CHRYSLER

August 11, 2014

Mr. Jeffrey L. Quandt, Chief
Vehicle Controls Division (VCD), NVS-213
U.S. Department of Transportation

National Highway Traffic Safety Administration (NHTSA)
Office of Defects Investigation (ODI)
Room W48-312
1200 New Jersey Avenue SE
Washington, D.C. 20590

Reference: NVS-213swm; PE14-013

Chrysler responded to Questions 1 and 2 on July 31, 2014, as agreed upon with ODI. The responses to Questions 1 and 2 have been provided again in this response with the remaining Question 3 through 14 responses. Additionally, the Information Request ("IR") provided a response date of Sunday, August 10, 2014. Pursuant to an agreement with ODI, Chrysler is providing the response to Questions 3 through 14 on Monday, August 11, 2014. Unless indicated otherwise in the response to a question, this document contains information through May 27, 2014, the date the IR was received.

Sincerely,

Philip Hartnagel

Attachment and Enclosures

Preliminary Statement

On April 30, 2009 Chrysler LLC, the entity that manufactured and sold the vehicles that are the subject of 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 now known as Chrysler Group LLC. Pursuant to the sales transaction, Chrysler Group LLC assumed responsibility for safety recalls pursuant to 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 LLC 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).

Note: Chrysler responded to Questions 1 and 2 on July 31, 2014, as agreed upon with ODI. The responses to Questions 1 and 2 have been provided again in this August 11, 2014 response with the remaining Question 3 through 14 responses. Additionally, the Information Request ("IR") provided a response date of Sunday, August 10, 2014. Pursuant to an agreement with ODI, Chrysler is providing the response to Questions 3 through 14 on Monday, August 11, 2014. Unless indicated otherwise in the response to a question, this document contains information through May 27, 2014, the date the IR was received.

Subject Vehicle Identification

Chrysler identifies the subject vehicles as 2004 – 2006 Dodge Ram 2500 and 3500 trucks equipped with manual transmission and manufactured for sale or lease in the United States, including, but not limited to, District of Columbia, and current U.S. territories and possessions.

Peer Vehicles Identification

Chrysler identifies the peer vehicles as any manual transmission vehicle, manufactured for sale or lease in the United States, including, but not limited to, District of Columbia, and current U.S. territories and possessions, incorporating the subject component, clutch interlock switch part number 53007944AB, into the vehicle architecture. The switch has been used in production vehicles from 1998 MY - 2014 MY (May 27, 2014). Peer vehicles include the following:

Jeep Cherokee	1998 – 2001 MY
Dodge Dakota	1998 – 2009 MY
Dodge Ram 1500	1998 – 2008 MY
Dodge Ram 2500	1998 – 2003 and 2007 MY – 2014 MY
Dodge Ram 3500	1998 – 2003 and 2007 MY – 2014 MY
Dodge Ram 4500	2008 – 2014 MY
Dodge Ram 5500	2008 – 2014 MY
Dodge Viper	1998 – 2010 MY

Subject Component Identification

The subject vehicles incorporate clutch interlock switch part number 53007944AB, into the vehicle architecture. Thus, Chrysler identifies the subject component as the clutch interlock switch assembly, Chrysler part number 53007944AB. The assembly includes the switch body, the electrical contacts, the spring guides, the springs, the switch cover, and the wire harness with connector.

Clutch Interlock Switch assembly part number 53007944AB

Alleged Defect Definition

NHTSA defines the alleged defect as the clutch interlock switch failure that allows engine crank/start when the clutch pedal is not depressed, which may result in vehicle movement.

1. Provide a table of production volumes using the subject component by platform, model and model year.

A1. Subject vehicles include all 2004 – 2006 MY Dodge Ram 2500 and 3500 trucks equipped with manual transmission and manufactured for sale or lease in the United States, including, but not limited to, District of Columbia, and current U.S. territories and possessions.

Subject component is all clutch interlock switches used in the subject vehicles.

Table 1 is a summary of production volumes of subject vehicles produced with subject switch.

Model Year	Platform	Model	Production Volume
2004	Dodge	Ram 2500	18208
2004	Dodge	Ram 3500	18420
2005	Dodge	Ram 2500	16489
2005	Dodge	Ram 3500	17775
2006	Dodge	Ram 2500	17547
2006	Dodge	Ram 3500	21422

Table 1: Subject Vehicle Production Volumes

The peer vehicles have been identified as all other vehicles using the same clutch interlock switch as the subject vehicles that 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 peer vehicles include manual transmission vehicles manufactured from 1998 MY through 2014 MY, May 27, 2014. Vehicle models include Jeep Cherokee (1998 – 2001MY), Dodge Dakota (1998 – 2009 MY), Dodge Viper (1998 – 2006 MY and 2008 – 2010 MY), Dodge Ram 1500 (1998 – 2008 MY), Dodge Ram 2500 (1998 – 2003 MY and 2007 – 2014MY), and Dodge Ram 3500 (1998 – 2003 MY and 2007 – 2014MY), Ram 4500 (2008 - 2014 MY), and Ram 500 Vehicles (2008 -2014 MY).

Table 2 and 2a are a summary of production volumes of peer vehicles produced with subject switch.

Model Year	Platform	Model	Production Volume
1998	Jeep	Cherokee	11877
1998	Dodge	Dakota	47951
1998	Dodge	Ram 1500	18567
1998	Dodge	Ram 2500	20403
1998	Dodge	Ram 3500	18670
1998	Dodge	Viper	1072
1999	Jeep	Cherokee	8497
1999	Dodge	Dakota	29197
1999	Dodge	Ram 1500	17845
1999	Dodge	Ram 2500	23093
1999	Dodge	Ram 3500	18188
1999	Dodge	Viper	1048
2000	Jeep	Cherokee	1986
2000	Dodge	Dakota	25006
2000	Dodge	Ram 1500	7825
2000	Dodge	Ram 2500	12037
2000	Dodge	Ram 3500	9804
2000	Dodge	Viper	1561
2001	Jeep	Cherokee	1413
2001	Dodge	Dakota	21658
2001	Dodge	Ram 1500	28025
2001	Dodge	Ram 2500	42057
2001	Dodge	Ram 3500	27830
2001	Dodge	Viper	1652
2002	Dodge	Dakota	16597
2002	Dodge	Ram 1500	15961
2002	Dodge	Ram 2500	21470
2002	Dodge	Ram 3500	15658
2002	Dodge	Viper	1381
2003	Dodge	Dakota	11927
2003	Dodge	Ram 1500	14129
2003	Dodge	Ram 2500	21588
2003	Dodge	Ram 3500	21808
2003	Dodge	Viper	1739
2004	Dodge	Dakota	9884
2004	Dodge	Ram 1500	15350
2004	Dodge	Viper	2231
2005	Dodge	Dakota	2115
2005	Dodge	Ram 1500	7155
2005	Dodge	Viper	1698

Table 2: Peer Vehicle Production Volumes

Model Year	Platform	Model	Production Volume
2006	Dodge	Dakota	5215
2006	Dodge	Ram 1500	8511
2006	Dodge	Viper	1643
2007	Dodge	Dakota	1864
2007	Dodge	Ram 1500	6411
2007	Dodge	Ram 2500	11930
2007	Dodge	Ram 3500	22473
2008	Dodge	Dakota	1101
2008	Dodge	Ram 1500	8546
2008	Dodge	Ram 2500	7013
2008	Dodge	Ram 3500	8894
2008	Dodge	Ram 4500	502
2008	Dodge	Ram 5500	646
2008	Dodge	Viper	1403
2009	Ram	Dakota	40
2009	Dodge/Ram	2500	2570
2009	Dodge/Ram	3500	3619
2009	Dodge/Ram	4500	115
2009	Dodge/Ram	5500	216
2009	Dodge	Viper	581
2010	Ram	2500	2246
2010	Ram	3500	2997
2010	Ram	4500	67
2010	Ram	5500	101
2010	Dodge	Viper	425
2011	Ram	2500	2583
2011	Ram	3500	4548
2011	Ram	4500	327
2011	Ram	5500	661
2012	Ram	2500	3921
2012	Ram	3500	6627
2012	Ram	4500	238
2012	Ram	5500	556
2013	Ram	2500	1787
2013	Ram	3500	1401
2013	Ram	4500	107
2013	Ram	5500	159
2014	Ram	2500	2133
2014	Ram	3500	2170
2014	Ram	4500	116
2014	Ram	5500	180

Table 2a: Peer Vehicle Production Volumes

2. **State, by model and model year, the number of subject and peer vehicles Chrysler has manufactured for sale or lease in the United States including, but not limited to, District of Columbia, and current U.S. territories and possessions. Separately, for each subject and peer vehicle manufactures to date by Chrysler, state the following:**
    a. **Vehicle identification number (VIN);**
    b. **Make;**
    c. **Model;**
    d. **Model year;**
    e. **Engine;**
    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." See Enclosure 1, Data Collection Disck, for a pre-formatted table that provides further details regarding this submission.

A2. The detailed response that lists the production data is provided in Enclosure 2 – Production Data as Microsoft Access 2010 tables titled "PE14-013 PRODUCTION DATA SUBJECT.accdb" and "PE14-013 PRODUCTION DATA PEER.accdb".

3. **State, by model and model year, the number of subject and peer vehicles Chrysler has 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, for which Chrysler sold an extended service plan. Separately, for each vehicle, state the following (if a vehicle had more than one plan, such as a maintenance plan and an extended service repair plan, then list the vehicle separately for each plan that it had):**

    a. **Vehicle identification number (VIN);**
    b. **Make;**
    c. **Model:**
    d. **Model Year;**
    e. **Name of the extended service plan;**
    f. **The mileage at which the extended service plan expires; and**
    g. **The number of months from the warranty start date at which the extended service plan expires.**

    Provide the table in Microsoft 2010, or a compatible format, entitled "EXTENDED SERVICE PLAN DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission

A3. The detailed response that lists the extended service plan for subject and peer vehicles Chrysler has 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, as requested in a. through g. is provided in Enclosure 3 Extended Service Plan Data CONF BUS INFO, which has been submitted under separate cover to the NHTSA Chief Counsel's Office with a request for confidential treatment.

4. State the number of each of the following, received by Chrysler, or of which Chrysler 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; and
e. Third-party arbitration proceedings where Chrysler is or was a party to the arbitration; and
f. Lawsuits, both pending and closed, in which Chrysler 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 Chrysler's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f" 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.

A4. Chrysler has identified the number of each of the following a. through f. that relate to, or may relate to, the alleged defect in the subject and peer vehicles. Chrysler has conducted a reasonable and diligent search of the normal repositories of such information.

a. Chrysler has identified 15 consumer complaints (Customer Assistance Inquiry Requests or CAIR) for the subject vehicles and 31 consumer complaints (Customer Assistance Inquiry Requests or CAIR) for the peer vehicles that relate to, or may relate to, the alleged defect, representing 14 unique VINs for the subject vehicles and 30 unique VINs for the peer vehicles.

b. Chrysler has identified five field reports for the subject vehicles and six field reports for the peer vehicles that relate to, or may relate to, the alleged defect.

c. Chrysler has identified zero consumer complaints and three legal claims alleging a crash in the subject vehicles that relate to, or may relate to, the alleged defect. Chrysler identified zero consumer complaints alleging injury in the subject vehicles that relate to, or may relate to, the alleged defect. Chrysler identified one claimed fatality in the subject vehicles that relates to, or may relate to, the alleged defect. The legal claims in the subject vehicles represent three unique VINs.

   Chrysler identified zero consumer complaints and three legal claims alleging a crash in the peer vehicles that relate to, or may relate to, the alleged defect. Chrysler identified zero claimed injuries and fatalities in the peer vehicles that relate to, or may relate to, the alleged defect.

d. Chrysler identified two consumer complaints and three legal claims alleging property damage in the subject vehicles that relate to, or may relate to, the alleged defect, representing four unique VINs.

   Chrysler identified five consumer complaints and two legal claims alleging property damage in the peer vehicles that relate to, or may relate to, the alleged defect, representing six unique VINs.

e. Chrysler identified zero third-party arbitration proceedings involving Chrysler for the subject or peer vehicles.

f. Chrysler identified three lawsuits or legal claims involving the subject vehicles that relate to, or may relate to, the alleged defect. Chrysler identified three lawsuits or legal claims involving the peer vehicles that relate to, or may relate to, the alleged defect.

   In summary, there are 22 unique VINs involving the subject vehicles and 36 unique VINs involving the peer vehicles that relate to, or may relate to, the alleged defect.

   Summary descriptions of the alleged defect, causal and contributing factors, and Chrysler's assessment of the problem, to the extent available, are included in Enclosure 6 Field Reports PUBLIC.

5. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 4, state the following information:

a. Chrysler's file number or other identifier used;
b. The category of the item, as identified in Request No. 4 (i.e., consumer complaint, field report, etc.);
c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
d. Vehicle's VIN;
e. Make;
f. Model;
g. Model Year;

h. Vehicle's mileage at time of incident;
i. Incident date;
j. Report or claim date;
k. Whether a crash 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 Access 2010, or a compatible format, entitled "REQUEST NUMBER FOUR DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

A5. The detailed response of customer complaints, field reports and legal claims for subject and peer vehicles responsive to Q4, as requested in Item a. though n., is provided in Enclosure 5 Request Number Four Data PUBLIC.

6. Produce copies of all documents related to each item within the scope of Request No. 4. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Chrysler used for organizing the documents. Describe in detail the search methods and search criteria used by Chrysler to identify the items in response to Request No. 4.

A6. Copies of all documents within the scope of Q5 are provided in Enclosure 6 Field Reports PUBLIC. The documents for the subject and peer vehicles contain customer complaints, field reports and legal claims. Chrysler has conducted a reasonable and diligent search of the normal repositories of such information.

7. State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Chrysler 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. Chrysler's claim number;
b. Vehicle owner or fleet name;
c. Make;
d. Model;
e. Model Year;
f. Vehicle's VIN;
g. Repair date;
h. Vehicle mileage at time of repair;
i. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;

j. Labor operation number;
k. Problem code;
l. Replacement part number(s) and description(s);
m. Concern stated by customer;
n. Cause;
o. Correction; and
p. 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." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

A7. The total number of warranty claims which relate to, or may relate to, the alleged defect in the subject vehicles is 177. This number is likely to be over inclusive, as a number of warranty claims were included, even though root cause was not defined and may be unrelated to the clutch interlock switch.

The total number of warranty claims which relate to, or may relate to, the alleged defect in the peer vehicles is 723. This number is likely to be over inclusive, as a number of warranty claims were included, even though root cause was not defined and may be unrelated to the clutch interlock switch.

Even when the clutch interlock switch is replaced, not every warranty claim relates to the alleged defect. Several warranty claims do not identify the clutch interlock switch (much less the failure of the clutch interlock switch allowing the vehicle to be started or crank without depressing the clutch), as the root cause of the condition. Furthermore, Chrysler excluded warranty claims from this submission when the available narrative described the reason the subject component was replaced due to a faulty ground or the re-flash of a control module. The majority of the warranty claims provided by Chrysler do not contain narratives, thus precluding a definitive determination of the root cause for the clutch interlock switch replacement. Finally, as more fully described in A10, Assessment 1, Chrysler received 57 returned subject components after having put these parts on retention. These returned clutch interlock switches were replaced by dealers and, if the vehicle was under warranty and the correct LOP was entered by the dealer technician, these warranty claims will appear in either the subject or peer vehicle warranty claim data. It should be noted that 55 of the 57 returned clutch interlock switches were fully functional. Mileage associated with these returned parts averaged 99,299 miles of customer use, and included fully functioning clutch interlock switches with up to 330,575 miles of customer use.

The warranty claim data requested is provided in Enclosure 7 Warranty Data PUBLIC.

8. Describe in detail the search methods and search criteria used by Chrysler to identify the claims in response to Request No. 7, 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 and peer vehicles. State, by make and

model year, the terms of the new vehicle warranty coverage offered by Chrysler 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 Chrysler 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 and indicate which plans would cover the subject component.

A8. Chrysler used the labor operation code ("LOP") to determine the claims that relate to, or may relate to, the alleged defect in the subject and peer vehicles. The LOP and associated failure codes used are shown in Table 8A.

Description	Labor Operation	Failure Code Description	Failure Code
Switch, Clutch Pedal	8805901	Binds, sticks , seized	7
Switch, Clutch Pedal	8805901	Circuit open	18
Switch, Clutch Pedal	8805901	Grounded or shorted	48
Switch, Clutch Pedal	8805901	Noisy	68
Switch, Clutch Pedal	8805901	Check Engine/Service Engine soon	ML
Switch, Clutch Pedal	8805901	Shortage Part	SE
Switch, Clutch Pedal	8805901	Uncodeable	UC

Table 8A – Clutch Interlock Switch Labor Operation

Table 8B lists LOPs with applicable failure codes that relate to, or may relate to, the alleged defect.

Description	Labor Operation	Failure Code Descriptiom	Failure Code
Hydraulic Clutch Systems - gas - Diesel -8.3 Engine	 06602501 06602503 06602510	Split, cut, torn	X2
Hydraulic Clutch Systems - gas - Diesel -8.3 Engine	 06602501 06602503 06602510	Broken or Cracked	11
Hydraulic Clutch Systems - gas - Diesel -8.3 Engine	 06602501 06602503 06602510	Damaged	27
Hydraulic Clutch Systems - gas - Diesel 8.3 Engine	 06602501 06602503 06602510	Improperly Installed	51
Hydraulic Clutch Systems - gas - Diesel -8.3 Engine	 06602501 06602503 06602510	Leaks	65
Reflash engine or powertrain control modules	18	Not Applicable	Not Applicable
Transmission	21	Not Applicable	Not Applicable

Table 8B – Occasional Used Labor Operation

The warranty claims identified in A7 were selected by first identifying potentially applicable LOP relating to the service replacement of the subject component. The primary LOPs identified

in Table 8A were specific to the clutch interlock switch and were used in searching for responsive paid claims relating to the subject and peer vehicles. The occasionally used LOPs identified in Table 8B were found to be improperly assigned by the dealer technician for repairs related to clutch interlock switch.

Vehicle extended warranty coverage options related to subject and peer vehicles are provided within Enclosure 8 Warranty Information CONF BUS INFO, which has been submitted under separate cover to the NHTSA Chief Counsel's Office with a request for confidential treatment.

9. 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 Chrysler 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 Chrysler is planning to issue within the next 120 days.

A9. Chrysler has not issued any technical service bulletins, Star On-Line cases, global parts ordering process ("GPOP"), or recalls related to the clutch interlock switch assembly in the subject and peer vehicles. Currently, no such communications are planned over the next 120 days.

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 and peer vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, Chrysler. 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.

A10. Chrysler has conducted or is conducting the following assessments related to the alleged condition:

Assessment 1: Collection and Analysis of Dealer-Replaced Clutch Interlock Switches and Hydraulic Clutch Actuation Assemblies

Start Date	End Date	Engineering Group Responsible
5/27/2014	Ongoing	Chrysler Engineering

Survey & Analysis of Subject Components Objective: Collect and analyze subject component functional field performance, and prioritize components for testing and analysis. The objectives of this assessment are to:

- Assess potential scope within the subject vehicle population to determine if an appropriate suspect population can be identified; and
- Assess whether trends which relate to, or may relate to, the alleged defect can be appropriately identified.

Survey & Analysis of Subject Components Results & Summary: The subject and peer vehicle clutch interlock switches and hydraulic clutch actuation assemblies were put on retention from dealers to the Chrysler Quality Engineering Center ("QEC"). Chrysler analyzed 58 returned hydraulic clutch actuation assemblies, with 57 subject components attached. Mileage associated with these returned parts averaged 109,323 miles of customer use, and included fully functioning clutch interlock switches with up to 330,575 miles of customer use. 18 of 57subject components were in service in excess of 150,000 miles (nearly all with fully functioning clutch interlock switches). The summary is attached as Enclosure 10 Assessment PUBLIC, Assessment 1.

Two clutch actuation assemblies with non-functional clutch interlock switches were received by Chrysler during this assessment. Both of these non-functional clutch interlock switches contained visibly broken springs. One of these clutch interlock switches, from a 2006 Dodge Ram, was received after 278,028 miles of customer use. Another non-functional clutch interlock switch with visibly broken springs, from a 2005 Dodge Ram, was received after 118,976 miles of customer use.

This assessment is ongoing.

Assessment 2: Field Customer Fleet Survey

Start Date	End Date	Engineering Group Responsible
6/24/2014	8/10/14	Chrysler Engineering

Fleet Survey Objective: Conduct a survey outside of the warranty system with a fleet customer who owns peer vehicles for its experience with the subject component. The objective of this assessment is to:

- Assess potential subject component field performance, based on usage pattern difference heavy duty commercial and non-commercial usage.

Fleet Survey Results & Summary: Survey results on 7/18/14 demonstrated all of the customer's peer vehicles had functioning clutch interlock switches. Results are provided as Enclosure 10 Assessment PUBLIC, Assessment 2.

Assessment 3: Dealer Survey and Collection of Additional Clutch Interlock Switches from the Field

Start Date	End Date	Engineering Group Responsible
5/27/2014	Ongoing	Chrysler Engineering

Dealer Survey and Collection Objective: Conduct a survey with dealers who recently sold replacement clutch interlock switches, which could have been replaced by the customers, independent repair shops or the dealers themselves. Additionally, clutch interlock switches will continue to be harvested from the field for subject and peer vehicles. The objectives of this assessment are to:

- Assess potential scope within the subject vehicle population to determine if an appropriate suspect population can be identified;
- Assess potential scope within heavy duty commercial usage as compared to non-commercial vehicles outside of the warranty system; and
- To obtain random, representative parts from the field for further analysis.

Survey Results & Summary: MOPAR continues to provide Chrysler Engineering a daily list of clutch interlock switch sales and associated dealer contacts. Chrysler Engineering then contacts each identified dealer to obtain information about each sale and/or replacement of the clutch interlock switch, and attempts to obtain removed parts for analysis, even though such clutch interlock switches are typically well past the warranty period.

One switch obtained by Chrysler during this assessment, from a 2002 Dodge Ram 2500 (peer vehicle), was received after 138,004 miles in service. Upon inspection, it was noted that both springs in the switch were broken. The customer complaint was for a "no start" condition when depressing the clutch pedal.

In addition, Chrysler is contacting random customers to replace switches across a representative sampling of vehicles from both subject and peer vehicle populations. These switches will be subjected to further metallurgical and other analysis.

This assessment is ongoing.

Assessment 4: Metallurgical Property Analysis of Clutch Interlock Switch Samples

Start Date	End Date	Engineering Group Responsible
5/27/2014	8/10/14	Chrysler Engineering and Chrysler Materials Engineering

Metallurgical Analysis Objective: Submit recently returned clutch interlock switches for analysis. The objectives of this assessment are to:

- Assess potential scope within the subject vehicle population to determine if an appropriate suspect population can be identified by comparing metallurgical properties between broken and intact springs of different time frames;

- Analyze returned switches for other possible failure modes.

Analysis Results & Summary: Samples of recently returned switches received by Chrysler Engineering were selected for analysis. These included both high mileage switches from field returns as well as bench tested parts.

The results are provided as Enclosure 10 Assessment CONF BUS INFO, Assessment 4 CONF BUS INFO.

LTR 147349 shows details of the spring fracture surface from a 2007 Dodge Ram VIN 7G700095 built on 5/12/2006 at 113,930 miles. Based on the metallurgical analysis, the cause of spring failure in this clutch interlock switch was determined to be fatigue.

Additional tests were run on high mileage parts that were returned after having already endured up to 330,575 miles of customer use.

LTR 147494 reflects the inspection results of a switch assembly run on a pneumatic cyclic test for 10 million cycles successfully without failure.

Assessment 5: Cycle Testing of Current Clutch Interlock Switches

Start Date	End Date	Engineering Group Responsible
5/21/2014	9/7/14	Chrysler Engineering

Test Objective: Cycle test current clutch interlock switches and analyze the results. The objective of this assessment is to:

- Assess the performance of current production switch springs under cyclic bench fatigue.

Test Results & Summary: One set of four of the new (current production) clutch interlock switches was cyclic fatigue tested at the Chrysler Technical Center starting on 5/21/14. The test requirement was for 1,000,000 cycles; testing was suspended after 2,000,000 cycles (2 x requirements) without failure. A second set of four current production clutch interlock switches is currently in testing and has accumulated 1,263,865 cycles as of 8/6/14, without a failure.

This assessment is ongoing.

Assessment 6: Collection and Analysis of Supplier Documents

Start Date	End Date	Engineering Group Responsible
7/24/2014	TBD	Chrysler Engineering

Objective: Review of supplier documents.

Status: On or about 4/21/2014, Chrysler began requesting the tier one supplier to provide the information in its possession relating to the subject components. Partial responses from the tier

one supplier were first received in mid-July 2014. Upon information and belief, documents outstanding include those in the possession of the tier two supplier of the return springs.

Documents received from the tier one supplier are provided in Enclosure 10 Assessments CONF BUS INFO, Assessment 6 CONF BUS INFO, which has been submitted under separate cover to the NHTSA Chief Counsel's Office with a request for confidential treatment.

This assessment is ongoing.

11. Describe all modifications or changes made by, or on behalf of, Chrysler or its suppliers 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 and peer 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 Chrysler is aware of which may be incorporated into vehicle production within the next 120 days.

A11. The change history implemented for the subject components is provided in Enclosure 11 Change History CONF BUS INFO, which has been submitted under separate cover to the NHTSA Chief Counsel's Office with a request for confidential treatment. Chrysler is not aware of any modification or changes that may be incorporated into the subject vehicle component within the next 120 days.

In addition, tier one supplier documents related to component change and modification are also included Enclosure 11 Change History CONF BUS INFO, which has been submitted under separate cover to the NHTSA Chief Counsel's Office with a request for confidential treatment. These supplier documents contain information that may or may not reflect implementation of manufacturing or design changes. Chrysler is anticipating that additional supplier documents will be forthcoming and will continue to analyze this information as it becomes available.

12. Produce two of each of the following:

a. Exemplar samples of each design version of the subject component;
b. Field return samples of the subject component exhibiting the subject failure mode;

c. Field return samples of the subject component exhibiting a failure mode that prevents the vehicle from starting when the clutch is fully depressed; and
d. Any kits that have been released, or developed, by Chrysler for use in service repairs to the subject and peer component/assembly which relates, or may relate, to the alleged defect in the subject vehicles.

A12.

a. Two exemplar parts of the subject component were obtained from current production stock at MOPAR, and are being submitted.

b. Two field return parts of the subject component, exhibiting broken springs, are being submitted.

c. There is no field return for subject component in the subject vehicle. However, a clutch interlock switch part number 53007944AB from a peer vehicle was identified to have an intermittent failure mode that prevents the vehicle from starting when the clutch pedal is fully depressed. This clutch interlock switch is being submitted.

d. Chrysler has not released any kits that include the subject component/assembly for service repairs.

13. State the number of each of the following that Chrysler has sold that may be used in the subject and peer 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 Chrysler 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 Chrysler is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

A13

a. The part number for the clutch interlock switch is the same for production and service. The clutch interlock switch supplier contact information and readily accessible part sales are included in Enclosure 13 Part Sales and Service Part Numbers PUBLIC and Enclosure 13 Part Sales and Service Part Numbers CONF BUS INFO, which has been submitted under separate cover to the NHTSA Chief Counsel's Office with a request for confidential treatment.

b. Chrysler has not released any kits for service that include, or are related to service repairs, for the subject component.

14. Furnish Chrysler'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; and
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.

A14.

Description of the Subject Component

The subject component is a down stop switch that is intended to prevent the vehicle from starting unless the clutch pedal is fully depressed. The hydraulic clutch master cylinder has a shoulder on the pushrod that contacts a collar in the clutch interlock switch. When the clutch pedal is depressed the clutch master cylinder pushrod pushes the collar toward contacts contained in the switch. When the collar mates with the contacts, the circuit for the engine starter is allowed to energize and start the vehicle. Figure 1 depicts the switch mounted on the clutch master cylinder. The graphics in Figure 1 illustrate the switch in the clutch pedal up position, or the free state on the right, and the left graphic depicts the stroked position, or the clutch pedal depressed position.

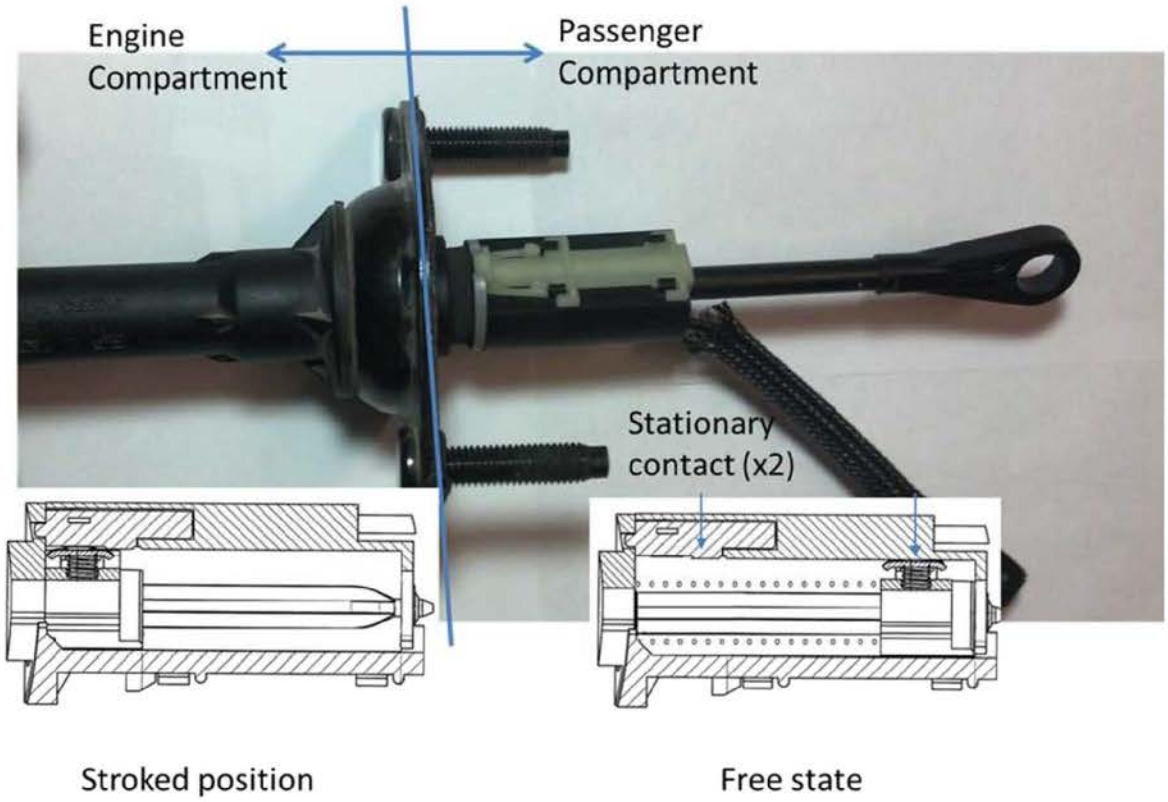


Figure 1 – Clutch Interlock Switch Mounted on Clutch Master Cylinder

The clutch interlock switch has two springs, located on each side of the collar that push the collar off the contacts to open the circuit as the clutch pedal is released. The purpose of the springs is to return the assembly to the free state when the clutch pedal is moved from the depressed position to the up position. Figure 2 shows the clutch interlock switch with one of the two return springs visible.

Figure 2 – Clutch Interlock Switch and View of a Return Spring

Potential Failure Modes

To date, Chrysler has investigated two possible failure modes relating to a malfunction of the clutch interlock switch: 1) foreign substance contamination; and 2) return spring fracture. The investigation into each potential failure mode is not complete, but it appears return spring fracture is a likely cause of clutch interlock switch malfunctions in the field.

1. Switch Contamination

One potential failure mode examined was the possible impact of fluid and/or foreign substance contamination around the clutch master cylinder pushrod and return springs. Foreign substances were observed in certain inspection photographs of the clutch interlock switch assembly in the vehicles involved in Legal Claim #1243115 (Verde) and VOQ #10533996. In theory, if master cylinder pushrod and return springs become coated by a foreign material, dirt or some other contaminant could adhere to the switch components. This could potentially cause corrosion of electrical contacts preventing a closed circuit, interfering with switch travel or corroding the return springs leading to a fracture.

While this potential failure mode remains a part of the investigation, Chrysler at this time does not believe that contamination is the proximate cause of any clutch interlock switch failures in the field.

2. Switch Return Spring Fracture

A second potential failure mode Chrysler identified is the fatigue fracture of both return springs in the clutch interlock switch. If both return springs should fracture, the potential exists for the circuit contacts to remain closed when the clutch pedal returns to the up position. This could permit the starter motor to crank the engine without the clutch pedal being depressed. If the vehicle's parking brakes were not set and the manual transmission shifter was not placed in the Neutral position at the time the ignition switch was actuated to "START" mode, the vehicle could move.

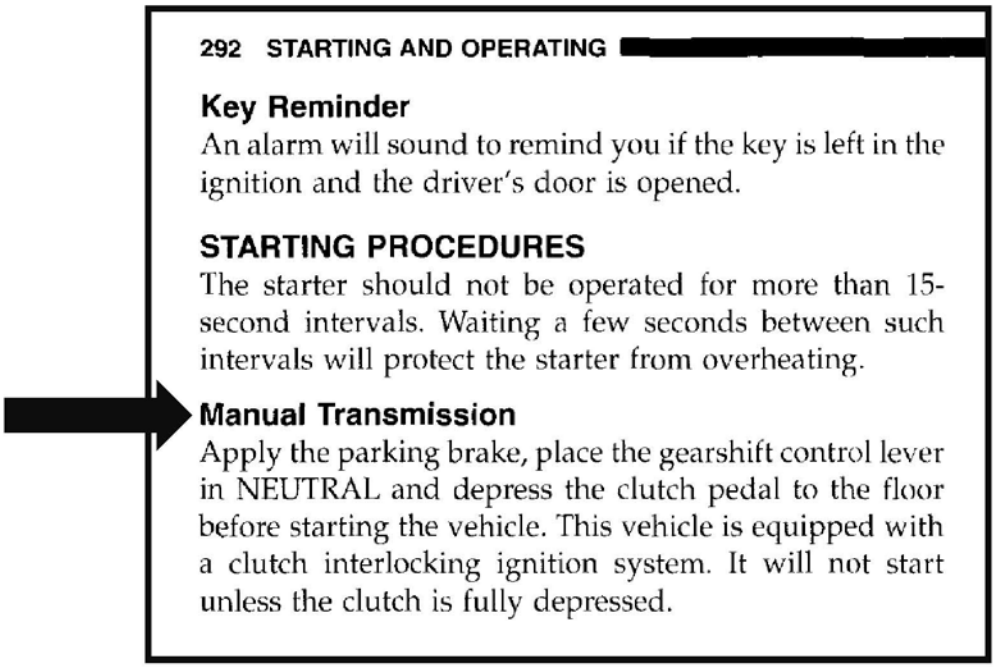
Fractured return springs were discovered in four of 61 clutch interlock switch assemblies that were obtained from subject and peer vehicles. As discussed more fully in A10, Assessments 1, 3 and 4, these four clutch interlock switches exhibited fractures in both of the return springs. Metallurgical analysis of the return springs in one of the four switches indicated the fractures were due to fatigue (see lab test report LTR 147349). The remaining three returned clutch interlock switches with fractured springs are being submitted to NHTSA in response to Q12. None of the four returned clutch interlock switches with fractured springs showed signs of foreign substance contamination, suggesting that contamination did not contribute to the return spring fractures or otherwise cause the switch to malfunction.

Based upon current information, the evidence of return spring fractures suggests this failure mode may be a cause of the alleged defect in the subject components. As noted in A10, Assessment 3, Chrysler is continuing to receive parts from the field to conduct metallurgical and other analysis in furtherance of this investigation. Additional testing and analysis will be conducted as additional clutch interlock switches with broken return springs are received by Chrysler.

To date, no other failure mode has been identified.

Risk to Motor Vehicle Safety

The number of manual transmission light-duty vehicles being sold over the past decade has been decreasing, as is the familiarity among U.S. drivers on how a manual transmission vehicle differs from an automatic transmission vehicle during start-up and operation. This is one of the reasons why Chrysler has included explicit instructions in its owner's manuals about how to properly start and operate a manual transmission vehicle. The excerpt below is representative excerpt of the Starting and Operating instructions that is contained in every owner's manual for the subject vehicles:



292 STARTING AND OPERATING

Key Reminder

An alarm will sound to remind you if the key is left in the ignition and the driver's door is opened.

STARTING PROCEDURES

The starter should not be operated for more than 15-second intervals. Waiting a few seconds between such intervals will protect the starter from overheating.

Manual Transmission

Apply the parking brake, place the gearshift control lever in NEUTRAL and depress the clutch pedal to the floor before starting the vehicle. This vehicle is equipped with a clutch interlocking ignition system. It will not start unless the clutch is fully depressed.

Figure 3: Dodge Ram Truck 2006 Owner's Manual Excerpt, Page 292.

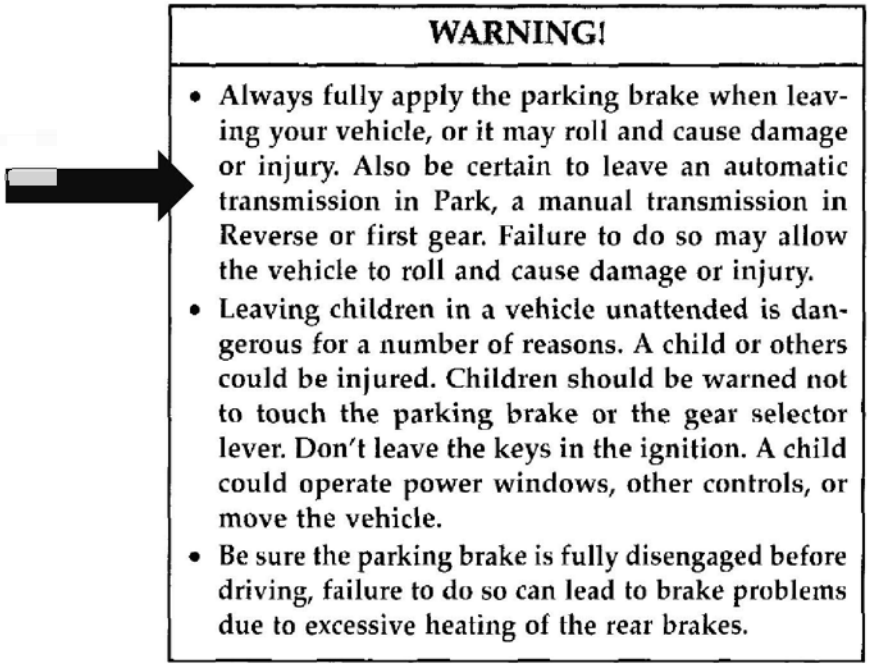
This above Starting and Operating section provides ***three distinct instructions*** to the operator before turning the key to the Start position in a manual transmission vehicle:

"Apply the parking brake,"
and

"place the gearshift control lever in NEUTRAL,"
and
"depress the clutch pedal to the floor before starting the vehicle."

An operator that follows ***any one*** of these ***three*** instructions will ***prevent inadvertent vehicle movement*** during start-up of a manual transmission vehicle. For inadvertent vehicle movement to occur during start-up, the operator must: 1) ***ignore*** all ***three*** instructions; ***and*** 2) the clutch interlock switch must be inoperable. For reasons discussed further below, Chrysler believes its field data clearly demonstrates that this is an extremely rare combination of events in the subject vehicles.

Moreover, the safe operation of a manual transmission vehicle requires that the parking brake be set at ***all times*** when the driver is not in the vehicle, regardless of whether it is running or parked. Below is a warning to the operators provided in the owner's manual:



WARNING!

- **Always fully apply the parking brake when leaving your vehicle, or it may roll and cause damage or injury. Also be certain to leave an automatic transmission in Park, a manual transmission in Reverse or first gear. Failure to do so may allow the vehicle to roll and cause damage or injury.**
- **Leaving children in a vehicle unattended is dangerous for a number of reasons. A child or others could be injured. Children should be warned not to touch the parking brake or the gear selector lever. Don't leave the keys in the ignition. A child could operate power windows, other controls, or move the vehicle.**
- **Be sure the parking brake is fully disengaged before driving, failure to do so can lead to brake problems due to excessive heating of the rear brakes.**

Figure 4: Dodge Ram Truck 2006 Owner's Manual Excerpt, Page 325.

These same or very similar instructions and warnings are provided in the peer vehicle owner manuals.

A review of the available field data responsive to Q2 illustrates that ***ignoring all three*** of the Starting and Operating instructions can result in an inadvertent movement of the subject vehicle:

- **Failure of the Operator to Apply the Parking Brake:** A properly functioning and set parking brake, in most instances, will prevent inadvertent movement of the vehicle on

key start. In every one of the subject vehicle consumer complaints, field reports and legal claims identified in A4 and the three VOQs, the parking brake could not have been properly set or, if it was, it was not operable. This failure to apply the Parking Brake resulted in a reported inadvertent vehicle movement.

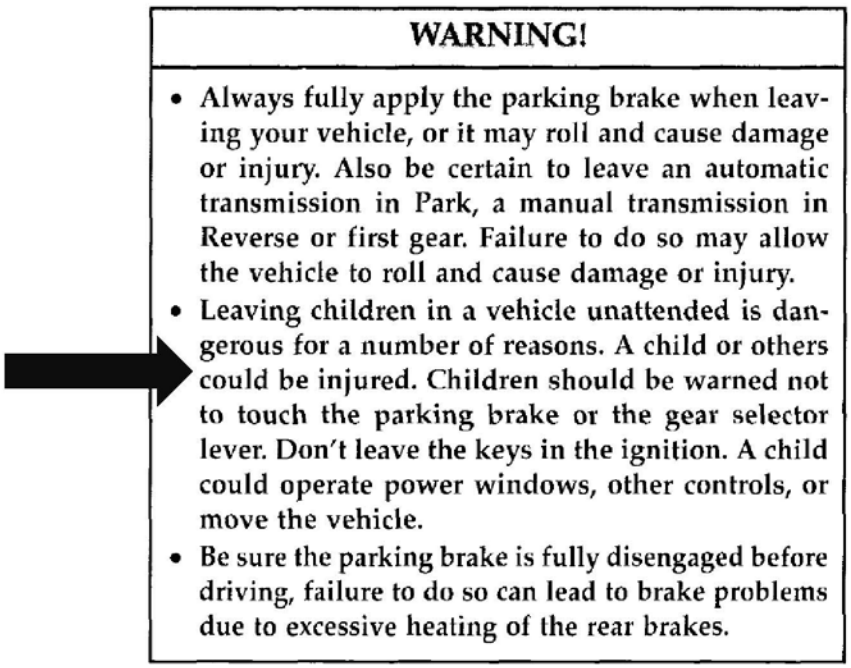
- **Failure of the Operator to Place the Gearshift Control Lever in Neutral.** A vehicle that is placed into the Neutral gear position will not engage transmission torque and, therefore, will not cause the vehicle to move if the starter motor is engaged. In every one of the subject vehicle consumer complaints, field reports and legal claims identified in A4 and the VOQs where the vehicle moved under starter motor power, the vehicle could not have been in the Neutral position during the reported ignition key movement to the Start position. This failure to place the gearshift control lever in Neutral resulted in a reported inadvertent vehicle movement.
- **Failure to Depress the Clutch Pedal to the Floor before Starting the Vehicle.** Depressing the clutch pedal will cause the mechanical link to the clutch plate to disengage and the transmission will not transfer engine torque to the wheels. In every one of the subject vehicle consumer complaints, field reports and legal claims identified in A4 and the VOQs where the vehicle moved under starter motor power, the clutch pedal could not have been properly depressed. This failure to depress the clutch pedal during the start procedure likely resulted in a reported inadvertent vehicle movement event.

Clutch interlock switches are not required by the Federal Motor Vehicle Standards ("FMVSS").[1] However, this device has been regarded as an important feature to help reinforce a universally recognized safe operating requirement for manual transmission vehicles -- to *always* "fully depress the clutch pedal before starting the vehicle" (see **Figure 3**). For operators who follow proper starting and operating instructions, the clutch interlock switch becomes redundant. These operators will never experience inadvertent movement of the vehicle during start-up of their manual transmission vehicles. For operators who routinely follow safe operating procedures in the start-up, a malfunctioning clutch interlock switch, on its own, does not present a safety concern.

Moreover, there were also two reported events identified in A2 that provide an additional layer of owner culpability – allowing unsupervised children access to ignition keys who actually try to start the vehicles. In Legal Claim #1243115 (Verde), a child was allowed access to the keys of a 2006 Dodge Ram 2500, he placed the keys in the ignition and cranked the starter causing the vehicle to move and strike a child resulting in a fatality. According to the police report, the vehicle owner and father of the decedent knew that the clutch interlock switch was malfunctioning. In Legal Claim #1214813 (Country Financial), an unsupervised child turned the vehicle's ignition to the Start position, causing the vehicle to move rearward and strike a building

[1] In fact, the most recent interlock device to be regulated by NHTSA – the brake transmission interlock device ("BTSI") – has no requirement for a telltale light (*see* 49 CFR 571.114, Standard No. 114 - Theft Protection and Rollaway Prevention; 49 CFR 571.101, Standard No. 101 - Controls and displays).

(no injuries). In its owner's manual, Chrysler warns operators of the dangers of allowing unsupervised children to operate the vehicle controls:



WARNING!

- **Always fully apply the parking brake when leaving your vehicle, or it may roll and cause damage or injury. Also be certain to leave an automatic transmission in Park, a manual transmission in Reverse or first gear. Failure to do so may allow the vehicle to roll and cause damage or injury.**
- **Leaving children in a vehicle unattended is dangerous for a number of reasons. A child or others could be injured. Children should be warned not to touch the parking brake or the gear selector lever. Don't leave the keys in the ignition. A child could operate power windows, other controls, or move the vehicle.**
- **Be sure the parking brake is fully disengaged before driving, failure to do so can lead to brake problems due to excessive heating of the rear brakes.**

Figure 5: Dodge Ram Truck 2006 Owner's Manual Excerpt, Page 325.

It is apparent from minimal rate of occurrences of inadvertent clutch engagement that the vast majority of operators actually followed one or more of these owner's manual instructions and warnings. For the subject vehicle fleet, that rate is 0.2 conditions per 1,000 vehicles. While some of these events may have been prevented by a properly functioning clutch interlock switch, ***all*** of these events could have been prevented if the operator would have followed the simple instructions and common sense warnings that Chrysler provided in its owner's manuals.

Conclusion

Chrysler is continuing its investigation into the root cause, scope and consequence of the reported failures of the clutch interlock switches in the subject vehicles. Chrysler will update ODI with additional information upon mutual agreement during the course of this investigation.