

Issue Number: **N202832**

PDF Date Submitted 06/13/2006



Part - Location: **Ignition Switch -Steering Column**

Complaint: **Engine will not start, sometimes sets DTCs B2960 and/or B3033**

Issue Type: **Current Prod**

Vehicle/Product Line: **ZAcad**

Region: **GMNA**

Severity: **2**

Primary Metric/Score: **IPTV36 / 82.06**

Vehicle / Product Description

Primary Project No:	ION	Model Year:	2006
Other Project No(s):		Model Year Qtr:	
Vehicle/Prop. #:		Model Code:	
Marketing Division:	Saturn	Hardware Stage:	
Marketing Region(s):	North America	(VIN) Vehicle ID #:	
Engine(s):		Transmission(s):	
Engine Serial #:		Transmission Serial #:	
Drive Type(s):		Option(s):	
Steering:		PIMREP No:	

Odometer Reading or Range in Miles from 1 to 3971

Part / Supplier Information

1st Level (VPPS):	2nd Level (VPPS):	3rd Level (VPPS):	4th Level (VPPS):
70 Information & Control	2 Customer Switch	5 Ignition Switch	1 Switch
UPC:	FNA:	Part Name:	Part Number:
-	-	Ignition Switch	10392423
Supplier(s) Name:	DUNS Code(s):	Part Year:	Drawing Revision Date:
Delphi	-	-	01/01/1900
Suspect Part(s) available?	Location of Suspect Part(s)	PIM (EPS/PAD)	EPN
<input checked="" type="radio"/> Yes <input type="radio"/> No	at Supplier		

Incident Description

Date first reported:	Complaint Category:
Incident Discovered by:	Discoverer's Dept:
Discoverer's Phone:	Plants w/ same Problem:

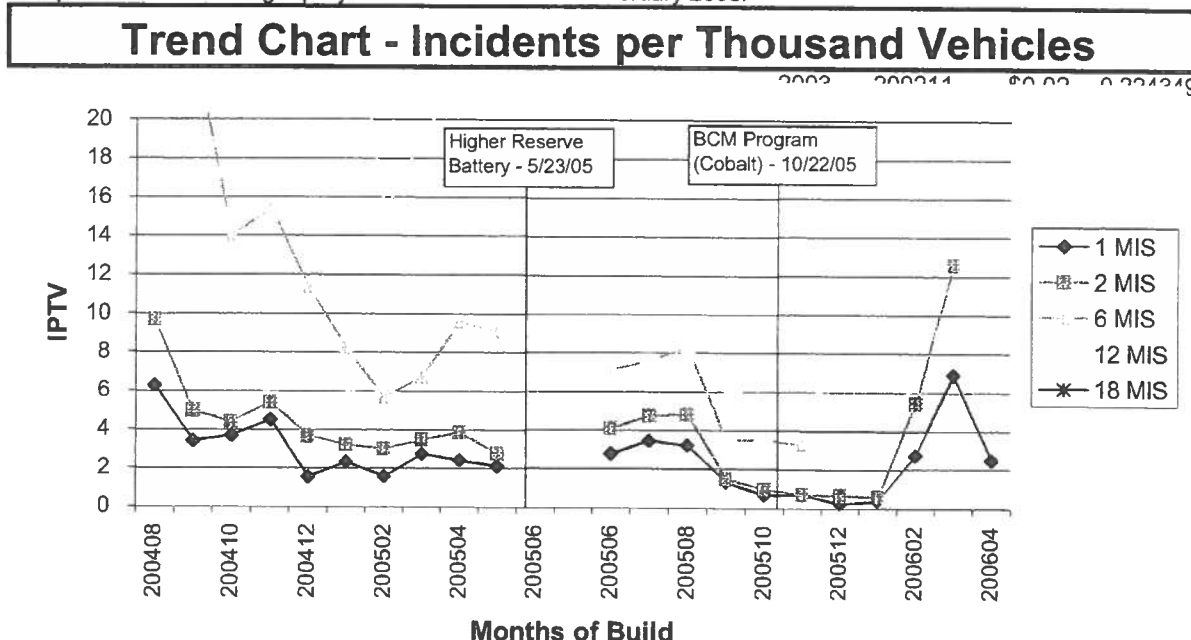
Source Level 1:	Source Level 2:	Source Level 3:

Incident Description: (Give detailed description of incident)

Customer complaint: No Start.
Tech findings:

Some indicate car will start by manipulating the ignition switch. Others indicate Passlock codes B2960 and/or B3033 are stored in history.
Tech Repair: Replace ignition switch.

Complaints are increasing rapidly with vehicles built after February 2006:



Some sample tech comments:

VIN	PRODDATE	SALEDATE	LBROP	LBROP_DESC	PARTNO	MILEAGE	VERBATIM
[REDACTED]	03/23/2006	05/06/2006	N2320	SWITCH, IGNITION-REPLACE	10392423	15	CUST STATES THE IGNITION IS NOT WORKING RIGHT. WHEN TURNING KEY, DOESN'T START, BUT WHEN TURNING BACK, VEHICLE WILL START. FOUND A FAULTY IGNITION SWITCH CAUSING 'NO INITIAL' START. REPLACED AND REPROGRAMMED. VEHICLE STARTS PROPERLY.
	03/23/2006	05/13/2006	N2320	SWITCH, IGNITION-REPLACE	10392423	17	GUEST STATES CAR DOES NOT START AND MOTOR DOES NOT TURN OVER. VERIFIED. FOUND VEHICLE WOULD NOT CRANK IN FULL START POSITION. HAD TO BACK KEY OFF ABOUT 1/8" TO GET STARTER TO ENGAGE. REPLACE FAULTY IGNITION SWITCH RECODE BCM AND VERIFIED REPAIRS
	03/20/2006	04/28/2006	N2320	SWITCH, IGNITION-REPLACE	10392423	8	SALES MANAGER RAYMOND STATES VEHICLE WONT CRANK OVER. TECH INSPECTED CHECK CHARGING SYSTEM 12.74V. IGNITION WOULD ONLY SEND START SIGNAL IF TURNED VERY SLOWLY AND ONLY IN ONE SPECIFIC SPOT. REPLACED IGNITION RETESTED
	03/14/2006	06/05/2006	N2320	SWITCH, IGNITION-REPLACE	10392423	8	REPLACED IGNITION SWITCH AND RET
	03/14/2006	04/20/2006	N2320	SWITCH, IGNITION-REPLACE	10392423	5	VERIFIED VEHICLE NOT STARTING AND LIGHTS ON AND RADIO OPERATING FOUND WHEN WIGGLING IGNITION SWITCH WIRES IT OPERATED INSPECTED TERMINAL TIGHTNESS ALL OK FOUND SWITCH BAD REPLACED IGNITION SWITCH AND REPROGRAMMED
03/13/2006			N2320	SWITCH, IGNITION-REPLACE	10392423	5	PASS LOCK SYSTEM CUSTOMER STATES THE VEHICLE WILL NOT START. INSPECTED TO FIND THE IGNITION KEY HAD TO BE HELD IN AN EXACT POSITION IN ORDER TO SEND IGNITION SIGNAL. REPLACED THE IGNITION SWITCH AND REPROGRAMMED. NO FURTHER TROUBLE WAS NOTED. VERIFIED NO START NO CRANK FOUND WIRE CONNECTOR AT SWITCH WAS WIGGLED VEHICLE WOULD START PER FOM REPLACED IGNITION SWITCH AND PROGRAMMED PASSLOCK



All warranty charts and details attached. Ign Sw ION after 0206.xlt

Preliminary Root Cause: (Give preliminary Root Cause if known, do not speculate!)

Potential Root Cause Champion: (Select potential Root Cause Champion.)

Re-Assign
Department : Potential Champion
Supplier Quality *** Spring Hill

or: Van Wirt, Thomas
Name: Phone: [REDACTED]
Fax: [REDACTED]

Evaluation Information (Test)			
Procedure: (Test Schedule)	% Complete (Test Schedule):	Driving Conditions:	Environmental Conditions:
Odometer:	Vehicle Test:	Part Durability:	Part Test:

Containment
Plant Information
Description of Plant Containment:

Plant:	VIN:	Breakpoint Date:	Contact Person:	Tel. No:


Field Information
Description of Field Containment:

Breakpoint Date:	Contact Person:	Tel. No:

Involved Components
Component: Plant:

Originator Information	
Document Originator: SAMUEL GREBE/US/GM/GMC	06/13/2006 02:52:04 PM
Location: Milford, MI	Phone: [REDACTED]
Dept.: GM *** Global Engineering *** North America Engineering *** Continuous Improvement: Cost & Quality, WVAE *** Red X and Warranty Engineering *** Warranty Engineering-Car	

Document Information		
Last Modified by	BRAD I COOK/US/GM/GMC	06/20/2006 12:10:49 PM
History	BRAD I COOK/US/GM/GMC - 06/20/2006 12:10:49 PM BRAD I COOK/US/GM/GMC - 06/20/2006 12:10:46 PM SAMUEL GREBE/US/GM/GMC - 06/13/2006 03:16:21 PM SAMUEL GREBE/US/GM/GMC - 06/13/2006 03:14:29 PM	

Issue Number:	N202832	 Impact
Part - Location:	Ignition Switch -Steering Column	
Complaint:	Engine will not start, sometimes sets DTCs B2960 and/or B3033	

Vehicle Line:	Prioritization Ranking by:	Priority Val.:	Bypass:	Link:
ZAcad	IPTV36	82.06	n	

Other Vehicle/Product Line(s) involved:

Assessment of Customer Satisfaction Impact
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	Applicable.....							
IPTV	Powertrain 1	0	0	0	0	0	0	
IPTV	Powertrain 2	0	0	0	0	0	0	
IPTV	Powertrain 3	0	0	0	0	0	0	
IPTV	Powertrain 4	0	0	0	0	0	0	
Cost / Vehicle	Saturn Ion	0.11	0.55	1.34	2.55	0	7.4	2006
Cost / Vehicle	Not Applicable	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable.	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable..	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable...	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable....	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable.....	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable.....	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable.....	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable.....	0	0	0	0	0	0	
Cost / Vehicle	Not Applicable.....	0	0	0	0	0	0	
Cost / Vehicle	Powertrain 1	0	0	0	0	0	0	
Cost / Vehicle	Powertrain 2	0	0	0	0	0	0	
Cost / Vehicle	Powertrain 3	0	0	0	0	0	0	
Cost / Vehicle	Powertrain 4	0	0	0	0	0	0	

Solution Effectiveness

(%):

Report Date:

06/12/2006

Warranty Specialist:

Sam Grebe

Warranty Comments:

Claim rates are for IONs built after Feb 2006.

Assessment of Internal Measurements

Plant	% Direct Run Improvement (< 100)	GCA Value	GM Rating	Ergonomics	Productivity
Report Date:					
Owner of Information:					

Assessment of Aftersales Impact

FPR No.:

Metric:	No of Cases:	Comments:
TAC:		
CAC:		
Buybacks:		
FPR:		

Local	Feedback Owner	
Document Information		
Document created by:	BRAD I COOK/US/GM/GMC	06/20/2006 12:10:40 PM
Last Modified by		
Issue Number:	N202832	
Part - Location:	Ignition Switch -Steering Column	
Complaint:	Engine will not start, sometimes sets DTCs B2960 and/or B3033	
Assign Root Cause Champion		
Department:	Champion:	
Supplier Quality *** Spring Hill	Van Wirt, Thomas - Phone: [REDACTED]	Fax: [REDACTED]
Nomination Comments:		
Champion History:		
Assign Root Cause Champion Designee		
Department:	Champion:	
Champion Designee History:		
Assign Root Cause External Designee		
Assignment Date:	Department : Name :	External Designee:
External Designee History:		
Root Cause Analysis		
Target Date:	Actual Date:	Actual date reported by champion:
07/20/2006	06/28/2006	
* Description of Root Cause Investigation Progress and Verification:		

Author: THOMAS VAN WIRT/US/GM/GMC on 28-Jun-2006 13:26


There are two main causes for the "no start" issues as described in the problem statement:

1) During on going review of parts returned from the field, Delphi identified a condition where the voltage "noise" in the switch created a communication issue with the pass lock system. The voltage "noise" was created by the contacts fingers which had insufficient load and potential for skips in the PCB traces.

2) During late April of 2006, Spring Hill Assembly began experiencing an issue where a drop in voltage occurred when the switch was turned to the start position. The codes being set were 2960 and 3031.

Upon review of the returned switches it was found that the contact fingers were damaged. This condition was created due to an improper alignment between two of the components (Anti-theft cylinder and the plunger Key-In) at the time of the installation of the rotor and contacts. Alignment is required as to not allow the rotor to contact any of the sides of the housing which induces the issue.

<input checked="" type="checkbox"/> Problem Solving Methodology: <i>Document the Solving Process seen as appropriate</i>	
Other Statistical Methods	
<input checked="" type="checkbox"/> Potential Solution Champion / Department:	
Department: or Name:	Potential Champion: Supplier Quality *** Spring Hill Van Wirt, Thomas Phone: [REDACTED] Fax: [REDACTED]
<input checked="" type="checkbox"/> Problem mainly caused by:	<input checked="" type="checkbox"/> Field Remedy Requested?
Supplier	No
<input checked="" type="checkbox"/> Root Cause Summary:	
There are two main causes: 1) The voltage "noise" was created by the contacts fingers which had insufficient load and potential for skips in the PCB traces. 2) Upon review of the returned switches it was found that the contact fingers were damaged. This condition was created due to an improper alignment between two of the components at the time of the installation of the rotor and contacts.	

Document Information		
Document created by:	BRAD I COOK/US/GM/GMC	06/20/2006 12:10:40 PM
Last Modified by:	THOMAS VAN WIRT/US/GM/GMC	06/28/2006 02:26:41 PM
Issue Number:	N202832	
Part - Location:	Ignition Switch -Steering Column	
Complaint:	Engine will not start, sometimes sets DTCs B2960 and/or B3033	
		
Assign Solution Champion		
Department:	Champion:	
Supplier Quality *** Spring Hill	Van Wirt, Thomas - Phone [REDACTED] Fax [REDACTED]	

Nomination Comments:

Champion History:

Assign Solution Champion Designee

Department:	Champion:
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Champion Designee History:

Assign Solution External Designee

Assignment Date:	Department: Name:	Champion Designee:
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External Designee History:

Develop Solution / Make Decision on Solution		
Target Date: 07/28/2006	Actual Date: 06/28/2006	Actual date reported by champion:
Description of Solution Investigation Progress and Verification:		

Author: THOMAS VAN WIRT/US/GM/GMC on 28-Jun-2006 15:24

1) The solution to the load and skip issue in the PCB traces is to change the PCB design to remove via holes from contact traces. In addition, the PCB vias were enlarged to avoid the contacts from being in close proximity to the vias. The detent plunger torque force was increased. This change was treated as a black box tier 3 design change and was approved via a 3660 document signed off by the GM DRE.

2) The solution to the quality issue experienced during April of 2006 was to improve the assembly method to reduce the risk of a wrong alignment and installation of the rotor. The operation was modified to assure that the components are properly aligned, to provided a better and standardized position of the cylinders. In addition, an alignment fixture was implemented in the rotor assembly operation to avoid possible contact risk between the switch housing and contact fingers. The fixture is being placed over the anti-theft cylinder to let the rotor slide through it straight, positioned in the proper manner without contact or incorrect balance during its assembly. Also, a contact force gage was implemented to verify that 100% of the contact finger forces in order to segregate those fingers with a force lower than 20 mg. This action will prevent assembly contact with enough force to make good contact with the traces of the PCB.

Aftersales Field Fix:	N/A
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EWO			
EWO #:	Approval / Release Date (i.e. CAB, etc):	Validation Part Availability Date:	TID (Target Implementation Date) of EWO:
EWO Comment:			

The implementation date of the following solutions in SHM was 7/17/06:

The solutions to the load and skip issue in the PCB traces is to change the PCB design to remove via holes from contact traces. In addition; the PCB vias were enlarged to avoid the contacts from being in close proximity to the vias. The detent plunger torque force was increased. The solution to the quality issue experienced during April of 2006 was to improve the assembly method to reduce the risk of a wrong alignment and installation of the rotor.

Breakpoint(s)			
Plant:	Date:	VIN / Val Vehicle #:	
SPH-Springhill TN	07/17/2006		
Breakpoint(s) Involved Components			
Plant*Component / Supplier*Part:		Serial - No:	Date Breakpoint:
Component/Part:	Plant / Supplier:	Serial - No:	Breakpoint:
Department :		Potential Champion:	
or		Red X and Warranty Engineering *** Warranty Engineering-Car	
Name :		Grebe, Samuel	
		Phone: [REDACTED]	
Service Bulletin			
Service Bulletin Requested:	Service Bulletin #:	Bulletin Release Date:	Applicable Region/Country:
Service Bulletin Name/Desc.:			
Summary			
<input checked="" type="checkbox"/> Implementation Summary:			
The implementation date in SHM was 7/17/06:			
Document Information			
Document created by:	THOMAS VAN WIRT/US/GM/GMC	06/28/2006 04:23:34 PM	
Last Modified by:	THOMAS VAN WIRT/US/GM/GMC	08/12/2006 10:52:12 AM	
Issue Number:	N202832		
<input checked="" type="checkbox"/> Part -	Ignition Switch -Steering Column		
Location:			
<input checked="" type="checkbox"/> Complaint:	Engine will not start , sometimes sets DTCs B 2960 and/or B3033		
Assign Feedback Champion			
Department:		Champion:	
Red X and Warranty Engineering ***		Chase, Bill - Phone: [REDACTED] Fax: [REDACTED]	
Warranty Engineering-Car			
Assign Feedback Champion Designee			
Department:		Champion:	
Assign Feedback External Designee			
Company:		External Designee:	
Feedback			
Target Date:	Actual Date:	Actual date reported by champion:	

12/10/2006 12/20/2006

Did the Solution fix the problem?

☒ Yes ☐ No

Copy of the data analysis to support the above conclusion:

MOB Chart for N2320 Ignition Switch



N2320_ZA57_2CDEC5.xls

Feedback Summary:

Available data (only 9 cases since BP) demonstrate issue has been resolved.

Document Information

Document created by: THOMAS VAN WIRT/US/GM/GMC 08/12/2006 10:51:52 AM

Last Modified by: Bill Chase/US/GM/GMC 12/20/2006 09:43:24 AM

Issue Number: **N202832**

☒ Part - Ignition Switch -Steering Column

Location:

Complaint: Engine will not start, sometimes sets DTCs B2960 and/or B3033



**Field
Remedy**

Assign Field Remedy Champion

Department:

Champion:

Field Remedy

Field Remedy Comment:


Last Break Point

Date	VIN / Part Number	Measure

Document Information

Document created by:

Last Modified by:

Issue Number:	N202832	 LL
Part -	Ignition Switch -Steering Column	
Location:		
Complaint:	Engine will not start, sometimes sets DTCs B 2960 and/or B3033	
Solution for new Design / Project		
Shall a Lessons Learned Request be sent? <input type="radio"/> Yes <input type="radio"/> No		
Step when issue was flagged as Lessons Learned:		
Flagged by:		
Standard Work Element:		
Lesson Learned Number:		
Has the issue been entered in the Lessons Learned database? <input type="radio"/> Yes <input checked="" type="radio"/> No		
Document Information		
Document created by:		
Last Modified by:		