
From: Raymond DeGiorgio
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CC:
BCC:
Sent Date: 2004-11-19 20:43:17:000
Received Date:
Subject: GMX 357 - Saturn ION Ignition Switch -- Intermittent No Starts at Cold Temperatures
Attachments: ION-IGN_SW One Pager.doc

All,
Per your request, enclosed please find a one pager on the Saturn ION_ Ignition Switch (Intermittent No Start).
If you have any questions or require additional information feel free to contact me.

Regards,

Ray DeGiorgio
GM-DE Ignition Switches



ION-IGN_SW One Pager.doc



GMX 357 Saturn ION Ignition Switch - Intermittent No Starts at Cold Temperatures

Condition:

During the winter months of 2003, some customers experienced vehicle no start when the ambient temperature is cold (0°F / -20°C). Technicians found B3033 (Pass Lock Tamper Mode) and/ or B2960 (BCM reading valid but different Pass Lock code) stored in the Body Control Module malfunction history, this is referred to as intermittent no start. The Pass Lock Theft System requires a 10 minute delay before a retry will be acceptable.

Root Cause:

Plots taken on the ignition switch output at cold temperature clearly indicated that the ignition switch was the cause of electrical noise. High viscosity of the grease caused the switch contacts to bounce at extreme cold temperatures. If this condition occurs during the first 100 ms of the crank cycle, than codes B3033 or B2960 are stored in the BCM, which disables vehicle crank. Thus resulting in a vehicle no start. The IGN switch CTS defines contact bounce maximum duration at 10 ms.

Note:

Delphi Mechatronic Systems the switch supplier confirmed that during the initial Production Validation testing, performance measurements checks were made at room temperature and not at temperature extremes. According to GM specification all performance checks must be performed at -40°C. This was an over sight at Delphi.

Corrective Action Plan:

Lower viscosity grease was developed by the switch supplier to ensure that the switch signal bounce time of 10 milli seconds is maintained at all temperatures.

Validation Plan:

- Switches with the NEW grease were cycled to 3X life durability
- Contact Bounce measurements checks were performed at -40°C per our CTS requirements
- A known vehicle with an intermittent start was retro fitted with a new switch cold soaked to - 40°C at Springhill and confirmed that no codes were stored by the BCM
- Two switches which completed 3X life durability cycling were provided to the BCM supplier and tested to ensure codes were that NO codes are set at cold temperatures

Implementation Plan:

- PWO was CAB approved on 3/21/04. New part number released.
- Springhill began building/ shipping vehicles with the new switch on 4/30/04