

**Toyota Motor Engineering &
Manufacturing North America, Inc.**

Vehicle Safety & Compliance
Liaison Office
Mail Code: S-104
19001 South Western Avenue
Torrance, CA 90501

June 5, 2013

Ms. Nancy Lummen Lewis
Associate Administrator for Enforcement
National Highway Traffic Safety Administration
Attn: Recall Management Division (NVS-215)
1200 New Jersey Ave, SE
Washington, D.C. 20590

Re: Certain Toyota Prius and Lexus HS250h Brake Booster Pump Assembly
Part 573, Defect Information Report

Dear Ms. Lewis:

In accordance with the requirements of the National Traffic and Motor Vehicle Safety Act of 1966 and 49 CFR Part 573, on behalf of Toyota Motor Corporation ["TMC"], we hereby submit the attached Defect Information Report concerning a voluntary safety recall of certain Toyota Prius and Lexus HS250h vehicles to address an issue with the brake booster pump assembly.

Should you have any questions about this report, please contact me at (310) 468- 8555.

Sincerely,



Abbas Saadat
Vice President
Toyota Motor Engineering & Manufacturing
North America, Inc.

Enclosures
Part 573, Defect Information Report

DEFECT INFORMATION REPORT

1. Vehicle Manufacturer Name:

Toyota Motor Corporation [“TMC”]
1, Toyota-cho, Toyota-city, Aichi-pref., 471-8571, Japan

Affiliated U.S. Sales Company

Toyota Motor Sales, USA, Inc. [“TMS”]
19001 South Western Avenue, Torrance, CA 90501

Manufacturer of Brake Booster Pump Assembly:

ADVICS CO., LTD
2-1, Showa-cho, Kariya-city, Aichi-pref., 448-8688, Japan
Phone: +81-566-63-8000
Country of Origin: Japan

2. Identification of the Vehicles Potentially Containing the Defect:

Based on production records, we have determined the involved vehicle population as in the table below.

Make/ Car Line	Model Year	Manufac- turer	VIN		Production Period
			VDS	VIS	
Toyota/ Prius	2010	TMC	KN3DU	A0001044 – A0067875 A1000089 – A1092031 A5000051 – A5076070	March 31, 2009 through October 9, 2009
Lexus/ HS250h	2010		BB1BA	A2000186 – A2009302	June 19, 2009 through October 9, 2009

Note: Although the involved vehicles are within the above VIN range, not all vehicles in this range were sold in the U.S.

No other Toyota or Lexus vehicles use the same brake booster pump assembly as the subject vehicles.

3. Total Number of Vehicles Potentially Containing the Defect:

87,060 units

4. Percentage of Vehicles Estimated to Actually Contain the Defect:

Unknown

5. Description of Problem:

The subject vehicles are equipped with brake pressure accumulators consisting of a metal plunger containing brake fluid encased in a metal housing. The plunger is designed with metal pleated bellows to allow for motion. Nitrogen gas is sealed between the plunger and housing. There is a possibility that a fatigue crack could develop in the bellows due to the vertical vibration of the plunger while driving. If this occurs, nitrogen gas could leak into the brake fluid and gradually cause the brake pedal stroke to become longer, resulting in decreased hydraulic pressure. Under certain circumstances, this condition could affect stopping distance and increase the risk of a crash.

6. Chronology of Principal Events:

May 2010 - October 2011

Toyota received a field report from the U.S. market indicating ABS, TRAC, VSC and brake warning lamp illumination and malfunctioning brakes. Toyota and the supplier examined the returned brake booster pump assembly and found that there was a fatigue crack on the metal pleated bellows of the plunger in the brake accumulator. No abnormality was found in dimensions or materials used. Toyota theorized that the crack on the bellows could have been caused by excessive impact forces repeatedly exerted onto the bellows by the metal housing of the brake accumulator while driving on very rough roads.

Toyota received additional field reports along with failed brake booster pump assemblies. Toyota performed a vehicle driving test using a brake booster pump assembly intentionally created with a fatigue crack on the bellows of the plunger to confirm the phenomenon reported from the field. The results of this test showed that an abnormal squeak noise occurred in the engine compartment and the brake pedal feel gradually became softer. In addition, the brake accumulator assembly and the plunger manufacturing processes were investigated at the supplier; however, no abnormalities or changes which could lead to the crack were identified. Several returned brake booster pump assemblies were examined and revealed that the cracks

seemed to occur near certain weld points on the plunger. In addition, in all parts that were examined, these weld points were located in the lower side of the accumulator. (the accumulator is oriented horizontally.) Toyota theorized that the location of the weld points in this area could create a tendency for cracks to develop near the weld points.

November 2011 – September 2012

Toyota conducted durability testing using two brake accumulators in which one contained a plunger manufactured with weld points located in the upper side of the accumulator and the other containing a plunger with weld points in the lower side. The results of this testing showed that cracks developed on the lower side of the accumulator in both cases. In addition, through the examination of additional field returned parts, it was found that the weld points of the plungers in some accumulators were located in the upper side of the accumulator even though cracks were present on the lower side. Toyota concluded that the location of the weld points of the plunger in the accumulator was not a contributor to the occurrence of the cracks.

Toyota recovered brake booster pump assemblies from in-use vehicles for further investigation to identify the cause of the cracking. A shaker test was performed on several of these parts and the amount of impact force exerted onto the bellows was measured. The results of these tests showed that some accumulators experienced larger impact forces despite the same test conditions. Upon further examination of the tested accumulators, it was confirmed that there was variation in the amount of clearance between the metal housing and the bellows. Toyota confirmed that the amount of clearance was related to the amount of impact force exerted onto the bellows.

October 2012 – May 2013

Toyota conducted additional durability testing using several brake accumulators intentionally created with different clearances between the accumulator housing and the bellows. The results of these tests confirmed that, if the amount of clearance is large, large impact forces may be exerted onto the metal bellows, which could result in gradual damage to the bellows. Toyota further analyzed the recovered in-use brake booster assemblies, and confirmed that a small number of brake boosters equipped with accumulators with large clearances were installed in vehicles produced before September 2009, when an updated brake accumulator, which was developed and introduced for other new models, was implemented in the subject vehicle production.

May 31, 2013

Based on the above investigation, Toyota decided to conduct a voluntary safety recall campaign on the subject vehicles to replace the brake booster pump assembly.

7. Description of Corrective Repair Action:

All known owners of the subject vehicles will be notified by first class mail to return their vehicles to a Toyota or a Lexus dealer for inspection. The dealer will inspect the brake booster pump assembly, and, if it is equipped with an affected accumulator, the dealer will replace the brake booster pump assembly with an improved one.

Reimbursement Plan for pre-notification remedies

The owner letter will instruct vehicle owners who have paid to have this condition remedied prior to this campaign to seek reimbursement pursuant to Toyota's or Lexus's General Reimbursement Plan.

8. Recall Schedule:

Notifications to the owners will begin in late July 2013 and be completed by late August 2013. Copies of the draft owner notification will be submitted as soon as it is available.

9. Distributor/Dealer Notification Schedule:

Notifications to distributors/dealers will be sent in mid-July, 2013. Copies of dealer communications will be submitted as they are issued.