# SHAKE AND/OR SHUDDER DURING LIGHT THROTTLE ACCELERATION BETWEEN 25 AND 80 MPH (40 AND 128 KM/H) AT A STEADY STATE

## #16-NA-175: Shake and/or Shudder During Light Throttle Acceleration Between 25 and 80 MPH (40 and 128 KM/H) at a Steady State - (Oct 10, 2018)

**Subject: Shake and/or Shudder During Light Throttle Acceleration Between 25 and 80 MPH (40 and 128 KM/H) at a Steady State**

| Brand: | Model: | Model Year: | | VIN Breakpoint | | Engine: (2.0L, 3.0L, 3.6L, 5.3L, 6.2L) | Transmission: (8 Speed Automatic) |
|---|---|---|---|---|---|---|---|
| | | from | to | from | to | | |
| Cadillac | ATS | 2016 | 2019 | November 1, 2015 | EOP | LGX, LTG, LT4, LF4 | M5N, M5U |
| | CT6 | 2016 | 2018 | | | LGX, LGW, LTG | M5N, M5U |
| | CTS | 2016 | 2019 | | | LGX, LTG, LT4, LF4 | M5N, M5U |
| | Escalade Models | 2015 | 2017 | | | L86 | M5U |
| Chevrolet | Camaro | 2016 | 2019 | | | LGX, LTG | M5T |
| | | 2016 | 2018 | | | LT1 | M5U |
| | Colorado | 2019 | 2019 | | | LGX | M5T |
| | Corvette | 2015 | 2019 | | | LT1, LT4 | M5U |
| | Silverado Models | 2015 | 2018 | | | L83, L86, L8B | M5U, M5X |
| | | | | | | | |

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|---|---|---|---|---|---|---|---|
| | | from | to | from | to | | |
| | Yukon Models | 2015 | 2017 | | | L86 | M5U |
| GMC | Canyon | 2019 | 2019 | | | LGX | M5T |
| | Sierra Models | 2015 | 2018 | | | L83, L86, L8B | M5U, M5X |

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| **Involved Region or Country** | North America, N.A. Export Regions and Korea |
| **Condition** | Some customers may comment on any of the following conditions:<br>• A shake and/or shudder during light throttle acceleration between 25 and 80 mph (40 and 128 km/h) steady state driving when transmission is not actively shifting gears.<br>• A shudder feeling that may be described as driving over rumble strips or rough pavement.<br>• Shudder feeling is evident in both Drive and M7 MY15-16 & L7 MY17, MY18 and MY19 mode.<br>**Important: Do NOT replace the torque converter or transmission assembly for this condition. Engineer reviews have proven that replacing the torque converter does not provide a long-term solution to TCC shudder. A revised service procedure will be released in Q1 of 2019. If the vehicle experiences a repeat shudder condition, this document should be followed again.**<br>All part replacement claims will be subject to engineering analysis. Any part(s) determined not to be defective will be subject to a possible claim debit.<br>**Note: This procedure has been updated to eliminate the replacement of the transmission oil filter.** |

## Diagnosis Instructions

To ensure TCC Shudder is diagnosed correctly, please drive the following schedule on a smooth road with transmission sump temperature between 122°F (50°C) - 158°F (70°C).

**Important:** For some road conditions, it may be required to apply the brake pedal and throttle simultaneously to stay within desired gear, engine firing mode, engine torque range, and engine/vehicle speed ranges.

**For Full Size Trucks/SUVs** - Press and hold the tow-haul mode button for 5 seconds to disable grade braking to prevent downshifts during test.

**Run the following tests for 3 operational modes:**

A. Normal Operation (GDS2 for viewing only).

B. GDS2 Commanding TCC in Disabled Operation. (TCC Open).

C. GDS2 Commanding TCC in Enabled Operation. (TCC Locked).

**Shudder Test**

Refer to the table below for conditions pertaining to specific applications. In each vehicle, constant throttle input on a smooth grade is desirable. PicoScope Measured Frequency is the approximate vibration frequency where TCC Shudder can be found, discussed in detail below.

| Vehicle Information | | | | | Shudder Test Conditions | | | | | PicoScope |
|---|---|---|---|---|---|---|---|---|---|---|
| Make | Application: | Engine type | Engine RPO | Trans RPO | Gear | Engine Mode (V4, V6, V8) | Transmission Input Speed (rpm) | Vehicle Speed (mph) | Engine Torque (Nm) | Measured Frequency (+/- 2 Hz) |
| Cadillac | CTS | 6 CYL. NA | LGX | M5N | 8 | V6 | 1100-1500 | 42-55 | 100-250 | 23 |
| Cadillac | CTS | 4 CYL. Turbo | LTG | M5N | 8 | V4 | 1100-1500 | 42-55 | 100-250 | 23 |
| Cadillac | CTS-V | 8 CYL. Supercharged | LT4 | M5U | 8 | V8 | 1000-1500 | 42-62 | 200-375 | 28 |
| Cadillac | ATS | 4 CYL. NA | LCV | M5T | 8 | V4 | 1100-1500 | 42-55 | 100-250 | 23 |
| Cadillac | ATS | 6 CYL. NA | LGX | M5N | 8 | V6 | 1100-1500 | 42-55 | 100-250 | 23 |
| Cadillac | ATS | 4 CYL. Turbo | LTG | M5N | 8 | V4 | 1100-1500 | 42-55 | 100-250 | 23 |
| Cadillac | ATS-V | 6 CYL. Twin Turbo | LF4 | M5U | 8 | V6 | 1100-1500 | 42-55 | 150-300 | 26 |
| Cadillac | CT6 | 6 CYL. Twin Turbo | LGW | M5X | 8 | V6 | 1100-1500 | 42-55 | 150-300 | 26 |
| Cadillac | CT6 | 6 CYL. NA | LGX | M5N | 8 | V6 | 1100-1500 | 42-55 | 100-250 | 23 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cadillac | CT6 | 4 CYL. Turbo | LTG | M5N | 8 | V4 | 1100-1500 | 42-55 | 100-250 | 23 |
| Chevrolet | Camaro | 6 CYL. NA | LGX | M5T | 8 | V6 | 1100-1500 | 42-55 | 100-250 | 23 |
| Chevrolet | Camaro | 4 CYL. Turbo | LTG | M5T | 8 | V4 | 1100-1500 | 42-55 | 100-250 | 23 |
| Chevrolet | Camaro SS | 8 CYL. NA | LT1 | M5U | 8 | V4/V8 | 1000-1,500 | 40-55 | (V4) 100-200 /(V8) 175-375 | 28 |
| Chevrolet | Corvette | 8 CYL. NA | LT1 | M5U | 8 | V4 (Eco Driving Mode) | 1000-1800 | 40-80 | 125-250 | 28 |
| Chevrolet | Corvette Z06 | 8 CYL. Supercharged | LT4 | M5U | 8 | V4 (Eco Driving Mode) | 1000-1800 | 40-80 | 125-250 | 28 |
| Chevrolet/GMC | Silverado/Sierra | 8 CYL. NA | L83 | M5U | 8 | V8 | 1050-1500 | 45-55 | 200-375 | 26 |
| Chevrolet/GMC | Silverado/Sierra | 8 CYL. NA BAS | L8B | M5X | 8 | V8 | 1050-1500 | 45-55 | 200-375 | 26 |
| Chevrolet/GMC/Cadillac | Silverado/Sierra/Yukon Denali/Cadillac XL/Escalade/ESV | 8 CYL. NA | L86 | M5U | 8 | V8 | 1050-1500 | 45-55 | 200-375 | 26 |
| Chevrolet/GMC | Colorado/Canyon | 6 CYL. NA | LGZ | M5T | 8 | V6 | 1100–1500 | 42–55 | 150–250 | 25 |

To confirm TCC Shudder, the vibration concern must be created in normal operation (Mode A) of the test. If the concern is gone with the torque converter clutch disabled (Mode B, TCC Open) and is gone with torque converter clutch enabled (Mode C, TCC Locked), then the vibration root cause is TCC Shudder, and the fluid flush procedure corrective action described below should be performed.

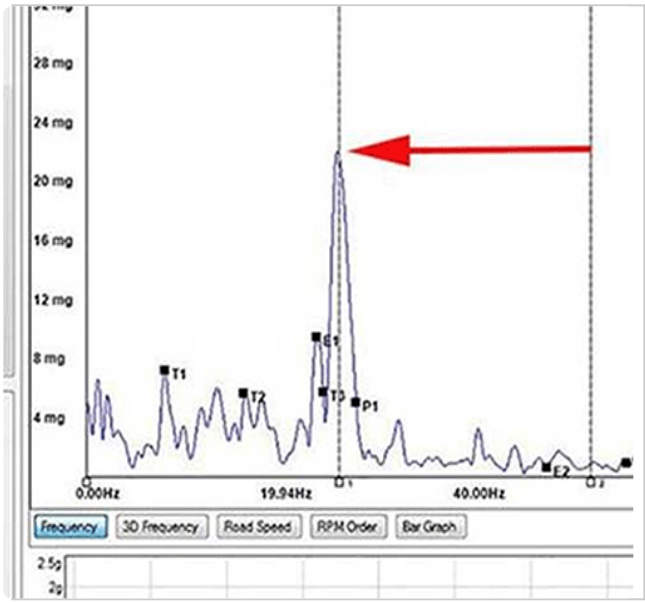
If the concern is not present in Mode A, then the vibration concern is NOT TCC shudder.

If the concern is still present with the torque converter clutch disabled (Mode B) or with the torque converter clutch enabled (Mode C, TCC slip speed at zero), then the vibration root cause is NOT TCC Shudder.

Vibrations not identified as TCC Shudder should be further investigated using the Vehicle Vibration Diagnosis in SI as a starting point.

**Picoscope Test**
The PicoScope (CH-51450) essential tool and NVH software can be used to confirm TCC Shudder, Engine, Tire, or Driveline component related conditions.

To confirm TCC Shudder, record the PicoScope data while driving in 8th gear in the application specific condition above. Minimize extraneous vibration input by testing on a smooth road and correct any other known vehicle vibration issues (tires, brakes, etc.) before conducting test. If TCC Shudder is present, a vibration peak will appear (highlighted by arrow below) within +/-2 Hz of the frequency listed in the table above. TCC Shudder vibration frequency is stationary in 8th gear. If the vibration frequency follows vehicle speed or engine speed, then it is NOT TCC Shudder.



In the above illustration, frequency and default view have been selected.

**Service Procedure**
**Important:** Requires Mobil 1 Synthetic LV ATF DEXRON HP transmission fluid.

> **Note:** Replacement of the transmission oil filter is not required for this procedure.

1. Drain, Clean pan/magnet, Oil Fill, & Remove fluid from the oil cooler lines.
    - A.) Use filtered compressed air regulated to 60 psi to remove transmission fluid from the transmission oil cooler lines.
    - B.) Remove the transmission fluid pan and drain transmission fluid following SI procedures for the application you're working on. Discard all oil.
      **Note:** If you find that the fluid is cloudy, milky, or appears to be contaminated with water or engine coolant, DO NOT proceed with below steps. Follow Both SI Procedures for *Cooling System Leak Testing* and *Engine Coolant/Water in Transmission*.
    - C.) Clean the pan/magnet if any metallic particles present.

Install the transmission fluid pan and refill with new Mobil 1 Synthetic LV ATF DEXRON HP transmission fluid following the Fluid Fill Procedure in SI to obtain correct fluid level.

The shudder should be improved after the completion of this flush procedure.

**Note:** Shudder should improve directionally right away, but for full affect, the vehicle may need to be driven up to 200 miles (322 km) and a minimum of two cold to hot drive cycles before determining if the fluid flush corrected the condition or not. Do not re-evaluate vehicle for additional customer shudder concerns until the vehicle has been driven 200 miles (322 km).

**Parts Information**

**Note:** U.S. dealers must order the **Mobil 1 Synthetic LV ATF DEXRON HP** fluid through your local General Motors oil distributor. When contacting the General Motors oil distributor, request **Mobil 1 Synthetic LV ATF DEXRON HP.** Canadian dealers must order part number 19355657 through Kem Krest Canada.

| Causal Part | Description | Part Number | Qty |
|---|---|---|---|
| N/A* | Mobil 1 Synthetic LV ATF DEXRON HP (Quarts/Liter) | 19417577 (U.S.) | 12 qts |
| | | 19355657 (Canada) | 11 liters |
| *For warranty transactions, DO NOT mark this part as the Casual 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.

| Labor Operation | Description | Labor Time |
|---|---|---|
| 8480478* | Flush and Drain Fluids for Transmission Shake and/or Shudder Repair | Use Actual Clock Time |
| *This is a unique Labor Operation for Bulletin use only. | | |

| Version | 13 |
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| **Modified** | June 1, 2016 – Added a breakpoint date.<br>November 29, 2016 – Added the 2017 Model Year and updated information including graphics under Diagnosis Instructions.<br>February 27, 2017 – Updated the Model section and added additional information to Test section.<br>April 18, 2017 – Updated the Shudder Chart information.<br>August 24, 2017 – Updated information.<br>September 19, 2017 – Updated the Service Procedure.<br>October 4, 2017 – Updated VIN breakpoints.<br>December 1, 2017 – Added the 2018 Model Year and updated Service Procedure sections.<br>December 14, 2017 – Removed the NOTE statement regarding the use of DEXRON VI to flow and flush transmission cooling system.<br>June 5, 2018 – Removed Colorado/Canyon Models, added Bulletin reference for Colorado/Canyon to Models section and updated the first Note under Service Procedure regarding Canadian dealer orders.<br>September 4, 2018 – Added the Parts Information section.<br>October 10, 2018 – Updated the Model Years to 2019, removed the Transmission Filter Replacement information, added the Colorado/Canyon Models and Test information and changed the U.S. part number in the Parts Information. |