



U.S. Department  
of Transportation

**National Highway  
Traffic Safety  
Administration**

# ODI RESUME

**Investigation:** EA 11-005  
**Prompted by:** Consumer complaints, PE10-038  
**Date Opened:** 05/04/2011 **Date Closed:** 01/05/2016  
**Investigator:** Scott Yon **Reviewer:** Scott Yon  
**Approver:** Stephen Ridella  
**Subject:** Loss of power steering assist

## MANUFACTURER & PRODUCT INFORMATION

**Manufacturer:** BMW of North America, LLC  
**Products:** MY 2002-2005 MINI Cooper and Cooper S  
**Population:** 109,000 (Estimated)  
**Problem Description:** Loss of power steering assist due to electric power steering failure.

## FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
<b>Complaints:</b>	1,167	679	1741**
<b>Crashes/Fires:</b>	17	3	20
<b>Injury Incidents:</b>	1	1	2
<b>Number of Injuries:</b>	1	1	2
<b>Fatality Incidents:</b>	0	0	0
<b>Other*:</b>	8	19	27

\*Description of Other: Other crash allegations as discussed below.

\*\* Total eliminates duplicates received by ODI and manufacturer.

## ACTION / SUMMARY INFORMATION

**Action:** Close this Engineering Analysis, see NHTSA Safety Recall 15V-660 for details of the recall.

### Summary:

The Office of Defects Investigation (ODI) originally opened the investigation of loss of power steering assist in model year (MY) 2004 and 2005 Mini Cooper as Preliminary Evaluation PE10-038. The investigation was upgraded to Engineering Analysis EA11-005 in May, 2011. During EA11-005 the scope was expanded to include MY 2002 and 2003 vehicles that use the same steering system. The subject vehicles now include MY 2002, the first year BMW sold MINI in the U.S., through mid-MY 2005 covering approximately 109,000 vehicles.

The subject vehicles use an electrically driven pump to provide hydraulic pressure to a conventional rack-and-pinion steering gear. A pump, the electric motor, and an electronic control unit (ECU) are housed in a single component BMW calls a "Power Pack." The investigation focused on contaminant-induced failure of the ECU resulting in a loss of assist without warning. When assist is lost mechanical steering is retained however increased steering effort is required to keep the vehicle on an intended path. Some consumers reported that restarting the vehicle (cycling the ignition switch) would often reinstate the steering assist. Additionally, and by design, assist can also reinstate during the drive cycle in limited circumstances. The unexpected loss of assist, and/or possibly the reinstatement of assist while driving, may contribute to a loss of vehicle control in certain driving situations. During MY 2005 production BMW introduced a revised Power Pack design (the ECU incorporated a conformal coating of the circuit board) which resulted in a significant reduction in failures.

ODI identified 20 reports describing crashes consistent with a loss of power assist event possibly caused by a failure of the Power Pack. Two reports alleged an injury however both were minor in nature and did not require emergency treatment (a subsequent doctor's visit occurred in one case). Ten of these reports described low speed crashes with

minimal, or in most cases no property or vehicle damage (e.g., striking a movable barrier in a parking lot). Additionally 27 other reports alleged or indicated that a crash occurred due to a Power Pack failure however in reviewing these reports, ODI either 1) was unable to confirm that a crash actually occurred (8 reports), or 2) determined that the crash circumstances (e.g., adverse road/weather conditions) or cause (e.g., the crash was caused by steering linkage failure) were not attributable to a Power Pack failure (19 reports).

Throughout the investigation BMW maintained that loss of assist in the subject vehicles did not constitute a safety related defect, noting that the subject vehicles are smaller, light weight vehicles that can be reasonably controlled when assist is lost. In May 2013 BMW launched a 13 year/150,000 mile extended warranty coverage utilizing the redesigned Power Pack as a replacement part. ODI continued its investigation. In July 2014 BMW provided ODI a status of the ongoing extended warranty program, and in May 2015 ODI requested an update of complaint data. Following a review of the provided data, ODI informed BMW of its assessment that loss of steering assist failures were not adequately resolved by an extended warranty program.

On October 12, 2015 BMW notified NHTSA that it would conduct a safety recall (15V-660) on approximately 86,000 subject vehicles not previously remedied with the new design Power Pack through regular or extended warranty programs. The recall covers MY 2002-2005 MINI Cooper, MY 2002-2005 MINI Cooper S, and MY 2005 MINI Cooper/ Cooper S convertibles manufactured through Feb 9, 2005. Vehicles produced after this date are not included since the redesigned Power Pack was incorporated into vehicle production at that time.

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