

Subject: FW: Complaint 10668373
Date: Tuesday, January 13, 2015 11:05:58 AM
Attachments: [Catastrophic Failures of Interior Door Handle on 1998.pptx](#)

Sent: Tuesday, January 13, 2015 10:31 AM

Subject: FW: Complaint 10668373

The consumer is updating their file.

From: [REDACTED]
Sent: Monday, January 12, 2015 8:35 PM
To: DataQuality, DataQuality (NHTSA)
Subject: Complaint 10668373

Dear Sir or Madam,

I am attaching a document to support the defect reported to your Bureau.

I have 30 years of experience as a manufacturing and design engineer, plus as many years actively repairing vehicles.

In my review of these failures, there is a flaw in the part design which leads to the failure of the interior door handle.

If you have further questions, please do not hesitate to contact me at the number below.

Regards,

[REDACTED]
Sr. Manager, Cabinets Operations
CommScope, Inc.

[REDACTED]
[REDACTED]

Catastrophic Failures of Interior Door Handle on 1998 GMC Sierra

Prepared by



Situation History

- Single owner of 1998 GMC Sierra, purchased in September 1998.
- Have experienced 7 failures of the interior left (driver) side door handle.
- All replacements have been purchased through GM dealerships.
- Last two failures were saved for analysis.
- Exhibit 06.25.10 was purchased on August 25, 2010 and failed on October 28, 2013.
- Exhibit 09.03.2013 was purchased on October 29, 2013 and failed on December 24, 2014.
- Previous five door handle failure points occurred exactly as the two failures reported in this document.
- These failures have all occurred without any indication of deterioration prior to total failure.

A potential safety risk is present should an individual experience the catastrophic failure of the interior door handle in an emergency situation.

Exhibit of Fractures

Exhibit 06.25.10 Failure



Exhibit of Fractures

Exhibit 09.03.13 Failure

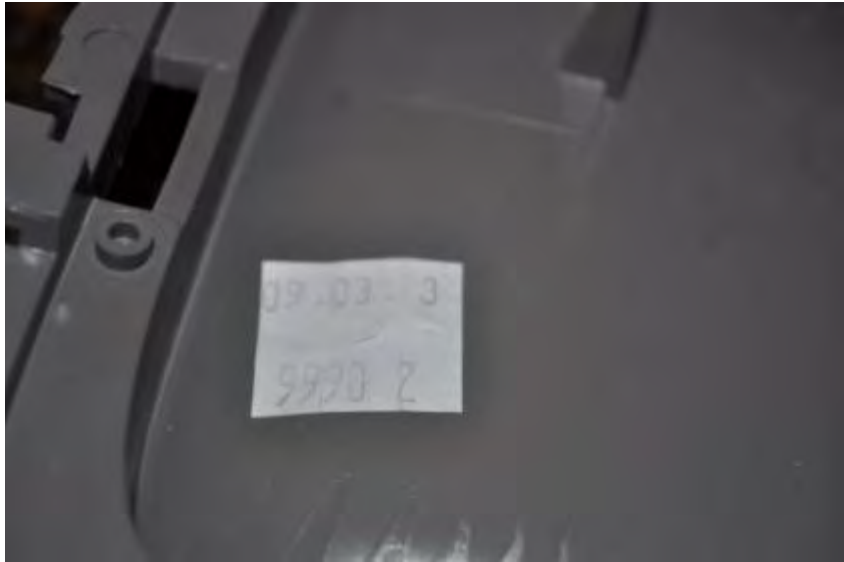


Exhibit of Fractures

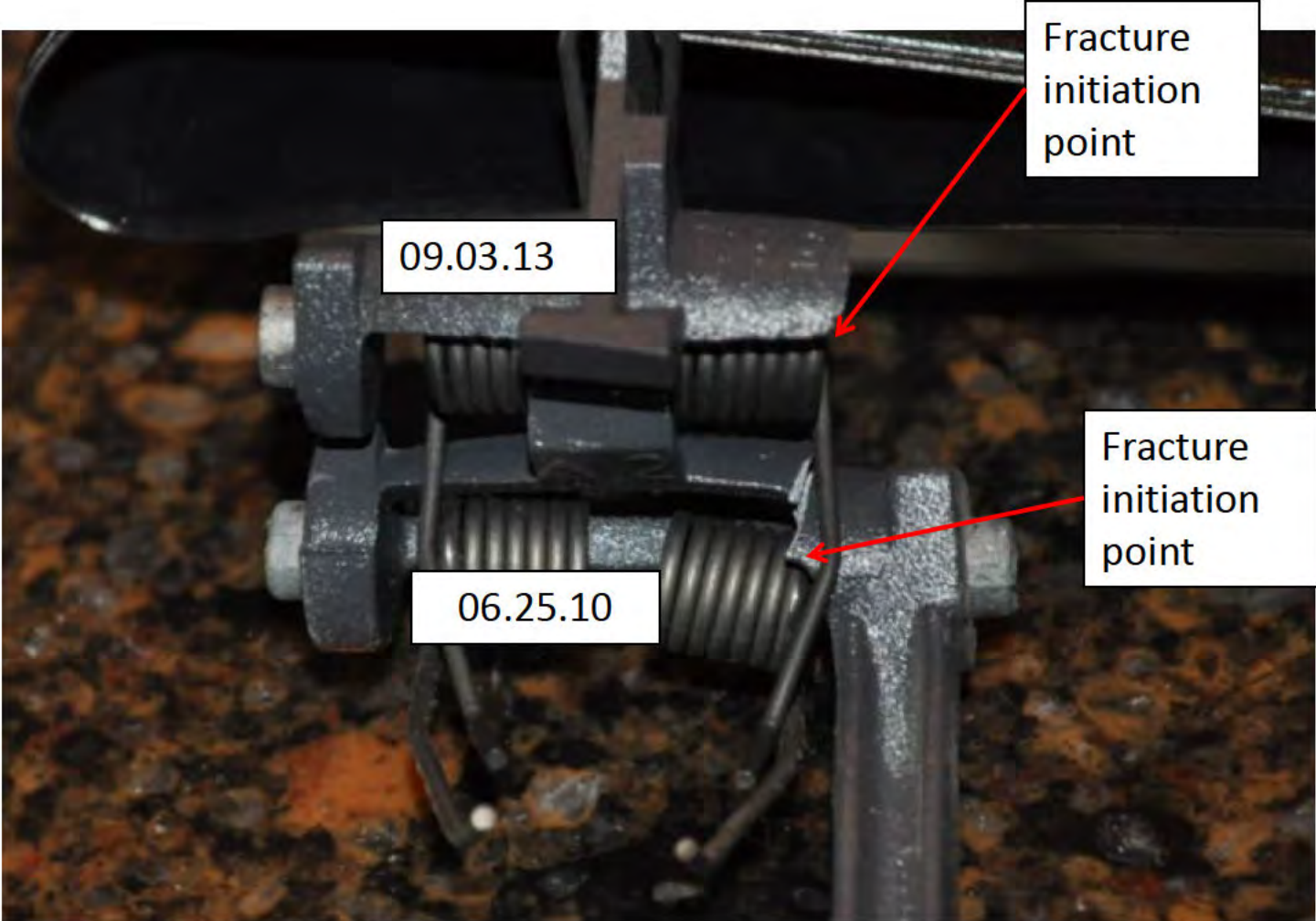
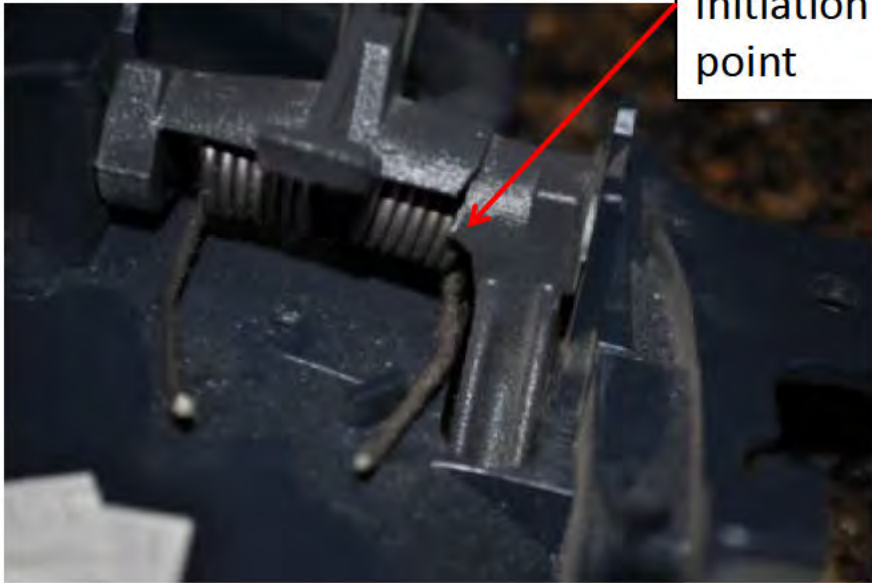


Exhibit of Fractures

Fracture
initiation
point



06.25.10

Fracture
initiation
point



09.03.13

Exhibit of Fractures

Note sharp feathered edge on component at fracture initiation point, a known stress point during actuation of the door handle.

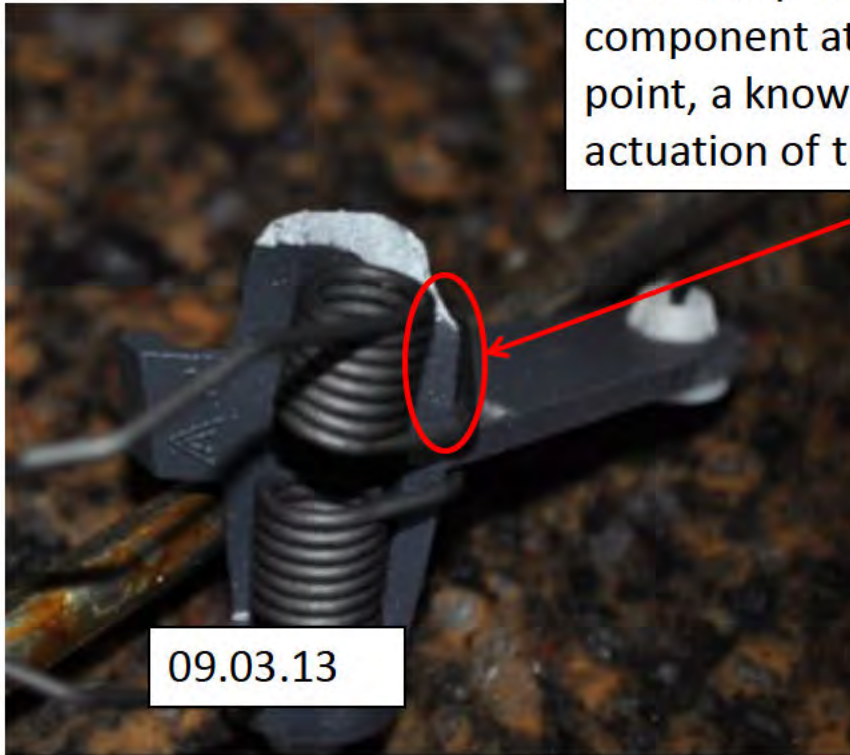


Exhibit of Fractures

Note feathered edge on component at fracture initiation point, a known stress point during actuation of the door handle.

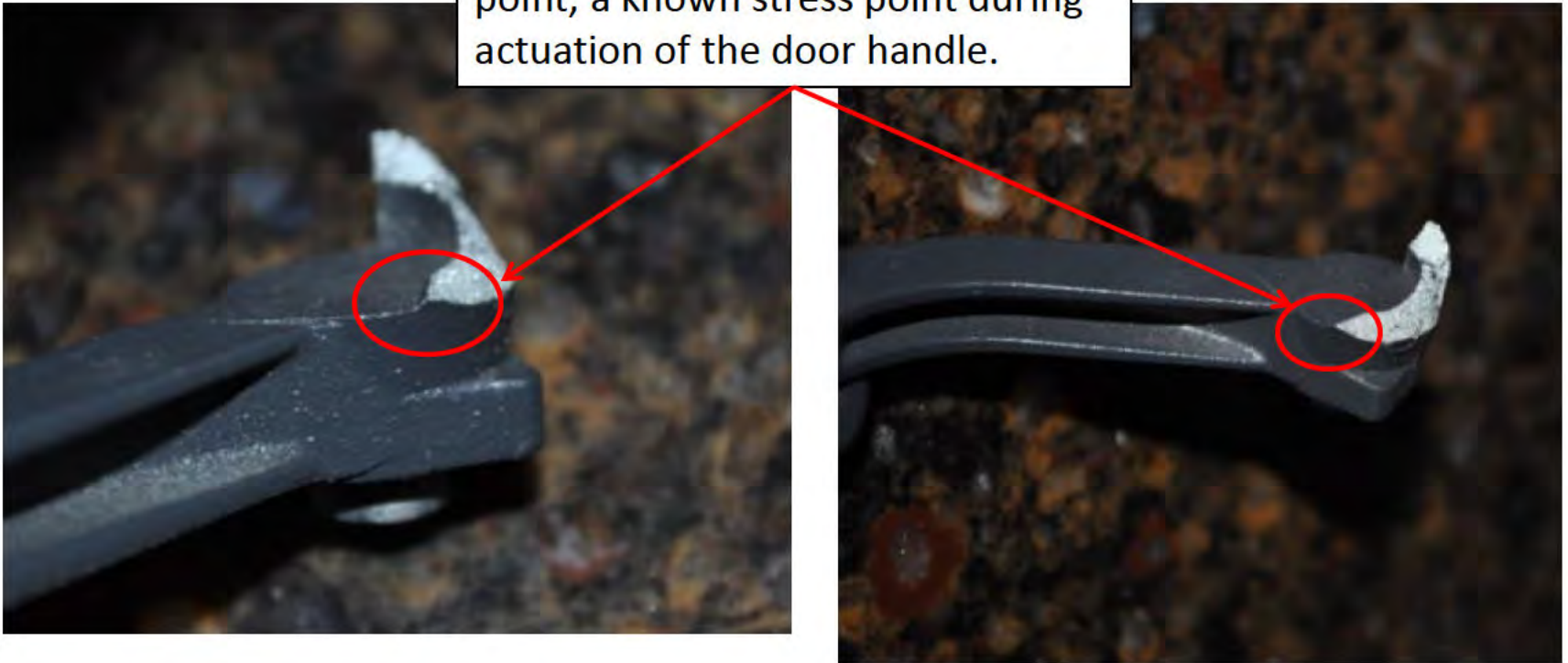


Exhibit of Fractures as reported by consumers

Reference

The screenshot displays the RepairPal website interface. At the top, there is a navigation bar with the RepairPal logo, a search bar, and links for 'Sign In', 'Sign Up', and 'Welcome Shops & Dealers'. Below this, a section titled 'Get verified customer reviews for shops near Orland Park' includes a search bar for 'Select Car Make' and 'near 60462', and a button 'Find a RepairPal Certified Shop'. The main content area features a sidebar with navigation options like 'GSA', 'Problem Reports', 'Recalls', 'Encyclopedia', 'Car Care Advice', 'Owners' Reviews', and 'Blog'. The central focus is the 'Car Problem Reports' section, which is circled in red. It displays a report for 'Chevrolet 2500 Pickup Inside/Outside Door Handles May Break', also circled in red. Below the title, there is a '20%' indicator and a '20%' button, both circled in red. The report text states: 'The inside and outside door handles are prone to breaking.' Below this, there are buttons for 'Add to My Checklist' and 'Find a Shop'. At the bottom, a user review is visible, circled in red, describing a door handle issue: 'The driver's side door won't open. The latch inside the door panel broke and fell off. Had it zipped shipped but it broke again.' The right sidebar contains an 'Ask a Question' section, a 'Verified customer reviews for auto repair shops near you' section with a photo of a mechanic, and a list of nearby shops like 'Spitfire Automotive' and 'Real Auto Haus'. The bottom of the page shows a 'Most Common Chevrolet 2500 Pickup Problems' section with a link to 'Intake Manifold Gaskets May Leak Coolant'.

Powder Metal Design Principles

Reference: Powder Metallurgy Company

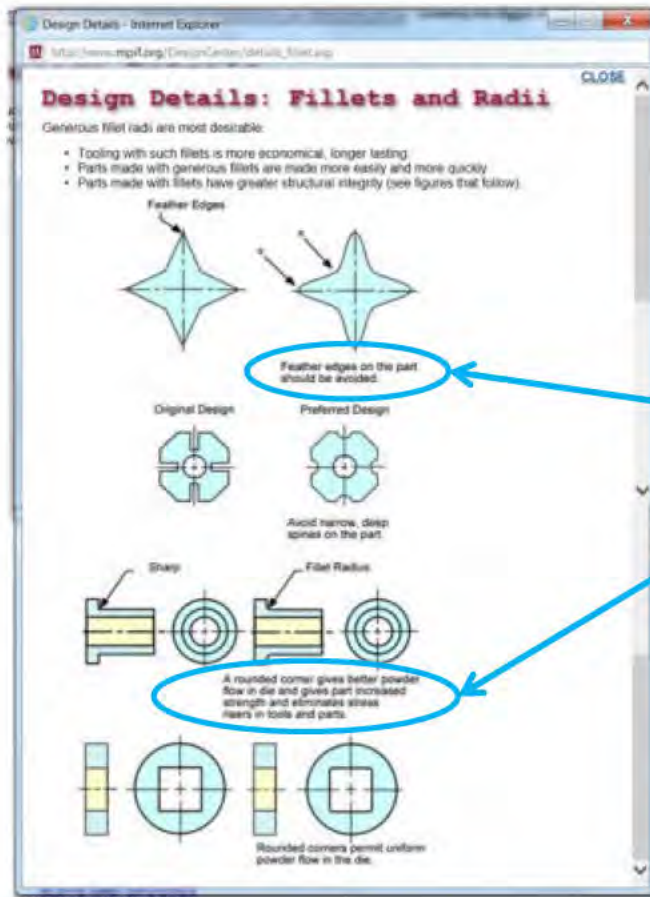
The slide is titled "UNDESIRABLE FEATURES" and is part of a presentation on powder metal design principles. It features a grid of 3D models of various parts. Some models are marked with a red 'X' to indicate they are undesirable, while others are marked with a blue circle and an arrow pointing to a specific feature. The text on the slide explains that features requiring thin tools or sharp corners are problematic for powder metal parts. A callout box highlights that sharp corners are undesirable and should be replaced with a fillet radius.

Features must be avoided that require tools with thin, weak sections or sharp inside corners, cause problems in powder fill and compaction, or make the component prone to distortion during sintering. Here are some of those problem features along with acceptable alternatives.

Note that sharp corners are undesirable and should be designed with a fillet radius.

Powder Metal Design Principles

Reference: Metal Powder Industries Federation



Note that sharp corners are undesirable and should be designed with a fillet radius.

Conclusion

- The inherent defect in the door handle design is a result of disregard to Powder Metallurgy design best practices.
- There is evidence supporting the failure of the interior door handle from other GM pick-up truck owners.
- Other owners have had repeated failures on a single vehicle with the interior door handle.

Recommendations

- Request FMEA results for the powder metallurgy (PM) design from General Motors.
- Request cycles-to-failure analysis report for the PM design from General Motors.
- Request critical-to-quality design parameters for the PM part from General Motors.
- Request sampling plan for PM product testing for validation that product meets critical-to-quality design parameters from General Motors.
- Request manufacturing quality control reports be produced for PM manufacturers from General Motors for this design.
- Request quantity of interior door handle replacements, of this design, which were performed at General Motors dealerships from General Motors.
- Request quantity of interior door handle replacements, of this design, which were sold as over the counter part sales from General Motors.