



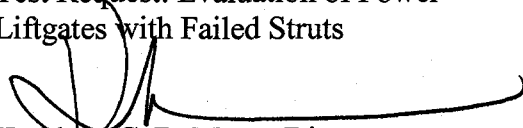
Memorandum

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

Subject: Test Request: Evaluation of Power
Liftgates with Failed Struts

Date: March 7, 2007

From: 
Kathleen C. DeMeter, Director
Office of Defects Investigation

Reply to: NVS-212mjl
Attn of: EA06-020

To: Michael Monk, Director
Vehicle Research and Test Center

By this memorandum, the Office of Defects Investigation (ODI) requests the Vehicle Research and Test Center (VRTC) to conduct the testing and evaluation as described below.

BACKGROUND: ODI is conducting an Engineering Analysis (EA06-020) of the failure of the liftgate gas struts in model year (MY) 2004 and 2005 Toyota Sienna vehicles. The dual liftgate struts have damaged gas seals that may cause the liftgate to drop or close unexpectedly. The power liftgate may automatically and immediately power-close at the completion of the power-open command. The subject vehicle power liftgate systems are equipped with two safety features, a motor speed sensor and a contact switch attached to edge of liftgate, both of which reverse the direction of the liftgate during closing when an obstruction is met. As of December 2006, there have been 14 reported injuries associated with the alleged problem on the subject vehicles.

OBJECTIVES: The objective of this test program is to evaluate and compare the performance of the power liftgate system with functional struts to a system with failed struts obtained from subject vehicles (use one set of good struts and two sets of bad struts). Also, other peer vehicle models equipped with power liftgate systems, including MY 2005-2006 Ford Freestar/Mercury Monterey (subject of NHTSA Recall No. 06V-069), should be evaluated for comparison.

METHODOLOGY/TEST PROCEDURES: VRTC should determine the methodology and test procedures necessary to meet the objectives of this test program. However, below are a few suggestions.

1. Measure the force and displacement of the initial drop of a liftgate with failed struts when the liftgate is power-opened.

2. Evaluate the operation of a liftgate with failed struts when the liftgate is manually opened. Evaluation should include operation of liftgate when manually opened to a full open position, as well as when manually opened to a less than full open position. The liftgate should be evaluated both when the power liftgate feature is activated and when it is deactivated.
3. Measure the force needed to activate the motor speed sensor auto-reverse safety feature during power-close at various locations, beginning after the initial drop to about 10 inches from the fully closed-position.
4. Measure the force needed to activate the contact switch auto-reverse safety feature during power-close.

ODI requested Toyota Motor North America to provide its design and performance requirements of the liftgate struts and power liftgate system, and expects a reply in late March 2007. ODI will provide any relevant information from that submission to VRTC when it becomes available.

ADDITIONAL INFORMATION: The project engineer at ODI, Michael Lee, will discuss the details of this test request with VRTC and will assist in obtaining failed struts from subject vehicles.

SCHEDULE: We would like to have the testing completed by May 15, 2007.