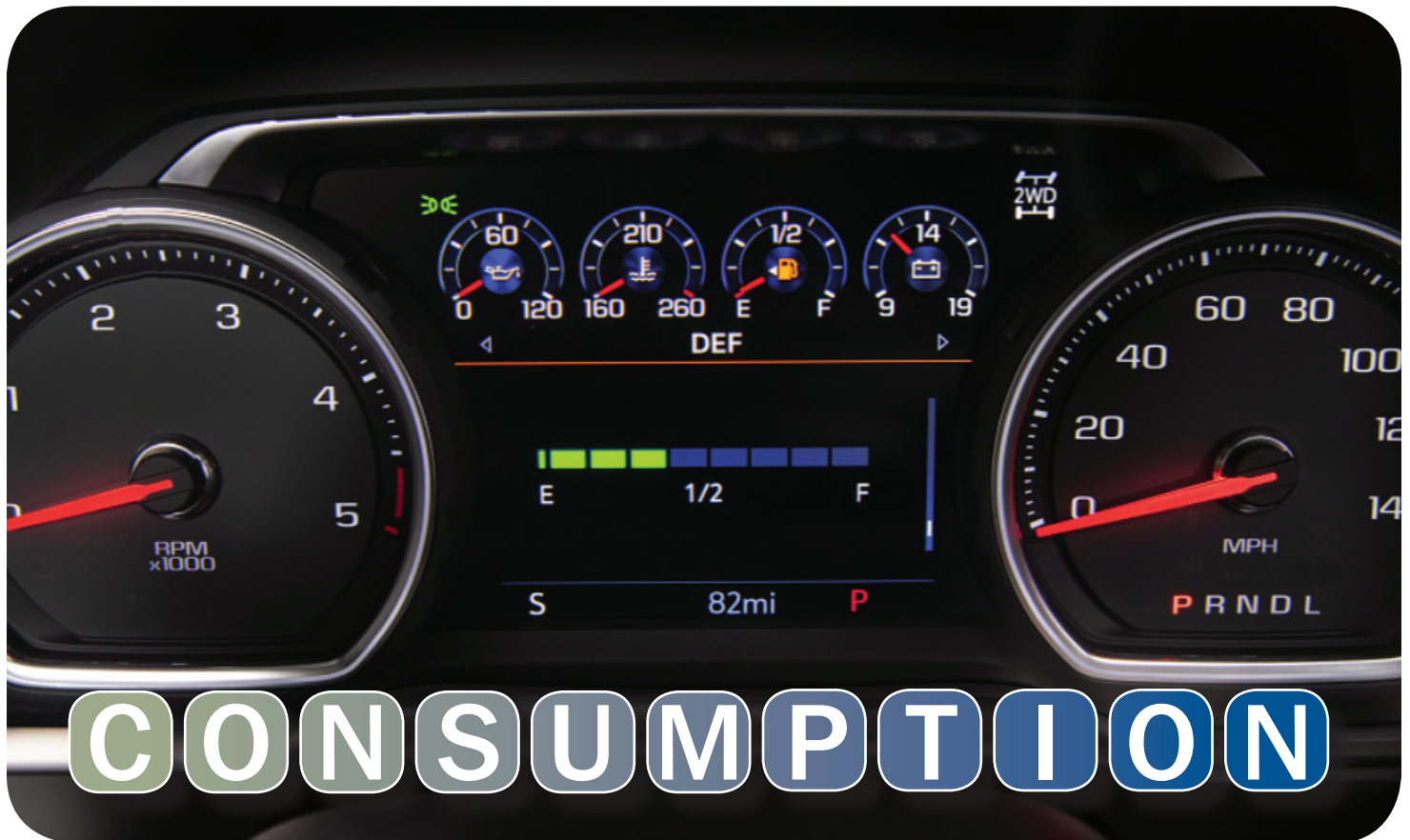


Diesel Exhaust Fluid



The diesel engines (RPOs LWN, LM2, L5P, L5D) available on 2020 Colorado, Express, Silverado 1500, Silverado 2500HD/3500HD, Silverado 4500HD/5500HD/6500HD, Canyon, Savana, Sierra 1500, and Sierra 2500HD/3500HD models use Diesel Exhaust Fluid (DEF) in order to reduce the exhaust Oxides of Nitrogen (NOx) levels within the Selective Catalyst Reduction stage of the exhaust aftertreatment system.

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Diesel Exhaust Fluid Consumption

A series of driver prompts and warnings are initiated when the DEF level falls below a calibrated value.

SEGMENTED DEF LEVEL GAUGE



DEF level gauge

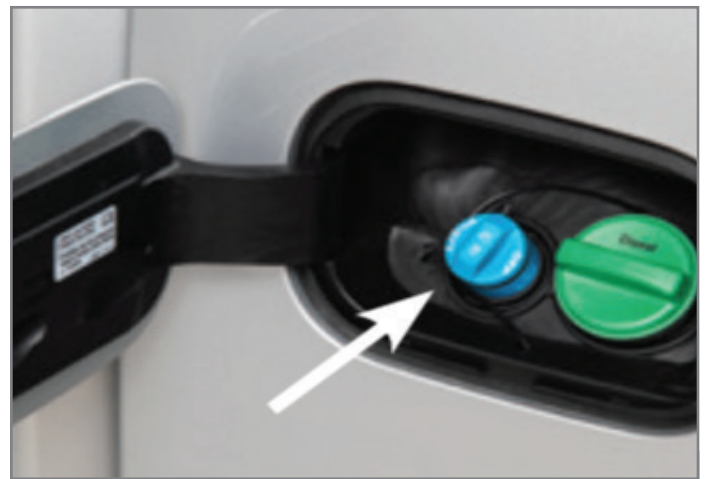
The current 2020 Silverado 1500 and Sierra 1500 models have a DEF level gauge on the instrument cluster that provides drivers with a representation of how much DEF is in the DEF tank up. The DEF level gauge does not operate like a typical float-style gauge that is used in a fuel tank. The Engine Control Module (ECM) monitors the DEF level and consumption rate in order to calculate an estimated range. DEF levels are detected by the DEF level sensor.

There may be some fluctuation in the amount of DEF represented on the DEF level gauge. After filling the DEF tank, it may take a few key cycles to register the correct amount in the DEF tank. With the new segmented DEF level gauge, it is possible that after adding 5 gallons (18.9 L) of DEF that the gauge reads as a full tank after the fill event. However, if the actual level of DEF is just entering the last segment on the gauge, the gauge is likely to drop by one segment shortly after driving after the fill event. As a result, a driver could have an initial impression that the vehicle

EMISSIONS REQUIREMENTS

Every year, GM produces diesel engines that continue to meet aggressive federal requirements to reduce Nitrogen Oxides (NOx)

in the vehicle exhaust. As DEF is required to reduce the NOx in the exhaust, DEF consumption will increase as NOx reduction requirements increase. Customer trading in an older model year diesel vehicle for a newer model year vehicle will likely see an increase in DEF usage. DEF consumption increases as the newer vehicles meet the more stringent emission requirements for that model year.



DEF fill

The amount of DEF consumed also is a function of how hard the engine is working, or engine load. Due to engine use, it is more representative to compare DEF consumption to the amount of fuel consumed – also a function of engine load – instead of miles traveled. In addition to engine load, other factors that affect the DEF usage rate are the humidity, temperature, and altitude where the vehicle is operating.

Under certain conditions, the ECM will increase or decrease the amount of DEF used based on learning or adaptive algorithms. In the event of a malfunction and Check Engine light, the ECM may double or even eliminate the amount of DEF that is being used. An improper amount of DEF use will continue until the vehicle is repaired and the learned value in the ECM is reset.

► Thanks to Larry Yaw

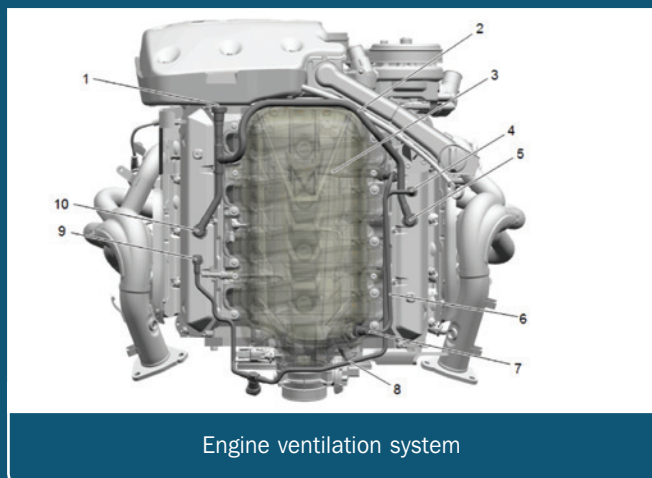
Rushing Air Sound in PCV Tube

Some 2020 Corvette models may have a rushing air or hissing sound coming from the engine compartment during normal engine operation. The hiss or vacuum leak sound is at the foul air Positive Crankcase Ventilation (PCV) tube to intake connection and is caused by normal air flow through the PCV tube.

A closed crankcase ventilation system is used on the 6.2L V8 engine (RPO LT2) in order to provide a more complete scavenging of crankcase vapors. The engine ventilation system design also minimizes oil consumption and significantly reduces the potential for oil ingestion during vehicle limit handling maneuvers.

ENGINE VENTILATION SYSTEM

In the LT2 engine, filtered fresh air is routed from upstream of the throttle plate through a formed nylon fresh air tube(8) to a PCV fitting(9) in the left-side rocker arm cover and a PCV fitting(4) in the right-side rocker arm cover. The design of the rocker arm covers shields rocker arm oil spray, reducing the potential for oil being drawn back into the fresh air PCV tube during any backflow of the ventilation system. Separated foul vapor from the engine oil tank(1) is routed to a PCV fitting(10) in the left-side rocker arm cover and a PCV fitting(5) in the right-side rocker arm cover via a formed nylon recirculation tube(2). Foul crankcase vapor is routed through a formed nylon foul air tube(6) from a



PCV connection(3) on the engine oil separator in the engine valley to right side rear of the intake manifold(7).

PCV TUBE ROUTING

When diagnosing the hissing sound, first verify the correct PCV tube routing. The following photo shows a PCV tube that is incorrectly routed.



Incorrectly routed PCV tube

The PCV tube is routed correct in the following photo.

The sound may change when moving the PCV tube, which is normal. However, if the PCV tube is routed incorrectly, the sound may be magnified.



Correctly routed PCV tube

If a leak is suspected, perform a smoke test to check the induction system. If tests show that the PCV tube is not leaking, it should not be replaced due to the rushing air or hissing sound only.

► Thanks to Richard Renshaw

Fuel Injector Replacement Guidelines

If an incorrect fuel injector is installed on 2014-2020 GM models equipped with a V6 or V8 gasoline engine (RPO LV1, LV3, L82, L83, L84, L8B, LT1, L86, L87, LT2, LT4, LT5, L8T, LTA), it can lead to skewed Long Term Fuel Trims (LTFT) and/or Short Term Fuel Trims (STFT) during engine operation. Vehicles with an illuminated Check Engine MIL or a possible rough idle after a fuel injector replacement should be checked to ensure that the correct injector was installed in the suspect cylinder.

Any of the following misfire or fuel trim related DTCs also may be set: P0300 – P0308, P050D, P0171, P0172, P0174, P0175, P2099, P219A, P219B.

REPLACING AN INJECTOR

If a fuel injector replacement is required during repairs, refer to the Electronic Parts Catalog to verify that the correct injector is ordered and installed.

Here's how to identify and order the correct injector. In this example, the vehicle is a 2016 Silverado 1500 4WD Crew Cab equipped with the 5.3L V8 engine (RPO L83), VIN# 3GCUK-SECXGG251110.

1. Identify the 8-digit injector part number found on the injector body.
2. Enter the VIN in the parts catalog; go to the fuel injector rail parts section.
3. After the injector part number has been identified in the Description column, the part number that needs to be ordered will be in the Part # column.

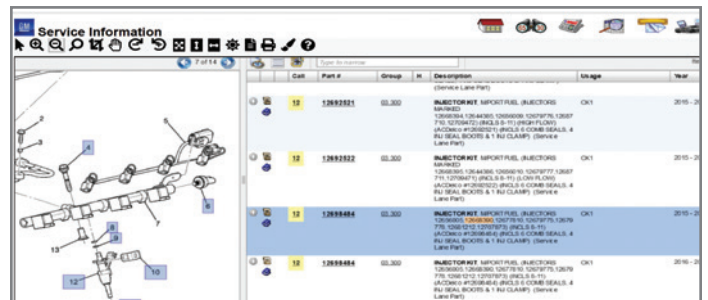


8-digit injector part number

For the Silverado with the 5.3L V8 engine in this example, the original fuel injector part number is 12668390, highlighted in the Description column. The part number to order is 12698484.

NOMINAL FLOW INJECTORS

When fuel rails are assembled at the supplier, each injector installed in the fuel rail can be a nominal, low or high flow injector. The different injectors in the rail is done to get an even balance or flow across the fuel rail for emission requirements. Replacement injector kits will be a different part number than the injectors, and a kit may contain one of several different injector part numbers.



Check the Description column and Part # column.

If an injector has been removed and discarded or if all injectors are on the bench and it can't be determined which one goes where, the best thing to do is order the "NOM FLOW" injector part number in the quantity needed.



NOM FLOW injector

For additional information, refer to Bulletin #20-NA-098.

► Thanks to Bryan Salisbury

DIC Messages Displayed After Auto Stop Event



Steering Assist is Reduced message

Some 2018 Equinox and Terrain models may have several Driver Information Center (DIC) messages display on the instrument cluster after an Auto Stop (when the automatic engine stop/start system turns off the engine when the vehicle is at a stop). The DIC messages may include Steering Assist is Reduced, Service StabiliTrak, and/or Park Brake Released. In addition, DTCs C0800:03 (Device Power 1 Circuit Voltage – Electronic Brake Control Module), C0800:03 or C0800:12 (Device Power 1 Circuit Voltage – Power Steering Control Module), and U0121 (Lost Communication with Brake System Control Module – Body Control Module) may be set.



Service StabiliTrak DIC message

There may be a steering assist reduction for a few seconds when the messages display. All of these symptoms occur most commonly after the engine restarts after an auto stop event.

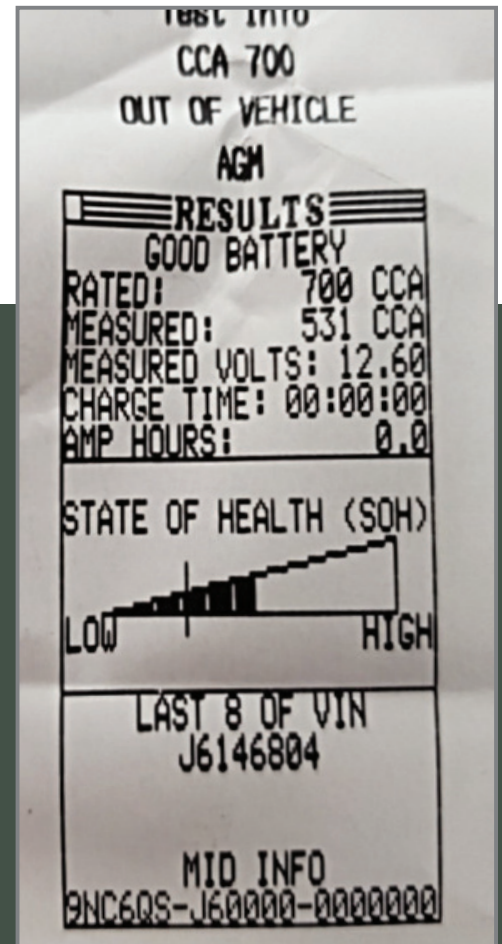
The steering assist condition and DIC messages may be caused by low voltage being received by the Electronic Brake Control Module or Power Steering Control Module. If these conditions are present, test the battery using the EL-52800 Diagnostic Charge Battery Station (DCBS) or EL-50313 Midtronics GR8 Battery Tester/Charger (GR8).

If the battery test result shows Replace Battery (GR8) or Bad Battery (DCBS), replace the battery. Use the standard labor code for battery replacement.

If the battery test result indicates the battery is good but the capacity is diminished with a CCA rating of 575 or below, the battery also should be replaced. Use the special labor code for battery replacement with a diminished CCA rating.

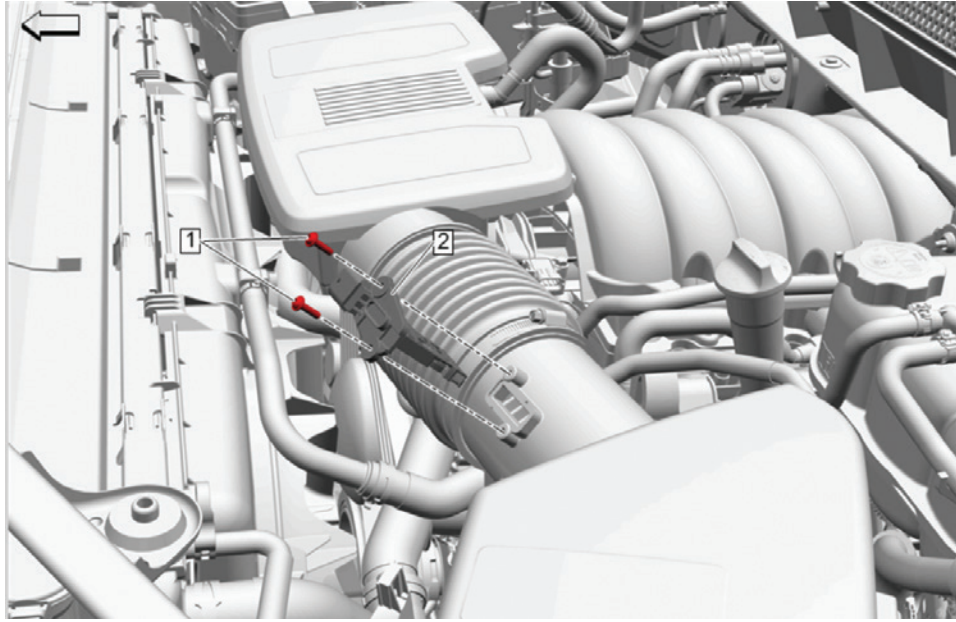
For additional information, refer to Bulletin #20-NA-094.

► Thanks to Rob Smith and Troy Henige



Good battery test result showing diminished CCA rating

MASS AIR FLOW | Sensor Performance



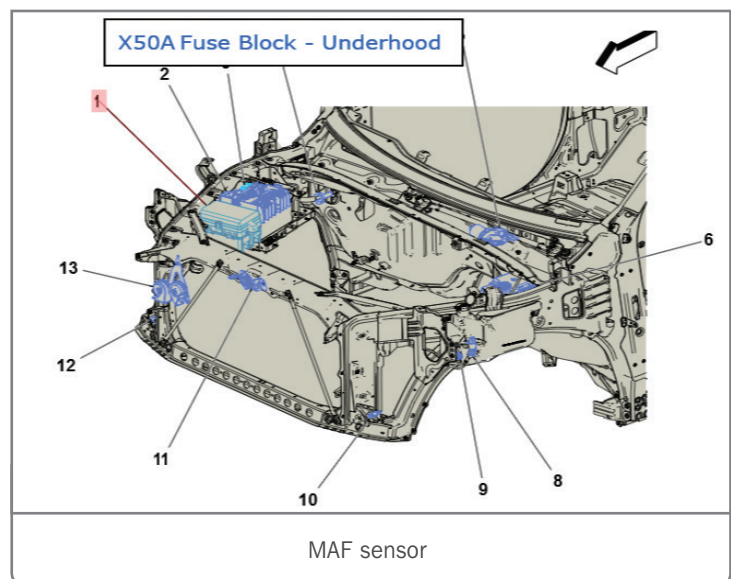
Some 2019-2020 Escalade, Silverado 1500, Silverado 2500/3500, Tahoe, Suburban, Sierra 1500, Sierra 2500/3500, and Yukon models equipped with the 5.3L V8 engine (RPO L82, L83, L84), 6.2L V8 engine (RPO L86, L87), or 6.6L V8 engine (RPO L8T) may have an illuminated Check Engine MIL and DTC P1682 (Ignition 1 Switch Circuit 2) set. DTCs P0101 (Mass Air Flow Sensor Performance), P0689 (Engine Controls Ignition Relay Feedback Circuit Low Voltage), P16A7 (Engine Controls Ignition Relay Feedback Circuit 2), or P16BC (Engine Controls Ignition Relay Feedback Circuit 3) also may be set. In addition, the vehicle may have had the Mass Air Flow (MAF) sensor replaced recently for DTC P0101.

If these conditions are found, there may be a faulty ignition relay or underhood fuse block terminal concern.

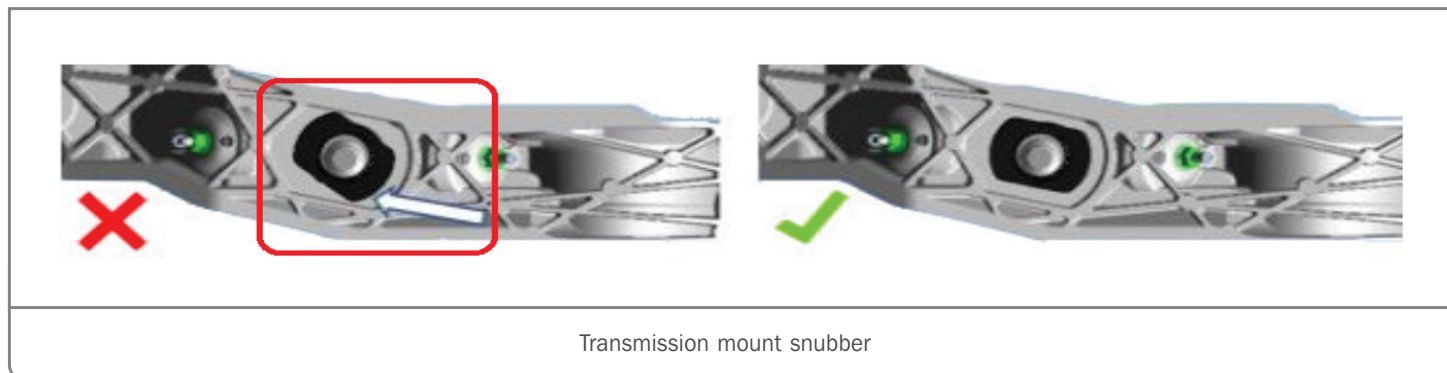
Before replacing the MAF sensor for DTC P0101, inspect the underhood fuse block ignition relay circuits. Replace the underhood ignition relay if required.

Also diagnose any applicable DTCs before replacing the MAF sensor. Refer to the appropriate Service Information for diagnosing each DTC.

► Thanks to Richard Renshaw



Low-Frequency Vibration Under Wide Open Throttle



Some 2020 CT5 models may have a low-frequency noise and vibration under wide open throttle that sounds like the muffler is grounding out against the body. The noise and vibration may get progressively worse as more miles are driven.

If the noise and vibration are present and can be heard inside the passenger compartment, check the transmission mount snubber. It may be out of position and rubbing against the inside pocket of the crossmember.

Raise the vehicle and inspect the position of the transmission mount and snubber. If out of position, loosen the bolt and rotate the snubber until the anti-rotation feature engages. Tighten the bolt to specification (100 N·m or 74 lb.-ft.). Lower the vehicle and perform a test drive to confirm the noise has been eliminated.

For additional information, refer to Bulletin #20-NA-089.

► Thanks to Blake Streling

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