



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

SEP 1 2011

1200 New Jersey Avenue SE.
Washington, DC 20590

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

David Robertson, Group Manager
Environmental, Safety and Powertrain Engineering
Mazda North American Operations
1500 Enterprise Drive
Allen Park, MI 48101

NVS-13cnl
PE11-026

Dear Mr. Robertson:

This letter is to inform you that the Office of Defects Investigation (ODI) of the National Highway Traffic Safety Administration (NHTSA) has opened Preliminary Evaluation PE11-026 to investigate allegations of brake master cylinder internal leaks in model year (MY) 2008 CX-9 vehicles manufactured by Mazda for sale in the United States, and to request certain information.

This office has received Early Warning Report (EWR) data from Mazda covering a time period from the first quarter of 2008 (2008Q1) to the third quarter of 2010 (2010Q3) indicating a high number of warranty claims and reports for the ServiceBrake-03 category. ODI's review of these reports concluded that in most instances Mazda dealers identified the primary cause as an internal brake fluid leak from the master cylinder into the vacuum booster. ODI has also received one complaint from the owner of a MY 2008 CX-9 which alleges that when depressing the brake pedal under normal conditions the vehicle does not come to a complete stop within the expected distance and that the brake pedal must be pumped to come to a complete stop. A copy of this report is attached.

Unless otherwise stated in the text, the following definitions apply to these information requests:

- **Subject vehicles:** All MY 2007 through 2011 Mazda CX-9 vehicles manufactured for sale or lease in the United States.
- **Subject component:** All brake master cylinders used as original equipment or service parts in the subject vehicles.
- **Mazda:** Mazda Motor Corporation and, expand to include foreign parent company where design, engineering and/or manufacturing are undertaken in a foreign country, all of its past and present officers and employees, whether assigned to its principal offices or any of its field or other locations, including all of its divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of their headquarters, regional, zone



and other offices and their employees, and all agents, contractors, consultants, attorneys and law firms and other persons engaged directly or indirectly (e.g., employee of a consultant) by or under the control of Mazda (including all business units and persons previously referred to), who are or, in or after January 1, 2000, were involved in any way with any of the following related to the alleged defect in the subject vehicles:

- **Alleged defect:** Master cylinder internal leakage to the brake booster assembly, resulting in any one or more of the following symptoms: excess brake pedal travel, brake warning lamp illumination; and, potentially, brake hydraulic circuit failure with increased stopping distance.
- **Document:** "Document(s)" is used in the broadest sense of the word and shall mean all original written, printed, typed, recorded, or graphic matter whatsoever, however produced or reproduced, of every kind, nature, and description, and all non-identical copies of both sides thereof, including, but not limited to, papers, letters, memoranda, correspondence, communications, electronic mail (e-mail) messages (existing in hard copy and/or in electronic storage), faxes, mailgrams, telegrams, cables, telex messages, notes, annotations, working papers, drafts, minutes, records, audio and video recordings, data, databases, other information bases, summaries, charts, tables, graphics, other visual displays, photographs, statements, interviews, opinions, reports, newspaper articles, studies, analyses, evaluations, interpretations, contracts, agreements, jottings, agendas, bulletins, notices, announcements, instructions, blueprints, drawings, as-builts, changes, manuals, publications, work schedules, journals, statistical data, desk, portable and computer calendars, appointment books, diaries, travel reports, lists, tabulations, computer printouts, data processing program libraries, data processing inputs and outputs, microfilms, microfiches, statements for services, resolutions, financial statements, governmental records, business records, personnel records, work orders, pleadings, discovery in any form, affidavits, motions, responses to discovery, all transcripts, administrative filings and all mechanical, magnetic, photographic and electronic records or recordings of any kind, including any storage media associated with computers, including, but not limited to, information on hard drives, floppy disks, backup tapes, and zip drives, electronic communications, including but not limited to, the Internet and shall include any drafts or revisions pertaining to any of the foregoing, all other things similar to any of the foregoing, however denominated by Mazda, any other data compilations from which information can be obtained, translated if necessary, into a usable form and any other documents. For purposes of this request, any document which contains any note, comment, addition, deletion, insertion, annotation, or otherwise comprises a non-identical copy of another document shall be treated as a separate document subject to production. In all cases where original and any non-identical copies are not available, "document(s)" also means any identical copies of the original and all non-identical copies thereof. Any document, record, graph, chart, film or photograph originally produced in color must be provided in color. Furnish all documents whether verified by Mazda or not. If a document is not in the English language, provide both the original document and an English translation of the document.

- **Other Terms:** To the extent that they are used in these information requests, the terms “claim,” “consumer complaint,” “dealer field report,” “field report,” “fire,” “fleet,” “good will,” “make,” “model,” “model year,” “notice,” “property damage,” “property damage claim,” “rollover,” “type,” “warranty,” “warranty adjustment,” and “warranty claim,” whether used in singular or in plural form, have the same meaning as found in 49 CFR 579.4.

In order for my staff to evaluate the alleged defect, certain information is required. Pursuant to 49 U.S.C. § 30166, please provide numbered responses to the following information requests. Insofar as Mazda has previously provided a document to ODI, Mazda may produce it again or identify the document, the document submission to ODI in which it was included and the precise location in that submission where the document is located. When documents are produced, the documents shall be produced in an identified, organized manner that corresponds with the organization of this information request letter (including all individual requests and subparts). When documents are produced and the documents would not, standing alone, be self-explanatory, the production of documents shall be supplemented and accompanied by explanation.

Please repeat the applicable request verbatim above each response. After Mazda’s response to each request, identify the source of the information and indicate the last date the information was gathered.

1. State, by model year, the number of subject vehicles Mazda has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Mazda, state the following:
 - a. Vehicle identification number (VIN);
 - b. Make;
 - c. Model;
 - d. Model Year;
 - e. Date of manufacture;
 - f. Date warranty coverage commenced; and
 - g. 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 2003, or a compatible format, entitled “PRODUCTION DATA.” See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

2. State the number of each of the following, received by Mazda, or of which Mazda is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:
 - a. Consumer complaints, including those from fleet operators;
 - b. Consumer complaints, including those from operators, where a failure or malfunction of the brake master cylinder or booster system was reported;
 - c. Field reports, including dealer field reports;
 - d. Field reports, including dealer field reports where master cylinder leakage or failure was claimed;

- e. 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;
- f. Property damage claims;
- g. Third-party arbitration proceedings where Mazda is or was a party to the arbitration; and
- h. Lawsuits, both pending and closed, in which Mazda 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 "e" through "h," provide a summary description of the alleged problem and causal and contributing factors and Mazda's assessment of the problem, with a summary of the significant underlying facts and evidence. For items g and h, 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.

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:
 - a. Mazda's file number or other identifier used;
 - b. The category of the item, as identified in Request No. 2 (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. Vehicle's make, model and model year;
 - f. Vehicle's mileage at time of incident;
 - g. Incident date;
 - h. Report or claim date;
 - i. Repair(s) dealer made to the vehicle;
 - j. Whether a crash is alleged;
 - k. Whether property damage is alleged;
 - l. Number of alleged injuries;
 - m. Number of alleged fatalities; and
 - n. A summary of the incident.

Provide this information in Microsoft Access 2003, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

4. Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Mazda used for organizing the documents.

5. State, by model and model year, total counts for all of the following categories of claims, collectively, that have been paid by Mazda to date that relate to repair or replacement of the subject component in the subject vehicles: warranty claims; extended warranty claims; claims for good will services; and field, zone, or similar adjustments and reimbursements. This should include all claims made in accordance with procedures specified in any service bulletins issued by Mazda related to the subject components.

Separately, for each such claim, state the following information:

- a. Mazda's claim number;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. VIN;
- d. Repair date;
- e. Vehicle mileage at time of repair;
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number;
- h. Problem code;
- i. Replacement part number(s) and description(s);
- j. Whether the master cylinder was returned for analysis;
- k. Concern stated by customer; and
- l. Comment, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2003, 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.

6. Describe in detail the search criteria used by Mazda to identify the claims identified in response to Request No. 5, 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 vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by Mazda on the subject 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 Mazda offered for the subject vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.
7. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Mazda 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 Mazda is planning to issue within the next 120 days.
8. 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 vehicles that have been conducted, are being

conducted, are planned, or are being planned by, or for, Mazda. 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.

9. State the number of master cylinders and brake booster assemblies that Mazda has sold that may be used in the subject vehicles by part number (both service and engineering/production) and month/year of sale (*including the cut-off date for sales, if applicable*).

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, all vehicle applications that use the component, whether installed in production or in service, and state the applicable dates of production or service usage.

10. Provide the following information regarding all warranty return analyses conducted by, or for, Mazda related to the alleged defect in the subject vehicles:
 - a. An Excel spreadsheet listing all returns and including the following information:
 - i) Claim number;
 - ii) Vehicle identification number;
 - iii) Master cylinder information (e.g., manufacturing date,
 - iv) Repair date;
 - v) Repair mileage;
 - vi) Results of all testing conducted on the part (e.g., leak check); and
 - vii) Summary of warranty return analysis findings.
 - b. Copies of all warranty return analysis reports, including all test results and photographs;
 - c. Describe all failure modes identified in analyses of returned parts; and
 - d. Describe and provide copies of all documents related to all analyses of return part inspections and testing.
 - e. A description of how the subject vehicles were evaluated by Mazda in the recall decision making process, either during the reviews that led to recalls 08V-311 and 09V-431 or subsequently.
11. Provide the following sample parts related to the alleged defect in the subject vehicles and peer vehicles (one sample each for subject vehicles):
 - a. One exemplar sample of the master cylinder sectioned or disassembled to show the leak path related to the alleged defect (i.e., seal and seal groove);

- b. One field return sample of a master cylinder assembly representing a “worst case” leak rate for the alleged defect, sectioned or disassembled to show the subject seal and groove; and
- c. One sample each of any kits that have been released by Mazda for use in repairs related to the alleged defect, or may be relate, to the alleged defect in the subject or peer vehicles.

In addition to the request samples, please provide a description of how field return parts were tested to assess “worst case” leak rates and provide the range, mean, standard deviation and maximum values measured by Mazda in field returns for each vehicle population (i.e., subject vehicles).

12. Provide the following information comparing the alleged defect and its effect on vehicle braking performance in the subject vehicles:
 - a. Describe the design of the master cylinder, including the subject seal and seal groove;
 - b. Describe the manufacturing process for the master cylinder and identify all factors related to the alleged defect condition;
 - c. Describe the leak rates associated with the alleged defect (maximum, mean, and standard deviation), including a detailed description of how Mazda measured or estimated leak rate (e.g., field return analysis, analysis of leak volume by time or miles in service, etc);
 - d. Describe the master cylinder reservoir construction, including a plot of fill height vs. volume with the nominal fill level and level at which the brake warning lamp illuminates shown;
 - e. Service interval remaining between brake lamp illumination and partial system failure, including the following:
 - i) A detailed description of how Mazda conducted this analysis and all assumptions used;
 - ii) A discussion of differences between city drive cycles and highway drive cycles on both the time to failure and miles to failure analyses;
 - iii) A discussion of leak dynamics during driving and after each drive cycle; and
 - iv) Mazda’s assessment of how the time to failure and mileage to failure data in field reports, complaints and warranty claims fit with the estimated intervals;
 - f. The failure rate related to the alleged defect;
 - g. Analysis of failure rates as a function of service time and mileage
 - h. Mazda’s estimate of the number of failures that resulted in a reduction in brake effectiveness (i.e., hydraulic circuit failure) and how this assessment was performed
 - i. Mazda’s assessment of the effect of the brake fluid leakage on brake booster assembly performance (using worst case fill volume); and
 - j. The effect of hydraulic circuit failure on vehicle stopping distance.
13. Provide Mazda’s assessment of the alleged defect in the subject vehicles, including:
 - a. 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, including Mazda's assessment of the causes and contributing factors for all crash reports submitted in response to this information request;
- e. What warnings, if any, the operator of the vehicle would have that the alleged defect was occurring or subject system was malfunctioning, and
- f. The reports included with this inquiry.

This letter is being sent to Mazda pursuant to 49 U.S.C. § 30166, which authorizes NHTSA to conduct any investigation that may be necessary to enforce Chapter 301 of Title 49 and to request reports and the production of things. It constitutes a new request for information. Mazda's failure to respond promptly and fully to this letter could subject Mazda to civil penalties pursuant to 49 U.S.C. § 30165 or lead to an action for injunctive relief pursuant to 49 U.S.C. § 30163. (Other remedies and sanctions are available as well.) Section 5(a) of the TREAD Act, codified at 49 U.S.C. § 30165(b), provides for civil penalties of up to \$5,000 per day, with a maximum of \$17,350,000 for a related series of violations, for failing or refusing to perform an act required under 49 U.S.C. § 30166. *See* 49 CFR 578.6 (as amended by 75 Fed. Reg. 79978 (Dec. 21, 2010)). This includes failing to respond to ODI information requests.

If Mazda cannot respond to any specific request or subpart(s) thereof, please state the reason why it is unable to do so. If on the basis of attorney client, attorney work product, or other privilege, Mazda does not submit one or more requested documents or items of information in response to this information request, Mazda must provide a privilege log identifying each document or item withheld, and stating the date, subject or title, the name and position of the person(s) from, and the person(s) to whom it was sent, and the name and position of any other recipient (to include all carbon copies or blind carbon copies), the nature of that information or material, and the basis for the claim of privilege and why that privilege applies.

Mazda's response to this letter, in duplicate, together with a copy of any confidentiality request, must be submitted to this office by October 21, 2011. Please refer to PE11-026 in Mazda's response to this letter. If Mazda finds that it is unable to provide all of the information requested within the time allotted, Mazda must request an extension from me at (202) 366-5207 no later than five business days before the response due date. If Mazda is unable to provide all of the information requested by the original deadline, it must submit a partial response by the original deadline with whatever information Mazda then has available, even if an extension has been granted.

If Mazda claims that any of the information or documents provided in response to this information request constitute confidential commercial material within the meaning of 5 U.S.C. § 552(b)(4), or are protected from disclosure pursuant to 18 U.S.C. § 1905, MAZDA must submit supporting information together with the materials that are the subject of the confidentiality request, in accordance with 49 CFR Part 512, as amended (69 Fed. Reg. 21409 et seq; April 21, 2004), to the Office of Chief Counsel (NCC-113), National Highway Traffic Safety Administration, Room W41-227, 1200 New Jersey Avenue, S.E., Washington, D.C. 20590. Mazda is required to submit two copies of the documents containing allegedly confidential information (except only one copy of blueprints) and one copy of the documents from which information claimed to be confidential has been deleted.

If you have any technical questions concerning this matter, please call Chris Lash of my staff, at (202) 366-2370.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey L. Quandt". The signature is fluid and cursive, with a large loop at the end.

Jeffrey L. Quandt, Chief
Vehicle Control Division
Office of Defects Investigation

Enclosure 1, One CD ROM titled Data Collection Disc and VOQs containing four files