
From: Peter Judis
To: Mark A. Beauregard
CC: Terrence E Connolly; John Zuzelski; Brian Stouffer
BCC:
Sent Date: 2012-10-11 15:57:47:000
Received Date: 2012-10-11 15:57:57:000
Subject: Re: Cobalt Ignition Switch - Further Follow up
Attachments:

Mark,

I wanted to provide some additional feedback to your comments.

1. The steering column shroud "anti-rattle" pad is officially called the "key bump pad". If just this 3 mm rubber pad would be removed there would not be an improvement in the condition, A new steering column shroud would have to be designed/styled to totally eliminate the key bump pad and increase the volume of open space below the ignition lock cylinder providing more knee clearance. I believe the Saturn Ion has a steering column shroud geometry that has these design elements.

2. In regards to Ignition PUGH matrix, I have been coordinating these studies periodically since 1996. The following is the latest one I ran in June 2012 with a cross sectional SMT membership. I unfortunately did not include anyone from your group but we did discuss "key dangle" and "key clearances" during the meetings. Benchmarking pictures were collected.

3. Future design direction for most mechanical keyed applications (D2XX and later) is to change from a Mid Mount CEA (Slide # 13) to a New Low Mount CEA (Slide # 14). The vertical dimensions from steering shaft centerline to the ignition lock cylinder centerline are not shown but could be calculated.

4. The following are some old PUGH analysis and trade studies that were completed in years past.

Pete

Mark A. Beauregard--10/10/2012 08:46:19 PM--Terry/Pete/John, I have reviewed and measured vehicles built before and after the supplier change a

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Date: 10/10/2012 08:46 PM
Subject: Re: Cobalt Ignition Switch - Further Follow up

Terry/Pete/John,

I have reviewed and measured vehicles built before and after the supplier change and found no statistical difference in torque required to rotate the key. The key cylinder is designed to freely rotate in the housing when the key is inserted (key displaces tumblers and allows the side bar to lift out of the housing). The primary source of rotational resistance is the ignition switch, not the key/key cylinder. The slot to hole change in the key was

made to address inertial loads from heavy key chains acting on a line of action offset from the centerline of the key cylinder.

Although not responsible for the steering column shroud, I have reviewed the complete steering column assembly. The shroud, and "anti-rattle" pad on it, seem to be styled surfaces that are not driven by packaging around functional column components. The pad can possibly be removed and replaced with some other part (not sure what). Obviously need someone with more background on these parts to investigate.

As far as future programs, the current guidance direction on packaging CEAs on steering columns warrants more discussion. I would like to see the pugh matrix that was completed earlier this year and understand who was involved (not sure my team was). I am pushing for the inclusion of ignition key/key cylinders as well as all vehicle lock cylinders to be included in PPCs, BOMs, and DFPs much earlier and more visibly in GVDP (looking at DFP 7 for interiors and DFP 13 for exteriors). Program teams will need to identify much sooner in the process what they want secured and how (electrically or mechanically). HVI 266 will need a big weighting factor. I will contact Al Landino as soon as we settle on a proposal. More to come.

Mark

Terrence E Connolly--10/10/2012 06:33:39 PM--I was on this by phone . . . so entirely possible I could have missed stuff . . . but don't think Or

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Date: 10/10/2012 06:33 PM
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I was on this by phone . . . so entirely possible I could have missed stuff . . . but don't think Orteck vs Strattec was discussed.

Pete - I think consistent with Jim Fed's guidance we should scope out what a different column shroud would mean as a recall. I don't expect a lot of work on this . . . but some sort of understanding -

- maybe a coarse sketch/section that is pretty "protective" (I'm sure there is no way to quantify this . . . but I'm thinking if this was the choice we'd want to feel confident it makes a diff.
- some assessment of cost - eg ball park tooling, ball park piece cost, how much labor time is it to replace a column shroud
- seems like the other big deal would be that it probably has to come in multiple colors . . . or we pay dealer to paint?
- Any likely collateral damage of doing this repair?
-

Thanks!

Terry Connolly
[REDACTED]

Peter Judis--10/10/2012 03:09:48 PM--Terry, I agree with your logic. Creating a new geometry for the lower steering column shroud that i

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Cc: John Zuzelski/US/GM/GMC@GM, Mark A. Beauregard/US/GM/GMC [REDACTED]
Date: 10/10/2012 03:09 PM

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Terry,

I agree with your logic. Creating a new geometry for the lower steering column shroud that is less susceptible to potential pinching between the drivers knee and key fob/ring "may" provide some improvement but would not change the X,Y,Z position of the ignition key.

I thought the lock cylinder group (Mark A Beauregard) may have found some difference in rotational torque between the first lock cylinder supplier (Orteck?) and the second lock cylinder supplier (Strattec?) who was implemented around 2008? Was this discussed at the meeting?

Pete

Terrence E Connolly--10/07/2012 10:44:32 PM--Don't think either of you guys were a part of the call on this topic last Thursday. Electrical repor

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Subject: Cobalt Ignition Switch - Further Follow up

Don't think either of you guys were a part of the call on this topic last Thursday.

Electrical reported out on ability to but an electronic fix in place that would cause airbag to stay active for 5 sec if ignition went to the accessory position. Basic answer is yes - they can do it . . . but becomes expensive field fix (needs a controller). Jim Federico is in wait/see mode on this . . . wants to have all his alternatives scoped. He now has this elec fix scoped . . . and I think we understand implications of an insert into the head of the key to eliminate potential for a lever arm.. Jim also specifically asked what we can do in the column (this was after we educated him on the defent/spring load being in the ignition switch.

I think realistically, the only "fix" we might participate in would be if we worked on some sort of a column knee shroud (even though not entirely clear that is the issue). Is this the way you guys see it too?

Thanks!

Terry Connolly
[REDACTED]

The following attachments were deleted at 1:29:18 PM on 10/23/2012

02 - Steering Column Pugh Matrix - V04 - 05JUN2012.xls
35 - Steering Column Step 4 Complexity Optimization - V8 - 11JUN2012 - Pete Judis.pptx
18 - Trade Study Global CEA & Column Configurations - V5.xls
1 - Trade15 Epsilon 2 CEA TRADE CHART V2.ppt
02 - Trade Study Keyed Ignition CEA & Column Configurations Rev 2 - GMX 352.xlsx
03 - GMX352 Ignition Positions and hand clearance zones for POPS 26JA10.pptx
Trade04 Ignition Switch Location - Part 1 V4.xls
Trade04 Ignition Switch Location - Part 2 V1.xls

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