

FORD MOTOR COMPANY (FORD) RESPONSE TO RQ23-002

Ford's response to this Recall Query information request was prepared pursuant to a diligent search for the information requested. While we have employed our best efforts to provide responsive information, the breadth of the Agency's request and the requirement that information be provided on an expedited basis make this a difficult task. We nevertheless have made substantial effort to provide thorough and accurate information, and we would be pleased to meet with Agency personnel to discuss any aspect of this Recall Query.

The scope of Ford's investigation conducted to locate responsive information focused on Ford employees most likely to be knowledgeable about the subject matter of this inquiry and on review of Ford files in which responsive information ordinarily would be expected to be found and to which Ford ordinarily would refer. Ford notes that although electronic information was included within the scope of its search, Ford has not attempted to retrieve from computer storage electronic files that were overwritten or deleted. As the Agency is aware, such files generally are unavailable to the computer user even if they still exist and are retrievable through expert means. To the extent that the Agency's definition of Ford includes suppliers, contractors, and affiliated enterprises for which Ford does not exercise day-to-day operational control, we note that information belonging to such entities ordinarily is not in Ford's possession, custody, or control.

Ford has construed this request as pertaining to vehicles manufactured for sale in the United States, its protectorates, and territories.

Ford notes that some of the information being produced pursuant to this inquiry may contain personal information such as customer names, addresses, telephone numbers, and complete Vehicle Identification Numbers (VINs). Ford is producing such personal information in an unredacted form to facilitate the Agency's investigation with the understanding that the Agency will not make such personal information available to the public under FOIA Exemption 6, 5 U.S.C. 552(b)(6).

Answers to your specific questions are set forth below. As requested, after each numeric designation, we have set forth verbatim the request for information, followed by our response. Unless otherwise stated, Ford has undertaken to provide responsive documents dated up to and including July 17, 2023, the date of your inquiry. Ford has searched within the following offices for responsive documents: Environment, Safety Engineering and Compliance, Ford Customer Service Division, Global Core Engineering, Office of the General Counsel, and North American Product Development.

The agency defined "Subject Vehicles" as "All MY 2020-2022 Ford Explorer vehicles manufactured for sale or lease in the United States, including, but not limited to, the District of Columbia, and current U.S. territories and possessions."

The agency defined "Recall Vehicles" as "All vehicles covered by NHTSA Recall 22V-255 and 23V-199 which were manufactured for sale or lease in the United States, including, but not limited to, the District of Columbia, and current U.S. territories and possessions."

The agency defined the "Subject Component" as "Rear axle assembly, including the bushing, rear axle bolts and powertrain differential unit."

Ford understands that the Agency opened this Recall Query to assess whether the remedy specified in the 22V-255 Safety Recall and 23V-199 Safety Recall (collectively, "Safety Recall") is "adequate," as specified in 49 U.S.C. § 30120(c). Before providing specific responses to the Agency's questions, Ford is providing the following synopsis of this Safety Recall. When Ford first launched both the 22V-255 Safety Recall and the Customer Satisfaction Program 22N06 ("Customer Satisfaction Program"), the objective was two-fold: address the safety risk associated with roll-in-park incidents, which, as the Agency understands, can be a significant safety hazard; and (2) ensure that the limited number of future rear axle bolt fractures were covered financially by Ford. The removal of this primary safety risk was successfully achieved through the implementation of the Safety Recall. Certain non-police Subject Vehicles received an updated PCM software that will turn on the Electronic Park Brake (EPB) when park is commanded. Since the Safety Recall was launched, there have been zero known incidents of roll-in-park.

While the loss of motive power can also occur if there is a rear horizontal bolt failure, it was Ford's judgement that it would occur infrequently. A review of the data indicates that the failure is progressive and primarily occurs at launch/low speeds -- many customers are able to continue driving and drove their vehicle to the dealership for repair. At the time of the Safety Recall, the rates of occurrence of all failures were carefully assessed and are provided in response to Question 14. Significantly, the rate of all failures, including reports of loss of motive power, has continued to occur at a low rate and in line with the initial projections.

When the severity of the limited number of rear axle bolt fractures are assessed, Ford believes an expansion of the remedy for 22V-555 (and 23V-199) is not warranted. In the year since the launch of the 22V-555 Safety Recall, all failures of rear axle bolts have occurred at a rate of 0.14% and there have been no reports of accidents or injuries. This is inclusive of both reports of loss of motive power and reports of customers able to drive their vehicle in for the repair under the Customer Satisfaction Program.

Request 1

State, by model and model year, the number of subject vehicles Ford has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Ford, state the following:

- a) Vehicle identification number (17-character VIN);
- b) Make;
- c) Model;
- d) Model Year;
- e) Subject component part number and design version installed as original equipment;
- f) Identify rear axle assembly for all subject model vehicles (one or two axle bolt design);
- g) Date of manufacture (MM/DD/YYYY);
- h) Date warranty coverage commenced (MM/DD/YYYY); and
- i) Whether the recall was performed or not (yes or no),
 - a. If yes, provide the recall number and repair date; and
- j) The State in the United States where the vehicle was originally sold or leased or delivered for sale or lease (postal abbreviation).

Provide the table in Microsoft Excel, or a compatible format, entitled "PRODUCTION DATA."

Answer

Ford records indicate that the approximate total number of 2020-2022 Ford Explorer vehicles sold in the United States (the 50 states and the District of Columbia), protectorates, and territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and Virgin Islands) is 735,625.

The number of subject vehicles sold in the United States by model and model year is shown below:

Model	MY	Units Produced	Units Sold
Explorer	2020	273,482	273,350
	2021	232,507	232,358
	2022	232,681	229,917
	Total:	738,670	735,625

The requested data for each subject vehicle is provided in Appendix A.

For request E, the rear subframe bushing suffix was updated from "BA" to "BB" to coincide with the design change to fill in the bushing weight savers and improve the bolt bending stress. This change was implemented as a running change in production on June 5, 2022, therefore the subject component part numbers in the Appendix A for vehicles built in June 2022 are estimates.

Request 2

State the number of each of the following, received by Ford, or of which Ford are otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:

- a) Consumer complaints, including those from fleet operators;
- b) Field reports, including dealer field reports;
- c) Reports involving a crash, injury, or fatality;
- d) Identify events involving driveshaft failures, and provide detail summary of the failed component (s) for example but limited to: driveshaft dislodges from rear housing or the yoke slips out the transmission;
- e) Reports involving a fire, crash, injury or fatality;
- f) Property damage claims; and
- g) Third-party arbitration proceedings both pending and closed, where Ford is or was a party to the arbitration; and
- h) Lawsuits, both pending and closed, in which Ford is or was a defendant or codefendant.

For subparts "a" through "g," state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in

which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

In addition, for items "c" through "g," provide a summary description of the alleged problem and causal and contributing factors and Ford's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "f" and "g," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Answer

For purposes of identifying reports of incidents that may be related to the alleged defect and any related documents, Ford has gathered "owner reports" and "field reports" maintained by Ford Customer Service Division (FCSD) and claim and lawsuit information maintained by Ford's Office of the General Counsel (OGC).

Descriptions of the FCSD owner and field report systems and the criteria used to search each of these are provided in Appendix B.

The following categorizations were used in the review of reports located in each of these searches:

Category	Allegation
A	Allegation of an unintended axle lock up.
A0	Allegation of an unintended vehicle rollaway resulting from a rear axle bolt fracture
A1	Allegation of a vehicle being towed into a dealer with a rear axle bolt fracture, severe NVH (grinding, popping, bang noises, etc.) with ambiguous loss of motive power condition
A2	Allegation of a vehicle being towed into a dealer with a rear axle bolt fracture with ambiguous symptoms
A3	Allegation of a vehicle being towed into a dealer, alleging loss of motive power while launching from a stop or during parking lot maneuvers, typically after NVH symptoms resulting from a rear axle bolt fracture
A4	Allegation of a vehicle being towed into a dealer, alleging loss of motive power while driving, typically after NVH symptoms resulting from a rear axle bolt fracture
B1	Allegation of a vehicle taken to a dealership by owner after significant NVH (grinding, popping, bang noises etc.) or with a visible leak condition resulting from a rear axle bolt fracture.
C	Vehicles that received 22S27 (22V-255), no other symptoms
D	Vehicles that received 22N06
E	Vehicles that received 23S16 (23V-199), no other symptoms

Owner Reports: Records identified in a search of the Global Contact Center Technology (GCCT) database, as described in Appendix B, were reviewed for relevance, and sorted in accordance with the categories described above. The number and copies of relevant owner reports identified in this search that allege a windshield trim detachment while the vehicle was in motion in a subject vehicle are provided in the GCCT portion of the

database contained in Appendix C. The categorization of each report is identified in the "Category" field.

When we were able to identify that responsive (i.e., not ambiguous) duplicate owner reports for an alleged incident were received, and the group counted as one report. In other cases, certain vehicles may have experienced more than one incident and have more than one report associated with their VINs. These reports have been counted separately.

Legal Contacts: Ford is providing, in Appendix B, a description of Legal Contacts and the activity that is responsible for this information. To the extent that responsive (i.e., not ambiguous) owner reports indicate that they are Legal Contacts, Ford has gathered the related files from the Office of General Counsel (OGC). Non-privileged documents for files that were located that are related to the responsive owner reports are provided in Appendix D.

Field Reports: Records identified in a search of the Common Quality Indicator System (CQIS) database, as described in Appendix B, were reviewed for relevance, and sorted in accordance with the categories described above. The number and copies of relevant field reports identified in this search with an allegation of the defect in a subject vehicle are provided in the CQIS portion of the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

VOQ Data: Of the two (2) VOQS provided by the agency in the Recall Query, none were associated with the defect, and it is not apparent that the consumers who filed the VOQs have experienced the alleged defect. Additionally, Ford identified 26 responsive VOQs that are included as part of Appendix C.

Ford made inquiries of its GCCT database for customer contacts, and its CQIS database for field reports, and its Global System for Analytics and Research (GSAR) database for warranty repairs regarding the vehicles identified on the VOQs. Reports were identified and are provided in the database in Appendix C.

Crash/Injury Incident Claims: For purposes of identifying allegations of accidents or injuries that may have resulted from the alleged defect, Ford has reviewed responsive owner and field reports, and lawsuits and claims. A chart identifying potentially relevant allegations is being provided in Appendix C, Figure 1.

Claims, Lawsuits, and Arbitrations: For purposes of identifying incidents that may relate to the alleged defect in a subject vehicle, Ford has gathered claim and lawsuit information maintained by Ford's OGC. Ford's OGC is responsible for handling product liability lawsuits, claims, and consumer breach of warranty lawsuits and arbitrations against the Company.

Lawsuits and claims gathered in this manner were reviewed for relevance and sorted in accordance with the categories described above.

We are providing the requested detailed information, where available, on the responsive and ambiguous lawsuits and claims in our Log of Lawsuits and Claims, as Appendix D. With regard to these lawsuits and claims, Ford has not undertaken to contact outside law firms to obtain additional documentation.

Request 3

Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:

- a) Ford's file number or other identifier used;
- b) The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
- c) Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
- d) Vehicle owner or fleet street address, city, state (postal abbreviation), and ZIP code (please use distinct fields for each data type);
- e) Vehicle's 17-character VIN;
- f) Vehicle's make, model and model year; (please use distinct fields for each data type);
- g) Vehicle's mileage at time of incident; (numeric data type);
- h) Incident date (MM/DD/YYYY);
- i) Report or claim date (MM/DD/YYYY);
- j) Whether a crash is alleged;
- k) Whether a fire is alleged;
- l) Whether property damage is alleged;
- m) Number of alleged injuries, if any; and
- n) Number of alleged fatalities, if any.

Provide this information in Microsoft Excel, or a compatible format, entitled "REQUEST NUMBER TWO DATA," A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

Answer

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 2. To the extent information sought in Request 3 is available for owner and field reports, it is provided in the database. To the extent information sought in Request 3 is available for lawsuits and claims, it is provided in the Log of Lawsuits and Claims as Appendix D.

Request 4

Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Ford used for organizing the documents. Describe in detail the search methods and search criteria used by Ford to identify the items in response to Request No. 2.

Answer

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 2. To the extent information sought in Request 4 is available for lawsuits and claims, it is provided in Appendix D. To the extent available, copies of complaints, first notices, or GCCT reports relating to matters shown on the log are

provided in Appendix D. With regard to these lawsuits and claims, Ford has not undertaken to contact outside law firms to obtain additional documentation.

Detailed descriptions of the search methods and criteria, including all pertinent parameters, used to identify the items provided in response to Request 2 are described in Appendix B.

Request 5

State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Ford to date that relate to, or may relate to, the alleged defect in the subject vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.

Separately, for each such claim, state the following information:

- a) Ford's claim number;
- b) Vehicle owner or fleet name (and fleet contact person) and telephone number (please use distinct fields for each data type);
- c) Vehicle owner or fleet street address, city, state (postal abbreviation), and ZIP code (please use distinct fields for each data type);
- d) 17- character VIN;
- e) Repair date (MM/DD/YYYY);
- f) Vehicle mileage at time of repair (numeric data type);
- g) Repairing dealer's or facility's name, telephone number, city and state or ZIP code (please use distinct fields for each data type);
- h) Labor operation number;
- i) Problem code;
- j) Diagnostic trouble code (s);
- k) Replacement part number(s) and description(s);
- l) Concern stated by customer;
- m) Cause as stated on the repair order;
- n) Correction as stated on the repair order; and
- o) Additional comments, if any by dealer/technician relating to claim and/or repair;
- p) Identify the number of claims reported for both rear axle design.

Your response should identify each rear axle design. Provide this information in Microsoft Excel or Microsoft Access 2010, or a compatible format entitled "WARRANTY DATA". A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

Answer

Records identified in a search of the AWS database, as described in Appendix B, were reviewed for relevance and sorted in accordance with the categories described in the response to Request 2. The number and copies of relevant warranty claims identified in this search that allege the defect in a subject vehicle are provided in the AWS portion of

the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

Requests for "goodwill, field, or zone adjustments" received by Ford to date that relate to the alleged defect that were not honored, if any, would be included in the FMC360 reports identified above in response to Request 2. Such claims that were honored are included in the warranty data provided.

Request 6

Describe in detail the search criteria used by Ford to identify the claims identified in response to Request 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used.

Answer

Detailed descriptions of the search criteria, including all pertinent parameters, used to identify the claims provided in response to Request 5 are described in Appendix B.

Request 7

Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions, diagnostic trouble codes and diagnostic trouble code descriptions applicable to the alleged defect in the subject vehicles. State whether the diagnostic trouble codes are automatically reported to the warranty database electronically or manually entered into the warranty database by a claims administrator.

Answer

Information applicable to specific claims as requested above can be found in Appendix C. Labor operation codes are manually entered into the warranty database by the claim administrator. Diagnostic trouble codes are not available for this issue.

Request 8

State, by make and model year, the terms of the new vehicle warranty coverage offered by Ford on the subject vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) that Ford offered for the subject vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

Answer

For 2020-2022 model year Ford Explorer vehicles, the New Vehicle Limited Warranty, Bumper to-Bumper Coverage begins at the warranty start date and lasts for three years or 36,000 miles, whichever occurs first.

Optional Extended Service Plans (ESPs) are available to cover various vehicle systems, time in service, and milage increments. As of the date of the Recall Query, 406,312 new and used vehicle ESP polices had been purchased for 2020-2022 model year Ford

Explorer vehicles that could potentially cover the alleged defect in the subject vehicles. Ford is unable to determine how many of the ESP policies are applicable to the subject vehicles. The details of the various plans are provided in Appendix J.

Request 9

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Ford has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, or other documents or communications, with the exception of standard shop manuals. Also include the latest draft copy of any communication that Ford is planning to issue within the next 120 days.

Answer

For purposes of identifying communications to dealers, zone offices, or field offices pertaining, at least in part, to the Alleged Defect, Ford has reviewed the following FCSD databases and files: The On-Line Automotive Service Information System (OASIS) containing Technical Service Bulletins (TSBs) and Special Service Messages (SSMs); Internal Service Messages (ISMs) contained in CQIS; and Field Review Committee (FRC) files. We assume this request does not seek information related to electronic communications between Ford and its dealers regarding the order, delivery, or payment for replacement parts, so we have not included these kinds of information in our answer.

A description of Ford's OASIS messages, ISMs, and the Field Review Committee files and the search criteria used are provided in Appendix B.

OASIS Messages: Ford has identified 0 SSMs and 1 TSBs that may relate to the Agency's request and is providing copies of them in Appendix I.

Internal Service Messages: Ford has identified 0 ISMs that may relate to the Agency's request.

Field Review Committee: Ford has identified 3 field service action communications that may relate to the Agency's request and is providing copies of them in Appendix F. Based on the agreement between NHTSA and Ford, the response to this request will be submitted to the agency no later than September 22, 2023.

Ford currently has no plans to issue communications related to the subject of NHTSA's investigation.

Request 10

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, Ford. For each such action, provide the following information:

- a) Action title or identifier;
- b) The actual or planned start date;
- c) The actual or expected end date;
- d) Brief summary of the subject and objective of the action;
- e) Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
- f) A brief summary of the findings and/or conclusions resulting from the action.

For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

Answer

Based on the agreement between NHTSA and Ford, the response to this request will be submitted to the agency no later than September 22, 2023 as part of Appendix F and Appendix E.

Request 11

Describe all modifications or changes made by, or on behalf of, Ford in the design, material composition, manufacture, quality control, supply, or installation of the subject component, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:

- a. The date or approximate date on which the modification or change was incorporated into vehicle production;
- b. A detailed description of the modification or change;
- c. The reason(s) for the modification or change;
- d. The part numbers (service and engineering) of the original component;
- e. The part number (service and engineering) of the modified component;
- f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- g. When the modified component was made available as a service component; and
- h. Whether the modified component can be interchanged with earlier production components.

Your response should include any changes to modified or changed bushing durometer. Also, provide the above information for any modification or change that Ford is aware of which may be incorporated into vehicle production within the next 120 days.

Answer

A table of the requested changes is provided in Appendix G.

Ford currently has no plans to introduce modifications into vehicle production related to the subject components within 120 days of the receipt of this inquiry.

Request 12

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquires and/or evaluations (collectively "actions") that relate to, or may relate to, benchmarked rear drive axle of Ford vs competitor rear drive axle.

Answer

Ford generally conducts benchmarking of competitor vehicles, parts, and designs and prepares "actions" for review by various individuals for various purposes. Specific to actions that may relate to "benchmarked rear drive axle of Ford vs. competitor rear drive axle," Ford has interpreted this question to request benchmarking actions initiated by the Driveline Systems Engineering (DSE) team to help inform their design. The DSE team for this particular design did not initiate or prepare benchmarking "actions" in the development of the rear drive axle in the subject vehicles. The DSE team did not consider this activity to be relevant to the design, as the rear drive bushing position is dependent of the platform, system layout, and powertrain.

Request 13

Provide responses to each item below and all related design and/or testing documents;

- a) Detailed description of the two designs and functions of the rear axle housing support rear bolt (one bolt versus two bolt designs);
- b) Detailed description of the bushing's Durometer including the loads it was designed for in both the new and old designs.
- c) Detailed description of the maximum force can be applied to the rear axle housing support rear bolt, including the design parameters in terms of minimum, nominal and maximum forces; and
- d) Provide all Failure Modes and Effect Analyses that refer to relate to, or may relate to, the defect in the subject vehicles. Include in your response all analysis and testing that studied or evaluated rear axle assembly failure sequences such as rear axle housing support rear bolt detached from rear drive axle/differential. If no such analyses or testing has been conducted, so state.

Answer:

A broader explanation of the function, durometer, forces, failure mode and effect analysis (DFMEA), and overall design of the rear axle housing support rear bolt is attached as part of Appendix L. Based on the agreement between NHTSA and Ford, the response to this request will be supplemented with the documentation that will be provided to the agency no later than September 22, 2023 as part of Appendix F and Appendix E.

Request 14

Provide in detail how Ford decided on the remedies of the subject recalls and the reasons for deciding not to replace the rear axle horizontal mounting bolt and bushing in the recalled vehicles as the remedy. Include your assessments, analyses, test, test results, studies, surveys, simulations and investigations, and evaluations that support Ford's response to this request.

Answer:

On August 10, 2021, Ford's engineering team presented a concern to the Critical Concern Review Group (CCRG) pertaining to the rear axle horizontal mounting bolt fracture on some 2020-2021 model year Explorer vehicles built with a 3-point mounted axle design.

In the period between August 2021 and February 2022, Engineering, CCRG, and Global Data Insights & Analytics (GDI&A) teams conducted an investigation and analysis to understand the rate of occurrence and severity of the failure mode, along with the detectability of the issue. Additionally, the investigation analyzed if different power packs performed differently and the population's scope. As of April 2022, 235 warranty claims had been identified related to the rear axle bolt, with 193 of them being first-time repairs and 42 of them being repeat repairs resulting in a second axle bolt fracture before the Safety Recall was implemented.

As of April 5th, 2022, Ford identified 8 allegations of vehicles experiencing a loss of motive power while launching from a stop or during parking lot maneuvers (2 correspond to police vehicles and 6 to retail vehicles), and 8 allegations of vehicles experiencing a loss of motive power while driving (1 corresponds to a police vehicle and 7 to retail vehicles). For all these claims, the loss of motive power occurred after severe noise, vibration, harshness (NVH) symptoms. A total of 4 claims were identified for vehicles that rolled backwards while in park. Additionally, there were 212 claims where the verbatims indicated severe NVH symptoms, but the vehicles remained functional and could be driven to the dealership for repair.

On April 5th, 2022, Ford calculated the following R/1000 by vehicle power pack configuration for axle bolt fractures for all symptoms:

Power Pack	MY	R/1000	MY	R/1000	Not Eligible for EPB Software Update	Eligible for EPB Software Update	Eligible for Hardware Replacement
3.3L FHEV Police	2020	3.64	2021	0.15	X		X
3.3L Gas Police	2020	0.71	2021	0.04	X		X
2.3L RWD	2020	1.264	2021	0.52		X	
3.0L PHEV	2020	0	2021	0.68		X	
3.3L FHEV	2020	1.29	2021	0.18		X	
3.0L GAS ST	2020	NA (no 3pt mount build)	2021	0.61		X	

If the rear axle bolt fractures, the vehicle will exhibit extreme noise, vibration, and harshness. Customers describe loud, grinding, binding, or clunking noises that are audible while driving the vehicle. In some cases, the driveshaft/half shafts may become

disconnected, resulting in loss of motive power and primary park torque increasing the risk of crash and injury.

The issue is progressive, and symptoms present themselves to the customer prior to the driveshaft/half shafts becoming disconnected. Based on a physical analysis of the defect made by the engineering team and the comments made by the customers on the warranty claims where they stated that they presented NVH concerns prior to the LOMP, the Ford engineering and the CCRG determined that the early symptoms alert customers of an issue with their vehicles before the vehicle would exhibit a loss of motive power condition. At the time Ford made its Safety Recall decision, there had been 20 claims of loss of park/loss of motive power, and 212 claims of customers able to drive their vehicles to the dealership for repairs.

The GDI&A team conducted a projection failure rate analysis for rear axle horizontal bolt fractures to estimate the failure rate at 120 months in service. This analysis indicated that non-police vehicles would have an expected failure rate below 1.22% (highest estimated failure rate for a retail vehicle – 2.3L RWD) compared to police vehicles, which indicated that the highest expected failure rate was of 9.65% (for 3.3L FHEV Police vehicles, 3.3L Gas police, had an expected failure rate of 0.95%) for the same time in service. The projection analysis is provided in Appendix K for further reference. Ford was unable to develop a projection for loss of motive power or roll in park symptoms since there is not a statistically significant sample size for these concerns.

Ford's CCRG recommended a Safety Recall for the subject vehicles to mitigate the risk for a roll-in-park condition, as a vehicle left unattended with a fractured axle bolt could present an unreasonable risk to motor vehicle safety by increasing the risk of crash and injury.

Ford's CCRG assessed the loss of motive power condition, and believed it did not present an unreasonable risk to motor vehicle safety due to the low rate of warranty claims resulting in a loss of motive power, the low projected failure rate, and the detectability of the issue due to the symptoms that precede a loss of motive power. Additionally, in the event of an axle bolt fracture that results in noise and vibration symptoms, most customers will be able to move the vehicle off the roadway to safety prior to a loss of motive power condition. At the time of the Safety Recall, there were 8 claims that identified a LOMP condition while driving, 7 of which claimed to have time to coast, or that the issue occurred while driving at low speed, going over bumps or going through local roads. One claim was unclear on the conditions to which they had lost power; the customer mentioned the loss of motive power occurred on the freeway but doesn't include more detail.

In an effort to develop a remedy to mitigate the safety risk related to a roll-in park condition, Ford identified a proactive repair to reprogram the vehicle Powertrain Control Module (PCM) software. This update automatically engages the Electronic Park Brake (EPB) when the Park gear is selected on the transmission. This repair can only be applied to non-police vehicles, as police vehicles do not have an electronic parking brake.

Ford's CCRG recommended a companion one-time Customer Satisfaction program to replace the rear axle bushing, axle cover, and axle bolt on non-police vehicles that exhibit this condition. The basis for this recommendation was the low warranty rate in service

leading to a loss of motive power along with the low projected failure rate for all axle bolt fracture.

Ford Explorer Police vehicles are not equipped with the required software to have it auto apply on every park selection. As a result of this difference between the police and the non-police vehicles, Ford developed a hardware remedy to replace the rear axle bushing and the axle bolt on 3.3L FHEV and 3.3L Gas Police vehicles to mitigate the safety risk of a roll-in-park condition.

Ford excluded some power packs from both the Safety Recall and the Customer Satisfaction Program as those power packs as they did not exhibit this type of failures (3.0 L Gas police, Platinum, King Ranch, 3.3L Gas Retail, and 2.3L 4WD, as well as 3.3L FHEV Police Units)

On April 7, 2022, Ford's Field Review Committee (FRC) approved this Safety Recall and Customer Satisfaction Program.

On April 20, 2022, the Agency contacted Ford asking for clarification with regards to the bushing/axle cover replacement, and the two different remedies. On April 20th, 2022, Ford replied to the questions, explaining the differences in hardware between the Police and the retail vehicles, stating that the Police units have a mechanical parking brake while the retail units have an electronic parking brake. The communications can be found as part of Appendix F.

In a call with the Agency on April 27th, 2022 Ford discussed with the Agency the use cases in which the customer could potentially remove the EPB and the steps the customer needed to take to override the function. There were no follow up questions on the topic at that point in time.

Ford's CCRG opened an investigation on January 31, 2023, pertaining to vehicles included in 22V-255 which had an incorrect remedy repair. The affected vehicles received a previous Powertrain Control Module (PCM) update which did not include an automatic Electronic Parking Brake (EPB) apply when the vehicle was shifted to park as intended.

It was discovered that there were software calibration level updates missing in the system for some powertrain variants before July 2022, after which all calibration levels were properly released. As a result, some customers did not receive the remedy.

Ford's CCRG recommended a new Safety Recall to contact customers to return to the dealer to receive the recall remedy.

On March 17, 2023, Ford's FRC approved a Safety Recall for this population of 674 affected units which did not receive the intended remedy.

As of July 17th, 2023, the date of this inquiry, the Safety Recall 22V-255 (22S27) has been implemented on 142,330 vehicles including both Police and Non-Police Units, out of total of 239,209 eligible vehicles affected (59.5% completion rate).

Customer Satisfaction Program 22N06 has been implemented on 275 vehicles out of total of 196,343 eligible vehicles affected (0.14% completion rate). The projections estimated that for retail vehicles (2.3L RWD) at 24 MIS – 0.15% of vehicles would have experienced

a bolt fracture (and 0.04% for 3.0L Gas 4WD vehicles), and at 36 MIS – 0.29 % of the vehicles would have experienced a bolt fracture.

Request 15

State the number of subject components that Ford has sold that may be used in the subject vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of the sale (including the cut-off date for sales, if applicable);

- a) Subject component; and
- b) Any kits that have been released, or developed, by Ford for use in service repairs to the subject component/assembly; and
- c) Identify the number of original and modified bushing, rear axle horizontal mounting bolt, rear axle assembly, and axle cover sold by Ford; and
- d) Identify any original and modified bushing, rear axle horizontal mounting bolt, rear axle assembly, and axle cover replacement given to customers as part of “service campaign” or “goodwill” or any free of service action.

For each component part number, provide the supplier’s name, address, and appropriate point of contact (name, title, and telephone number). Also, identify by make, model and model year, any other vehicles of which Ford is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

Answer:

Ford service parts are sold in the U.S. to authorized Ford and Lincoln dealers. Ford has no means to determine how many of the service parts sold were installed on vehicles, the vehicle model or model year on which a particular part was installed, the reason for any given installation, or the purchaser's intended use of the components sold.

Ford is providing the total number of Ford service replacement rear axle horizontal mounting bolt, by part number (both service and engineering) and year of sale, where available, in Appendix I.

Request 16

Furnish Ford’s assessment of the alleged defect in the subject vehicle, including:

- a) The causal or contributory factor(s);
- b) The failure mechanism(s);
- c) The failure mode(s);
- d) The risk to motor vehicle safety that it poses;
- e) What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring, or subject component was malfunctioning; and
- f) The report included with this inquiry.

Answer:

In response to statements requests 16 (a) through (c), Ford's engineering team determined that the main contributory factor for this issue is the joint design that is not robust to peak axle input torques and manufacturing variability. The primary contributor is insufficient bearing area for maximum loading conditions. This results in bearing area deformation, increasing the bending stress on the bolt, leading to a potential bending fatigue failure.

During a peak torque event, the powertrain torque going through the driveline can cause the axle to rotate upwards, which can bend the bolt. Peak torque events mostly occur during vehicle launch at or near wide open pedal as the first gear ratio – multiplied by the maximum engine torque, will result in the highest peak torque possible. In addition, the inertia of a vehicle weight in steady state can also create an impact factor which contributes to peak torque in launch events. After numerous peak torque events, the bolt may experience what is known as a bending fatigue failure, ultimately resulting in a bolt fracture.

In response to item 16(d), a fractured rear axle bolt will allow the rear axle housing to move out of position, resulting in severe noise and vibration. If the rear axle bolt breaks, the driveshaft or half-shafts may become disconnected, resulting in loss of the vehicle's forward power and loss of transmission torque to the rear wheels.

In response to item 16(e), a fractured rear axle bolt will allow the rear axle housing to rotate the pinion upwards outside of the design boundary limits, leading to a high articulation angle between the axle and the driveshaft. This condition will result in loud popping, banging, or grinding noise and vibration. If the customer continues to drive, the driveshaft and/or half-shafts may become disconnected, resulting in loss of the vehicle's forward power and loss of transmission torque to the rear wheels. A visual representation can be observed on Appendix L, slide 7.

In response to item 16(f), Ford's review of the reports included with this inquiry are as follows:

ODI: 11517162 was repurchased by Ford due to unrelated allegations. The VOQ specifies that the vehicle would randomly slam to a complete stop while driving, preceded by an audible clicking sound after receiving the 22V-255 PCM remedy. The issue allegedly occurred again while driving down a hill at about 40-50 mph but disengaging the drivetrain and causing the vehicle to roll downhill with no ability to accelerate, ultimately causing to roll into a utility pole.

Ford's analysis of the vehicle found the allegation to be unrelated to the 22V-255 recall remedy. The axle bolt was reviewed by Ford in July 2023, and it was confirmed to be intact.

ODI: 11499008 contained a verbatim related to allegations of abrupt electronic parking brake disengagement after receiving the remedy for 22V-255. The customer mentioned that 22N06 had been performed on their vehicle, but Ford's records indicate that 22N06 has not been performed and remains open and available.

There are no warranty records for this vehicle to indicate that the axle bolt has fractured. Additionally, the verbatim is inconsistent with the symptoms of a fractured axle bolt. Ford's records indicate that the recall remedy flash completed without issue.

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