TOYOTA
TOYOTA TECHNICAL CENTER, USA, INC.

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DEFECTS INVESTIGATION

August 31, 2000

Mr. Kenneth N. Weinstein
Associate Administrator for Safety Assurance – NSA-01
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

00V-256 (01)

Re: Toyota Echo brake vacuum port
Part 573, Defect Information Report

Dear Mr. Weinstein:

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 a Defect Information Report concerning a safety recall of certain 2000 model year Toyota Echo vehicles to address a possible brake vacuum port problem.

Should you have any questions about this report, please contact Mr. Mitch Kato of my staff at (202) 775-1707.

Sincerely,

TOYOTA TECHNICAL CENTER U.S.A. INC.

Takashi Yoshie
General Manager

TY:mk
Attachment

1850 M Street, NW, Washington, D.C. 20036 (202) 775-1707 FAX: (202) 463-6513

DEFECT INFORMATION REPORT

OOV-256 (02)

1. Vehicle Manufacturer Name:

Toyota Motor Corporation ["TMC"]
1, Toyota-cho, Toyota-city
Aichi-ken, 471-8571 Japan

Affiliated U.S. Sales Company

Toyota Motor Sales, USA, Inc. ["TMS"]
19001 South Western Avenue
Torrance, CA 90509

2. Identification of Affected Vehicles:

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

Make/ Car Line	Model Year	Manufac-turer	VIN		Production Period
			VDS	VIS	
Toyota Echo	2000	TMC	AT123	0001111 - 0053671 5000099 - 5018894	August 17, 1999 through March 1, 2000
			BT123	0001078 - 0054467 5000006 - 5021172	

Note :

(1) Only vehicles registered in the states of Alaska, Colorado, Idaho, Illinois, Iowa, Kansas, Maine, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New York, North Dakota, South Dakota, Vermont, Wisconsin, and Wyoming, are affected.

(2) Although the involved vehicles are within the above VIN ranges, not all vehicles in these ranges were sold in the U.S.

3. Total Number of Vehicles Potentially Affected:

4,530

4. Percentage of Vehicles Estimated to Actually Experience Malfunction:

Unknown, but very low

5. Description of Problem:

When the vehicle is operated at highway speed, without engine warm-up prior to driving, and in extremely low temperature with very infrequent brake operation, there is a possibility that condensed moisture from a Positive Crankcase Ventilation ["PCV"] port might seep toward the brake vacuum port inside the intake manifold and start to freeze. If this condition continues, the amount of ice at the vacuum port could increase gradually, and in the worst case, eventually the accumulated ice may plug the port. As a result, vacuum assist to the brakes would be decreased (eventually to zero), and the increased pedal pressure required could lead to an increase in vehicle stopping distance.

6. Chronology of Principal Events:

January through February, 2000

TMC received information from Toyota Canada Inc. in Canada regarding hard brake feel (insufficient power assist), when the brake was applied. In response, TMC recovered related parts and investigated details for the conditions for which the failure occurred. As a result of the investigation, it was found that the failure occurred when the brake was applied after approximately fifteen minutes of highway speed driving when the outside temperature was around -25°C. Although no abnormalities were observed on the recovered parts, it was found that a slight clearance exists at the top of separator between the brake vacuum port and the PCV expansion room of the intake manifold. Although the cause of the failure and effect of the slight clearance on brake performance were not clear at the time, the clearance was terminated to remove any possible factors and minimize any effects of condensed moisture from the PCV port. However, TMC continued its investigation to identify the cause of the failure.

March through August, 2000

TMC conducted replication tests in consideration of various driving patterns and temperatures, but the failure could not be replicated. It was observed that if the vehicle was operated at highway speed for approximately fifteen minutes from a cold start, without braking application, and under a temperature of -25°C, condensed moisture from the PCV port seeped toward the brake vacuum port through the slight clearance at the separator, and formed a very thin frozen layer (however the port was not plugged.) It was also confirmed that the ice disappeared when the brake was applied (even with the above condition) due to braking vacuum. In addition, no ice was formed if the vehicle was warmed-up before driving, because the temperature at the brake vacuum port was higher than the icing point.

TMC also confirmed that no condensed moisture seeped toward the brake vacuum port in the intake manifold when the clearance was terminated at the separator. Therefore, when this clearance is removed, there is no possibility of forming ice at the brake vacuum port.

After analyses of the results of its investigation, even though the failure has not yet been replicated, TMC believed that there is a possibility that ice could accumulate at the brake vacuum port under the limited condition previously described, and in the worst case, eventually the accumulated ice may plug the port. As a result, vacuum assist to the brakes would be decreased (eventually to zero), and the increased pedal pressure required could lead to an increase in vehicle stopping distance. Therefore, Toyota decided to conduct a safety recall in extremely cold areas.

Toyota received only 3 complaints, reported from an extremely cold region in Canada, and no complaints from the U.S. However, Toyota decided to expand the recall area to include all of Canada and all extremely cold states in the U.S. , based on meteorological data.

The basis for selecting the U.S. recall area is as follows:
Based on our replication test, Toyota determined that the temperature at which accumulated ice can plug the brake vacuum port is -25°C. Therefore, Toyota determined to conduct a safety recall in Alaska where the monthly average low outside temperature record was below -25°C. Although the possibility of this failure occurring is quite low in other states, Toyota decided to adopt a substantial conservative margin and extended the recall area to states to those specified in a previous and similar safety recall, 97V156, conducted for other models.

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 dealer for repair of the vacuum port. Also, owners of the subject vehicles in states other than the recall states will be notified of the recall.

8. Recall Schedule:

Mailing of the owner notifications will commence around the beginning of October and be completed around the end of October 2000.

Copies of the owner notification and dealer instructions will be submitted as soon as they are available.