FCA
FIAT CHRYSLER AUTOMOBILES

Thomas McCarthy
Head, Vehicle Safety Compliance and
Product Analysis

February 28, 2020

Mr. Bruce York
Chief, Medium and Heavy Duty Vehicle Division
Office of Defects Investigation
U.S. Department of Transportation
National Highway Traffic Safety Administration
Office of Defects Investigation
Room W46-324
1200 New Jersey Avenue SE
Washington, D.C. 20590

Reference: NEF-106rr; PE19-017

Dear Mr. Yon:

Enclosed is the response of FCA US LLC ("FCA US") to the December 18, 2019, Information Request issued in the above-referenced investigation. This constitutes FCA US's full response to this Information Request.
FCA US is submitting to the Chief Counsel's Office, via courier for next day delivery, an accompanying request for confidentiality pursuant to 49 C.F.R. Part 512 and Exemption 4 to the Freedom of Information Act.

Sincerely,

[redacted]

Thomas McCarthy

Head, Vehicle Safety Compliance and Product Analysis

Attachment and Enclosures
cc. Jonathan Morrison, Chief Counsel's Office

Preliminary Statement

On April 30, 2009, Chrysler LLC, the entity that manufactured and sold the certain vehicles that may be discussed in this Information Request, filed a voluntary petition for relief under Chapter 11 of Title 11 of the United States Bankruptcy Code.

On June 10, 2009, Chrysler LLC sold substantially all of its assets to a newly formed company later known as Chrysler Group LLC. Pursuant to the sales transaction, Chrysler Group LLC assumed responsibility for safety recalls pursuant to the 49 U.S.C. Chapter 301 for vehicles that were manufactured and sold by Chrysler LLC prior to the June 10, 2009, asset sale.

On June 11, 2009, Chrysler LLC changed its name to Old Carco LLC. The assets of Old Carco LLC that were not purchased by Chrysler Group LLC, as well as the liabilities of Old Carco that were not assumed, remain under the jurisdiction of the United States Bankruptcy Court – Southern District of New York (In re Old Carco LLC, et al., Case No. 09-50002).

Effective December 15, 2014, Chrysler Group LLC changed its name to FCA US LLC ("FCA US").

Note: Unless indicated otherwise in the response to a question, this document contains information up to December 18, 2019, the date this Information Request ("IR") was received.

This attachment contains FCA US' response to the IR issued in Investigation PE19-017, as clarified via email with Ryan Rahimpour of the National Highway Traffic Safety Administration's ("NHTSA") Office of Defects Investigation ("ODI") on January 6, 2020, January 24, 2020 and January 28, 2020.

- In response to Request No. 1, FCA US will provide will provide three additional columns in the Access database; 1) Engine Sales Code, 2) Transmission Sales Code, 3) Indicate if VIN was built as an "Incomplete vehicle." In addition, FCA US has also provided engine description, transmission description, transfer case sales code and description, front driveshaft sales code and description, and front axle sales code and description.

- In response to Request No. 1, subpart e, FCA US will provide separate tables containing the component supplier, part number and design version installed as original equipment for the Subject and Peer Vehicles, by model and model year.

- In response to Request No. 3, subpart g, and Request No. 5, subpart f, FCA US will provide the FCA US internal vehicle maintenance history in files identified by VIN. Those files are located in Enclosure 3 and Enclosure 5.

- In response to Request No. 7's direction that FCA US "[p]rovide copies of any service instructions and/or required tools concerning the subject components provided to dealers," FCA US will provide any maintenance and/or service instruction documents regarding the double Cardan joint on the front driveshaft. FCA US also will provide information for any special tools required to maintain and service this joint.

- In its response to Request No. 8, subpart b, FCA US will limit the subject components to the driveshaft and transfer case.

- In response to Request No. 9, FCA US will exclude the engine and transmission Subject Components.

- In response to Request No. 10, FCA US will exclude the engine and transmission Subject Components.

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

a. Vehicle identification number (VIN);
b. Make;
c. Model;
d. Model Year;
e. Subject component supplier, part number and design version installed as original equipment;
f. Date of manufacture;
g. Date warranty coverage commenced; and
h. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2010, or a compatible format, entitled "PRODUCTION DATA."

A1. FCA US' responses to subparts (a) through (d) and (f) through (h) of this Request are located in **ENCLOSURE 01** and titled PE19-017 SUBJECT_PRODUCTION DATA.accdb and PE19-017 PEER_PRODUCTION DATA.accdb. The response to subpart (e) of the Request is located in **ENCLOSURE 01** and titled PE19-017 SUBJECT_PART NUMBERS_CONF BUS INFO.pdf, and PE19-017 PEER_PART NUMBERS_CONF BUS INFO.pdf. At NHTSA's request, FCA US has provided additional columns as described above.

2. State the number of each of the following, received by FCA, or of which FCA is otherwise aware, which relate to, or may relate to, the alleged defect in the subject and peer 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. Property damage claims;
e. Third-party arbitration proceedings where FCA is or was a party to the arbitration; and
f. Lawsuits, both pending and closed, in which FCA is or was a defendant or codefendant.

For subparts "a" through "f," 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 "f," provide a summary description of the alleged problem and causal and contributing factors and FCA's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e/f" and "f, / 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.

A2. FCA US has conducted a reasonable and diligent search of the normal repositories of information potentially responsive to this Request. In compiling its response to this Request, FCA US separated

responsive reports into those that "Relate To" the Alleged Defect and those that "May Relate To" the Alleged Defect in the Subject and Peer Vehicles. A report was assigned to the "May Relate To" category if it involved a Subject or Peer Vehicle, but lacked sufficient information to either determine whether the underlying incident in fact was related to or caused by the Alleged Defect. FCA US further segregated responsive reports into one of three categories: (1) reports in which the front driveshaft initiated the failure; (2) reports in which the transfer case initiated the failure; and (3) reports as to which the initiating cause could not be determined. This information constitutes FCA US' responses to subparts (a) through (f) of this Request, and is located in **ENCLOSURE 02** titled PE19-017 SUBJECT_REPORTS.pdf and PE19-017 PEER_REPORTS.pdf.

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. FCA'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), street address, email address and telephone number;
d. Vehicle's VIN;
e. Vehicle's make, model and model year;
f. Vehicle's mileage at time of incident;
g. Vehicle maintenance history (subject vehicle only);
h. Incident date;
i. Report or claim date;
j. Whether a crash is alleged;
k. Whether property damage is alleged;
l. Number of alleged injuries, if any; and
m. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA."

A3. FCA US' responses to subparts (a) through (f) and (h) through (m) of this Request are located in **ENCLOSURE 03** and titled PE19-017 SUBJECT_REQUEST NUMBER TWO DATA.accdb, and PE19-017 PEER_REQUEST NUMBER TWO DATA.accdb. The response for subpart (g) of the Request for each VIN with available records is located in ENCLOSURE 03 and titled Q3 FCA US MAINTENANCE HISTORY_CONF BUS INFO.pdf.

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 FCA used for organizing the documents. Describe in detail the search methods and search criteria used by FCA to identify the items in response to Request No. 2.

A4. FCA US has conducted a reasonable and diligent search of the normal repositories of information potentially responsive to this Request. Documents related to each item within the scope of Request

No. 2 were gathered by using information such as vehicle model, model year, and a word search using words reasonably related to the reports sought by this IR. The keyword criteria used in this search are located in **ENCLOSURE 04** and titled PE19-017_Q2 KEYWORD SEARCH CRITERIA.pdf. An eyes-on review of the search results was then conducted to determine whether each returned record relates to, or may relate to, the Alleged Defect.

Copies of the available documents related to each item within the scope of Request No. 2 can be found in **ENCLOSURE 04**. The customer complaint summaries are submitted in files titled PE19-017 SUBJECT_CONSUMER AND CUSTOMER COMPLAINTS.pdf and PE19-017 PEER_CONSUMER AND CUSTOMER COMPLAINTS.pdf and the related documents are arranged in corresponding folders by complaint number. Legal summaries are contained in files titled PE19-017 SUBJECT_LEGAL SUMMARIES.pdf and PE19-017 PEER_LEGAL SUMMARIES.pdf and the related documents are arranged in corresponding folders by claimant name. Field reports are contained in files titled PE19-017 SUBJECT_FIELD REPORTS.pdf and PE19-017 PEER_FIELD REPORTS.pdf.

In FCA US' responses to Request No. 2 and 3, FCA US analyzed records referencing the Alleged Defect ("Front driveshaft and/or transfer case failure") as follows:

- "Relate To": Transfer Case and/or Front Driveshaft is stated as the failed Subject Component that resulted in loss of motive power to front axle (i.e., loss of motive power was not engine or transmission related); or

- "May Relate To": Loss of Motive Power to Front Axle with undetermined cause (not engine or transmission related) or loss of motive power not stated.

5. State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by FCA to date that relate to, or may relate to, the alleged defect in the subject and peer 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. FCA's claim number;
b. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;
c. VIN;
d. Repair date;
e. Vehicle mileage at time of repair;
f. Vehicle maintenance history (subject vehicle only);
g. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
h. Labor operation number(s);
i. Problem code(s);
j. Replacement part number(s) and description(s);
k. Concern stated by customer;
l. Cause as stated on the repair order;
m. Correction as stated on the repair order; and

n. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "WARRANTY DATA."

A5. FCA US' responses to subparts (a) through (e) and (g) through (n) of this Request are located in **ENCLOSURE 05** and titled PE19-017 SUBJECT_WARRANTY DATA.accdb and PE19-017 PEER_WARRANTY DATA.accdb. The response for subpart (f) of the Request is located in ENCLOSURE 05 and titled Q5 FCA US MAINTENANCE HISTORY_CONF BUS INFO.pdf.

6. Describe in detail the search methods and search criteria used by FCA to identify the claims in response to Request No. 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used.

Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions, applicable to the alleged defect in the subject vehicles.

State, by make and model year, the terms of the new vehicle warranty coverage offered by FCA on the subject and peer 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 FCA offered for the subject and peer vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

A6. In order to identify the claims detailed in its response to Request No. 5, FCA US searched the normal repositories of information potentially responsive to this Request utilizing service part numbers. A list of the part numbers used for this search is located in **ENCLOSURE 6** and titled PE19-017 SUBJECT_SERVICE PART NUMBERS_CONF BUS INFO.pdf and PE19-017 PEER_SERVICE PART NUMBERS_CONF BUS INFO.pdf. All claims returned utilizing the identified part numbers were subject to an eyes-on review to determine whether each returned record "Relate To", or "May Relate To", the Alleged Defect.

In FCA US' response to Request No. 5, FCA US used the following criteria in its assessment:

- "Relate To": Specifically notes the driveshaft or transfer case has failed; or
- "May Relate To": Transfer case internal defect actually noted, or mention of transfer case oil leak, planetary gear failure or transfer case housing crack noted.

Labor operations, labor operation descriptions, problem codes, problem code descriptions, part numbers and part number descriptions potentially related to the Alleged Defect are contained in the correspondingly titled columns in the database located in **ENCLOSURE 05** and titled PE19-017 SUBJECT_WARRANTY DATA.accdb and PE19-017 PEER_WARRANTY DATA.accdb.

New vehicle warranty coverage offered by FCA US on the Subject and Peer Vehicles is located in **ENCLOSURE 06** and titled PE19-017_NEW VEHICLE WARRANTY.pdf.

Extended warranty and service contract coverage option(s) that FCA US offered for the Subject and Peer Vehicles, and the number of vehicles that are covered under each such extended warranty, is provided by option, model, and model year located in **ENCLOSURE 06** and titled PE19-017 SUBJECT_SERVICE CONTRACTS_CONF BUS INFO.pdf and PE19-017 PEER_SERVICE CONTRACTS_CONF BUS INFO.pdf.

7. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject and peer vehicles, that FCA 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 FCA is planning to issue within the next 120 days. Provide copies of any service instructions and/or required tools concerning the subject components provided to dealers.

A7. FCA US has conducted a reasonable and diligent search of the normal repositories of information potentially responsive to this Request. The responsive records are located in **ENCLOSURE 07**.

8. Describe all assessments, required maintance, 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, FCA. For each such action, provide the following information:

a. Action title or identifier;

b. Required service intervals as it pertains to time or mileage in service of the subject component;
c. The actual or planned start date;
d. The actual or expected end date;
e. Brief summary of the subject and objective of the action;
f. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
g. 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.

A8. FCA US' responses to subparts (a) and (c) through (g) of this Request are located in **ENCLOSURE 08** and are summarized in the chart titled PE19-017_ACTIONS SUMMARY_CONF BUS INFO.pdf. Copies of responsive documentary information is included within **ENCLOSURE 08**. The response to subpart (b) is located in **ENCLOSURE 08** and titled Q8_00035_CONF BUS INFO.pdf. Additionally, FCA US has provided copies of Owners Manuals, User Guides, and Diesel Supplements for the Subject Vehicles, which are located in **ENCLOSURE 08**.

9. Describe all modifications or changes made by, or on behalf of, FCA 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 number(s) (service and engineering) of the original component;
e. The part number(s) (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.

Also, provide the above information for any modification or change that FCA is aware of which may be incorporated into vehicle production within the next 120 days.

A9. FCA US' responses to subparts (a) through (h) of this Request are located in **ENCLOSURE 09** and titled PE19-017_CHANGE HISTORY_CONF BUS INFO.pdf.

10. State the number of each of the following that FCA 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 sale (including the cut-off date for sales, if applicable):

a. Subject component; and
b. Any kits that have been released, or developed, by FCA for use in service repairs to the subject component/assembly.

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 FCA is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

A10. FCA US' response to this Request is located in **ENCLOSURE 10** and titled PE19-017_PART SALES_CONF BUS INFO.pdf, PE19-017_SUPPLIER INFORMATION.pdf and PE19-017_IDENTICAL COMPONENT USAGE_CONF BUS INFO.pdf. Associated part numbers are included in **ENCLOSURE 6** and titled PE19-017 SUBJECT_SERVICE PART NUMBERS_CONF BUS INFO.pdf.

11. Furnish FCA'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 reports included with this inquiry.

A11. FCA US has reviewed and analyzed the data provided in response to the Requests above and the VOQs provided by NHTSA in conjunction with this IR. Based on the information known to date from that review, and FCA US' related investigation into the subject matter of this IR, FCA US cannot conclude that the Alleged Defect in the Subject Vehicles poses an unreasonable risk to motor vehicle safety.

FCA US' investigation of the Alleged Defect, as defined, was assessed according to its two constituent Subject Components: front driveshaft and transfer case. As to the former, FCA US' analysis reveals that these driveshaft incidents result from failure to properly inspect and maintain the double Cardan joint incorporated into the driveshaft. Consistent with this, the complaint records submitted in conjunction with this Response are replete with indications of inadequate inspection and improper maintenance. The effect of improper maintenance is exacerbated by the duty cycle of up-fitted heavy duty cab chassis trucks, and can result in substantial degradation of the driveshaft's integrity. This degradation initially produces vibration and noise, but ultimately can lead to driveshaft and transfer case failure if ignored.

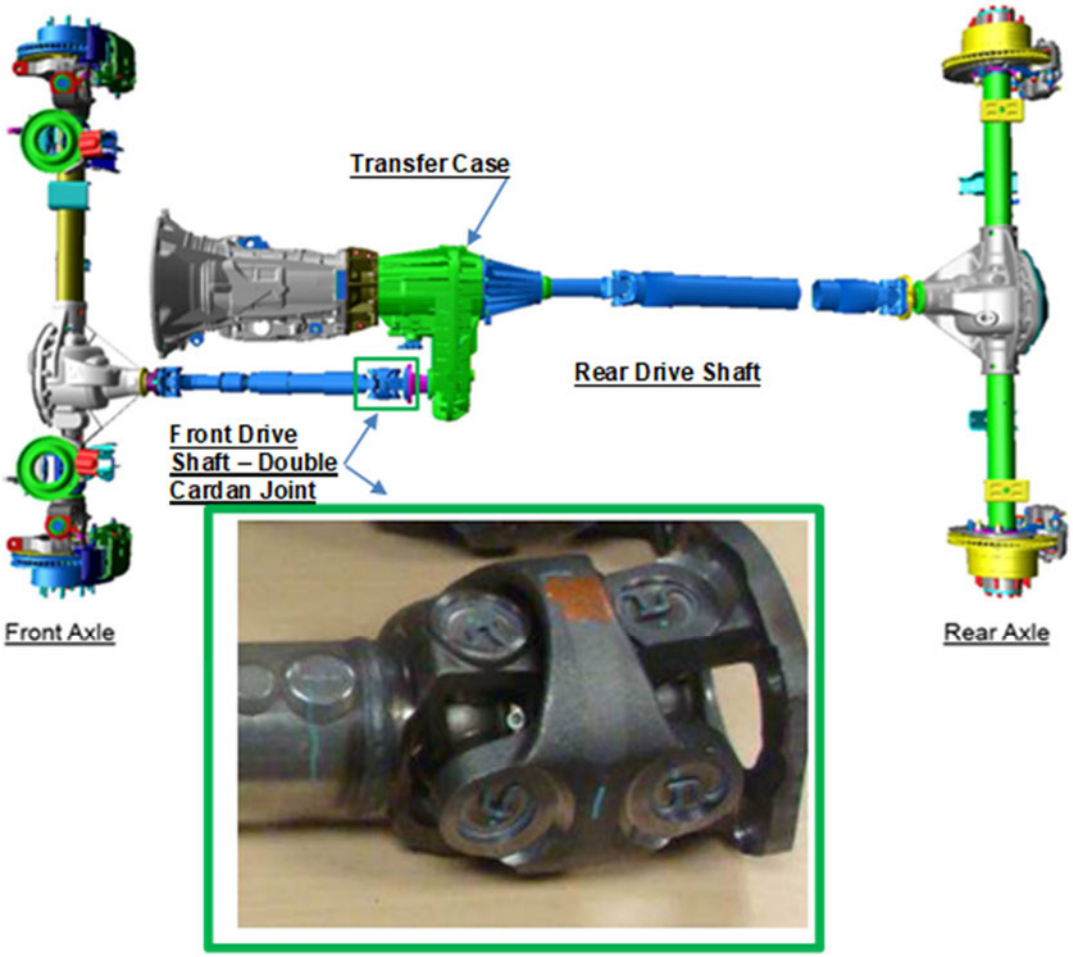
FCA US' review of the complaint records submitted in connection with this IR, where the records are sufficiently specific, reveals that these driveshaft inspection and maintenance issues represent the majority of responsive complaint records. The few remaining records, most of which can be attributed to unspecified transfer case failures, represent a variety of infrequent internal transfer case failure modes.

Finally, FCA US notes that, in a population exceeding 65,000 Subject Vehicles, FCA US' records reveal a total of two related injuries and zero related fatalities and zero crashes.

I. Background

1) The Subject Components – Drive Shaft and Transfer Case

With the exception of the 2019 MY Subject Vehicles, all of the Subject and Peer Vehicles are equipped with a front driveshaft containing a double Cardan joint. A double Cardan joint is a universal joint, or u-joint, that consists of two Cardan joints connected by a link yoke with an internal centering mechanism that maintain the two Cardan joints at near equal angle and velocity. The double Cardan joint is located on the front driveshaft, which connects the front differential located on the axle to the transfer case. A transfer case is a part of the drivetrain that transfers power from the transmission to the front and rear axles through drive shafts.



The front driveshaft on the 2019MY Ram 4500 and 5500 4WD vehicles were made with a maintenance-free 8-ball Rzeppa-type Constant Velocity Joint ("CVJ"). A CVJ is a type of universal joint that transmits motion with an angular velocity ratio of unity between input and output members. The 2019MY Subject Vehicles were made with this CVJ due to their lower mass, improved ease of assembly at the assembly plant, and true constant velocity operation.

2) Inspection/Maintenance Requirements

To ensure consistent performance throughout the lifetime of the Subject Vehicles, FCA US provides owners with comprehensive information describing the proper inspection and maintenance of both the front driveshaft and the transfer case.

FCA US' efforts to educate owners on the proper maintenance requirements of these components begin with the materials that every Subject Vehicle owner is provided, including the Owner Manual, (with Diesel Supplement, as applicable), the User Guide and an under hood label. As discussed in more detail below, the failures occasioned by insufficient driveshaft lubrication do not happen instantaneously. Instead, they develop following a gradual process of heat, internal wear and loosening in the double Cardan joint and annealing of internal metal components that results from the lack of re-lubrication. Any loosening or extra internal clearance within the joint would be apparent to a servicing technician as a natural extension of required maintenance.

With this in mind, the salient details of the maintenance requirements are as follows:

- For gas engines, both the Owner Manual and User Guide require front driveshaft lubrication at every oil change. Recommended oil change intervals are every 8,000 miles, twelve months or 350 hours of engine run time, whichever comes first or every 4,000 miles for severe duty or earlier if indicated by the oil change indicator.

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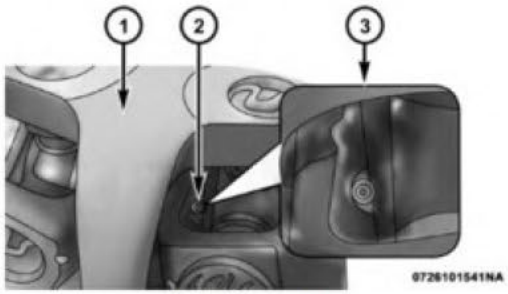
Front Prop Shaft Lubrication — Four-Wheel Drive Models

Lubricate the front driveshaft grease fitting at each oil change.

0726077907

Front Drive Shaft Double Cardan Joint

The grease fitting is located at the rear of the front driveshaft, near the centering mechanism of double cardan joint. Refer to the "Maintenance Schedule" for the proper maintenance intervals. Use Mopar Type MS-6560 (lithium-based grease), or equivalent.



Double Cardan Joint

1 — Double Cardan Joint
2 — Grease Fitting
3 — Exploded View – Grease Fitting

Body Lubrication

Locks and all body pivot points, including such items as seat tracks, door hinge pivot points and rollers, liftgate, tailgate, decklid, sliding doors and hood hinges, should be lubricated periodically with a lithium based grease, such as

NOTE: Under no circumstances should oil change intervals exceed 8,000 miles (13,000 km), twelve months or 350 hours of engine run time, whichever comes first. The 350 hours of engine run or idle time is generally only a concern for fleet customers.

MAINTENANCE SCHEDULES 627

Once A Month Or Before A Long Trip:

- Check engine oil level
- Check windshield washer fluid level
- Check the tire inflation pressures and look for unusual wear or damage
- Check the fluid levels of the coolant reservoir, brake master cylinder, power steering and automatic transmission and fill as needed.
- Check function of all interior and exterior lights

Maintenance Chart

Required Maintenance

Refer to the Maintenance Schedules on the following pages for required maintenance.

At Every Oil Change Interval As Indicated By Oil Change Indicator System:
• Change oil and filter.
• Rotate the tires. **Rotate at the first sign of irregular wear, even if it occurs before the oil indicator system turns on.**
• Inspect battery and clean and tighten terminals as required.
• Inspect automatic transmission fluid if equipped with dipstick.
• Inspect brake pads, shoes, rotors, drums, hoses and park brake.
• Inspect engine cooling system protection and hoses.
• Inspect exhaust system.
• Inspect engine air cleaner if using in dusty or off-road conditions.
• Lube the front drive shaft fitting.

- For diesel engines, both the Owner Manual and User Guide require front driveshaft lubrication at every 7500 miles

Maintenance Chart — Cummins Diesel Engine

Mileage or time passed (whichever comes first):	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000	82,500	90,000	97,500	105,000	112,500	120,000	127,500	135,000	142,500	150,000
Or Months:	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Or Kilometers:	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000	132,000	144,000	156,000	168,000	180,000	192,000	204,000	216,000	228,000	240,000
Change engine oil every 15,000 miles (24 000 km) or six months or 500 Hours or sooner if prompted by the oil change indicator system, whichever comes first. **	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Additional Inspections																				
Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rotate the tires.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lubricate front drive shaft fitting (4x4).	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

- To reinforce the need to lubricate the front driveshaft at every oil change, every Subject Vehicle also contains an under hood label to remind owners and technicians alike of this important maintenance requirement. Examples of this are shown below.

- The FCA US Owner Manual also advises customers to inspect the CV/Universal joints every 30,000 miles, or every three years, whichever comes first. It is important to underscore the need to perform a physical inspection of these components, which is a necessary byproduct of the required maintenance described above. During the lubrication process, the servicing technician will handle the driveshaft and consequently will be alerted to any abnormal wear in the double Cardan joint, for example, any looseness or play. In this way, the inspection and maintenance process is a consistent means of detecting driveshaft wear.

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Mileage or time passed (whichever comes first)	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Or Kilometers:	32,000	48,000	64,000	80,000	96,000	112,000	128,000	144,000	160,000	176,000	192,000	208,000	224,000	240,000
Additional Inspections														
Inspect the CV/Universal joints.		X			X			X			X			X
Inspect front suspension, tie rod ends, and replace if necessary.	X		X		X		X		X		X		X	
Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing, change axle fluid.	X		X		X		X		X		X		X	
Inspect the brake linings, parking brake function.	X		X		X		X		X		X		X	

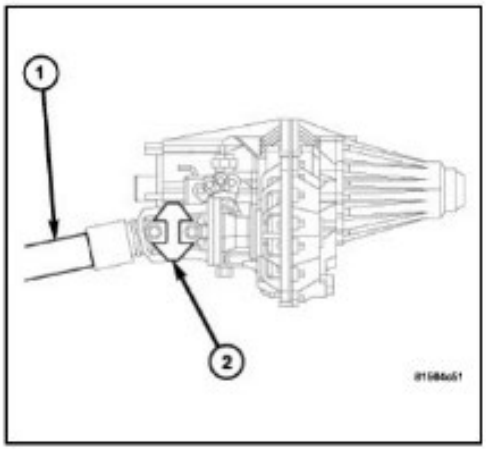
- Maintenance requirements related to the transfer case likewise vary between diesel and gas engine Subject Vehicle variants. In both cases, transfer case fluid inspection is required every 30,000 miles, though the owner materials suggest that diesel engine Subject Vehicle owners change transfer case fluid at 60,000 miles, whereas similar materials for gas engine owners suggest changing transfer case fluid at 120,000 miles. For vehicles used for police, taxi, fleet or frequent trailer tow, owners are instructed to change transfer case fluid (rather than merely inspect it) every 30,000 miles.

- Dealer technicians also have access to the maintenance schedules related to the Subject Vehicles, as well as detailed instructions on how to perform the service. An example of the service instructions for lubrication of the double Cardan joint is shown below:

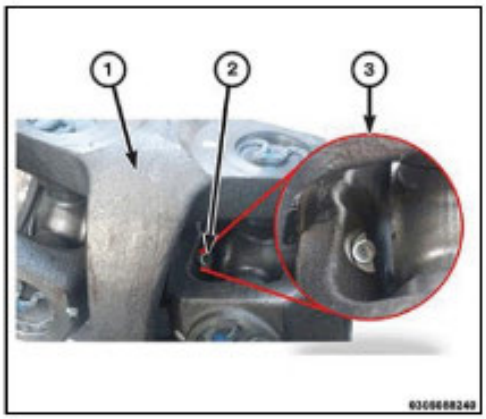
03 - Differential and Driveline / Driveshaft / Standard Procedure

LUBRICATION

Vehicles with double cardan universal joint front driveshafts (1) are equipped with a grease fitting (2).



Grease the double cardan universal joint (1) at each oil change using an appropriate grease gun at the fitting (2). Inset (3) shows a close up view of the grease fitting (2).



Periodically, additional training materials are published to underscore the importance of proper driveshaft maintenance.

3) The Subject Vehicle Population

The Subject Vehicle population is comprised of cab chassis 4WD vehicles that are designed to be upfit to a number of commercial uses, including but not limited to hauling and dumping, crane and boom trucks, utility vehicles, tow trucks and ambulances. These upfits are performed by either a second stage vehicle manufacturer or an alterer. These third-party manufacturers or alterers (herein collectively referred to as "Upfitters") complete the vehicle manufacturing process and/or alter a complete vehicle after it has left FCA US' control. A number of these upfit configurations entail significant weight loading due to upfit and upfit use cases. For that reason, FCA US' Upfitter-facing materials caution against overloading. This material is made available on RamTrucks.com. Many of the upfit uses involve the addition of significant electrical wiring to the base cab chassis. Some of the records assembled as part of this IR Response indicate that Upfitters have installed wiring over, under and/or around the

driveshaft, running the risk that the wiring might come in contact with, and become wrapped around, the spinning driveshaft while the Subject Vehicle is in motion. This can lead to driveshaft failure. Several examples are below.

The above images were taken of the same driveshaft from the same Subject Vehicle. The left image does not show evidence of damage to the centering mechanism, which indicates that the double Cardan joint was not lacking grease. The right image shows wiring wrapped around the driveshaft and was likely the cause of the failure.

The image above also illustrates aftermarket wiring looped around the driveshaft.

II. The Alleged Defect

With this understanding of the Subject Components, their maintenance requirements, and the use case of the Subject Vehicles, FCA US provides its assessment of the Alleged Defect. As mentioned above, the failures underlying the Alleged Defect in the two Subject Components have different root causes that require separate analyses.

1) Front Driveshaft

A review of the records identified in response to this IR indicates that the Alleged Defect in the front driveshaft is caused by improper maintenance and, more specifically, a failure to inspect and lubricate the driveshaft in the intervals described above. Due to lack of inspection and maintenance, the grease within the double Cardan centering mechanism becomes compromised, resulting in wear to the needle bearings, ball stud, centering ball, ball seat, and seals. Heat generation from breakdown of the grease within the centering mechanism eventually will anneal the ball stud and needle bearings, causing them to begin to wear away. Continued heat buildup can cause the ball stud to become malleable. Wear of the ball stud, needle bearings, and between the centering ball and ball seat creates clearance, resulting in unbalanced movement. This unbalanced movement results in severe forces reacting within the transfer case that can also lead to noise and vibration. If ignored, this eventually can lead to catastrophic failure of the transfer case, followed by separation of the driveshaft. Evidence of this failure mode is found in the deformed shape of the centering mechanism/ball stud as a result of overarticulating the double Cardan joint prior to fracture (as seen in the two photos below). If separated from the transfer case, the front driveshaft will continue to spin, potentially impacting and causing damage to other components in proximity.

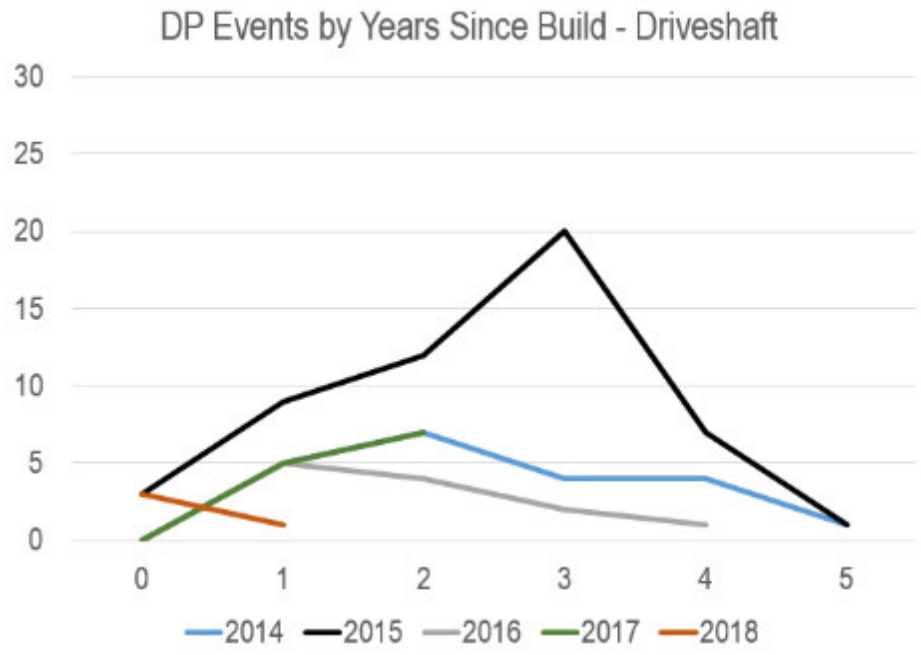
The images above are examples of a double Cardan joint that has failed due to insufficient lubrication.

FCA US' review of the available records pertaining to the Subject Vehicles indicates that, where the failure condition can be attributed to the driveshaft, these incidents are consistent with this described failure mode. However, several observations are in order.

First, the underlying records related to the driveshaft-initiated failures identified by FCA US in response to Question 2 evidence a lack of driveshaft maintenance. In response to Question 2, FCA US has identified 132 incidents that, based on its analysis, are likely attributable to failure of the front driveshaft consistent with the description above. In over 50 of these cases, underlying records provided in FCA US' response to Question 3 expressly indicate (often by a dealership technician) that the driveshaft was improperly maintained. Representative examples of these indications include: "the front driveshaft has not been lubricated which has caused it to fail"; "cardon [sic] joint shows no signs of ever being lubricated"; "it is not a transfer case issue and that it is actually a driveshaft issue that has ball bearings that are suppose [sic] to be greased every oil change and it looks like they have never been greased and they were blue and extremely hot."

Second, as discussed above, the failure mode is a consequence of unbalanced movement within the double Cardan joint that leads to noise and vibration. That noise and vibration should be detectable to the driver before the occurrence of any failure of the driveshaft.

Third, FCA US' records reflect failures only for 2014-2018MY Subject Vehicles. Data of unique driveshaft events stratified by years since build reflects a predominance of driveshaft issues related to 2015MY Subject Vehicles, increasing to a peak at three years, but reducing to low levels consistent with the remaining Subject Vehicle population by the fifth year in service.



Fourth, and relatedly, FCA US has not identified any reported failures of 2019MY Subject Vehicles. As described above, the 2019MY Subject Vehicles were built with a different front driveshaft style than the 2014-2018MY Subject Vehicles. Specifically, 2019MY Subject (and Peer) Vehicles moved from the double Cardan joint described above to a CVJ.

Fifth, the Peer Group data shows relatively lower rates of driveshaft failures. However, there are significant differences between the Subject and Peer Vehicle populations. As discussed above, the Subject Vehicles are all cab chassis vehicles that are upfit in a variety of ways to serve specific heavy-duty commercial uses, including towing, hauling or other heavy duty cycles. By contrast, most of the Peer Vehicles (Ram 2500 and some Ram 3500 trucks) are pickup trucks designed more for personal and/or less severe duty cycles. A number of other factors differentiate the Subject and Peer vehicles. The manufacturers of the front driveshaft, as well as the double Cardan joints, are different between the Subject and Peer Vehicles. The architecture, driveshaft tubes and joint design also are different between the pickup truck and the cab chassis.

2) Transfer Case

Distinct from the identified driveshaft failures described above, FCA US' analysis of the responsive records indicates that there are low numbers of incidents that have been attributed to transfer case-initiated failures based on the description of the incident contained in FCA US' records. The overall C/1000 rate for these transfer case reports is 0.48.

The complaints can be summarized into two general categories: (1) those in which the transfer case was described as the initiating failure, even though the driveshaft also failed consistent with the phenomenon described above (suggesting that these incidents may also have been caused by improper inspection and/or maintenance); and (2) transfer case failure attributed to an internal failure within the case itself.

3) VOQ Analysis

FCA US also has reviewed the circumstances involved in the three VOQs referenced in the IR. This review has confirmed that the failures involved in those VOQs are consistent with FCA US' understanding of driveshaft failures as explained in this Response. Warranty records associated with the vehicle involved in VOQ 11104270 indicate that FCA US placed a warranty restriction on the vehicle due to lack of proper maintenance of the double Cardan joint. The decision to restrict this vehicle was subsequently reviewed by a FCA US Fleet Technical Liaison, who also noted the lack of greasing to the double Cardan joint. FCA US has no maintenance records for this vehicle following the initial maintenance performed as part of new vehicle preparation.

FCA US' review of VOQ 11113352 also is consistent with the analysis above. Photos of the driveshaft in this matter show that the centering mechanism of the double Cardan joint was deformed, which is an indication of insufficient lubrication. The maintenance records provided by NHTSA (from an independent repair facility) for this vehicle contain no indication that the double Cardan joint had been lubricated or inspected in accordance with the FCA US maintenance schedules described above. FCA US internal maintenance records also do not contain and oil, lube, filter maintenance indications.

Finally, the description of the failure in VOQ 11121408, which references that the driver noticed a "loud bang" and "parts of the transmission on the road," is consistent with the driveshaft separation mode described above. This is further confirmed by observations from the dealer technician that inspected the vehicle after the failure, who noted that the driveshaft has separated at the double Cardan joint.

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For the reasons set forth in FCA US' response to this IR, FCA US respectfully requests the Agency to close this investigation.