

**From:** Raymond DeGiorgio  
**To:** Andrew C. Brenz  
**CC:** Raymond DeGiorgio; CHRIS J BERUBE; KEN WASMER  
**BCC:**  
**Sent Date:**  
**Received Date:**  
**Subject:** Re: mid-corner cutouts  
**Attachments:**

Andrew,

I have been working with John Hendler the Electrical VSE on this issue and at this time I do not have any quick/ easy solution that will provide you the necessary Key/ Cylinder retention forces required during high-g maneuvers. The location of the Key/ Cylinder (Low Mount) is a major road block. With this Low Mount Ignition System vehicle power interrupts are always going to be an issue especially during an aggressive maneuvers (Acceleration/ Braking/ Shifting).

What options are available to resolve this issue?

OPTION # 1 - Increase detent plunger force for better key retention

- Increasing the detent forces will "slightly" improve the system but over time you'll soon experience the same condition due to material wear and decreased forces.

Risks - Revalidation of the ignition switch electrical performance will be required.

- higher detent force could result in sticky start condition, especially at cold temperatures.

OPTION #2 - Roll out the GMT 191/192 DLIS Switch for '07 MY

- currently in development is a double detent ignition switch which is a significant improve vehicle power interrupts

OPTION #3 - Incorporate additional detent plungers within the lock housing/ key cylinder area

- additional detents in the "RUN" position will complement existing key retention forces would significantly improve vehicle power interrupts

- similar systems are used on HIGH mount ignition systems i.e. GMT 201

OPTION #4 - Eliminate Low Mount Ignition Systems altogether

- several individuals urged this team not to go with a low mount system for this very reason

- with the column tilted to its lowest position, keys are hitting the drivers knees, this is most annoying to any customer

At this time I do not have a recommendation.

Raymond DeGiorgio  
GM-DE

Andrew C. Brenz



Andrew C. Brenz

11/22/2004 07:20 AM

To: Raymond DeGiorgio/US/GM/GMC  
cc: CHRIS J BERUBE/US/GM/GMC; KEN WASMER/US/GM/GMC  
Subject: Re: mid-corner cutouts

Ray,

Hopefully you remember me from my presentation to Nadeau's team about what our group does here in HPVO. We have an issue here that you might already know about. Please, read on and let me know what you think.

Here's a note from Chris Berube our VPM for the X001 Level 4 coupe. In the course of developing a track-capable vehicle, Chris and the team are frequently at the Milford Road Course and other tracks putting the Cobalt through high-g maneuvers. They've encountered an issue that interrupts vehicle power during high-g, right hand turns. This is now explained ... I think. During a right hand turn - and possibly other maneuvers - a stray hand or knee can bump the key fob and rotate the ignition switch from the RUN to ACCY position. The driver sees a loss of engine and when it happens, they restart the vehicle and all seems fine.

Is there a specification on the force/torque required to keep that switch in the RUN position? If so, is the switch meeting that spec? If not, what are the options for implementing a stronger spring?

Thanks in advance for your quick reply. This vehicle is in ManVal now, soon to be in production (12/6/04).

Andy Brenz  
VSE- Electrical  
High Performance Vehicle Operations

--- Forwarded by Andrew C. Brenz/US/GM/GMC on 11/22/2004 07:01 AM ---



CHRIS J BERUBE To: Andrew C. Brenz/US/GM/GMC  
cc: KEN WASMER/US/GM/GMC  
Subject: Re: mid-corner cutouts

11/21/2004  
04:32  
PM

Andy,

We think we have discovered the cause of the mid-corner shutoff issue with the GMX001 Tuner. During the 24 hour track test, John Heinrich noticed that if his hand or knee just slightly grazes the key fob due to downshifting, etc., the ignition switch will rotate backwards one detent to the acc'y run position which shuts the car off. This seems to be relatively easy to do because the force required to rotate the key back from the run position is very low. We removed the key tag and key fob and the problem never recurred for the rest of the test. Can you investigate what the effort spec is for this, and whether the switch is corporate common? Also, is there warranty data that would support this issue and possibly drive a change to the effort levels to turn the ignition off?

**Chris**

HPVO Vehicle Performance Manager - ION Red Line / Cobalt SS-SC

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Speaking of solving problems, I mentioned to Ryan that the electrical system failure on the MRC right turns may be attributed to loose connectors at the body module. Steve Kirkman (hardware architect) seems to remember something like this occurring on the base program a while back. If that turns up as a dead end, let me know and I'll see about getting out there.

Andy

CHRIS J BERUBE



**CHRIS** To: Andrew C. Brenz/US/GM/GMC  
**J** cc:  
**BERUBE** Subject: Re:

10/26/2004  
11:09  
AM

Andy,

I am currently not providing vehicles for commutes at this point. We need the vehicles at MPG during the week to solve problems.

Chris

---

I'd be happy to drive a vehicle if you'd like. Not going long distances on weekend but I would put around 80 miles per day, at least.

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Andrew,  
I have been discussing this issue with John Handler - Electrical VSE on X001 Program

Here's where we stand with this issue;  
- this switch was never designed with "High Performance Manuevers" in mind. New requirements  
- with the column tilted downwards keys are hitting passenger's knees (this is not acceptable)  
- the static loading on the switch is 3 lbs worst case (Normal to the key)  
- "increasing the spring load" will not solve this issue; too high of a load would prevent the key cylinder from returning the key back to run from crank in cold weather situations

Solution:  
-

Raymond DeGiorgio  
GM-DE  


Andrew C. Brenz



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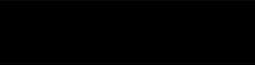
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