

Inspection and Replacement Criteria for Drag Links

Introduction:

The Federal Motor Carrier Safety Administration requires pre and post trip inspections of Commercial Motor Vehicles as well as periodic comprehensive whole-vehicle inspections. One of the areas for daily inspection is the steering wheel system. The regulation for steering wheel systems, among other things, requires inspection of the drag link ball-and-socket joints for wear, loose and missing hardware, and damage. The complete requirements can be found at <http://www.fmcsa.dot.gov/> .

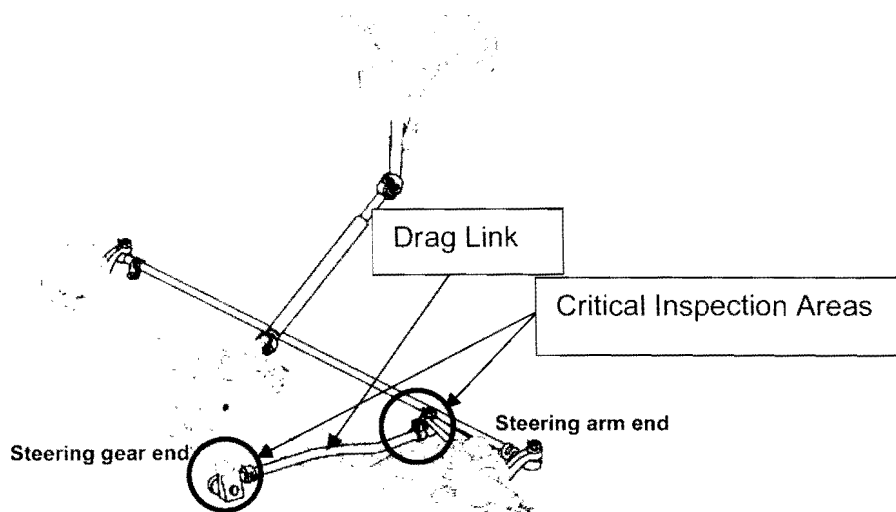


Figure 1

The image above shows the draglink and critical inspection areas. These areas **must be visually inspected daily** for damaged components; missing bolts, nuts, cotter pins; and for damaged sealing boots. Any problems found should be recorded on the daily inspection report.

The drag link ball sockets also require inspection for wear on a quarterly basis or at 25,000 miles (40,234 kilometers), whichever comes first. This is done by pushing and pulling on the drag link by hand to see if there is any movement in the ball socket.

DANGER! Missing or damaged components must be repaired or replaced before placing the vehicle into service. Complete loss of steering may occur!

DANGER! Any movement, other than rotational, measured with hand pressure (i.e., 50 lbs of pressure), requires placing the vehicle out of service for immediate drag link or socket replacement. Complete loss of steering may occur!

Rotational movement is normal and is explained on page 5 of this document.

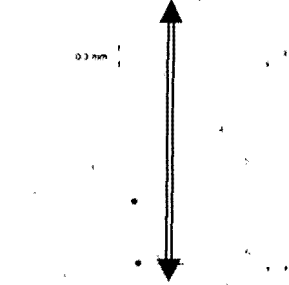
The information that follows provides the correct inspection and replacement criteria for drag links and ball sockets.

Quarterly Ball Socket Inspection:

DANGER! The engine must be off, the park brake applied, and wheels properly chocked when conducting this inspection.

Frequency: Inspect for lash in sockets every three months or 25,000 miles (40,234 kilometers), whichever comes first.

The drag link has spring loaded ball sockets at each end and is attached with a castellated nut and cotter pin.



Any movement along the axis indicated by the line with arrows requires placing the vehicle out of service for immediate drag link or socket replacement.

1. Pressure Spring
2. Joint Shaft
3. Ball Race
4. Boot Opening
5. Sealing Boot with Retaining Ring
6. Housing
7. End Cap

This inspection is done by pushing and pulling on the drag link to see if there is any movement in an axial direction. **Any movement, other than rotational, measured with hand pressure of 50 lbs, requires placing the vehicle out of service for immediate drag link or socket replacement.** Rotational movement is normal and is explained on page 5 of this document. If no movement is detected by hand, the socket is operable.

IMPORTANT NOTE! The front wheels must be pointed straight ahead when performing this inspection.

Step 1: Inspection at the adjustable end:

At the steering arm end (i.e., the adjustable end), **push down and pull up** on the drag link in a direction toward the ground by reaching over the driver's side front tire. **Any movement requires placing the vehicle out of service for immediate replacement of the ball socket.**

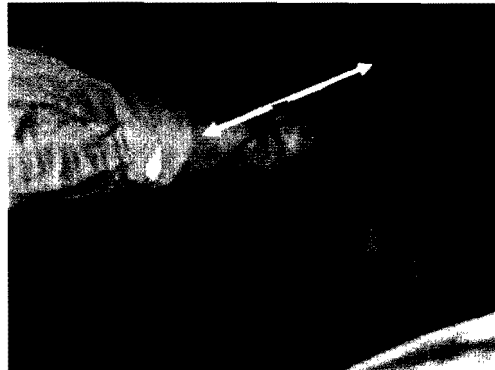
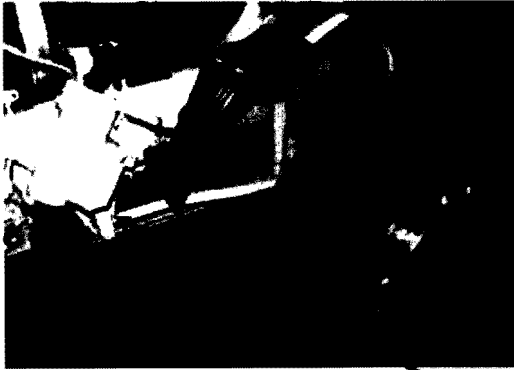


The adjustable end is the rearmost end and is to be checked by pushing down and pulling up on the drag link.

Step 2: Inspection at the fixed end:

At steering gear end (i.e., the fixed end), **push in and pull out** on the drag link in a direction toward the engine. **Any movement, other than rotational, requires placing the vehicle out of service for immediate replacement of the drag link.** Rotational movement is normal and is explained on the bottom of this page.

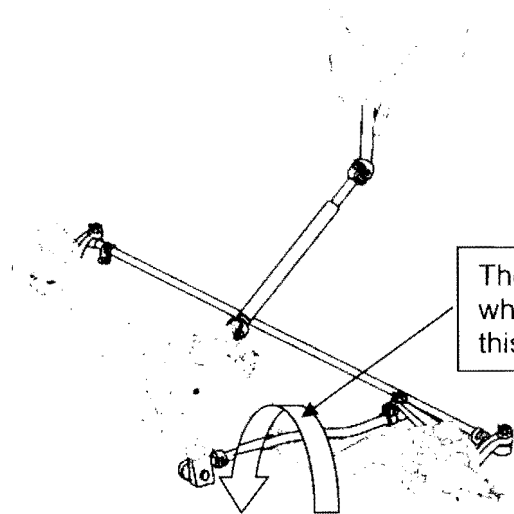
If no movement is detected by hand, the socket is operable.



At steering gear end (i.e., the fixed end), push in toward the engine and then pull back out.

Important Note: Do not use a wrench or other objects to apply leverage when inspecting ball sockets. Applying leverage can damage components, which may ultimately result in loss of steering control.

Important Note: Rotational Movement, movement when twisting or rotating the drag link by hand, is normal.



The drag link can move when twisting by hand; this is normal.

Daily Inspection:



The drag link is located just inside of the driver's side front tire.

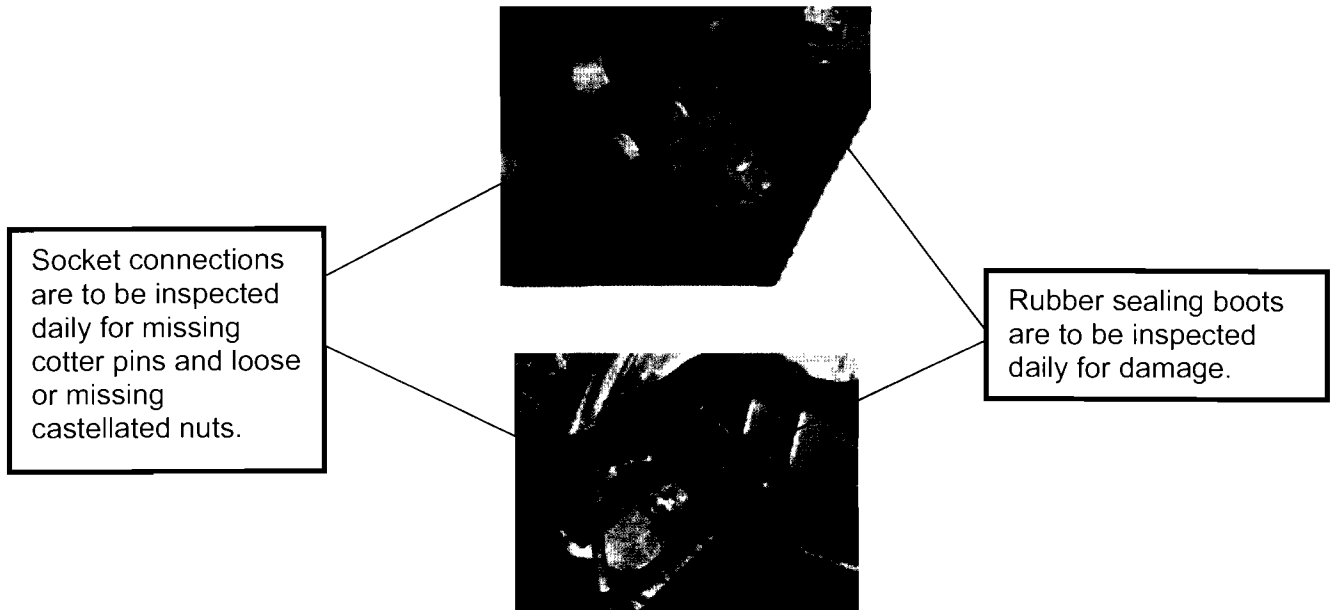


DANGER! The engine must be off, the park brake applied, and wheels properly chocked when conducting this inspection.

Step 1: Inspect for damaged or torn sealing boots and loose or missing attachment nuts and cotter pins.

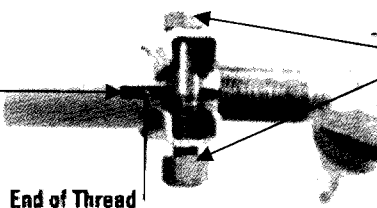
Any form of tear in the rubber sealing boot requires drag link or ball socket replacement.

Missing cotter pins and loose or missing castellated nuts are to be repaired before driving the vehicle.



Step 2: Inspect the adjustable end of drag link for loose or missing pinch bolt and for socket thread engagement.

The threaded, adjustable, end is to be inspected daily. If you can see the end of the socket threads through the slot in the tube, the drag link or tie rod must be adjusted or replaced before driving the vehicle.



Pinch bolt is to be inspected daily for loose or missing pinch bolt and nut. Missing or loose bolts/nuts are to be repaired before driving the vehicle.

General Plan for Reimbursement of Pre-Notification Remedies

Volvo Trucks North America Inc. will administer this plan through its Corporate Regulatory Compliance Department.

The provisions of this plan set forth the procedures to be followed for reimbursing owners (claimants) for the costs associated with repairs performed prior to notification of a recall, to remedy safety defects and non-compliances.

Required Information:

If the claimant's Volvo vehicle is affected by a recall campaign and the claimant had the problem corrected at their own expense prior to receiving notification of the recall, Volvo Trucks North America will reimburse the claimant by check for the reasonable amount paid for the appropriate pre-remedy repairs (i.e. the cost of parts, labor, taxes and disposal fees) in accordance with the provisions set forth in this document. In order to process each claim, the claimant **MUST** submit the following documentation to support the request to the Regulatory Compliance Department as specified in the section titled "*Contact Information*":

- Claimant's name, mailing address, and telephone number; and,
- The recall number, title, and description; and,
- The complete 17 digit Vehicle Identification Number (V.I.N.); and,
- A notarized statement by the claimant that the pre-notification repair addressed the defect specified in the owner notification letter; and,
- A copy of the repair invoice or receipt for the repairs.
 - The invoice / receipt must provide the VIN, total amount paid (i.e. total amount of reimbursement requested by the claimant), and include a breakdown of the parts, labor, and other costs.

Limitation of Claims

Volvo Trucks North America will consider all claims, but may deny all or part of the claim for any of the following reasons:

- The vehicle was not part of the recall;
- The repairs were performed more than one (1) year prior to the date, that Volvo Trucks North America notified the National Highway Traffic Safety Administration or Transport Canada, that a safety related defect or non-compliance exists;
- The repairs were performed more than 10 calendar days after the last mailing of the initial customer notification letter, pertaining to the recall;
- The vehicle was still covered by warranty or extended warranty on the date of repair which would have provided a free repair;
- If the receipt / invoice is not itemized by parts & labor;
- If the repair did not address the safety defect or non-compliance that led to the recall;
- If the repair was not reasonably necessary to correct the safety defect or non-compliance that led to the recall;
- If the claim is fraudulent;
- If the repair was not of the same type (repair, replacement, and refund) as the recall remedy;
- If adequate documentation as described above is not submitted to the appropriate address specified in this plan in the section titled "*Contact Information*".

Contact Information

Submit copies of all documentation supporting your claim to:

Volvo Trucks North America Inc.
Regulatory Compliance Department
Attn: Regulatory Compliance Administrator
P.O. Box 26115
Greensboro, NC 27402-6115

Claims will be processed within 60 days of receipt