

# **PE06-013 Closing Report**

## **Wheel Separations in Model Year 2004 - 2006 Volvo Truck North America (VTNA) Model VHD Trucks**

### **CONTENTS**

- (1) Subject**
- (2) Background**
- (3) Population**
- (4) Description – Disc Wheel Spacer**
- (5) ODI Investigation**
- (6) ODI Assessment**
- (7) VTNA's Actions**
- (8) Conclusion**

## **(1) Subject**

This report addresses the originally-installed disc wheel spacer(s) in certain aluminum wheel equipped model year 2004-2006 Volvo Truck North America (VTNA) VHD vehicles.

VTNA has described the VHD model as "a vocational truck primarily used in applications such as construction (dump and concrete mixer trucks) and refuse (trash removal and disposal). In these applications, the truck will experience severe conditions such as driving off road, up steep grades and over rough terrains."



Volvo Truck VHD Model Vehicle Source: Volvo Truck North America Website

## **(2) Background**

On September 20, 2005, ODI received a Vehicle Owner's Questionnaire (VOQ 10137044) reporting several incidents in which the rear wheel and hub assembly had either loosened or separated from a 2004 model year VTNA VHD-84F truck.

On March 16, 2006, ODI opened PE06-013 based on VOQ 10137044, ODI's Early Warning Reporting (EWR) data, and a review of VTNA's August, 2005 Service Bulletin SP 771-003 advising owners to remove the Aluminium [sic] Disc Wheel Spacer because "thermal distortion of this spacer may cause uneven torque of the wheel nuts."

On March 21, 2006, ODI sent VTNA a Request for Information; VTNA responded with the requested information on May 5, 2006.

On June 9, 2006, VTNA filed Defect Information Report 06V-213.

### **(3) Population**

VTNA has identified 872 currently unaddressed (\*) 2004-2006 VHD model vehicles equipped with aluminum wheels and suspect disc wheel spacers which were sold in the United States and which are the subject of Campaign 06V-213.

(\*) VTNA has advised ODI that the originally-installed suspect disc wheel spacer has been removed from 274 vehicles as directed by VTNA Service Program SP 771-003 issued in August, 2005.

VTNA has identified an additional 222 currently unaddressed vehicles which were sold in Canada.

### **(4) Description – Disc Wheel Spacer**

The disc wheel spacer is an owner-specified option (at VTNA) which is installed between the hub and the wheel and/or between the mating wheels in dual wheel assemblies and is intended reduce or eliminate corrosion and/or fretting by providing an insulating barrier between the clamped wheel end components.

VTNA has used the term "disc wheel spacer" to describe this component. ODI is aware that the terms "wheel saver" or "separator plate" have also been used in the trucking industry to describe this component.

### **(5) ODI Investigation**

ODI's investigation consisted of requesting and reviewing information that VTNA provided and discussing ODI's observations with VTNA.

### **(6) ODI Assessment**

ODI's investigation indicates that the wheel end clamp in certain VHD model vehicles had experienced a loosening of the wheel end clamp joint that allowed the affected wheel(s) to displace circumferentially (loosen) relative to the hub and subject the wheel mounting studs to bending and shear loads.

A loosened wheel end clamp joint imposes reverse bending loads on each stud each time that the affected wheel rotates causing the studs to bend, crack and eventually fracture.

Wheel end separations pose two risks:

- (1) A wheel and tire assembly that separates poses a risk of property damage, personal injury, and possibly death to other users of the roadway.
- (2) The affected vehicle may lose stability.

VTNA has also informed ODI that certain VN series tractors intended primarily for line-haul service have also been equipped with disc wheel spacers. Both VTNA and ODI will continue to monitor the performance of wheel ends and disc wheel spacers in VN series vehicles to evaluate whether further action indicated for these vehicles.

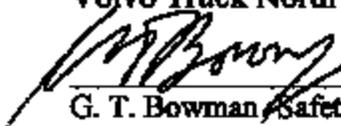
**(7) VTNA's Actions**

On June 9, 2006, VTNA filed Defect Notice 06V-231 stating that dealers will replace the originally installed disc wheel spacers with new disc wheel spacers, inspect and, if necessary replace, any damaged mating wheel end equipment (wheels, studs, and/or hubs).

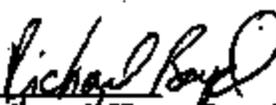
**(8) Conclusion**

This investigation is closed.

VTNA has taken a responsive action to address a potentially significant factor (replacement of the original disc wheel spacer) that appears to have caused or contributed to wheel loosening and separations in model year 2004-2006 VHD Volvo Truck North America trucks.

  
 G. T. Bowman, Safety Defects Engineer

6/20/06  
 Date

I Concur:   
 Chief, Medium & Heavy Duty Truck Division

6/20/06  
 Date

  
 Director, Office of Defects Investigation

6/20/06  
 Date