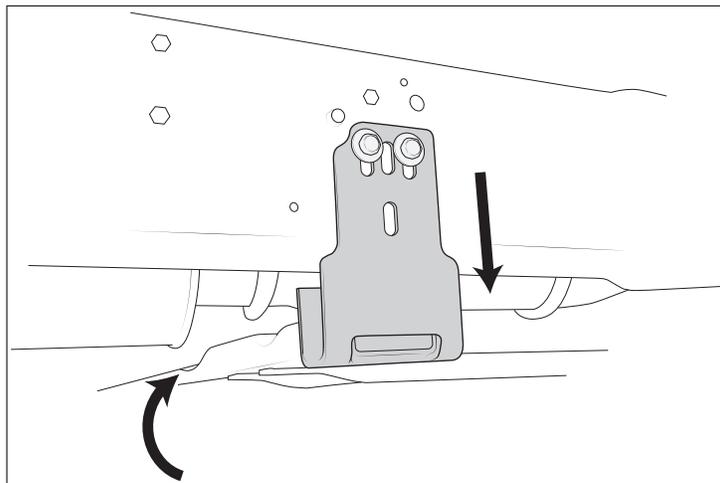


Figure 49

12. Install the wheels and tires.
13. Torque at ride height

Once the vehicle is on the ground at ride height, you will need to torque the following:

- Front radius arm bolts at frame end.
- Front track bar bolts
- Loosen then torque rear control arm bolts at frame and axle end to **229 ft-lbs.**
- Rear track bar bolts (loosen and retighten at frame end). Torque both sides to **145 ft-lbs.**

After everything is tight, drive the vehicle back and forth on flat ground to check steering wheel position. Adjust the drag link to straighten the steering wheel as needed.



III.3500 REAR SUSPENSION

NOTE: For Long Bed configurations you will need PN: NRM43400AA

1. Support the vehicle by the frame until the rear wheels are off the ground.
2. Remove the wheels and tires.
3. Disconnect parking brake cable (fig. 50).
 - a. Note the tension on the forward and rear parking brake cables loosen the brake adjustment nut to just short of the end of the threads.
 - b. Disconnect forward section of the rear brake cable.
 - c. Disconnect rear section of the rear brake cable.
 - d. Disconnect rear brake line pass through fitting.

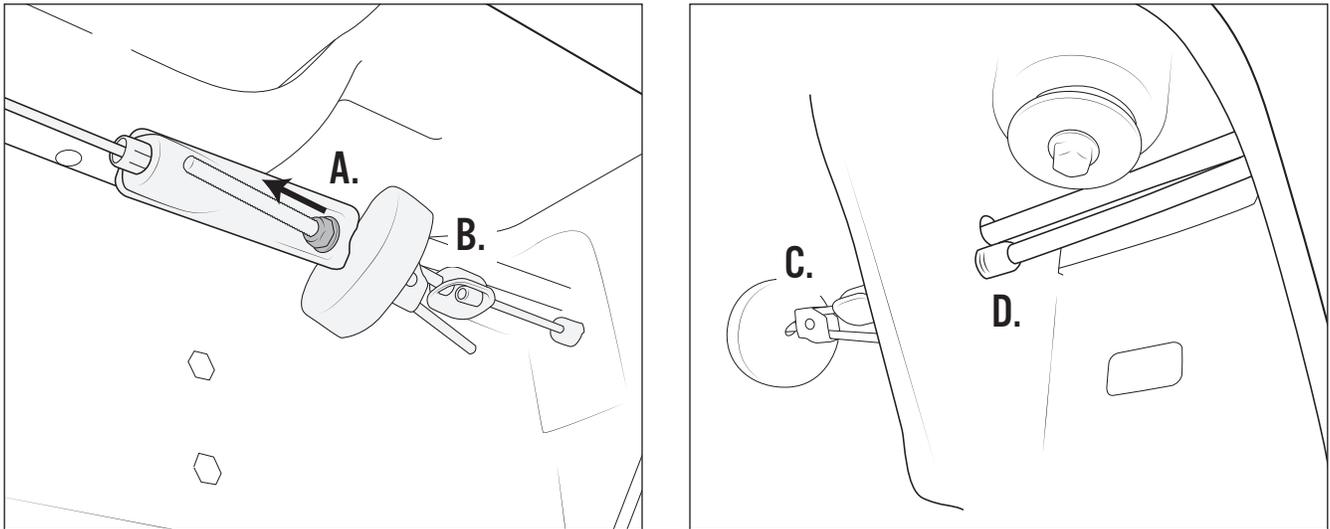


Figure 50

4. Support the axle and remove the shocks, save hardware.
5. Remove the axle U-bolts from one side.
6. Lower the axle enough to insert the lift block (fig. 51).
7. Install the new U-bolts and snug (fig. 51).
8. Repeat steps 4-6 for the opposite side.
9. Torque the U-bolts to **160 ft-lbs.**
10. Remove the rear bump stops.
11. Install the AEV bump stop spacers with supplied hardware and torque to **40 ft-lbs** (fig. 52).
12. Assemble the shock bushings as shown (fig. 26) then install AEV shocks. Torque the lower bolt to **136 ft-lbs.**

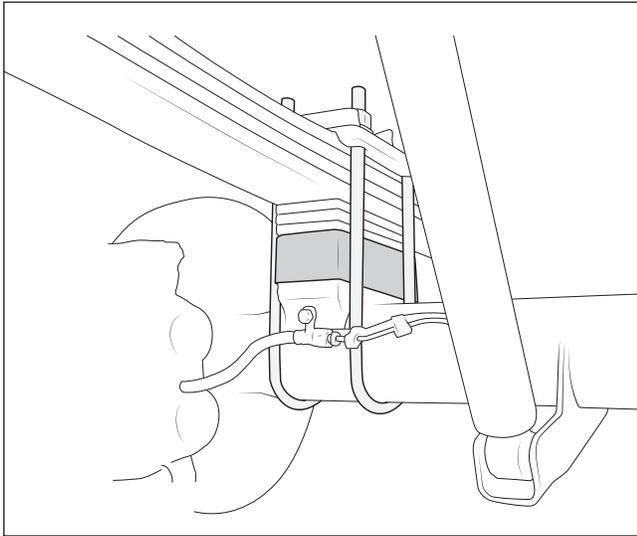


Figure 51

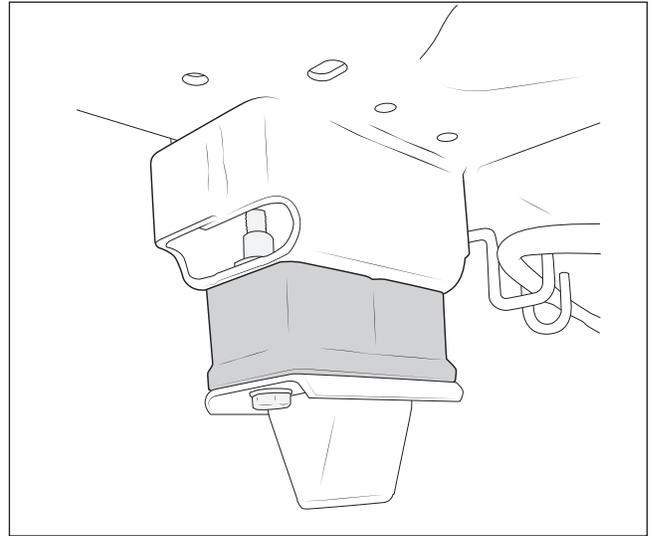


Figure 52

13. Install AEV parking brake line spacer (fig.53).

- a. Install the AEV rear brake line spacer onto the pass-through fitting on the forward part of the rear brake line.
- b. Insert the brake line and spacer back into its original location and secure with AEV provided jam nut using anti-sieze, torque to 14–16 ft-lbs.
- c. Reconnect the rear section of the rear brake line to its OE position.
- d. Reconnect the forward section of the rear brake line to its OE position.
- e. Adjust nut in a tightening direction and set to previously not tension.
- f. Check the operation of the parking brake and adjust as needed to ensure proper tension.

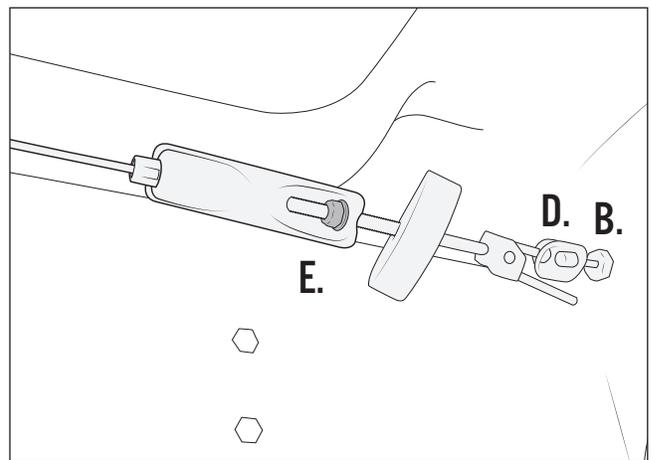
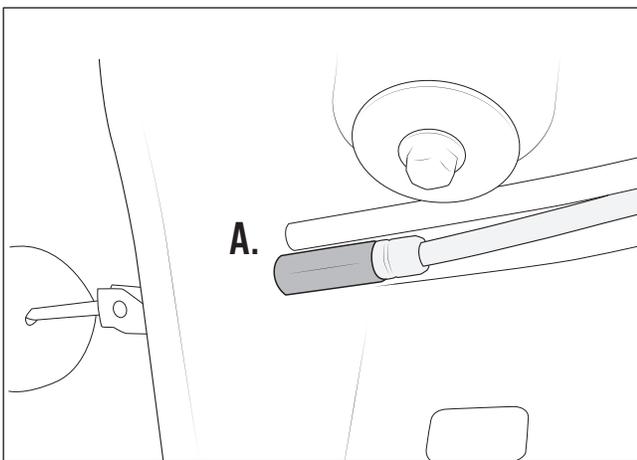


Figure 53

14. Install the wheels.

After everything is tight, drive the vehicle back and forth on flat ground to check steering wheel position. Adjust the drag link to straighten the steering wheel as needed.