

# BMW Group

February 18, 2005

Mr. Thomas Z. Cooper  
Chief, Vehicle Integrity Division  
Office of Defects Investigation  
National Highway Traffic Safety Administration  
400 Seventh Street, S.W.  
Washington, DC 20590

Re: PE04-081

Dear Mr. Cooper:

With this letter, BMW is responding to NHTSA's Information Requested dated January 19, 2005 in the above captioned matter. The above captioned matter pertains to NHTSA's investigation of the performance of side air bag systems in certain Model Year 2001 - 2003 Volkswagen Jetta, Golf, and GTI vehicles.

NHTSA's letter to BMW requests information pertaining to side air bag systems in certain Model Year 2001 - 2003 MINI Cooper models sold or leased in the United States. Please note that Model Year 2002 was the first Model Year that the MINI Cooper models were offered for sale in the United States.

The attachments included with this letter comprise BMW's response to PE04-081. As requested by NHTSA, BMW has repeated each question verbatim and provided our response accordingly. Our detailed responses are contained in the attachments.

Should you have any questions pertaining to the information enclosed with this letter, please contact Martin Rapaport of my staff at (201) 573-7708.

Sincerely,



Karl-Heinz Zwica  
Vice President, Engineering US

Attachments

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BMW of North America, LLC

BMW Group Company

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**BMW Response  
to  
NHTSA PE04-081**

1. State, by model and model year, the number of subject peer vehicles BMW has manufactured for sale or lease in the United States. If there are multiple side air bag system designs or versions for a given subject peer vehicle, please identify under section "a". Separately, for each model subject vehicle manufactured to date by BMW, state the following:

- a. Vehicle identification number (VIN);
- b. Make;
- c. Model;
- d. Model Year;
- e. Airbag system model version (if more than one),
- 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 2000, or a compatible format, entitled "PRODUCTION DATA".

Response:

The number of subject peer vehicles BMW has manufactured for sale or lease in the United States by Model and Model Year is contained in Table 1. The attached CD contains the additional information, as requested in Question 1, in a file entitled "Production Data".

Vehicle Model	Model Year	US Production
MINI Cooper	2002	10,357
MINI Cooper S	2002	7,146
MINI Cooper	2003	18,297
MINI Cooper S	2003	15,158

Table 1.

2. State the number of each of the following, received by BMW, or of which BMW is otherwise aware, which relate to, or may relate to, the subject condition in the subject 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, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
- d. Property damage claims (including own vehicle); and
- e. Third-party arbitration proceedings where BMW is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which BMW is or was a defendant or codefendant.

For subparts "a" through "d", 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). Identify reports that have a duplicate with either other mfg reports/claims or with ODI.

In addition, for items "b" through "f," provide a summary description of the alleged problem and causal and contributing factors and BMW's assessment of the problem, with a summary of the significant underlying facts and evidence along with any photographs and airbag control module diagnostic result/readout/printout (along with explanation/description). For items f and 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.

Response:

The information provided in response to Question 2 is current as of January 28, 2005.

Question 2(a)

There have been twenty-one (21) consumer complaints, which relate to, or may relate to, the subject condition in the subject peer vehicles.

Question 2(b)

There have been sixteen (16) field reports, which relate to, or may relate to, the subject condition in the subject peer vehicles. These 16 field reports are associated with the 21 consumer complaints identified in Question 2(a).

Question 2(c)

There have been two (2) injury claims, which relate to, or may relate to, the subject condition in the subject peer vehicles. These 2 injury claims are associated with the 21 consumer complaints identified in Question 2(a).

Question 2(d)

There have not been any property damage claims against BMW, which relate to, or may relate to, the subject condition in the subject peer vehicles.

Question 2(e)

There have not been any third-party arbitration proceedings where BMW is or was a party to the arbitration, which relate to, or may relate to, the subject condition in the subject peer vehicles.

Question 2(f)

There have not been any lawsuits both pending and closed, in which BMW is or was a defendant or codefendant, which relate to, or may relate to, the subject condition in the subject peer vehicles.

\* \* \*

As requested above regarding, "...a summary description of the alleged problem and causal and contributing factors and BMW's assessment of the problem, with a summary of the significant underlying facts and evidence along with any photographs and airbag control module diagnostic result/readout/printout (along with explanation/description)...", BMW provides the following information.

### Deployments Due to Impacts

After analysis of possible contributing factors to the cases involving side air bag system deployment, BMW concluded that the principal causal factor is a precipitating impact event of vehicle systems/components (e.g., wheels, tires, rims, suspension components, undercarriage) with a road hazard (e.g., pothole, curb, construction material, or some other object) which results in the transmission of an impact force wave from the impact point through suspension and body structure to the side air bag system sensor.

Due to the nature of side air bag systems, a "deployment decision" must be made in typically less than 10 milliseconds. In that extremely short period of time, some non-collision (non-crash) forces (such as contact with a road hazard) can have an initial acceleration "signature" that closely resembles the onset of a vehicle-to-vehicle, or vehicle-to-narrow-object collision. Sometimes the control module logic, based upon the state-of-the-art programming, predicts that a deployment is needed and makes a decision to deploy the side air bag system.

### Evidence of Impacts Sometimes Requires Special Expertise

Virtually all of the complaints/reports indicate that the side air bag deployment occurs subsequent to, and as a result of, an encounter with a pothole, curb, construction material, or some other road hazard. This contact produces damage to vehicle components, such as tire sidewall tearing and/or rim bending, shock/strut tower "mushrooming" (the strut's bolted connections becoming non-planar and non-aligned), vehicle undercarriage denting/jarring/scraping, etc.

We have provided representative example photos in Attachment 1. These photos are indicative of a precipitating impact event, such as hard contact with a pothole, curb, or some other road hazard, causing the deployment. For example, the photos included herein indicate evidence of, as noted above, tire sidewall tearing and/or rim bending damage, shock/strut tower "mushrooming" damage, vehicle undercarriage denting/scraping damage, etc.

Note that we have included eight (8) photos depicting typical vehicle component (rim, shock/strut tower, vehicle undercarriage) damage following four (4) photos depicting an undamaged vehicle shock/strut tower for comparison. We have included 4 photos depicting an undamaged vehicle shock/strut tower because the reviewer may be unaware of the specific difference between an undamaged and a damaged shock/strut tower. By analyzing these specific photos, one can see that the vehicle's shock/strut tower's bolted connection is in a planar and an aligned condition prior to an encounter with, e.g., a large/severe pothole, and that subsequent to this occurrence, the bolted connection is no longer in a planar or aligned condition.

### Diagnostics Show That System Received Impact Pulse

We have also provided a representative example air bag control module diagnostic/readout in Attachment 2. This is a typical diagnostic/readout from the module, when queried, following a side air bag deployment as a result of an impact. The information contained in the readout indicates that the vehicle's side air bag system (side air bag, and Head Protection System) deployed as denoted by the entries "MRS4-06" and "MRS4-0A". The readout also indicates that the deployment was a result of receiving a signal ("crash-telegram") from the side impact sensor as denoted by the entry "MRS4-91". The signal that the side impact sensor transmitted to the module calling for deployment was a result of vehicle impact as noted above.

3. State, by model and model year, the number and total count for all of the following categories of claims, collectively, that have been paid by BMW to date that relate to, or may relate to, the subject condition in the subject 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.

Provide this information in Microsoft Excel table, or a compatible format, entitled "WARRANTY DATA COUNT".

Response:

The information provided in response to Question 3 is current as of January 20, 2005.

The number, by Model and Model Year, of all paid warranty-related claims that relate to, or may relate to, the subject condition in the subject peer vehicles is contained in Table 2, and on the attached CD in a file entitled "Warranty Data Count" as requested.

The only applicable "categories of claims" are paid warranty claims, and paid good-will warranty claims. No other categories of warranty-related claims denoted within Question 3 have been utilized by BMW. The total count for all of the paid warranty-related claims outlined in Table 2 is thirty-two (32).

Vehicle Model	Model Year	Paid Claim Type	Number of Paid Claims
MINI Cooper	2002	Warranty	4
MINI Cooper S	2002	Warranty	3
MINI Cooper	2003	Warranty	1
MINI Cooper S	2003	Warranty	5
MINI Cooper	2002	Warranty Good-Will	4
MINI Cooper S	2002	Warranty Good-Will	3
MINI Cooper	2003	Warranty Good-Will	4
MINI Cooper S	2003	Warranty Good-Will	8

Table 2.

4. Describe in detail the search criteria used by BMW to identify the claims identified in response to Request No. 3, 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 subject condition in the subject peer vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by BMW on the subject peer vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered) and if it covers inadvertent side-airbag deployments (without an actual side crash, but sensors did sense a shock pulse). Describe any extended warranty coverage option(s) that BMW offered for the subject peer vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty and if it covers inadvertent side-airbag deployments.

Response:

The search criteria utilized by BMW, including, "...labor operations, problem codes, part numbers and any other pertinent parameters used..." specifically pertained to the use of the 4-digit (general level) paid warranty (including good-will) claim problem code for air bag systems. By utilizing this 4-digit code, all air bag system paid warranty (including good-will) claims are captured within the 6-, 8-, and 10-digit (more detailed) levels. These more detailed levels identify the air bag subsystem and specific problem with the subsystem. Using the more general 4-digit code search allowed for a comprehensive response to this question by being able to capture all air bag system paid warranty (including good-will) claims that relate to, or may relate to, the subject condition in the subject peer vehicles.

Subsequent to performing the paid warranty (including good-will) claim search at the 4-digit level, and capturing all of the 4-digit level claims, each specific claim was reviewed in order to determine its possible applicability to the subject condition in the subject peer vehicles.

The problem codes, and problem code descriptions, applicable to the subject condition in the subject peer vehicles, are contained in Attachment 3. Labor operation codes and associated descriptions were not utilized in the search, and are therefore not included herein. However, if specifically needed, they can be provided.

The terms of the new vehicle warranty coverage offered by BMW on the subject peer vehicles is contained in Attachment 4.

**5. Provide a table showing the following information concerning the side-impact airbag systems in the subject peer vehicles by model and model year:**

- a. type of side air bag system (thorax, head, curtain or combination thereof);
- b. location of each seating position at which a side air bag system is installed;
- c. the number of side air bags at each of those seating positions; and
- d. bag location (seat mounted, door mounted, etc.)

Response:

The locations, types, and numbers of side air bag systems in the subject peer vehicles for all Model Year 2002 - 2003 MINI Cooper and Cooper S models are contained in Table 3.

Airbag System Type	Location of each seating position at which a side air bag system is installed	Number of side air bags at each of those seating positions	Bag Location
Thorax	Front Left Seat Front Right Seat	1	Seat Mounted
Head Protection System	Front Left Seat Front Right Seat Rear Left Seat Rear Right Seat	1	Roof Mounted, Coverage from A- to C-Pillar

Table 3.

**6. For each model, model year of the subject peer vehicles, identify the supplier of the side-impact crash sensing system and electronic restraint module. Please provide a complete street address, contact name, and telephone number for each supplier identified.**

Response:

The supplier information pertaining to the side-impact crash sensing system and electronic restraint module is as follows:

Robert Bosch GmbH  
Automobilelektronik  
Postfach 300240  
70442 Stuttgart  
Germany

Contact Person:  
Mr. Bernhard Prien  
Tel.: 49-89-5128-289

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