

# DAIMLERCHRYSLER

*Law*  
11/8/05

DaimlerChrysler Corporation  
Stephan J. Speth  
Director  
Vehicle Compliance & Safety Affairs

November 2, 2005

Mr. Jeffrey L. Quandt  
Office of Defects Investigation  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
400 Seventh Street, SW  
Washington, D.C. 20590

Reference: NVS-213cla; PE05-036

Dear Mr. Quandt:

This document updates DaimlerChrysler Corporation's ("DCC's") September 9, 2005 response to the referenced inquiry regarding alleged engine compartment fires in model year ("MY") 1999-2000 Chrysler Cirrus, Dodge Stratus and Plymouth Breeze ("JA") vehicles. DCC has conducted a reasonable and diligent search of records kept in the ordinary course of business for such information.

As requested, please find production data for 1995-1998 MY JA vehicles manufactured for sale or lease in the U.S. sorted by model year and engine type. Also summarized below is service part demand by calendar year for the JA high pressure power steering hose by calendar year.

- 1995-1998 MY JA vehicles manufactured for sale or lease in the U.S.:

Model Year	Engine Type		
	2.0L I-4	2.4L I-4	2.5L V-6
1995	6,037	21,454	82,501
1996	57,824	56,851	21,525
1997	74,859	83,076	38,632
1998	47,263	103,354	61,433
Total Vehicle Volume 654,809			

- JA high pressure power steering hose service part demand by calendar year:

The 2.0L and 2.4L engine applications utilize the same high pressure power steering hose. Total service part demand by calendar year:

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Part Sales	0	436	6084	6820	3558	2859	3606	5595	7752	10146	4436

Total service part demand by calendar year for JA 2.5L engine applications:

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Part Sales	11	198	398	160	177	285	226	271	268	254	220

The JA 2.5L engine application utilized a steel tube construction high pressure power steering hose with no rubber component located adjacent to the engine exhaust manifold. The hose for JA 2.0L/2.4L engine applications contained a rubber portion routed adjacent to the exhaust manifold that mated with a steel tube at the steering rack and pump ends.

Part demand as summarized above reflects high pressure power steering hose usage for all model year JA vehicles (1995-2000 MY) and behaves as expected, with increasing demand as additional vehicles are included in the subject vehicle population and the age of those vehicles increases. DCC cautions, however, that part demand can be driven by any of a number of reasons, such as vehicle accidents, etc., and has concluded that part sales cannot be used to determine any trend related to the alleged condition.

- JA vehicle engine compartment fire input:

In response to Question 8 of the PE05-036 information request, DCC summarized results of a prior internal investigation that evaluated reports of JA engine compartment fires in vehicles from Puerto Rico, primarily from the 1995-1997 MY. As noted, that investigation was closed by DCC based on no trend of input anywhere in the world beyond Puerto Rico, the age and mileage of the vehicles involved, the appearance of knowledge by the operator that a power steering fluid leak existed, and the extreme operating conditions required to induce the condition.

A review of all engine compartment fire input received by DCC since the closure in 2004 of the above investigation shows a total of 33 complaints for 1995-1998 MY JA vehicles

based on text, pictures and fire analysis reports that exist in the DCC Customer Assistance Inquiry Request ("CAIR") database:

Category Description	Model Year			
	1995	1996	1997	1998
Engine Compartment Fire – No Identified Cause	1	5	4	5
Engine Compartment Fire – Likely Fluid on Manifold	1	3	5	5
Engine Compartment Fire – Possible Electrical Origin	0	3	1	0

The average mileage at the time of occurrence for these complaints was in excess of 107,000 miles, for a vehicle population that is between seven and ten years old. Many of the complaints involved substantial damage to the engine compartment, thus impeding DCC's efforts to make a definitive cause and origin determination based upon physical evidence. Accordingly, statements of eyewitnesses were helpful in categorizing these inputs. Some of these complaints may be related to a known issue involving the loss of an engine oil galley cup plug on 2.4L engines, which was the subject of a prior safety recall affecting 1995-1996 MY vehicles in April of 1996 (96V006000).

Comparing this input for 1995-1998 MY JA vehicles to that provided with the September 9, 2005 PE05-036 response for 1999-2000 MY JA vehicles shows a distinct difference in engine compartment fire rates, with the rate for the later model year (newer) vehicles significantly higher. In an attempt to understand this difference, DCC has undertaken a comprehensive test program utilizing repurchased 1998 and 1999 MY JA vehicles. The engine compartment environment, including the power steering hoses, was instrumented and severe duty cycle testing completed to simulate peak operating temperatures.

Test results have shown a distinct difference in engine compartment, and power steering hose, temperatures between the two model year JA vehicles. Preliminary analysis of the high pressure power steering hoses appears to indicate that the 1999 MY JA 2.4L hose may be thermally degrading at a faster rate in the localized area where the hose transitions from rubber to steel tube construction due to higher operating temperature when compared to the 1998 MY application. There are no identified physical differences between the hoses used in the two model years, and specific reasons for the increased heat exposure for the 1999 MY JA are not fully understood at this time.

Although the 2.0L engine utilizes the same high pressure power steering hose as the 2.4L engine, analysis comparing the two engine compartment packages has shown that the hose in the 2.0L engine environment is nominally located a greater distance from all

significant heat sources (exhaust manifold, etc.). This packaging difference may be a factor explaining the very minimal level of fire input for the 2.0L engine applications.

In early October of 2005, DCC was forwarded 26 JA Vehicle Owner Questionnaires ("VOQs") characterized as possibly being responsive to the subject inquiry. Five of the VOQs contained no VIN information and DCC was subsequently unable to assess relevance. Of the remaining VOQs, detailed review showed allegations of JA engine compartment fires due to a variety of reasons. A number of the incident information statements reference engine failure ("engine rod bearing dropped, and blew a hole in the side of the engine block") which would allow engine oil to leak out and potentially result in an engine compartment fire. A number of other statements reference the loss of an engine oil galley plug (previously referenced safety recall 96V006000) and still others indicate that there was a pre-existing engine oil leak which had not been addressed. The majority of the VOQs had minimal technical description of the event and for those DCC is unable to make an accurate determination as to potential cause or applicability.

In response to Question 8 of the PE05-036 information request, DCC noted the re-purchase of a 1999 MY 2.4L engine JA vehicle with over 103,000 customer miles that had experienced an engine compartment fire. The operator stated that the vehicle caught fire, at which time she opened the hood and observed fire at the rear of the engine compartment. She extinguished the fire and began driving again. A short time later the vehicle again caught fire and was extinguished. This vehicle arrived at DCC on September 6, 2005 and has been thoroughly analyzed as part of the comprehensive test program previously discussed.

The enclosed video shows the high pressure power steering hose environment for this repurchased vehicle (following damage sustained by the multiple engine compartment fires) during an engine cranking sequence. Power steering fluid (appearing red in color in the video) can be seen leaking from the hose. The damaged hose was removed for analysis and showed that the outer cover is cracked and charred, with multiple striations on the inner surface of the hose.

Also noted in response to Question 8 of the PE05-036 information request, DCC has been conducting a survey of model year 1999-2000 JA vehicles to assess the overall integrity of the power steering system, fuel system and major engine compartment electrical systems in high mileage vehicles. This survey has focused on 2.4L JA vehicles and to date ten 1999-2000 MY vehicles have been procured and reviewed, with an average mileage in excess of 77,000 miles.

High pressure power steering hoses were removed from the survey vehicles for material analysis. Five of the ten hoses, with average mileage over 87,000 miles, showed no

leakage when subjected to a severe 2,000 psi pressure check. Three of the five had observable crazing/cracking of the hose material. Of the remaining five 1999-2000 MY hoses analyzed, all showed a slight fluid leakage condition when subjected to the 2,000 psi pressure check. This check significantly exceeds the maximum normal pump relief operating pressure of less than 1,500 psi measured in the vehicle during a full lock steering event. Physical property testing to date of the removed hoses has yielded mixed results, with no real conclusions able to be drawn at this time. DCC is awaiting a final report regarding this analysis, and will forward it to NHTSA when received. No issues were noted with the fuel system or major engine compartment electrical systems in any of the survey vehicles.

Sincerely,



Stephen J. Speth

Enclosure