

Meeting with NHTSA  
BMW Confidential Information  
July 24, 2014

# MY 2002 - 2005 MINI LOSS OF POWER STEERING ASSIST EA11-005

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# AGENDA

- Investigation Background
- Extended Warranty Program
- Summary
- Discussion

# MINI POWER STEERING INVESTIGATION BACKGROUND AND CHRONOLOGY

Date	Actions
24-Sep-2010	NHTSA opens PE10-038.
14-Dec-2010	BMW submits PE IR response to NHTSA.
4-May-2011	NHTSA closes PE and opens EA11-005.
2-Sep-2011	BMW submits EA IR response to NHTSA.
Oct-2011	BMW proposes an extended warranty.
Q3-Q4 2011	BMW-NHTSA "Special Field Study".
May-2012	NHTSA requests additional technical info.
Q3 2012	NHTSA requests additional data collection re: special maneuvers.
Apr-2013	NHTSA requests changes to BMW extended warranty proposal and BMW accepts NHTSA's requested changes.
May-2013	BMW implements extended warranty for approx. 130,000 MY 2002-05 vehicles produced from SOP to February 9, 2005.
24-Jul-2014	BMW review with NHTSA.

# MINI POWER STEERING INVESTIGATION PRELIMINARY EVALUATION – PE10-038


 <p>U.S. Department of Transportation <b>National Highway Traffic Safety Administration</b></p>	<h2>ODI RESUME</h2>			OFFICE OF DEFECTS INVESTIGATION <b>NHTSA</b> <small>Authentic: All Government Information                  National Highway Traffic Safety Administration                  uses a digital certificate to ensure                  the information remains unchanged.</small>
	<b>Investigation:</b> PE 10-038 <b>Date Opened:</b> 09/24/2010 <b>Investigator:</b> Cynthia Glass <b>Approver:</b> Richard Boyd <b>Subject:</b> Loss of power steering assist	<b>Reviewer:</b> Scott Yon		
<b>MANUFACTURER &amp; PRODUCT INFORMATION</b>				
<b>Manufacturer:</b>	BMW OF NORTH AMERICA, LLC			
<b>Products:</b>	2004-2005 Mini Cooper			
<b>Population:</b>	80,000 (Estimated)			
<b>Problem Description:</b>	Complainants allege a loss of power steering assist due to power steering pump failure.			
<b>FAILURE REPORT SUMMARY</b>				
	<b>ODI</b>	<b>Manufacturer</b>	<b>Total</b>	
<b>Complaints:</b>	54	TBD	TBD	
<b>Crashes/Fires:</b>	0	TBD	TBD	
<b>Injury Incidents:</b>	0	TBD	TBD	
<b>Fatality Incidents:</b>	0	TBD	TBD	
<b>ACTION / SUMMARY INFORMATION</b>				
<b>Action:</b> This Preliminary Evaluation is opened.				
<b>Summary:</b> The Office of Defect Investigations has received 54 complaints and a confidential number of field reports alleging an unexpected loss of power steering assist while driving the vehicle. When the power steering assist stops working it requires increased force to steer the vehicle. Some drivers reported experiencing difficulty while trying to steer or control the vehicle.  The reports indicate that the loss of power steering assist may be related to a power steering pump failure.				

# MINI POWER STEERING INVESTIGATION

## PE10-038 – BMW RESPONSE (TECHNICAL INFO)

PE10-038 IR Summary	
<b>Production Data:</b> MY 2004 - 05: MINI Cooper, Cooper S <ul style="list-style-type: none"> <li>• Approx 59,000 Vehicles (MINI Convertible erroneously excluded. Included in EA response)</li> </ul>	
<b>Field Data:</b> Warranty Claims - 4,671, Consumer Complaints - 200, Field Reports - 2, Legal Actions - 3 ("Lemon-Law")	
Power Steering Assist Loss Failure Modes	
Temporary Loss Of Assist	
If the power steering pump cooling fan stopped working, the pump could gradually shutdown to protect itself from overheating. After cooling down, power steering assist would restart dependent upon the corresponding temperature level.	
An under-voltage condition of the vehicle (low battery) could result in a gradual degradation of assist.	
Permanent Loss Of Assist	Actions
A "checksum" error in the EEPROM electronics could prevent the power steering pump from functioning at the start of the driving cycle.	EEPROM ECU Redesign - Feb 2005
Production process quality problems in the MOSFET electronics could lead to: <ul style="list-style-type: none"> <li>• Continuous running of the pump; including after switching off the engine.</li> <li>• Loss of power steering assist during the driving cycle; the pump would not switch on during the driving cycle, nor at the start of the next driving cycle.</li> </ul>	MOSFET production process optimized - July 2005

# MINI POWER STEERING INVESTIGATION ENGINEERING ANALYSIS – EA11-005

 <p>U.S. Department of Transportation <b>National Highway Traffic Safety Administration</b></p>	<h2>ODI RESUME</h2>			<small>OFFICE OF DEFECTS INVESTIGATION <b>NHTSA</b> Authenticity: US Departmental Information Administrative: Professional Activities Internal Control: Information Management</small>
	<b>Investigation:</b> EA 11-005 <b>Prompted by:</b> Consumer complaints, PE10-038 <b>Date Opened:</b> 05/04/2011 <b>Investigator:</b> Cynthia Glass <b>Approver:</b> Frank Borris <b>Subject:</b> Loss of Power Steering Assist	<b>Reviewer:</b> Scott Yon		
<b>MANUFACTURER &amp; PRODUCT INFORMATION</b>				
<b>Manufacturer:</b> BMW OF NORTH AMERICA, LLC <b>Products:</b> 2004-2005 Mini Cooper <b>Population:</b> 59,614	<b>Problem Description:</b> Loss of power steering assist due to power steering pump and/or power steering cooling fan failure.			
<b>FAILURE REPORT SUMMARY</b>				
	<b>ODI</b>	<b>Manufacturer</b>	<b>Total</b>	
<b>Complaints:</b>	339	180	519	
<b>Crashes/Fires:</b>	8	0	8	
<b>Injury Incidents:</b>	0	0	0	
<b>Fatality Incidents:</b>	0	0	0	
<b>Other*:</b>	0	4,508	4,508	
*Description of Other: Warranty claims related to power steering loss.				
<b>ACTION / SUMMARY INFORMATION</b>				
<b>Action:</b> This Engineering Analysis is opened.				
<b>Summary:</b> ODI has received 339 complaints alleging an unexpected loss of power steering assist while driving the vehicle. When the power steering assist stops working, drivers experienced difficulty in steering and/or controlling the vehicle.  According to BMW drivers may experience either a temporary or permanent loss of power steering assist. BMW further advised that a temporary loss of power steering assist may be due to a malfunctioning cooling fan or an under-voltage condition in the power steering system. A permanent loss of power steering assist may be due to an error in the internal electronics, and may also result in the continuous running of the power steering pump.  The VOQ complaints allege 5 minor crashes and 3 fires. The crashes are described as "hit the curb". The fires are described as "melted wires". There were no property damage claims.  ODI has received similar complaints for other model year Mini Cooper vehicles. Additional information is required to evaluate the frequency, consequence, and scope of this issue. Accordingly, the investigation has been upgraded to an Engineering Analysis.				

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## EA11-005 – BMW RESPONSE (TECHNICAL INFO)

### EA11-005 IR Summary

**Production Data:** MY 2002 - 05: MINI Cooper, Cooper S, Convertible

- Approx. 130,000 vehicles.
- MINI Convertible included in EA response.
- Scope was expanded to include MY 2002 and 2003.

**Field Data:** **Warranty Claims** - 16,053, **Consumer Complaints** -768, **Field Reports** - 23, **Dealer Reports** - 12, **Legal Actions** - 8 (7 "Lemon-Law" / 1 "Class-Action")

### Power Steering Assist Loss Failure Modes

#### Temporary Loss Of Assist

- Reiteration of PE response failure modes.
- Additional information regarding "failsafe" design in overheating conditions provided.

#### Permanent Loss Of Assist

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Memorandum



U.S. Department  
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National Highway  
Traffic Safety  
Administration

Subject: Meeting with BMW of North America, LLC  
Loss of Power Steering Assist in  
MY2004-2005 BMW MINI Cooper Date: July 26, 2011

From: Cynthia Glass, NVS-212

To: Memo to File EA11-005

In Attendance: Frank Borris, Director, Office of Defects Investigation (ODI)  
Scott Yen, Chief, Vehicle Integrity Division, Office of Defects Investigation  
Cynthia Glass, Safety Defects Engineer, Office of Defects Investigation  
Nicholas England, Trial Attorney, Office of the Chief Counsel (OCC)  
Jan Urbahn, General Manager, Safety Engineering & Intelligent Transportation  
Systems, BMW  
Sam Campbell, Government Technical Affairs Manager, BMW

Memorandum



U.S. Department  
of Transportation

National Highway  
Traffic Safety  
Administration

Subject: Meeting with BMW Date: 10/25/11

From: Ali Motamedamin, NVS-212

Reply to  
Attn. of:

To: To File EA11-005

On October 25, 2011, NHTSA staff held a meeting with BMW representatives relating to investigation EA11-005, Mini Cooper vehicles. The purpose of the meeting was to discuss a field study conducted by BMW and to discuss the current status of the investigation.



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National Highway  
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Administration

## Memorandum

Subject: Phone call with BMW

Date: 7/26/12

From: Ali Motamedamin, NVS-212 A\*

Reply to  
Ath. of

To: To File EA11-005

On July 25, 2012, NHTSA staff held a telephone conversation with BMW representatives relating to investigation EA11-005, Mini Cooper vehicles. The purpose of the meeting was to discuss technical issues related to the investigation.

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# EXTENDED WARRANTY PROGRAM

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**Meeting with NHTSA  
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July 24, 2014**

# **MY 2002 - 2005 MINI LOSS OF POWER STEERING ASSIST DISCUSSION**

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