Service Bulletin

File in Section: -
Bulletin No.: PIP5038B
Date: June, 2013

PRELIMINARY INFORMATION

Subject: **SES Light, Engine Misfire, and/or Shudder - Inspect Ignition Coils**

Models: **2009 Buick Enclave**
2008-2009 Cadillac CTS, STS
2009 Chevrolet Traverse
2009 GMC Acadia
2009 Saturn Outlook
With Direct Injected 3.6L V6 Engine (RPO LLT)

This PI was superseded to update diagnosis and repair directions. Please discard PIP5038A.

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

Condition/Concern

Some customers may experience a SES light, misfire and/or a shudder on acceleration. Upon inspection, any of the following DTCs may be present: P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0351, P0352, P0353, P0354, P0355, P0356

This may be the result of a heat stressed/damaged ignition coil.

The coil damage could be due to the ECM latching "ON" the associated coil EST (dwell) line.

Dwell times greater than 50msec will result in coil damage (see photos)

3419856

Note: The cylinder with the damaged coil may not be the cylinder causing the issue (coil damage).

ECM EST latchup is caused by an Electromagnetic Interference (EMI) that is conducted from the ignition coil to the ECM on one of the EST lines (wire to wire coupling of this electrical transient is not the issue). The ignition coil/ cylinder that is producing this EMI may not be the one that is damaged. Eliminating the source of this issue, not just replacing the damaged ignition coil is key to having customers not return with the same condition.

Events/conditions that can produce EMI transient include:

3419858

Spark plugs that are cracked, wrong plug gap, worn plugs, carbon fouling, and top post contact issues.

Corrosion - all prevents the coil charge to produce a healthy spark, which could reflect EMI transient back to the ECM.

Battery Connections –Improperly installed, loose or corroded battery cables can cause intermittent conditions. Top clamp battery cables should be clean, fully seated and alignment from making contact with the battery case, then hand tighten.

Ignition Coil Grounds dirty and not properly torqued.

System grounds - corroded, loose, open, intermittent

In some cases the related ignition coil fuse in the UBEC may be open as well.

Ignition Coils - Shorted –Ignition coil grounds must be cleaned both sides of the terminal, along with the ground bolt and properly torqued.

Acadia, Traverse, Enclaves and Outlook: G112, G114

CTS: G130 and G131

STS: G109 and G0112

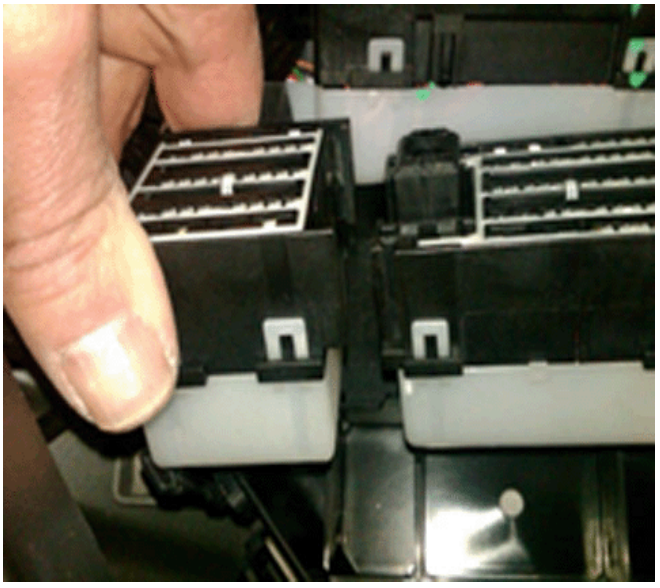
Using a torque wrench, tighten the fastener to 20 NM (15 lb-ft).

Do NOT over-tighten the fastener.

Has the engine or engine wiring harness or UBEC ever been removed from a previous repair, IE: Timing chains, front cover reseal?

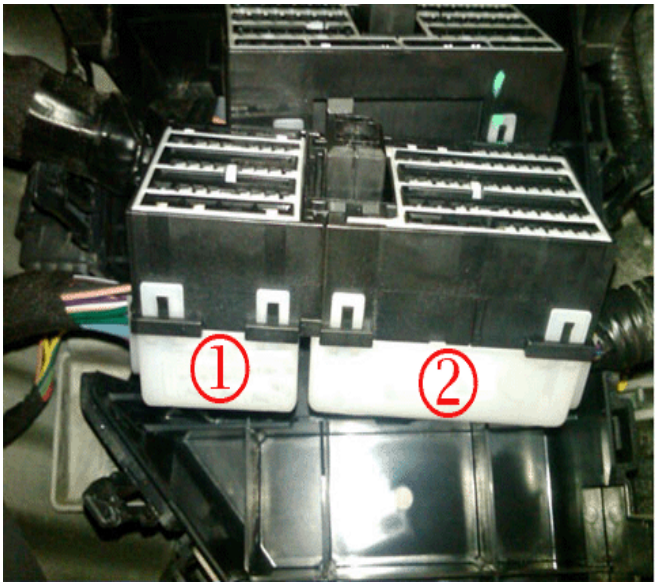
Incomplete connector engagement into the base of the UBEC can cause internment conditions for many engine circuits.

U BEC (Under Hood Body Electrical Center) - Poor connector engagement on bottom of the UBEC, loose terminal fits and low pin drag can cause intermittent transient.



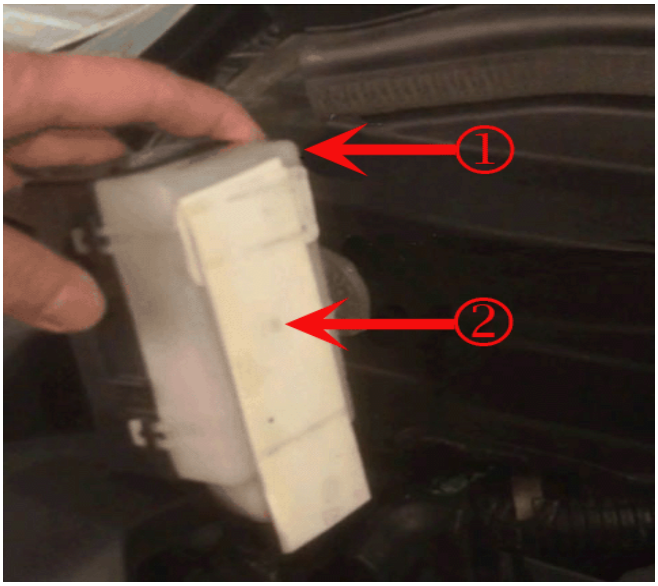
3419859

X1 and X3 Connectors slide together. Connectors must be fully seated.



3419861

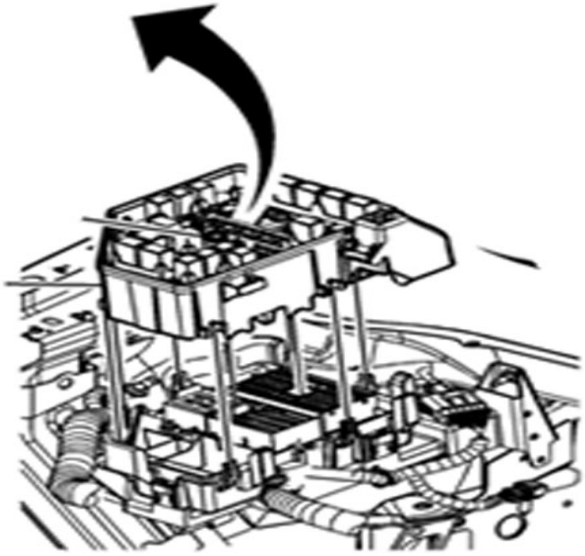
1) Connector 1 2) connector 3
Check Coil terminal cavities for proper pin drag and fit.
Connections: Cavity 47-Even bank and 51 Odd Bank Ignition Coil – All Models



3419862

1) Engine harness connector - UBEC 2) Foam tape used to support connector to UBEC in addition to assembly fasteners.

Assembly Aid: By adding a small stripe of Foam or Felt tape 2 mm thick to the back of electrical connections and bottom of the UBEC tray. The Tape provides additional stack up height between the tray and correctors for better connector terminal engagement. Once X1 / X3 connectors, are seated in the upper UBEC, hand tighten the assembly bolt, an indicator flag should become visible on top of the upper UBEC half.



3419871

Small Stripe of Foam tape Approx 2mm thick works the best.

3419865

On the Enclave, Acadia, Traverse and Outlook products, proper alignment of the battery clamp to the battery is essential in ensuring that the battery clamp fully seats on the battery post. Improper alignment will result in the battery clamp interfering with the case of the battery.

This interference will give a false indication of a tight battery connection.

This is most likely to occur on the negative battery terminal due to the short length of the battery cable.

3419866

Recommendation/Instructions

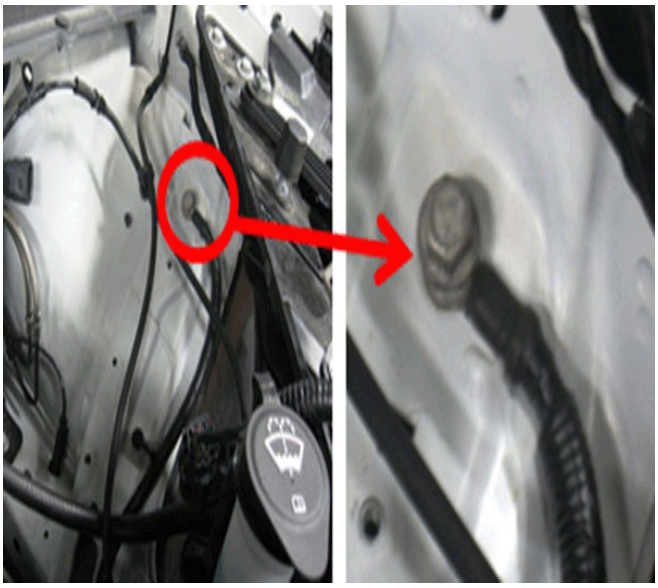
If SI diagnosis does not isolate the cause of this concern or if it leads to an ignition coil concern, usually a REPEAT Ign coil concern, follow the steps below:

1. Document all DTCs and history misfires for each cylinder on the repair order.
   This is important because single cylinder misfires may have preceded multiple cylinder misfires.
2. Refer to SI and inspect the related ignition coil power, ground, and control circuits to ensure that none of them are open or shorted.
   If any wiring concerns are noted, repair as necessary by following SI procedures.
3. . Visually inspect the sides of the top of the related ignition coil for any sign of damage due to voltage/heat stress.
   Traces or Lines under the epoxy is not damage from voltage/heat stress, and should not be replaced.
   3.1. If there is no sign of ignition coil damage, this PI does not apply.
   3.2. If any ignition coil is damaged due to voltage/heat stress, follow the remaining steps below.

4. Mark the cylinder location on the top of all 6 ignition coils with a paint pen.

Important: Do not start the engine until steps 5-7 are completed or the new ECM could be damaged.

5. If any of the conditions (A-E) below are found, make the necessary repairs then replace only the damaged coil otherwise change all 6 ignition coils, all 6 spark plugs and the ECM.
   A. Check the UBEC for proper connections. Make sure UBEC connectors are properly seated.
   B. Inspect ALL spark plugs for proper gap, cracks, carbon tracking, and corrosion - replace plugs as needed.
   C. Check battery connections - battery cables need clean and fully seated, before tightening to 9 NM.
   D. Check battery ground connection - battery to body, shock tower (G115) to engine block - tight and clean on both sides of the ground cable.
   Enclave, Acadia, Traverse and Outlook shown as picture example:



3419867

   CTS and STS: Negative battery cable at battery and cable to body bolt. – Clean both sides of the terminal and mounting surface. Must be free of corrosion at mounting, terminal, attachment bolt surfaces.
   E. Check coil grounds to engine - check for voltage drops - tight and clean
6. Repair procedure:
   Was the vehicle built prior to December 2008? If yes and the vehicle is experiencing repeat ignition coil stress (Melted), replace All 6 ignition coils, spark plugs and ECM together as a unit.
   Vehicle is built prior to December 2008, that is experiencing shutter on acceleration with no signs of coil stress, or misfire, replace subject coil for misfire and replace all six spark plugs.
   Vehicle was built after December 2008, vehicle is experiencing a single cylinder misfire, replace only coil and spark plug affected.
7. If there were misfires on one entire bank of the engine, inspect the related ignition coil fuse and replace it if open.
8. Check rear O2 performance to insure proper catalytic converter efficiency.

Warranty Information

For vehicles repaired under warranty use:

Labor Operation	Description	Labor Time
*4080048	Spark Plug and Ignition Coil Replacement	.2 hr (CTS/STS)
		.2 hr Bank 1 .7 hr Bank 2 (Enclave, Traverse, Acadia, Outlook)
Add Time	To Replace Each Additional Spark Plug and Coil	.1 hr (All Models)
Add Time	Only Use if ECM Replacement is Required	.6 hr (Enclave, Traverse, Acadia, Outlook)**
		1.1 hr (STS)**
		2.6 hr (CTS)**
Add Time	Diagnosis & Inspection Time	Up to .5 hr (All Models)

Labor Operation	Description	Labor Time
* This is a unique labor operation for bulletin use only. It will not be published in the Labor Time Guide.		
** Time Includes diagnosis, ECM programming with SPS, and All Configuration Times.		

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.