

June 24, 2020

## DEFECT INFORMATION REPORT

1. Vehicle Manufacturer Name:

Toyota Motor Manufacturing, Kentucky, Inc. ["TMMK"]  
1001 Cherry Blossom Way, Georgetown, KY, 40324

Toyota Motor Manufacturing Canada Inc. ["TMMC"]  
1055 Fountain Street North, Cambridge, Ontario, Canada N3H 5K2

Affiliated U.S. Sales Company:

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

Manufacturer of Power Steering Gear Assembly

Robert Bosch Automotive Steering LLC.  
15 Spiral Dr. Florence, KY 41042  
859-568-1143

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 / RAV4    | 2019-2020  | TMMC         | July 2, 2019<br>through<br>February 11, 2020      |
| Toyota / RAV4 HV | 2020       | TMMC, TMMK   | December 17, 2019<br>through<br>February 11, 2020 |

| Applicability                          | Part Number | Part Name                             | Component Description           |
|--|-------------|---------------------------------------|---------------------------------|
| MY2019-2020<br>Toyota RAV4<br>/RAV4 HV | 44250-0R011 | Gear Assy, Electric Power<br>Steering | Power Steering<br>Gear Assembly |
|  | 44250-0R021 |                                       |                                 |

- 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 the vehicles listed above that were assembled with steering gear assemblies that were manufactured by a specific supplier on a specific production line during a specific time period. Other Toyota or Lexus vehicles sold in the U.S. are not equipped with steering gear assemblies that were potentially manufactured by the specific supplier on the specific production line during the specific time period.

3. Total Number of Vehicles Potentially Involved:

Toyota RAV4 : 41  
Toyota RAV4 HV : 5  
Total : 46

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

Unknown. Toyota is unable to provide an estimate of the percentage of vehicles to actually contain the defect. Whether a missing screw or a screw that was not properly tightened will, over time, lead to certain components inside the steering gear corroding and causing a loss of power steering assist depends on the steering loading conditions experienced by each particular vehicle.

5. Description of Problem:

The subject vehicles are equipped with an electric power steering (EPS) system, which includes a steering gear assembly containing a steering gear box cover that is attached with five screws. One specific screw of the five may not have been installed or properly tightened. This could create a gap between the steering gear assembly and the steering gear box cover under certain steering loading conditions, allowing water to enter. Over time, certain components inside the steering gear could corrode, resulting in a loss of power steering assist. In the event of loss of power steering assist, the steering system will revert to manual steering mode, and steering control can be maintained at all times. However, suspension of power steering assist results in increased steering effort at low vehicle speeds and increases the risk of a crash.

## 6. Chronology of Principal Events:

### February 2020 – March 2020

In early February, 2020 Toyota was notified by the supplier that a steering gear assembly had been assembled with a missing screw but had passed through the quality checkpoints in the production process. The supplier began an inspection of steering gear assemblies within their facility and identified two additional steering gear assemblies that had a missing screw. The supplier stopped shipments to Toyota and began a 100% inspection for this screw. Around this same time, Toyota also identified a vehicle that was assembled with a steering gear assembly that had a missing screw. As a result, Toyota began inspecting additional vehicles in which the steering gear assembly had already been installed and steering gear assemblies that had arrived from the supplier; no additional steering gear assemblies with missing screws were found.

The supplier continued their investigation and began reviewing production records containing the torque data for the process where the missing screw was found. They found that the assembly equipment had also passed assembled parts through the quality checkpoint with screws below the torque specification. As a result of this data review, the supplier identified 65 steering gears assemblies that either had a potentially missing screw or a screw that was tightened below the specified torque value and were shipped to TMMC and TMMK. TMMC and TMMK checked the production records for those steering gears and found that the affected steering gear assemblies had been installed in Toyota vehicles during the vehicle assembly process. The supplier began a failure analysis to understand the potential impact of a missing screw or a screw that was tightened below the specified torque value.

### April 2020 – Early June 2020

The results of the supplier's failure analysis identified some of the theoretical effects that may be caused as a result of the missing screw or a screw that was tightened below the specified torque. One of the potential effects was that, over time, a gap could be created between the steering gear assembly and the cover; this gap might allow for the intrusion of water into the assembly. In theory, water intrusion could potentially corrode components of the steering gear assembly, and cause a loss of power steering assist. At this time, it was unclear whether any of the potential effects could occur in real world vehicle use.

To understand the nature and extent of potential safety risks, Toyota decided to conduct a series of tests. Toyota removed the aforementioned screw from the steering gear assembly cover on a test vehicle in order to conduct the testing. Toyota's testing plan involved multiple drive patterns and turning scenarios, as well as impacts with common obstacles (e.g. curbs, medians, speed bumps), to simulate various steering loading conditions on the vehicle. The testing did not create a "gap" condition, or identify or quantify the potential effects or risks that were identified in the supplier simulation.

### June 18, 2020

While the testing was unable to identify a risk scenario theorized by the supplier's simulation, Toyota could not eliminate the possibility that, over time, certain components inside the steering gear could corrode due to water intrusion, potentially resulting in a loss of power steering assist. Therefore, out of an abundance of caution, Toyota decided to conduct a voluntary safety recall campaign for the vehicles identified above. In the event of loss of power steering assist, the steering system will revert to manual steering mode, and steering control can be maintained at all times. However, suspension of power steering assist results in increased steering effort at low vehicle speeds and increases the risk of a crash.

As of June 17, 2020, based on a diligent review of records, Toyota's best engineering judgement is that there are no Toyota Field Technical Reports or 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 by first class mail to return their vehicles to a Toyota dealer. For all involved vehicles, Toyota dealers will replace the electric power steering gear assembly with a new one at no cost to customers.

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 August 23, 2020. 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, 2020. Copies of dealer communications will be submitted as they are issued.

10. Manufacturer's Campaign Number:

[Interim / Remedy] 20TB11 / 20TA11