Subject: Malfunction Indicator Lamp Illuminated with DTC P0300 and/or P0299/P2227 Set

This Bulletin replaces PIP5511A. Please discard PIP5511A.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Model Year</th>
<th>VIN</th>
<th>Engine</th>
<th>Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buick</td>
<td>Envision</td>
<td>2016</td>
<td>to</td>
<td>-</td>
<td>Equipped with 2.0L Engine (RPO LTG)</td>
</tr>
<tr>
<td>Chevrolet</td>
<td>Equinox</td>
<td>2018</td>
<td>to</td>
<td>-</td>
<td>Equipped with 2.0L or 1.5L Engine (RPOs LTG, LYX)</td>
</tr>
<tr>
<td>GMC</td>
<td>Terrain</td>
<td>2018</td>
<td>to</td>
<td>-</td>
<td>All</td>
</tr>
</tbody>
</table>

Involved Region or Country: U.S. and Canada

Condition: Some customers may comment on a malfunction indicator lamp illuminated. During diagnosis, a technician may find DTC P0299, P2227, or P0300 set/stored.

Cause:
- This condition may be caused by a moisture build up inside the charge air cooler. Long drives through rainy conditions and/or high humidity conditions (heavy fog) can cause moisture to collect in the charge air cooler.
- A heavy acceleration can draw moisture into the engine causing DTC P0300. In cold temperatures, ambient and PCV moisture can freeze in the charge air cooler, restricting flow, and causing DTC P0299 and/or P2227.

Correction:
- Perform a smoke leak test of the charge air cooler, then follow the repair steps in the appropriate Service Procedure below, depending on the build date and vehicle outside temperature experience.

Note: Charge Air Cooler Shutter is only to be used in northern states or provinces where temperatures are consistently 20°F/-7°C or less.

Note: DO NOT use the grill cover when towing, mountainous and/or during very hot ambient temperatures 86F/30C.
Flow Chart Based on Conditions
Service Procedure Equinox, Terrain

Important: For the 2.0L engine ONLY, remove the boost sensor from the intake charge pipe to the throttle body and wipe with a clean rag to remove residual moisture. The added shutter is activated to close and open based on temperature.

1. Perform a smoke leak test of the charge air cooler.

- If a leak is determined, replace the charge air cooler with the newly designed part. Refer to Charge Air Cooler Replacement in SI.
- If there is NO leak, but a P0300, P0299 and/or P2227 are present, **AND the vehicle was built ON or BEFORE March 1, 2018**, then replace the charge air cooler with the newly designed part. Refer to Charge Air Cooler Replacement in SI.
- If there is NO leak, but a P0300, P0299 and/or P2227 are present, **AND the vehicle was built AFTER March 1, 2018**, refer to SI for further diagnosis.

Important: In warmer climates with high humidity, P0300 may be set during extended highway driving due to the condensation of moisture in the charge air cooler. Installing the lower portion of the soft grill cover will help prevent this occurrence. The customer should remove the cover for non-highway driving or when pulling a trailer.

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Service Procedure Equinox, Terrain

If the charge air cooler is icing in colder weather conditions, even after using the grill covers, **OR the temperature is expected to be consistently below 20°F/-7°C**, install a shutter in front of the Charge Air Cooler, following the steps listed below.

**Important:** Grill covers cannot be used once the Charge Air Cooler shutter is installed.

**Important:** The Charge Air Cooler shutter is a permanently installed item. The added shutter is activated to close and open, based on a temperature controlled integral thermostatic spring.

1. Remove the front bumper shutter. Refer to Front Bumper Shutter Replacement in SI.
2. Remove and discard the front bumper secondary (lower) shutter assembly. Refer to Front Bumper Secondary Shutter Replacement in SI.
3. On the back of the upper shutter using a saw blade, cut the upper shutter to lower shutter actuator at the pivot location, as shown in the photo above, and remove the linkage (1) and discard.

**Note:** The secondary (lower) shutter assembly will **NOT** need to be reinstalled in the future.

4. Reinstall the upper shutter.

5. Remove the radiator air lower baffle retainers and baffle. Refer to *Radiator Air Lower Baffle Replacement in SI*.

**Note:** Steps 6 - 9 listed below are for Equinox vehicles **ONLY**.
6. Use a utility knife to cut out the front lip in 3 sections of the radiator air lower baffle, as shown in the pictures above.

7. Use a utility knife to trim the ribs on the left and right sides of the side baffle, in order to provide clearance for the new shutter, as shown in the picture above.
8. Locate the shutter in front of the air lower baffle, and install the new retainers that come with the new shutter for the Equinox (1) and Terrain (2), as shown in the pictures above.

9. Reinstall the front bumper shutter.
**Service Procedure Envision ONLY**

**Important:** Remove the boost sensor from the intake charge pipe to the throttle body and wipe with a clean rag to remove residual moisture.

1. Perform a smoke leak test of the charge air cooler.

**Important:** The newly designed charge air cooler is wider and is **NOT** compatible with the existing lower baffle on the vehicle. The baffle will need to be replaced to accommodate the larger charge air cooler.

- If a leak is determined, replace the charge air cooler with the newly designed part. Refer to Charge Air Cooler Replacement in SI.
- If there is NO leak, but a P0300, P0299 and/or P2227 are present, **AND the vehicle was built ON or BEFORE January 5, 2019,** then replace the charge air cooler with the newly designed part. Refer to Charge Air Cooler Replacement in SI.
- If there is NO leak, but a P0300, P0299 and/or P2227 are present, **AND the vehicle was built AFTER January 5, 2019,** refer to SI for further diagnosis.

**Parts Information**

**Important:** For Equinox and Terrain **ONLY:** The vehicles may not show an E48 RPO code, so use the other RPO identifiers to select the correct cover.

<table>
<thead>
<tr>
<th>Causal Part</th>
<th>Description</th>
<th>Part Number</th>
<th>RPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Charge Air Cooler</td>
<td>84454110</td>
<td>LYX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>84454111</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>84634949</td>
<td>LTG</td>
</tr>
</tbody>
</table>
Causal Part | Description | Part Number | RPO
--- | --- | --- | ---
NA* | COVER PKG-FRT GRL OPG | 84624274 (Equinox) | Without WBL or WFP
| 84624275 (Equinox with Redline/Sport) | With WBL or WFP
| 84630081 (Terrain without front license plate bracket) | Without VK3
| 84648360 (Terrain with front license plate bracket) | With VK3
| BAFFLE, RAD AIR LWR | 23350091 (Envision ONLY) | -
| SHUTTER KIT - FRT BPR LWR | 84812681 (Equinox) | LTG, LYX
| 84826590 (Terrain) | |

*For warranty transactions, **DO NOT** mark this/these parts as the Causal Part. Enter the word “Bulletin” in the Causal Part Description free-flow text field.

**Warranty Information**
For vehicles repaired under the Powertrain coverage, use the following labor operation. Reference the Applicable Warranties section of Investigate Vehicle History (IVH) for coverage information.

<table>
<thead>
<tr>
<th>Labor Operation</th>
<th>Description</th>
<th>Labor Time</th>
</tr>
</thead>
</table>
| 4087008* | Perform Smoke Test for Charge Air Cooler and Charge Air Cooler Replacement | 2.3 hrs. (Envision)
|  | 2.3 hrs. (Equinox RPO LTG) |
|  | 2.4 hrs. (Equinox RPO LYX) |
|  | 2.6 hrs. (Terrain RPO LTG) |
|  | 2.4 hrs (Terrain RPO LYX) |
| Add | Install Shutter Cover if also Replacing Charge Air Cooler | 0.2 hrs. (Equinox, Terrain)
| 1086018* | Perform Smoke Test and Install Charge Air Cooler Grille Cover | 0.6 hrs. (Equinox)
|  | 0.5 hrs. (Terrain) |
| 4087308* | Perform Smoke Test for Charge Air Cooler and Install Shutter Cover | 1.3 hrs. (Equinox, Terrain)

*This is a unique Labor Operation for Bulletin use only.

**Version**
11
- Released January 22, 2018
- Revised July 26, 2018 — Added Holden Equinox Model.
- Revised October 19, 2018 — Updated the Cause and Correction.
- Revised December 21, 2018 — Updated Additional Options, Correction, Parts Information and Warranty Information.
- Revised January 09, 2019 — Updated the Parts Information.
- Revised February 19, 2019 — Added Envision also updated the Condition, Parts Information and Warranty Information.
- Revised March 19, 2019 — Updated the Service Procedure and Warranty Information for Equinox/Terrain.
- Revised May 15, 2019 — Updated the Warranty Information and adding flow chart.
- Revised November 05, 2019 — Updated the Warranty Information.
- Revised December 17, 2019 — Added 2020 Model Year.
- Revised February 21, 2020 — Updated pictures for flow charts, also updated applicable information within the bulletin including the Service Procedure Equinox/Terrain also Part and Warranty Information.