



## Work Instruction

LWI 065

# ATLAS™ TORQUE ROD TOWER REPAIR – E-ONE

Issued by: **Engineering**

Date: xx/xx/2018

Rev.: 0

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## I. PURPOSE

This publication is intended for vehicles equipped with the Link ATLAS™ suspension. The repair work will consist of the replacement of the existing lateral torque rod tower with a new upgraded torque rod tower.

## II. SCOPE

This work instruction is provided for information only. It is expected that all work will be performed by qualified technicians, using appropriate industry safety standards. In all cases, safety must be at the forefront when working through this installation process.

The assembler is responsible for all necessary safety precautions:

- Always wear proper personal protective equipment
- Never work alone
- Carefully read and understand the work instructions prior to commencing work
- Do not modify or substitute components. Failure may occur and cause personal injury and/or property damage

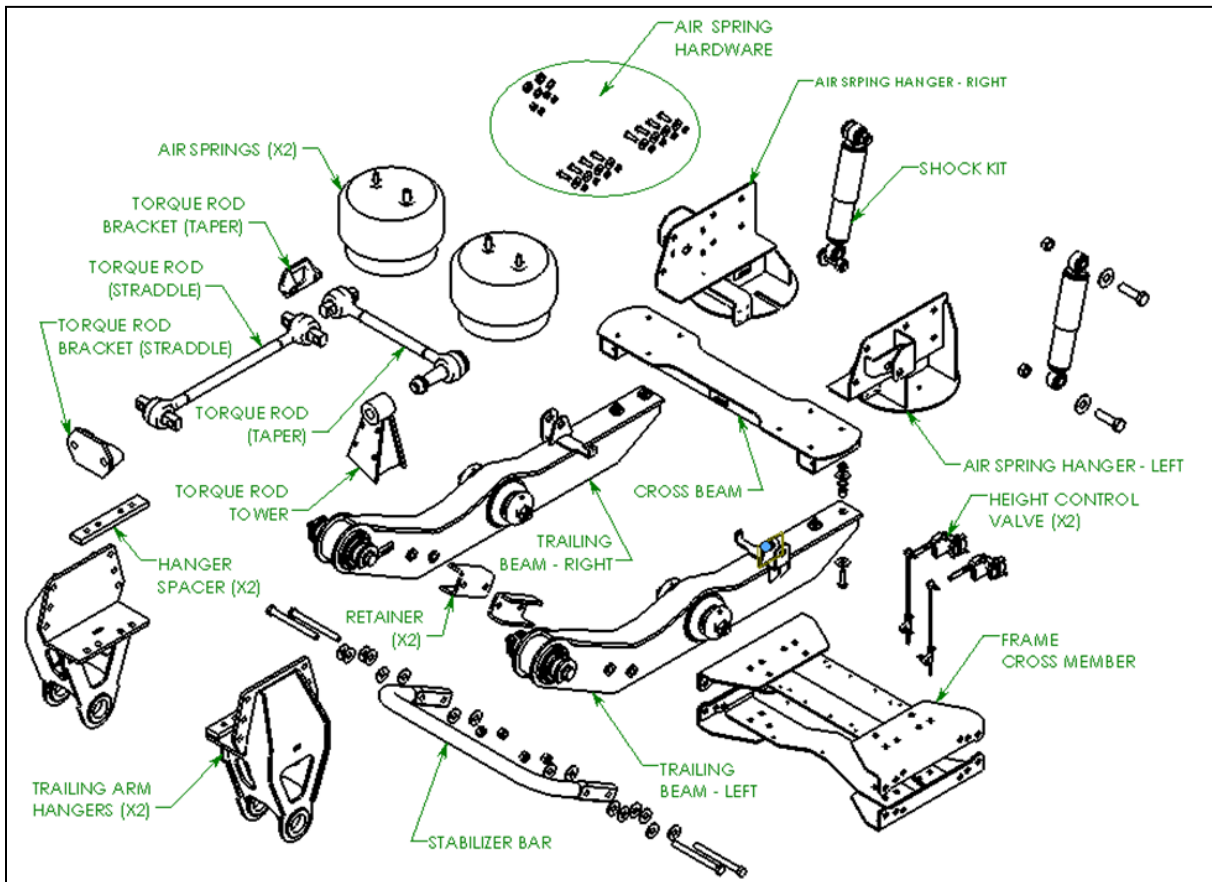
## III. TOOLS REQUIRED

The following tools are required:

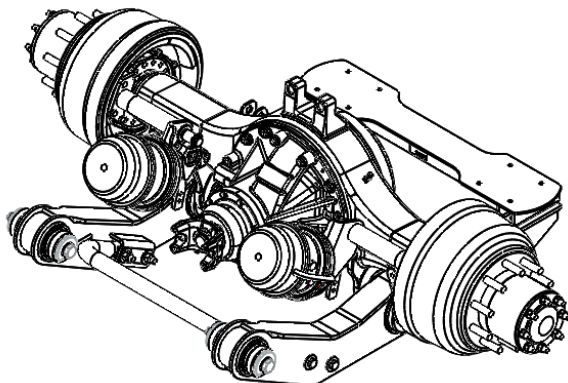
- Chalk
- 3/4", 1-1/2", 1-5/8" Open end box wrench
- 3/4", 1-1/2", 1-5/8" Socket (3/4" drive)
- Ratchet (3/4" drive)
- Torque wrench (3/4" drive)
- Mallet
- Welder
- Grinder
- Plasma Torch



**IV. SUSPENSION ASSEMBLY OVERVIEW**



The repair of the suspension will require the removal of the lower suspension components consisting of the axle, trailing beams, cross beam and the stabilizer bar as one unit.





## V. SUSPENSION DISASSEMBLY

**Caution:** Raise and block up truck frame to ensure vehicle is secure, providing a safe environment while performing any work stated in the following instructions.

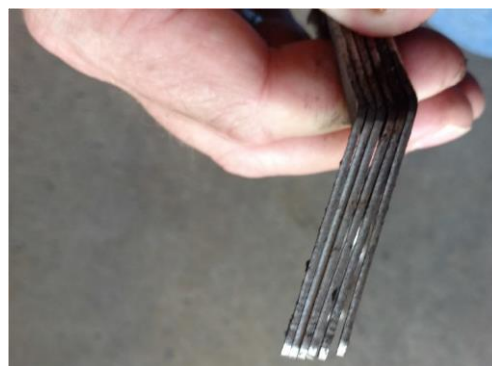
1. Disconnect the air lines plumbed into the height control valve.
2. Disconnect the ABS sensor cables from the rear axle.
3. Disconnect the drive shaft from the rear axle.
4. Remove the lateral torque rod first.

**Note:** To remove the bolts from the longitudinal torque rod mount on the axle, the lateral torque rod has to be removed first.



5. Remove the frame side bracket and hardware of the lateral torque rod.

**Note:** Record the location and number of shims used for proper alignment and reinstallation of the axle and suspension.



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6. Remove the tapered end of the lateral torque rod from the axle tower.



7. Remove the hardware from the axle mount of the longitudinal torque rod.

**Note:** It is not necessary to remove frame mounted side of the longitudinal torque rod.

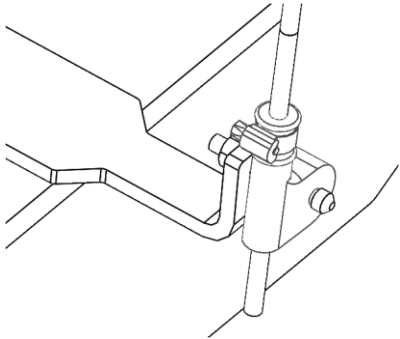
**Note:** Record the location and number of shims used for proper alignment and reinstallation of the axle and suspension.



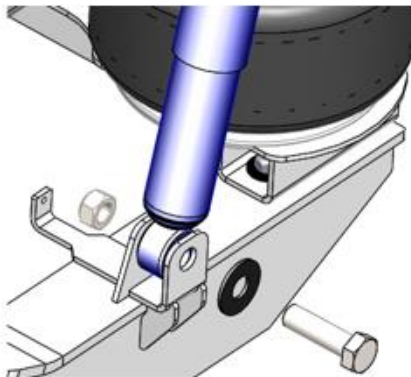
8. Support the axle and suspension with floor jacks before disassembling the suspension any further.
9. Disconnect the height control valve linkage rod from each trailing beam. Pull and slide the rubber boot off of the bolted stud on each L bracket.



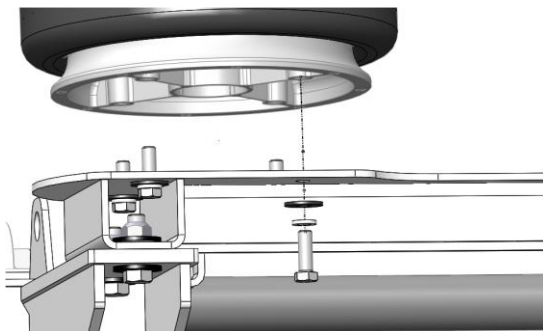
**Note:** Do not loosen the linkage rod rubber boot. Keep the rubber boot in position to preserve the set ride height.



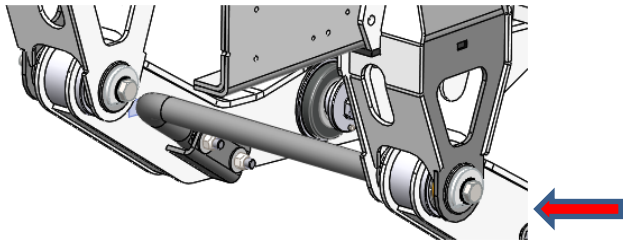
10. Remove the lower shock mounting hardware from each trailing beam.



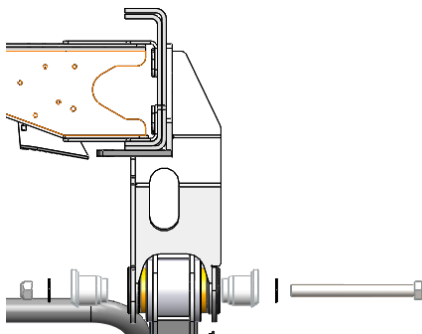
11. Remove the lower hardware of each air spring from the cross beam.



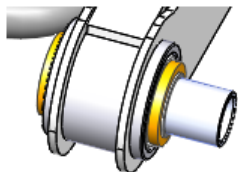
12. Remove the bolt from each trailing beam front bushing.



13. Remove the inside and outside bushing adapter cap at each trailing beam hanger.



14. Remove the sleeve from inside the trailing beam front bushing.



15. Lower the axle and suspension assembly using the floor jacks. Remove assembly from under the truck.





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#### VI. REMOVAL OF EXISTING LATERAL TORQUE ROD TOWER

1. Use the plasma cutter to remove the existing lateral torque rod tower. Use an upward angle of the plasma torch to cut.

**Caution:** Make sure the axle housing is not damaged from the plasma torch.



2. Once the tower is removed, trim the existing material with the plasma torch. Use a downward angle following the profile of the axle housing.

**Caution:** Make sure the axle housing is not damaged from the plasma torch.





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3. Use a grinder to remove any remaining material and weld. Restore the axle housing profile as close as possible to original. Clean enough area for weld prep to install the new torque rod tower.



## VII. INSTALLATION OF NEW TORQUE ROD TOWER

1. Install the E-One alignment bracket fixture into the longitudinal torque rod axle housing. This alignment bracket will ensure the new torque rod tower is installed in the same location as the original.

**Note:** Using the alignment bracket will ensure the same spacer shims can be reused and the axle will not have to be re-centered under the truck.

2. The bottom profile of the torque rod tower will need to be modified to fit the profile of the axle housing. Use a grinder to modify the plates as necessary.



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3. Install the new torque rod tower onto the bolt and ensure it fits to the alignment plate.



4. Secure the new torque rod tower to the alignment plate.

5. Tack weld the torque rod tower to the axle.





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6. Complete the root weld (3/8" fillet) around the base of the torque rod tower.



7. Complete welding the second and third (3/8" fillet) passes. Make sure the corners are welded.

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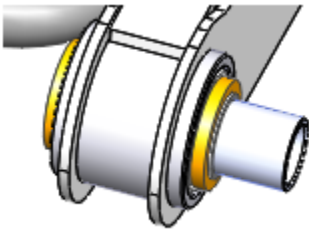
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8. Once all welding is complete, cover the torque rod tower with an asbestos blanket and allow 2 hours for the welded areas to cool down slowly.
9. Once the torque rod tower has cooled, remove the alignment plate from the axle.

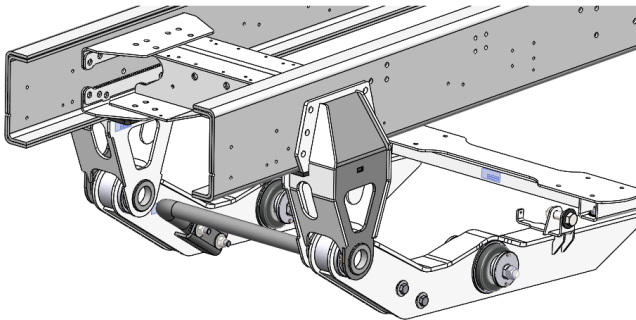
**VIII. Installing the axle and suspension assembly.**

1. Position the axle and suspension assembly underneath the truck using the floor jacks.
2. Ensure each trailing beam outer bushing sleeve is clean. Reinsert the adapter bushing sleeve into each outer sleeve. Ensure the adapter bushing sleeve is not protruding past the outer bushing sleeve in the trailing beam.



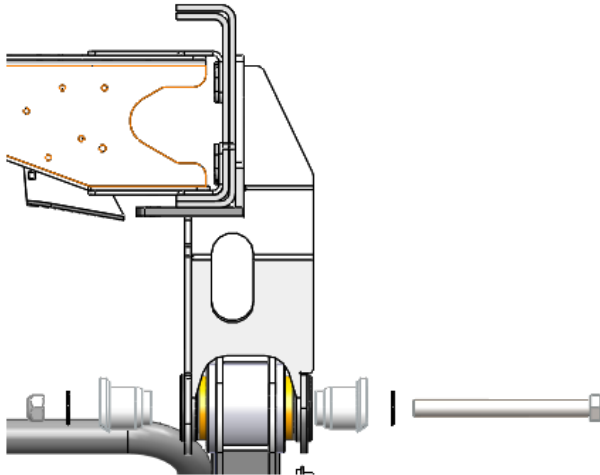
**Note:** Install anti-seize compound on outside of the inner sleeve.

3. Slide each trailing beam bushing end up into the corresponding trailing beam hanger plates on the frame. Align the bores as close as possible. Hold the position of the axle trailing beam assembly for bushing installation.

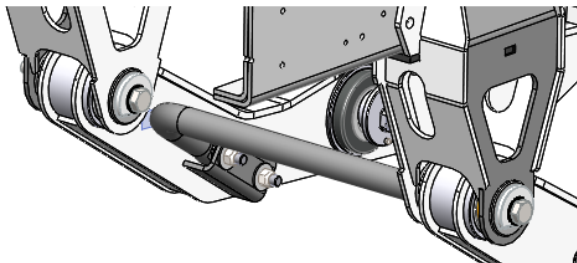


4. Slide each adapter cap into the bore from opposite sides. Fully seat each cap. The cap will also need to line up with the inside diameter of the inner sleeve.

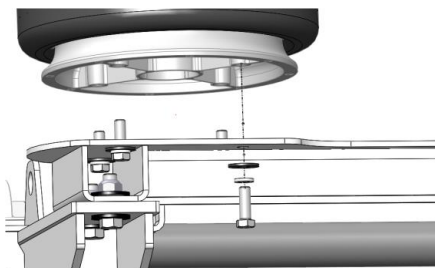
**Note:** The mallet may be needed to achieve a proper fit. Do not force anything. Apply anti-seize compound on each adapter cap.



5. Install the  $\text{\O}1$ " bolt, flat washers and Stover nut.
6. Tighten the hardware.  
*Torque specification: 490 lb-ft [664 Nm]*



7. Secure the bottom of each air spring to the cross beam using the  $\text{\O}1/2$ " bolt, the  $\text{\O}1/2$ " lock washer and  $\text{\O}1/2$ " SAE washer.  
*Torque specification: 30 lb-ft [41 Nm]*





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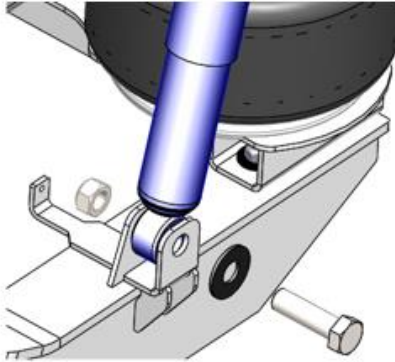
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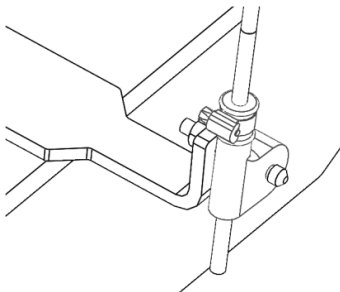
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8. Line up the lower shock eye with the trailing beam shock mounting holes.

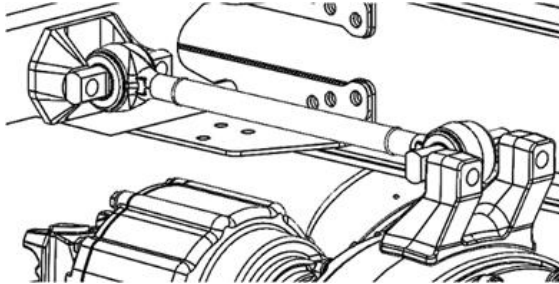


9. Install a  $\text{\O}1$ " flat washer and bolt through the mounting holes and shock eye from the outside.
10. Install the  $\text{\O}1$ " nut onto the bolt stud and tighten.
11. Tighten the hardware.  
*Torque specification: 200 lb-ft [271 Nm]*

12. Slide the rubber boot of each height control linkage rod onto the corresponding stud. Ensure rubber boot is fully seated on the smaller diameter of the stud.

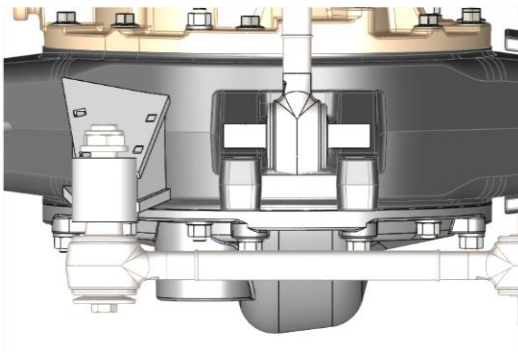


13. Install the longitudinal torque rod and shims onto the axle mount. Torque to OEM specifications.

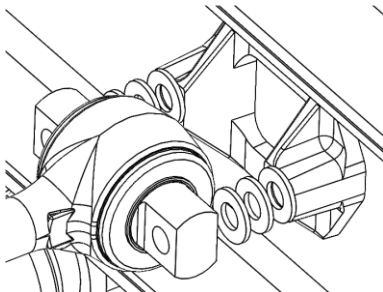


14. Install the tapered end of the lateral torque rod into the torque rod tower. Install the supplied lock nut (1.25-12UNF-2A) on the tapered end.

*Torque specification: 250 ft-lb [271 Nm]*



15. Install the lateral torque rod and shims into the torque rod tower, then the frame side bracket onto the frame. Torque to OEM specifications.



16. Reconnect the ABS sensor cables and the air lines.

17. Reconnect the drive shaft.



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**VII. REVISION HISTORY**

<b>Revision</b>	<b>Date</b>	<b>Details</b>
0		Initial release.