

June 23, 2022

DEFECT INFORMATION REPORT

1. Vehicle Manufacturer Name:

Toyota Motor Manufacturing, Texas, Inc. ["TMMTX"]
1 Lone Star Pass, San Antonio, TX 78264-3413

Affiliated U.S. Sales Company:

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

Manufacturer of Rear Axle Assembly:

Hino Motors Manufacturing USA
45501 Twelve Mile Rd.
Novi, MI 48377
Telephone: +1-248-699-9300

Country of Origin: USA

2. Identification of Involved Vehicles and Affected Components:

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

Make/Car Line	Model Year	Manufacturer	Production Period
Toyota / Tundra	2022	TMMTX	November 2, 2021 through June 13, 2022

Toyota / Tundra HV	2022	TMMTX	March 15, 2022 through June 7, 2022
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Applicability	Part Number	Part Name	Component Description
MY2022 Toyota Tundra	47870-0C020	Bracket Assembly, Caliper Support w/ Bearing, RH	Axle Shaft Subassembly excluding Shaft
	47880-0C020	Bracket Assembly, Caliper Support w/ Bearing, LH	

- 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) This issue only affects MY 2022 Tundra vehicles manufactured with these specific rear axle shaft sub-assemblies used at a certain vehicle assembly plant during the above production period; other MY 2022 Tundra vehicles are not affected. Other Toyota or Lexus vehicles are manufactured with different rear axle shaft sub-assemblies or by different suppliers with different studs.

3. Total Number of Vehicles Potentially Involved:

Tundra: 44, 928

Tundra HV: 1,248

Total: 46,176

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

Toyota is unable to estimate the percentage of the involved vehicles to contain the defect. Whether the issue, in each case, will actually lead to an increased risk of a crash described in Section 5 depends on various factors. However, as the NHTSA manufacturer portal requires an integer value be entered, Toyota has entered the value “1” in response to this question in the portal. For the purpose of this report, “1” means “unknown”.

5. Description of Problem:

The subject vehicles are equipped with a rear axle assembly, consisting of an axle housing, axle shaft sub-assemblies, and a differential carrier assembly. Each axle shaft sub-assembly is secured to the axle housing using studs and flange nuts. The flange nuts can loosen over time and, in some cases, fall off, potentially causing one or both axle shaft sub-assemblies to begin to

separate from the axle housing. If the vehicle is operated with loosened nuts, the operator may experience vibration, hear an abnormal noise, and/or observe leaking of differential oil. If an axle shaft sub-assembly completely separates, this can affect vehicle stability and brake performance, increasing the risk of a crash.

6. Chronology of Principal Events:

March 2022 –June 2022

In mid-March 2022, Toyota received a field report on a MY2022 Toyota Tundra indicating that the flange nuts connecting the axle shaft sub-assembly to the axle housing were missing, from their securing studs and there was complete separation between the axle shaft sub-assembly and axle housing along with damage to the surrounding parts. Toyota began to investigate this incident and recovered the related parts.

In late March, the parts that were recovered from the vehicle in the initial field report were sent to the supplier for further inspection. Additionally, a second field report was received with a similar condition. The parts from this vehicle were recovered and also sent to the supplier for evaluation. In both cases, it was observed that the flange nuts were missing from the studs, and there was complete separation between the axle shaft sub-assembly and the axle housing. However, what may have caused the nuts to loosen and become missing was unknown. The parts were then sent to Toyota's design group for evaluation.

Toyota began a 100% torque check at Toyota's vehicle assembly facility for all vehicles. This activity indicated that all nuts were tightened to the design specification prior to leaving the production facility. Additionally, Toyota began conducting a field survey to understand the torque values of vehicles in the field. Toyota and the supplier continued to investigate all of the parts and components related to the rear axle and rear differential to check if the individual components were within their design specification; no out-of-specification condition was found.

In April, Toyota had received an additional report with a partial separation between the axle shaft sub-assembly and the axle housing (i.e., two flange nuts were missing and two were loose). The field surveys indicated that vehicles in the field had flange nuts with torque values that were lower than the design specification. It was hypothesized that a reduction of the axial force in the joint was occurring. In mid-April an increased torque for the flange nuts was implemented at the supplier and additional torque checks were also done for parts at the assembly plant.

In early May, vehicle drive testing was undertaken using rear axles with the increased torque specification. After the testing, the axial force in the joint was found to have reduced and there was a reduction in torque values on the flange nuts. At this point it was believed that the process for pressing the studs onto the axle shaft sub-assemblies had unknown variations.

Further investigation of parts variations revealed two causes: (1) lack of adequate press force exerted on some of the studs, and (2) greater than expected serration resistance. Both causes combined contributed over time to the loss of joint integrity between the axle shaft sub-assembly and the axle housing. Subsequently, changes were made in the stud pressing process, and studs were introduced to the assembly process on a lot-by-lot basis to minimize the variation related to the stud head height in the pressing process. In early June, an increased torque specification was implemented to account for any inadequacy in axial force that might result in flange nut loosening.

Based on the investigation results and Toyota's engineering judgement, it was determined that, if the flange nuts loosen and, in some cases, fall off, this can cause one or both axle shaft sub-assemblies to begin to separate from the axle housing. If the vehicle is operated with loosened nuts, the operator may experience vibration, hear an abnormal noise, and/or observe leaking of differential oil. If an axle shaft sub-assembly completely separates, this can affect vehicle stability and brake performance, increasing the risk of a crash.

June 17, 2022

Toyota decided to conduct a voluntary safety recall campaign.

As of June 9, 2022, based on a diligent review of records, Toyota's best engineering judgement is there are 5 Toyota Field Technical Reports (received between March 17, 2022 and June 9, 2022) and 5 warranty claims that have been received from U.S. sources that relate or may relate to this condition 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 dealers will inspect the rear axle assembly and retighten the axle flange nuts. For any vehicles where other axle-related components are damaged, they will be replaced, if necessary.

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 the warranty.

8. Recall Schedule:

Notifications to owners of the affected vehicles will occur by late July 2022. 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 by June 24, 2022. Copies of dealer communications will be submitted as they are issued.

10. Manufacturer's Campaign Number:

22TA05