Service Bulletin

Bulletin No.: 21-NA-047
Date: March, 2021

TECHNICAL

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

Note: This procedure should only be completed once per vehicle. Any vehicle that returns with suspect shudder should be diagnosed utilizing published diagnostics, GDS, PICO Scope or other diagnostic tools. Sometimes shudder is not caused by the torque converter clutch (TCC). In some instances, shudder is fish bite, chuggle, surge or vibration.

Brand:	Model:	Model Year:		Breakpoint Date:		Engine:	Transmission:
		from	to	from	to		
Chevrolet	Colorado	2019	2020	March 1, 2019	EOP		M5T
GMC	Canyon						

Involved Region or Country	United States, Canada, Middle East Operations (MEO)
Condition	Some customers may comment that their vehicle is experiencing 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. ⇒ The condition may be described as if they are driving over rumble strips or rough pavement. Shudder can be evident in both Drive and M7 mode. Shudder cannot be evident with TCC locked (zero slip) or TCC released (open)
Cause	This condition may be due to Torque Converter Clutch (TCC) Shudder.
Correction	**Note:** This procedure should only be completed once per vehicle. Any vehicle that returns with suspect shudder should be diagnosed utilizing published diagnostics, GDS, PICO Scope or other diagnostic tools. Sometimes shudder is not caused by the torque converter clutch (TCC). In some instances, shudder is fish bite, chuggle, surge or vibration. ⇒ If a customer presents a vehicle with a similar complaint, follow normal SI diagnostics.

Diagnosis Instructions:

Use one of the following tests methods to assist in proper diagnosis of TCC shudder. Evaluate vehicle on a smooth road with transmission sump temperature between 122°F (50°C) - 158°F (70°C), engine speed between 1100 - 1500 rpm, and engine torque between 150 - 250 Nm.

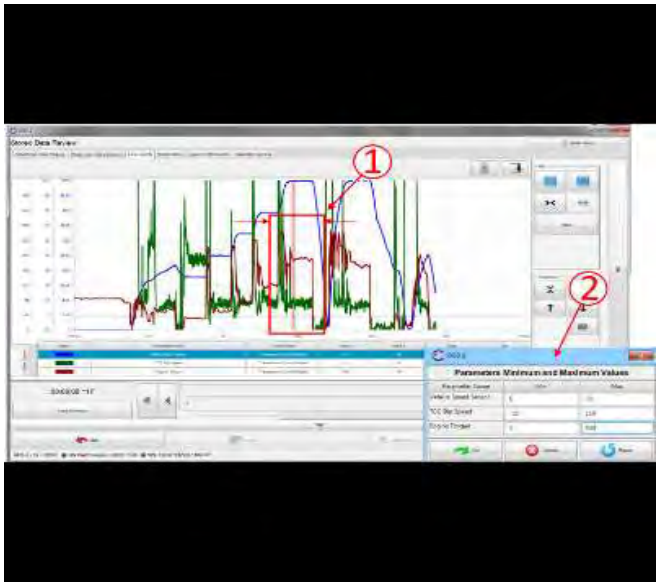
Perform TCC slip control test and TCC shudder/ picoscope test within this procedure.

Repeat claims should have pan inspected for further diagnosis. Additional information may be found in Service Information – Torque Converter Diagnosis.

TCC Slip Control Test

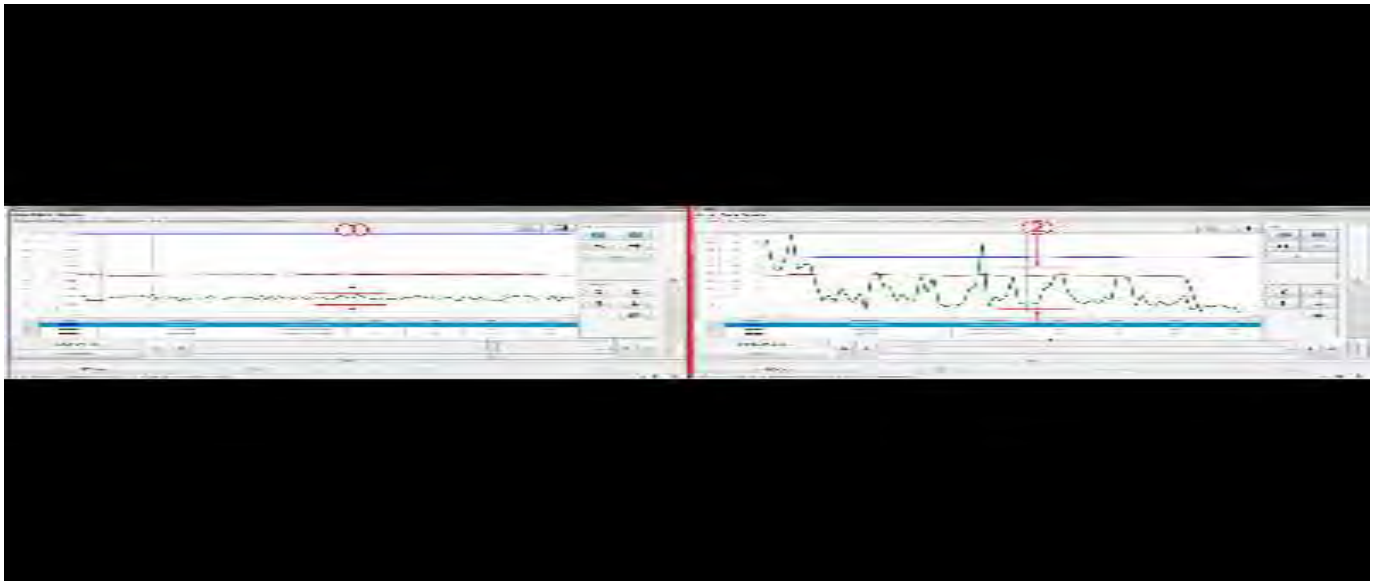
TCC SLIP CONTROL TEST RESULT	TCC RPM Slip Peak to Peak (At Steady Throttle)	ACTION	Note
Normal	Below 20 rpm	Do nothing	-
Degraded	Near 60 rpm repeating	Flush transmission fluid	Shudder, surge, fish bite likely

1. Utilize TIS2Web / GDS2 / MDI service tool.
2. Select module diagnostics – TCM.
3. Select TCC data for session log/data collection.
4. Collect data between 55 to 70 MPH (89-112 km/h) steady state (steady throttle) with minimum 15 seconds.



5751734

5. Zoom into 15 second window for analysis (1).
6. For line graph evaluation, set parameter minimum and maximum to values (2) stated for comparison (Fig 1).



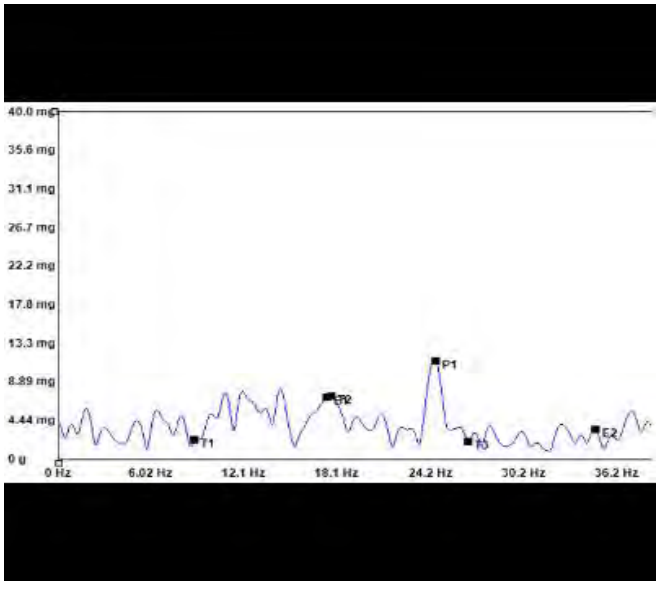
5752700

7. Evaluate collected data with line graph and compare data from a normal (1) and degraded. (2).

TCC Shudder/Picoscope Test

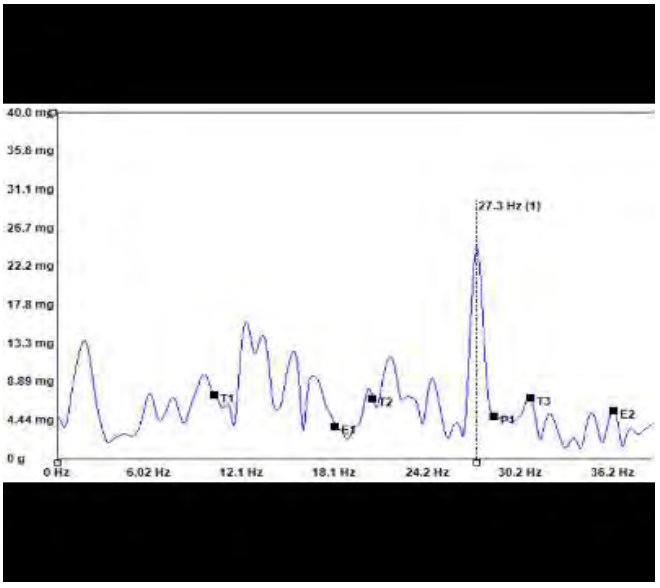
TCC SHUDDER TEST RESULT	TCC Shudder Frequency (At Slight Tip In)	ACTION	Note
Normal	None	Do nothing	-
Shudder	23 to 27 Hz	Flush transmission fluid	Intermittent / Audible

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



5751608

The graph above depicts a normal frequency.



5751612

The graph above depicts a degraded frequency or shudder.

Note: Any vehicle that returns with suspect shudder should be diagnosed utilizing published diagnostics, GDS, PICO Scope or other diagnostic tools. Sometimes shudder is used to describe an engine problem and is not caused by the torque converter clutch (TCC).

Vehicles that are presented with TCC shudder should have the appropriate fluid exchange procedure completed. Diagnosis beyond the customer compliant is not required if vehicle was built prior to production dates indicated above.

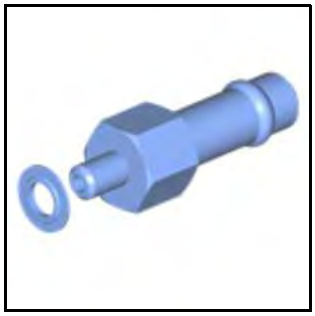
Special Tools

DT-52263 Transmission Fluid Exchange Kit:

To confirm TCC Shudder, record the PicoScope data while driving in stated conditions. 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. 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.

- DT-52263-1 Block Assembly (includes fluid drain hose, spring clamp)
- DT-52263-2 Cooler Line Plug (qty 3) (use with rear differential cooler and Camaro V8 non rear differential cooler)
- DT-52263-3 ½" Cooler Line Flush Adapter for 2019 Silverado and Sierra
- DT-52263-4 3/8" Hose Adapter (6" long with 2 hose clamps)
- DT-52263-5 Radiator Cooler Drain Adapter



3763203

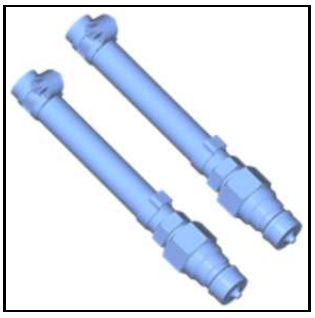
- DT-51190 Transmission Oil Fill Adapter

5181938

- GE-47716-2 Graduated Bucket

1215917

DT-45096 TransFlow Cooler Flush Machine



4733125

DT-45096-31 TransFlow Adapter (one of two pieces from DT-45096-30)

Service Procedure

Initial TransFlow Flush Machine Setup

Important: The prepping procedure only needs to be completed if the DT-45096 supply reservoir has DEXRON VI fluid in it and has not been converted to use the new blue label Mobil 1 Synthetic LV ATF HP fluid.

Note: The prepping procedure only needs to be completed if HP fluid is not in the supply reservoir.

1. Connect the TransFlow adapter DT-45096-31 to the supply line of the DT-45096 TransFlow machine.

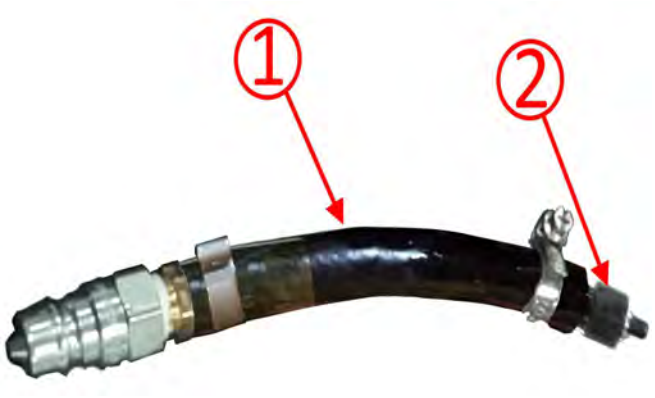
5180884

2. Switch the DT-45096 TransFlow to Idle.
3. Connect power leads to the vehicle 12-volt DC supply.
4. Turn the TransFlow main switch ON.
5. Connect air supply to the DT-45096.
6. Place the TransFlow supply hose with adapter DT-45096-31 into a waste reservoir using care not to spill the expelled fluid.
7. Switch the DT-45096 TransFlow to Flow and allow all the fluid in the supply reservoir to be removed and placed in the waste reservoir.
8. Switch the control switch back to idle.

Fluid Exchange Procedure - Colorado, Canyon, Silverado, Sierra, Yukon Denali and Escalade Models with an Accessible Transmission Oil Cooler Line Block Assembly

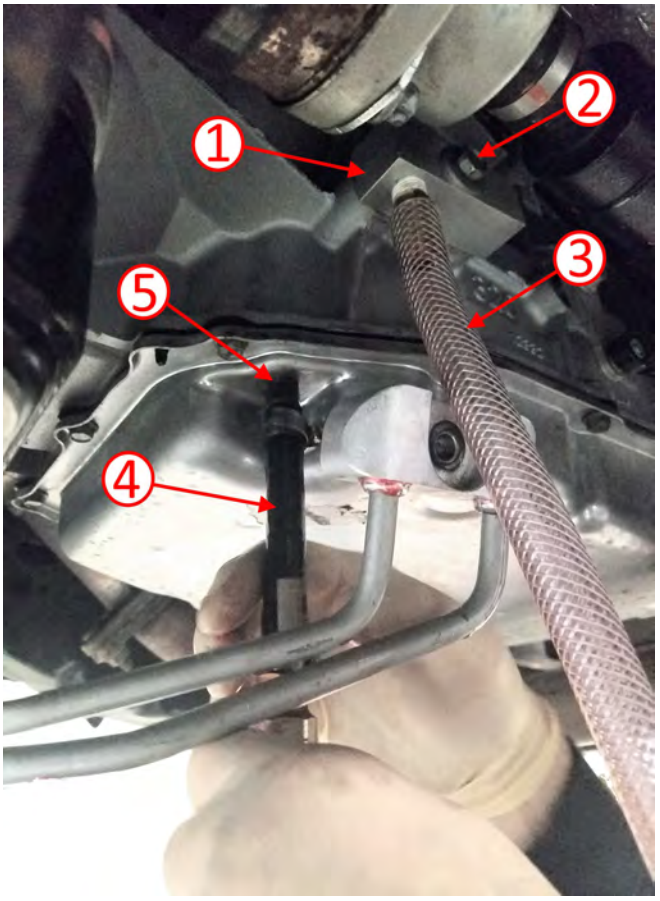
Important: This procedure must be followed as published. The exchange process is required to obtain proper level of new blue label Mobil 1 Synthetic LV ATF HP fluid. Intermixing of other types of transmission fluid or aftermarket additive packages will result in a low concentration level of new fluid and will not provide satisfactory results.

1. Fill the DT-45096 with 20 quarts of HP fluid.
2. Raise the vehicle on a hoist.



5182541

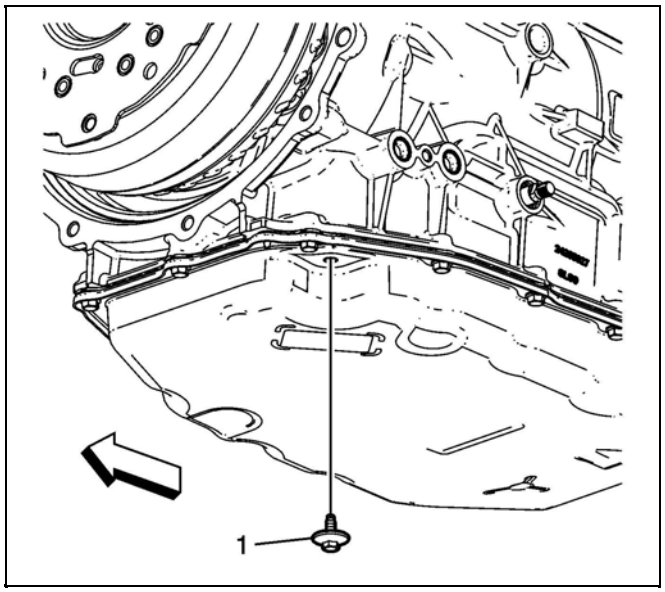
3. Install the DT-45096-31 TransFlow adapter (1) to the DT-51190 fluid fill adapter (2).



5180563

4. Remove the transmission oil cooler pipe assembly from the transmission.
5. Install the DT-52263-1 Adapter Block Assembly (1), reusing the seal from the transmission oil cooler pipe assembly.
6. Tighten the bolt (2) to 22 N•m (16 lb ft).

7. Place the hose (3) in the GE-47716-2 Graduated Measuring Bucket, utilizing a Spring Clamp to retain the hose.

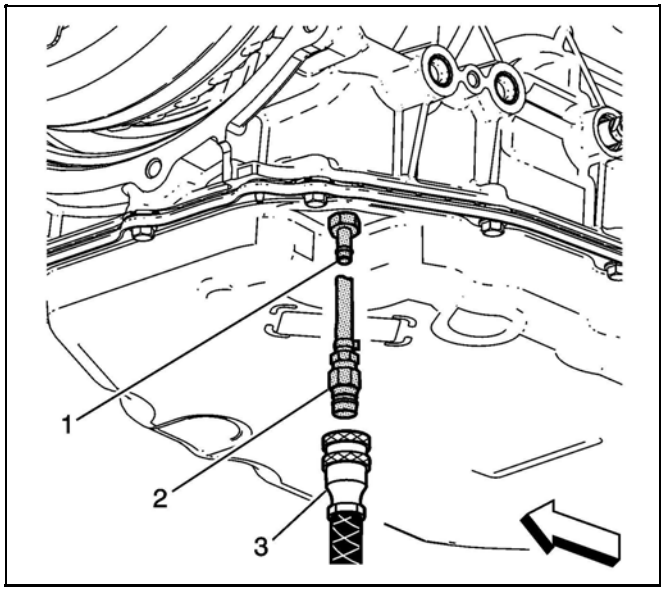


3723844

8. Remove the level set plug (1) from the transmission.

Important: **DO NOT** over tighten the DT-51190 as it can be damaged by excessive torque. **DO NOT** exceed 9 N•m (80 lb in).

9. Install the DT-51190/DT-45096-31 assembly and hand tighten as shown in the graphic above.

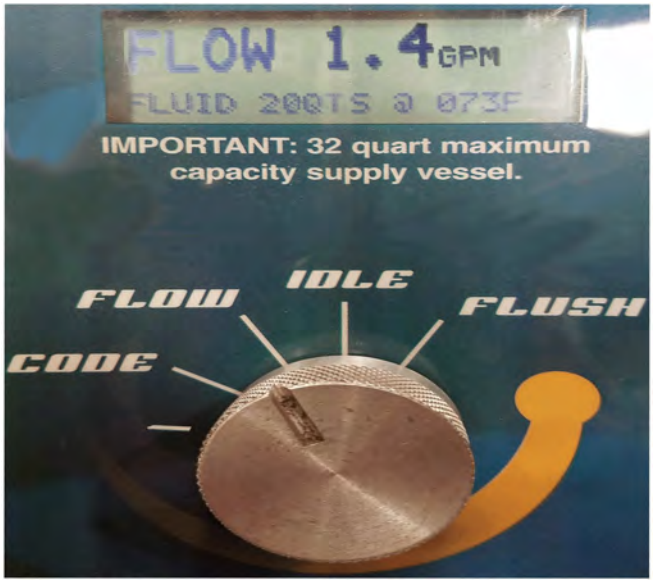


3723839

10. Connect the TransFlow fluid feed (supply) line (3) to the DT-45096-31 adapter (2).
11. Lower the vehicle.

Caution: DO NOT REMOVE MORE THAN 3 QUARTS OF FLUID AS IT COULD CAUSE FLUID PUMP CAVITATION AND POSSIBLY DAMAGE THE TRANSMISSION.

12. Utilizing the graduated bucket, start the engine and run 30- 45 seconds until 3 quarts of fluid is expelled.
13. Shut the engine off immediately.
14. Connect the DT-45096 to the vehicle battery 12 volts and connect shop air to the air connection.



5181027

15. Switch the DT-45096 TransFlow to Flow and add 4 quarts of HP to the transmission.

5181020

16. Switch the DT-45096 TransFlow to Idle (Reducing fluid level in the TransFlow from 20–16).

17. Switch the TransFlow DT-45096 to Flow and start the engine:
    17.1. Add a maximum of 4 quarts of HP Fluid to the transmission, turn the TransFlow switch to idle once 4 quarts have been added, while allowing 4 additional quarts of oil to fill the DT-graduated bucket (Reducing fluid level in the TransFlow from 16 – 12).

Note: DO NOT add additional transmission fluid until the 4 quarts of oil have been removed from the transmission (Reducing fluid level in the TransFlow from 12–8).

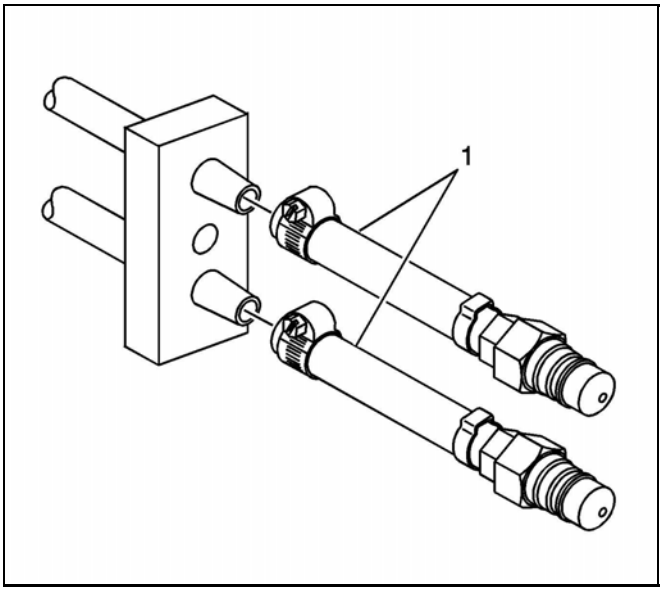
    17.2. Repeat step 17.1.
    17.3. Add a maximum of 5 quarts of HP fluid to the transmission while allowing 5 additional quarts of oil to fill the DT-graduated bucket (Reducing fluid level in the TransFlow from 8 – 3).

5181401

    17.4. Shut the engine off once 16 quarts of fluid have been collected.
    17.5. Properly dispose of the expelled transmission fluid.
18. Raise the vehicle.
19. Disconnect the DT-45096 TransFlow feed (supply) line from DT-45096-31 TransFlow adapter.
20. Using care, remove DT-45096-31/DT-51190 as an assembly.
21. Remove the DT-51190 fluid fill adapter from DT-45096-31 hose.
22. Install the level set plug.

    Tighten

    Tighten the plug to 9 N•m (80 lb in).
23. Remove DT-52263-1 Adapter Block Assembly from the transmission.
24. If equipped, remove the Thermal By-Pass Block from the cooler pipes on the Escalade, Silverado, Sierra and Yukon Models.



1762577

25. Install DT-45096-31 adapters (1) to the transmission oil cooler lines.
26. Connect the DT-45096 TransFlow to the DT-45096-31 adapters.

5210461

27. Switch the DT-45096 TransFlow to Flush.

28. Flush the vehicle cooler and lines using 2 quarts of HP fluid.
    ⇒ Flush 1 quart of fluid through the lines, then switch the hose connections and flush 1 quart of fluid in the opposite direction.
29. Remove the DT-51190/DT-45096-31 assembly.
30. If equipped, install the Thermal By-Pass Block from the cooler pipes on the Escalade, Silverado, Sierra and Yukon Models.
31. Install the transmission oil cooler pipe using a new cooler block seal.
32. Partially lower the vehicle.
33. Start the engine.
34. Using care, shift the transmission through all forward ranges and Reverse.
35. Shift the transmission into Park.
36. Perform the Transmission Fluid Level and Condition Check outlined below in this procedure:
    36.1. Get the transmission fluid temperature to the proper temperature.
    36.2. Install the level set plug.

Tighten

Tighten the plug to 9 N•m (80 lb in).

The TCC shudder condition should be directional improved immediately after the fluid exchange procedure. It may take up to 320 km (200 mi) for the TCC shudder condition to be eliminated. It is not a requirement for the dealer to drive the vehicle 320 km (200 mi). The customer should be advised that the full effect will take up to 320 km (200 mi) and a minimum of two cold to operating temperature drive cycles.

Parts Information

Note: Only select the parts that coincide with the repair performed.

Causal Part	Description	Part Number	Qty
X	Mobil 1 Synthetic LV ATF HP (Available only through Local GM Oil Distributors)	19417577 (US - 1 quart)	20
		19418066 (Canada - 0.946L/1 qt)	20
N/A		Drum 55 gallon 19417904 (US)	1
N/A	SEAL, TRANS FLUID CLR PIPE	23135703	1

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
8481958*	Diagnostic Test and Fluid Exchange	1.8 hrs
Add	DT-45096 Prep (Not required unless the fluid is not Mobil 1 Synthetic LV ATF HP)	0.1 hr
*This is a unique Labor Operation for Bulletin use only.		

Version	1
Modified	Released March 04, 2021