



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: PE 08-053
Date Opened: 09/12/2008
Principal Investigator: Peter Kivett
Subject: Drag Link Failure

Date Closed: 01/15/2009

Manufacturer: Volvo Trucks North America
Products: Model Year 2005 Volvo VNL and VN Trucks
Population: 6200

Problem Description: Drag-link failure resulting in a loss of steering control.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	1	6	7
Crashes/Fires:	3	0	3
Injury Incidents:	0	0	0
# Injuries:	0	0	0
Fatality Incidents:	0	0	0
# Fatalities:	0	0	0
Other*:	0	0	0

*Description of Other:

Action: This Preliminary Evaluation is being upgraded to EA09-003

Engineer: Peter Kivett

Date: 01/15/2009

Div. Chief: Richard Boyd *RB*

Date: 01/15/2009

Office Dir.: Kathleen C. DeMeter

Date: 01/15/2009

Summary: ODI has decided to upgrade this PE and conduct field work and testing. Summary numbers in this resume are representative of only the 2005 Model Year vehicles. See the attached report for details.

The Office of Defects Investigation (ODI) opened this Preliminary Evaluation (PE) on September 12, 2008. This PE is based on two reports received by the Federal Motor Carrier Safety Administration (FMCSA) alleging two separate crashes, both involving model year 2005 Volvo VNL and VN trucks. The crashes were allegedly caused by a separation of the steering drag-link. This type of failure results in a total loss of steering control. The subject vehicle's drag links are "maintenance free," designed without provisions to lubricate the steering joint.

Since the opening of the PE, an ODI investigator contacted the fleets identified by FMCSA and visited several others identified within Volvo's warranty and complaint submission received November 7th, 2008. An ODI investigator also visited two trucking fleets alleging a drag link failure resulting in a vehicle crash and took possession of several worn out drag links. ODI has also received reports from State Police as well as a crash reconstruction company, both of whom responded onsite to a crash, and each alleging independently of one another that the drag link failed causing a loss of all steering.

ODI theorizes that moisture can penetrate into the ball and socket assembly of the drag link ball joint (Figure 1), which at some point will compromise the joint integrity.

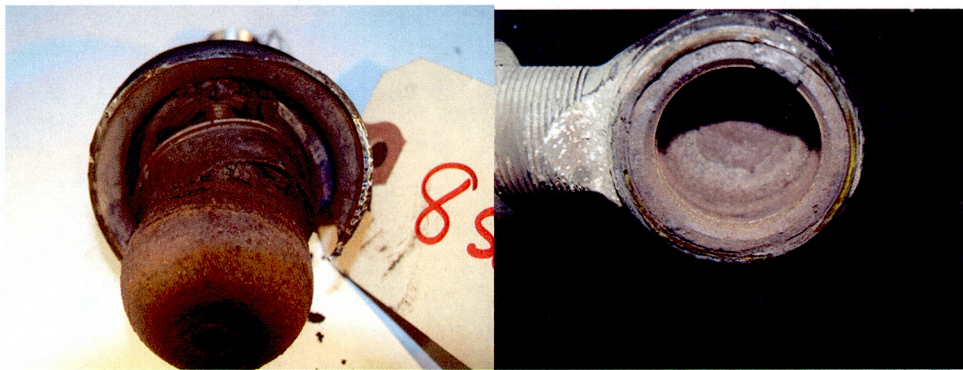


Figure 1: Drag link steering ends recovered from the field with extensive corrosion

Since there is no "zerk" fitting (Figure 2) to flush the ball joint free of foreign contaminants, ODI theorizes that ultimately corrosion causes the ball and socket to wear. Eventually, due to the heavy loads and constant road vibration, this wear causes the ball to detach from the socket resulting in a catastrophic failure of the drag link.

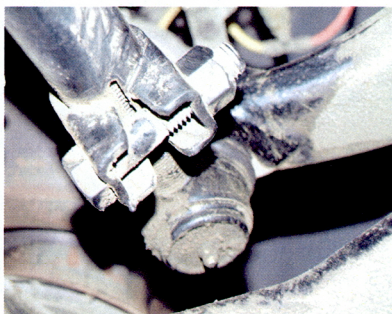


Figure 2: Photo of a peer vehicle that uses a "zerk" fitting

ODI was notified by Volvo that the supplying manufacture of the drag link was changed from "TRW" Fahrwerksysteme GMBH & CO.KG **part # 8079525** to Lemforder Corporation **part # 20371221** for the 2006 model year built vehicles. ODI is also aware that the Lemforder's supplied drag link steering joint increased in size. The ball and stud outer dimension increased from 35mm to 40mm, featuring a more robust drag link.

Volvo's position is that this is a "wear-out" part, that is to be inspected with all front suspension and steering components. Volvo also has published a Service Bulletin explaining how to manually check for looseness, by testing for axial movement along the axis of the ball stud (Service Bulletin #LKN-105). Furthermore, Volvo claims there are warnings to the operator; loose feeling in the steering "play" and possible noise "popping" within the steering.

In summary, ODI has reports of total drag link separations. Volvo has certain maintenance requirements which they believe would allow the inspector to detect the loose ball socket in the drag link long before a total failure would ever occur.

In order to fully understand whether a defect exists, ODI is upgrading this investigation to an Engineering Analysis (EA).