



Service Bulletin

PRELIMINARY INFORMATION

Subject: Repeat P228C Setting On High Feature V6 Engines While Using E85 Fuel

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission:
		from	to	from	to		
Buick	LaCrosse	2011-2016		ALL	ALL	ALL	ALL
Cadillac	ATS Sedan	2013		ALL	ALL	ALL	ALL
Cadillac	SRX	2011-2016		ALL	ALL	ALL	ALL
Chevrolet	Caprice PPV	2012-2015		ALL	ALL	ALL	ALL
Chevrolet	Captiva Sport (Fleet Only)	2013-2015		ALL	ALL	ALL	ALL
Chevrolet	Equinox	2011-2017		ALL	ALL	ALL	ALL
Chevrolet	Impala Limited (Including Fleet and PPV)	2012-2017		ALL	ALL	ALL	ALL
Chevrolet	Impala	2014-2017		ALL	ALL	ALL	ALL
GMC	Terrain	2011-2017		ALL	ALL	ALL	ALL

Equipped with HFV6 engine RPO, LF1, LFW, or LFX

And RPO FHS: Vehicle Fuel — E85 (85% ethanol max.)

Supersession Statement

This PI was superseded to add model years, Please discard PIP5385B.

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

Condition/Concern

You may have a customer come in with an SES light on or reduced engine power message came on and was cleared after cycling the key

If you find a P228C set as current or history, and a prior history of High Pressure Fuel Pump replacement, and the customer has been using E85 fuel,

This PI would apply.

Note: Starting with Model Year 2012 vehicles, FlexFuel vehicles may also be identified by the following Vehicle Fuel RPO Codes:

- FHO: Vehicle Fuel — E10 (10% ethanol or less)
- FHS: Vehicle Fuel — E85 (85% ethanol max.)

Recommendation/Instructions

At this time there is "No Verified Repair" for this concern.

If the code is current then follow SI direction for repairing the concern.

If the code is set in history and there are no current drivability concerns, proceed with the following.

1. Take a large fuel sample and let it sit for a couple of hours looking for contamination.
2. Ensure actual and desired fuel pressures in the scan tool are very close to the same.
3. If contamination is found in the tank then completely flush the fuel system and add e-10 fuel.
Also you may need to check the strainer in the fuel tank for concerns of build up or blockage
Note: Contamination in the fuel is not warrantable
4. Remove the high pressure fuel pump inlet line from both ends.
 - a) Using regulated air down to about 60 psi or lower, blow through the inlet (vehicle) side of this pipe / hose.
 - b) Check for restriction in the check valve built into this hose.
 - c) If restricted then replace the pipe / hose assembly, run a tank of premium or top tier E10 fuel through the vehicle and reevaluate the concern.
 - d) If no restriction present continue with PI.**Note: Please box the inlet line with the HPFP when sending pump back or retain line so it can be requested back if replaced without pump.**
5. Replace the high pressure fuel pump and all related lines per SI instructions.
6. Run a tank of premium or top tier E10 fuel through the system to clean all components.
7. Reevaluate the vehicle

Note: After vehicle repair is complete, Please have the customer or fleet manager fill out the survey below.

Please copy and print.

Filling out the questionnaire will not affect your vehicle warranty. GM is looking for additional information to help survey fuel usage and determine the potential causes of the problem. Answer as many questions as you can. Please also fill-out Appendix A if this involves a fleet or vehicles with dedicated fueling sources. Thank you very much for your assistance.

Date	
Customer name	
Customer telephone number:	
e-mail address:	
VIN (s)	
Describe the problem your vehicle(s) was having.	
Examples:	
Hard starting/no start	
Rough idle	

Sluggishness (no power)	
Stalling	
Hesitation	
Check engine light came on	
Has your vehicle had this problem before? (please circle)	Yes No
Is your vehicle driven daily? (please circle)	Yes No
How many miles is your vehicle driven daily?	
What percentage of the miles are driven on the highway?	
Describe vehicle usage	
(I.e. Personal commute, r c heavy-duty/heavy payloads, patrol, etc.)	
What grade of fuel is normally purchased for your vehicle? (please circle)	
	Regular (87 octane)
	Mid-grade (89 octane)

Premium (91 octane or higher)

E85

Other Intermediate Ethanol Blends

Diesel fuel

Bio-diesel fuel (specify grade)

Other types of fuel (please list)

Rank the 3 most frequently used fuel brands, with 1 being the most frequently used and 3 being the least used.

- Amoco
- Arco
- BP
- Chevron
- Circle K
- Citgo
- Clark
- Coastal
- Conoco
- Exxon
- Hess
- Giant
- Marathon
- Mobil
- Phillips 66
- Shell
- Speedway
- Sunoco
- Super America
- Texaco
- Union 76
- Wawa
- Others

Where did you buy the fuel when you started

fuel when you started noticing issues?					
Did you notice any abnormal sounds coming from the vehicle? If yes, please describe.	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td colspan="2"></td> </tr> </table>	Yes	No		
Yes	No				
Does your drive include significant elevation changes?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td colspan="2"></td> </tr> </table>	Yes	No		
Yes	No				
Do you generally purchase the same brand of fuel? (please circle)					
If yes, what brand is it?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No		
Yes	No				
	Brand name:				
If you generally purchase the same brand of fuel, is it purchased at the same location? (please circle)					
If yes, what is the location?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No		
Yes	No				
	Location:				
Please feel free to provide other					

relevant
information
and
comments

Thank you very much for taking the time to fill out this questionnaire!

Please return or have the dealership return the completed questionnaire to:

Fax: 248-676-7220

Jay Cummings, GM Powertrain Fuels and Lubricants

Jill.cummings@gm.com

Authored and revised by: J.M. Cummings

Rev. March 2014

APPENDIX A

TO BE COMPLETED BY FLEET OR VEHICLES WITH DEDICATED FUELING SOURCES

What is the total number of vehicles in your fleet?

What are the fleet vehicle applications (example: goods transport, patrol, etc.)?

Description of vehicles in the fleet. (Brands, Models, Model Years)

Who are the dedicated fuel supplier(s) and where do they purchase their fuel from?

Are they accredited?

How many gallons purchased at a time and how many deliveries a week?

How long have you been using this fuel supplier?

What has been the experience with them in terms of quality?

What are the most commonly used type or blend of fuels in your fleet?

How is the fuel stored and dispensed?

Is there a maintenance plan for the storage tanks?

Regular cleaning or flushing?

Have the storage and dispensing systems been certified for the type of fuel used?

What are the filters in place for the storage and dispensing system?

How are the filters sized?

How many microns?

Is there a regular maintenance and replacement plan for the filters and the dispensing system?

Is there a bypass valve for the filters if it becomes clogged?

Does your organization require that all fuels used in your fleet have to meet ASTM specifications?

Have you changed your fuel supplier(s) in the past?

If so, why?

Does your fuel usage change in winter?

What type of quality monitoring program do you have to assure fuel quality?

- Supplier's certificate of analysis?
- Regular fuel analysis?
- Occasional fuel analysis?
- Analyzing fuel when faced with operational/storage issues?
- No fuel monitoring program?

In your experience with monitoring fuel quality have you received fuel not meeting specifications?

If yes, how many times?

If your organization received out-of-spec or low quality fuel, what corrective measures were adopted?

Please specify.

Do you use any additives in your fuel?

If yes, please specify

Any other comments about your fleet / vehicles?

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



WE SUPPORT VOLUNTARY TECHNICIAN CERTIFICATION