

September 20, 2024

## DEFECT INFORMATION REPORT

1. Vehicle Manufacturer Name:

Mazda Toyota Manufacturing U.S.A., Inc [“MTMUS”]  
9000 Greenbriar Parkway, NW, Madison, AL 35756

Affiliated U.S. Sales Company:

Toyota Motor North America, Inc. [“TMNA”]  
6565 Headquarters Drive, Plano, TX 75024

Manufacturer of Brake Actuator Assembly:

Bosch BHP Plant  
Betriebsgelände Firma Bosch, Sonthofener Str. 30, 87544 Blaichach, Germany  
Phone: +1-734-979-2142

Country of Origin: Germany

2. Identification of Involved Vehicles and Affected Components:

Based on production records, we have determined the involved vehicle population to be the vehicles listed in the table below.

Make/Car Line	Model Year	Manufacturer	Production Period
Toyota / Corolla Cross Hybrid	2023-2024	MTMUS	June 1, 2022 through September 10, 2024

Applicability	Part Number	Part Name	Component Description
MY2023-2024 Toyota Corolla Cross Hybrid	44050-0A200 44050-0A201	Actuator Assy, Brake with Fluid	Brake Actuator Assembly

Note: (1) Although the involved vehicles are within the above production period range, not all vehicles in this range were sold in the U.S.

(2) Based on Toyota's current understanding of the condition, this report applies to certain Toyota Corolla Cross Hybrid vehicles with a specific brake actuator assembly supplied by Bosch, containing specific skid control Electronic Control Unit (ECU) software. Certain other Toyota vehicles are equipped with a brake actuator supplied by this supplier containing similar software. Toyota is confirming whether the condition described in section 5 can occur in other models with similar software. Other Toyota or Lexus vehicles sold in the U.S. are equipped with a brake actuator assembly of a different design and are not affected by the condition described in this report.

3. Total Number of Vehicles Potentially Involved:

42,199

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

100% of the involved vehicles contain a Brake Actuator Assembly containing a Skid Control ECU with a specific software described in Section 5 below. Whether this issue, in each case, will cause the hard brake pedal with reduced brake force depends on activation of regenerative cooperative brake and Electric Braking Distribution (EBD) as described in Section 6.

5. Description of Problem:

The subject vehicles are equipped with a brake actuator with a skid control Electronic Control Unit (ECU) which controls the hydraulic and regenerative brake systems. Due to the programming of the skid control ECU software, there is a possibility that the brake fluid pressure may not be controlled as designed in limited situations when the brake pedal is applied during cornering. Operators may temporarily experience a hard brake pedal with reduced braking force, causing the brake stopping distance to be more than expected, and potentially increasing the risk of a crash.

6. Chronology of Principal Events:

April, 2024

In late April 2024, Toyota received a field report from the Japan market alleging that the driver temporarily experienced a hard brake pedal that then worked normally after the pedal was depressed several times. A dealer technician inspected the vehicle, and no brake system abnormality was observed. Based on the driver's allegation, the dealer technician replaced the brake booster with master cylinder and sent the original part to Toyota. The part was sent to the supplier to be investigated; no abnormality was found.

May 2024 – September 2024

In late May 2024, Toyota received notification from another dealer in Japan about a vehicle with abnormal, hard brake operation. The vehicle data was retrieved for analysis. Because the data does not include a brake pedal force, Toyota could not confirm whether the hard brake pedal occurred. However, the data indicated that, when the brake fluid pressure at the brake master cylinder increased, the brake force did not increase. Toyota began design review of the brake system.

During the design review, Toyota hypothesized that the brake fluid in the vehicle may have been contaminated by debris which could possibly cause the brake actuator valves to stay closed, resulting in the brake force not increasing. It undertook an investigation of this possibility but concluded that this was not a cause of the reported abnormalities.

Toyota also hypothesized that if the Regenerative Cooperative Brake and the Electric Braking Distribution (EBD) activate simultaneously, there is a possibility that all valves in the brake actuator may close, resulting in the brake force not increasing. In testing to confirm whether this could occur, Toyota duplicated a temporarily hard brake pedal in a specific and limited condition and determined the mechanism as follows: (1) when the brake pedal is depressed, the vehicle decelerates by the Regenerative Cooperative Brake and the valves to the front brake calipers within the brake actuator close (2) while steering in a curve and depressing the brake pedal to an extent that results in rear wheels slipping, the EBD is activated to stabilize the vehicle and closes the valves to the rear brake calipers within the brake actuator. (3) with all valves closed, the brake fluid is blocked in the brake tube between the brake master cylinder and the brake actuator, resulting in the hard brake pedal; (4) brake fluid pressure is not distributed to all brake calipers, resulting in a reduced brake force; and (5) if the brake pedal is released or is depressed more, all closed valves are opened and the brake performance returns.

Based on above findings, Toyota concluded that a driver can temporarily experience a hard brake pedal with reduced braking force, causing the brake stopping distance to be more than expected, and potentially increasing the risk of crash.

September 13, 2024

Based on the results of the above investigation, Toyota decided to conduct a voluntary safety recall campaign.

As of September 13, 2024, based on a diligent review of records, Toyota's best engineering judgment is that there are 0 Toyota Field Technical Reports and 0 warranty claims that have been received from U.S. sources that relate or may relate to this condition and which were considered in the decision to submit this report.

7. Description of Corrective Repair Action:

All known owners of the subject vehicles will be notified to return their vehicles to a Toyota dealer. For all involved vehicles, the dealer will update the skid control ECU software, free of charge.

Reimbursement Plan for pre-notification remedies

As the owner notification letters will be mailed out well within the active period of the Toyota New Vehicle Limited Warranty ("Warranty"), all involved vehicle owners for this recall would have been provided a repair at no cost under Toyota's Warranty.

8. Recall Schedule:

Notifications to owners of the affected vehicles will occur by November 19, 2024. A copy 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 on September 20, 2024. Copies of dealer communications will be submitted as they are issued.

10. Manufacturer's Campaign Number:

Remedy: 24TA11