



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

ODI RESUME

Investigation: PE 07-021
Date Opened: 04/19/2007 Date Closed: 08/09/2007
Principal Investigator: Tom Bowman
Subject: Front Suspension Coil Spring Ejection

Manufacturer: Mercedes-Benz USA, Llc.
Products: 1996-1999 Mercedes Benz E-Class
Population: 172,781

Problem Description: Front suspension coil spring support may corrode, flex, and fracture which can eject the front coil spring into the roadway at highway speeds.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	12	39	51
Crashes/Fires:	0	0	0
Injury Incidents:	0	0	0
# Injuries:	0	0	0
Fatality Incidents:	0	0	0
# Fatalities:	0	0	0
Other*:	0	29	29

*Description of Other: Warranty claims alleging spring ejection.

Action: Close this Preliminary Evaluation

Engineer: Thomas Bowman

Date: 08/09/2007

Div. Chief: Richard Boyd

Date: 08/09/2007

Office Dir.: Kathleen C. DeMeter

Date: 08/09/2007

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Summary: ODI has focused this investigation on assessing the risks posed by a separated spring as (1) a road hazard and (2) the potential for vehicle control to be compromised after the front coil spring has been ejected from its intended position in the vehicle. Both risks are associated with corrosion, flexing, and fracture of the upper front suspension mounting bracket. Time-in-service failure rates are notably higher in salt belt states since corrosion is a primary contributor to the failure mode.

Since a number of incidents have occurred while the vehicle was being operated, ODI is skeptical that owners can always detect the subtle side to side difference in ride height and/or inspect or notice that the upper suspension bracket has been compromised by corrosion.

(1) Road Hazard - Although the (approx. 7 lb.) front suspension spring that may be ejected at highway speeds could pose a serious road hazard to pedestrians and other vehicles, the occurrence rate has been low (.03% based on 51 reported incidents occurring and an initial population of 172,781 vehicles after 9 - 12 years of use / exposure) and there are no known injuries, fatalities, or property damage reports due to an ejected spring. Also, many of the 51 incidents occurred at low speed or while the vehicle was stopped or parked.

(2) Vehicle Control - Vehicle handling and control could be affected by the fracture of the upper suspension mount and/or the associated spring ejection. ODI first identified its concern about corrosion in the upper suspension bracket of subject vehicles in 2002, at which time Mercedes provided a video that showed that a vehicle could be steered, stopped, and controlled through various maneuvers at high speeds with a front coil spring completely missing from the vehicle. During PE07-021, in addition to reviewing the 2002 video-tape, ODI engineers drove an exemplar vehicle with the spring removed and simulated various combinations of steering angles to assess whether there were any possible conditions / displacements in which the separated spring might interfere with the wheels. In a vehicle with the front spring removed, the top of the wheel can lightly contact the bottom area of the wheel fender during high angle turns typically associated with slower speed maneuvers such as city driving. The light tire contact generated an obvious "grinding" noise and would likely abrade or bend the edge of the fender with continued use. However, the extent of the interference was not sufficient to affect vehicle steering and does not occur at smaller turning angles associated with highway driving.

ODI has not identified a safety related defect trend at this time. Further use of agency resources does not appear to be warranted. Accordingly, this investigation is closed. The closing of this investigation does not constitute a finding that a safety related defect does not exist. The agency reserves the right to take further action if future circumstances warrant.