



Service Bulletin

Bulletin No.: 19-NA-121

Date: June, 2019

TECHNICAL

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

Attention: This Bulletin only applies to vehicles sold in the U.S., Canada and Middle East.

Brand:	Model:	Model Year:		Date Breakpoint:		Engine:	Transmission:
		from	to	from	to		
Chevrolet	Silverado 1500 (New Model)	2019	2019	SOP	March 01, 2019	L3B, L84	MQE
GMC	Sierra 1500 (New Model)						

Involved Region or Country	United States, Canada, Chile, Thailand and Middle East Operations (MEO)
Condition	<p>Some customers may comment on any of the following conditions:</p> <ul style="list-style-type: none"> 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. A shudder feeling that may be described as driving over rumble strips or rough pavement. <p>Shudder feeling is evident in both Drive and M7 modes.</p>

Diagnosis Instructions

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

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.

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:

- Normal Operation (GDS2 for viewing only)
- GDS2 Commanding TCC in Disabled Operation (TCC Open)
- 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.

Vehicle Information					Shudder Test Conditions				
Make	Application:	Engine Type	Engine RPO	Trans RPO	Gear	Engine Mode (4, V6, V8)	Transmission Input Speed (rpm)	Vehicle Speed mph (km/h)	Engine Torque (Nm)
Chevrolet/ GMC	Silverado/ Sierra	4 CYL. Turbo	L3B	MQE	4	4	1100-1500	45-55 (72-88)	100-250
Chevrolet/ GMC	Silverado/ Sierra	8 CYL. NA	L84	MQE	8	V8	1050-1500	45-55 (72-88)	200-375

GDS Test

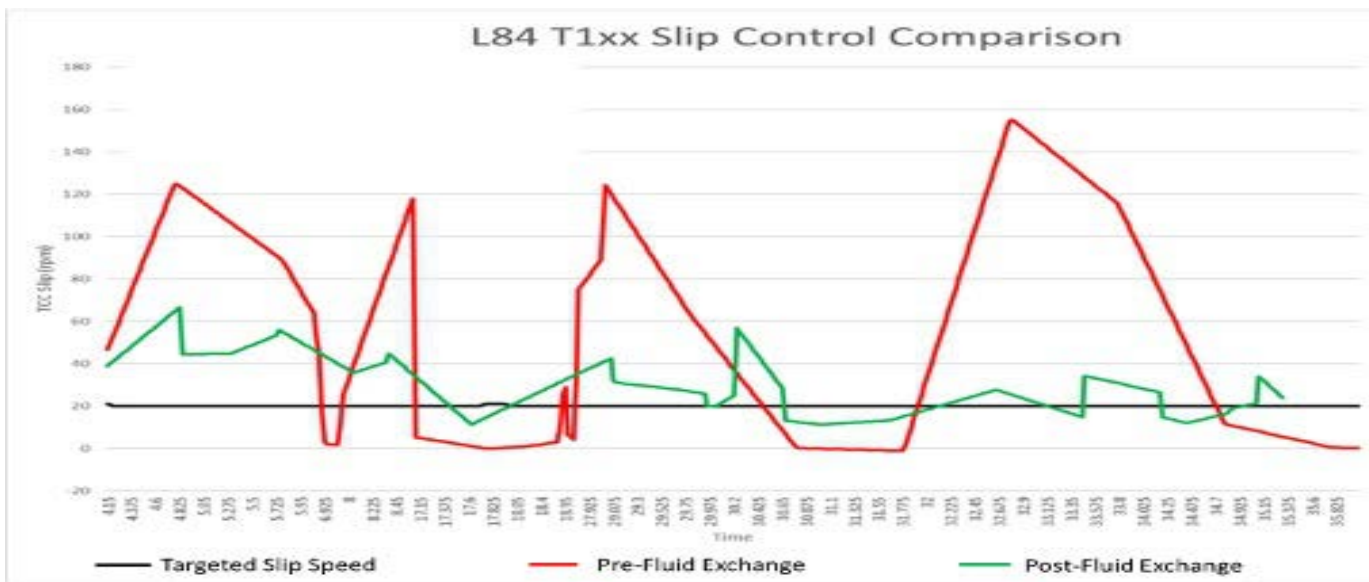
To confirm TCC Shudder, the vibration concern must be created in normal operation (Mode A) of the test. If the concern is gone with the torque converter clutch disabled (Mode B, TCC Open) and is gone with torque converter clutch enabled (Mode C, TCC Locked), then the vibration root cause is TCC Shudder,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

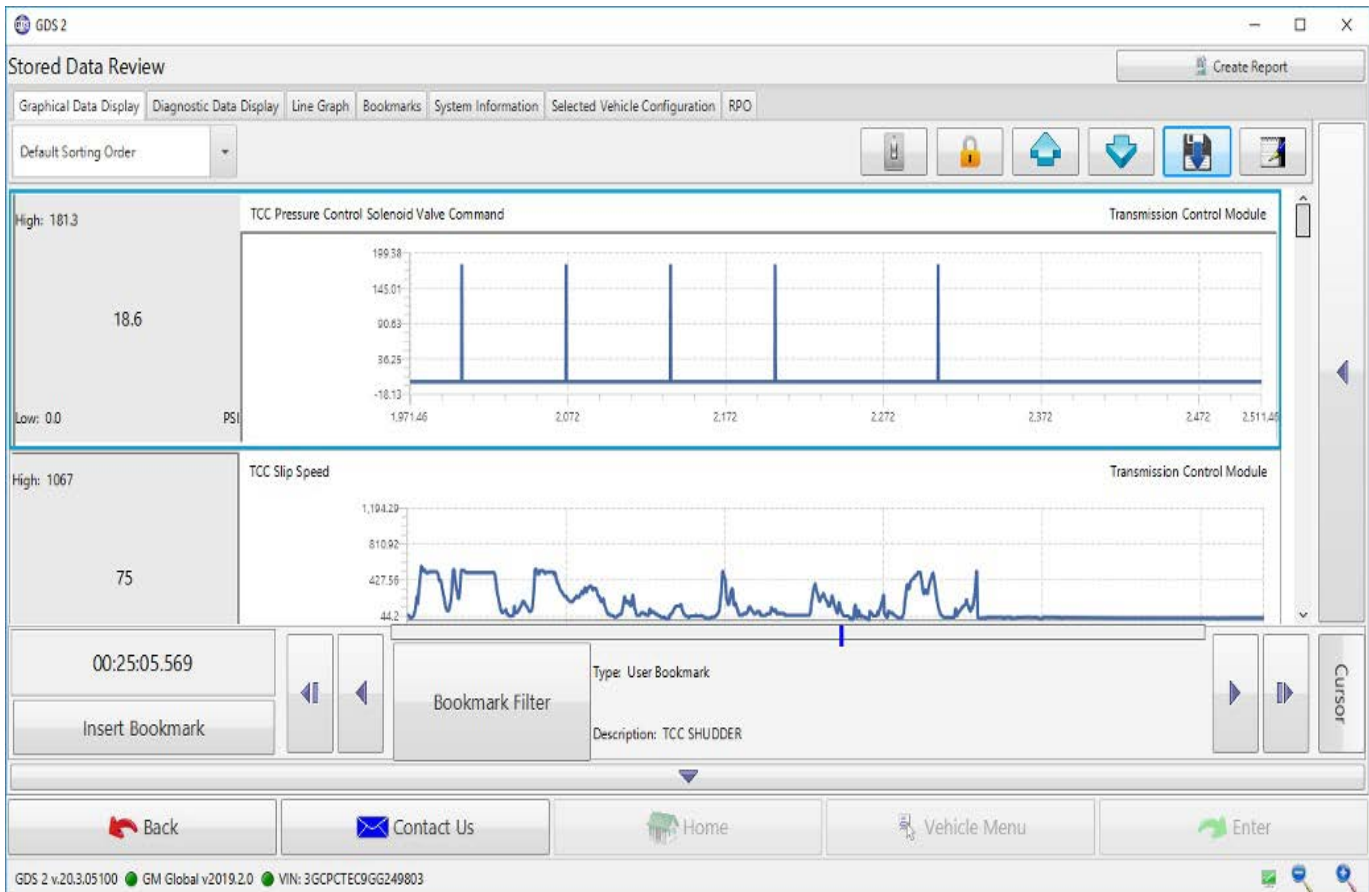
If the concern is still present with the torque converter clutch disabled (Mode B) or with the torque converter clutch enabled (Mode C, TCC slip speed at zero), then the vibration root cause is NOT TCC Shudder.

GDS can be used to monitor TCC Slip to confirm TCC Shudder. Once TCC shudder is duplicated TCC slip speed should be monitored while driving at a steady speed and steady throttle. TCC shudder typically will present itself in a saw tooth or oscilloscope pattern where TCC slip will increase and decrease rapidly. The increase may be as much as a 150 rpm and decline to below 0 rpm, creating a saw tooth or oscilloscope type pattern. When TCC slip speed is graphed on the GDS screen. Desirable slip speed would present itself with 5 to 15 rpm variation. Slip speed will vary by application. The slip speed is it should be consistent and not erratic or presented in a saw tooth or oscilloscope pattern

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



This is an example of TCC slip speed on a 5.3 (L84) truck. Note the improvement in slip speed after immediately after the fluid exchange procedure. The slip speed will improve after additional mileage is accumulated. This improvement will occur over the course of 200 miles (320 km) and a minimum of two cold to operating temperature drive cycles. The truck should be returned to the customer for the mileage accumulation.



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Example of GDS Screen Print.

Important: Obtain a single page screen print from GDS that shows the TCC shudder event. This screen print must be attached to the Repair Order hard copy for reference. A screen print can be completed by pressing the Print Screen button on your laptop computer or by using a program or application such as Snipping Tool.

Examples of acceptable screen prints:

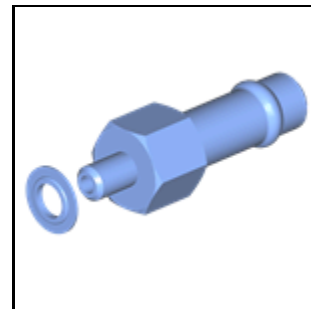
- GDS2 Session showing TCC slip
- GDS2 Special Functions showing TCC Locked Slip Speed

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Special Tools

DT-52263 Transmission Fluid Exchange Kit:

- DT-52263-1 Block Assembly (includes fluid drain hose, spring clamp)
- DT-52263-5 Radiator Cooler Drain Adapter



- DT-51190 Transmission Oil Fill Adapter



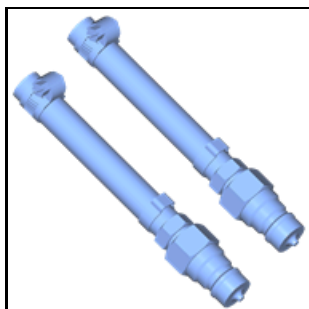
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- GE-47716-2 Graduated Bucket



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DT-45096 TransFlow Cooler Flush Machine



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

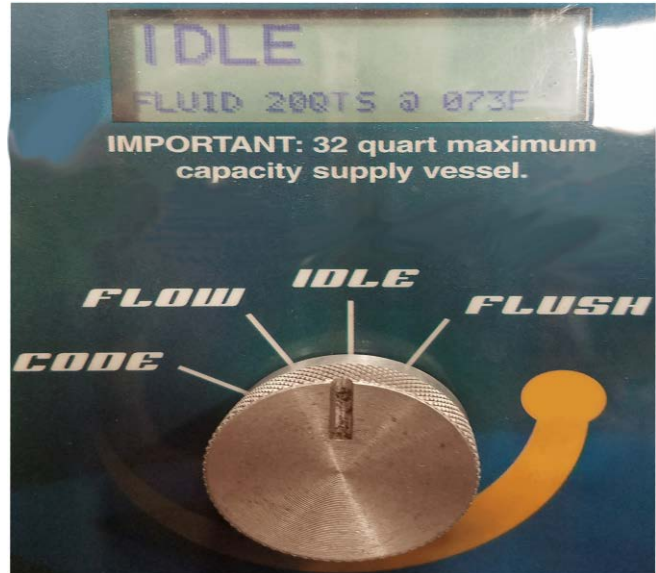
Service Procedure

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.



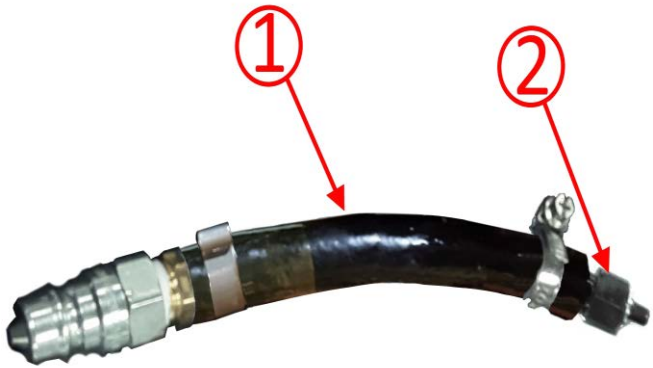
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2. Switch the DT-45096 TransFlow to Idle.
3. Connect power leads to the vehicle 12-volt DC supply.
4. Turn the TransFlow main switch ON.
5. Connect air supply to the DT-45096.
6. Place the TransFlow supply hose with adapter DT-45096-31 into a waste 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 – 2019 Chevrolet Silverado and GMC Sierra (New Body Style) Equipped with the RPO (MQE)

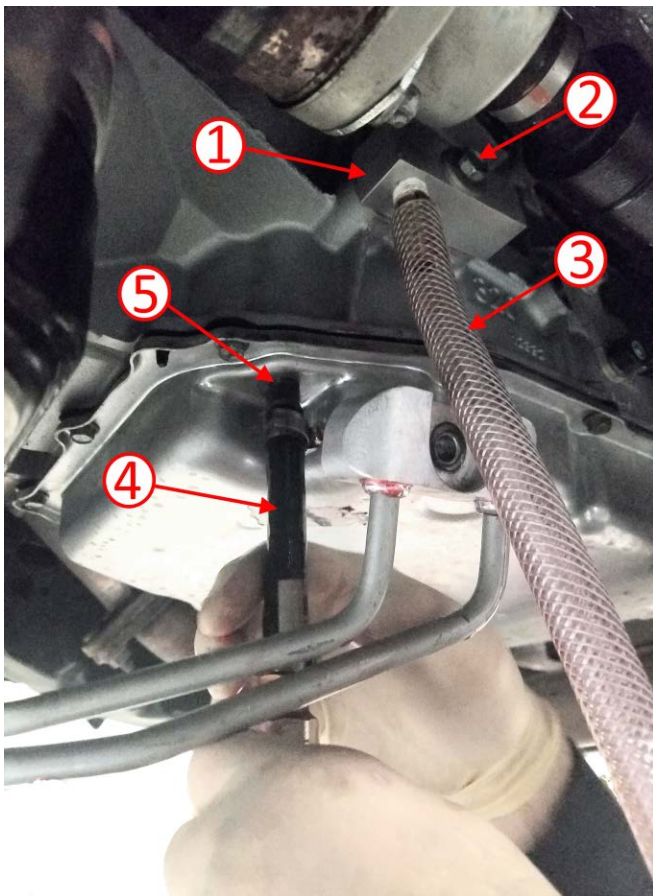
Important: This procedure must be followed as published. The exchange process is required to obtain proper level of new blue label Mobil 1 Synthetic LV ATF HP fluid. Intermixing of other types of transmission fluid or aftermarket additive packages will result in a low concentration level of new fluid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

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



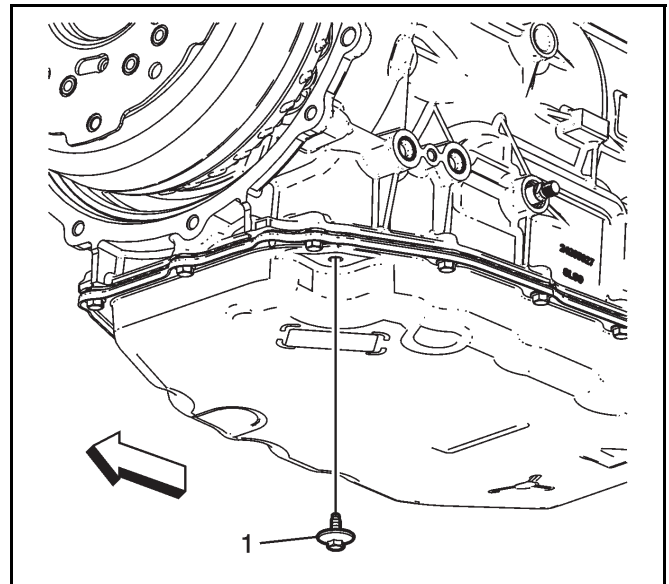
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3. Install the DT-45096-31 TransFlow adapter (1) to the DT-51190 fluid fill adapter (2).



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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.

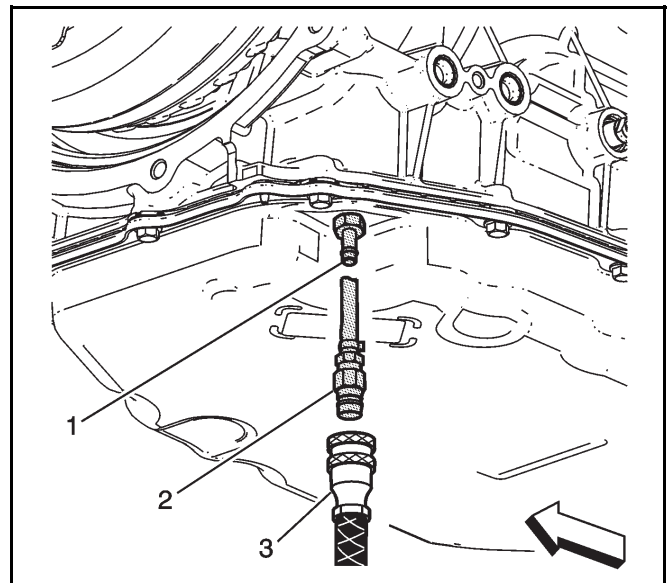


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8. Remove the level set plug (1) from the transmission.

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.



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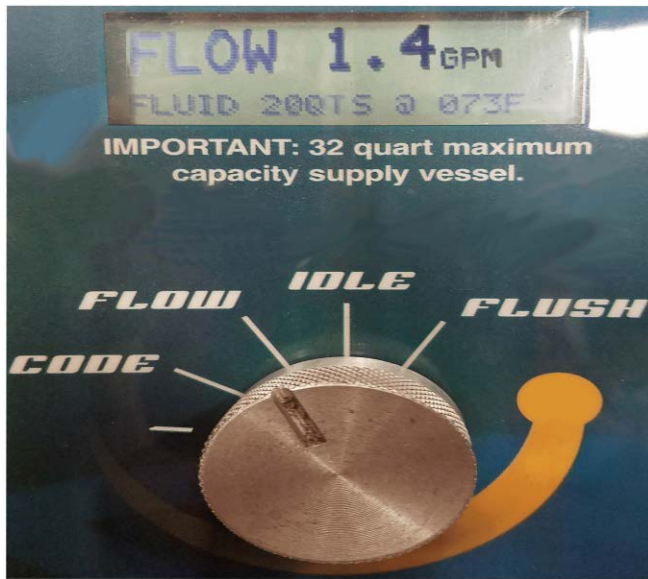
10. Connect the TransFlow fluid feed (supply) line (3) to the DT-45096-31 adapter (2).

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.

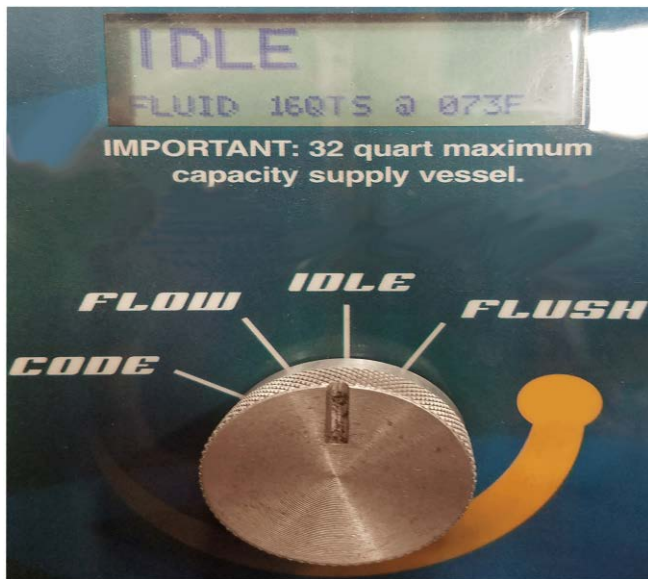
12. Utilizing the graduated bucket, start the engine and run 30 - 45 seconds until 3 quarts of fluid is expelled.

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.



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



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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).



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- 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
Torque 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 (L84 only).
 - 24.1. If equipped with the 4 cylinder (L3B) engine skip to step 27.
25. Using clean compressed shop air regulated to 50 PSI blow out the transmission oil cooler lines to remove any remaining transmission fluid.
26. If equipped, install the Thermal By-Pass Block from the cooler pipes.
27. Install the transmission oil cooler pipe using a new cooler block seal.
28. Partially lower the vehicle.
29. Start the engine.
30. Using care, shift the transmission through all forward ranges and Reverse.
31. Shift the transmission into Park.
32. Perform the Transmission Fluid Level and Condition Check outlined below in this procedure:
 - 32.1. Get the transmission fluid temperature to the proper temperature.
 - 32.2. Install the level set plug.

Tighten

Torque 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 200 mi (320 km) for the TCC shudder condition to be eliminated. It is not a requirement for the dealer to drive the vehicle 200 mi (320 km). 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.

Transmission Fluid Level and Condition Check

This procedure checks both the transmission fluid level, as well as the condition of the fluid itself. Because the transmission on this vehicle is not equipped with a fill tube and dipstick, a tube in the bottom pan is used to set the fluid level.

Warning: *The transmission fluid level must be checked when the transmission fluid temperature (TFT) is between 35–45°C (95–113°F). If the TFT is not within this range, either idle or brake torque the vehicle to raise the fluid temperature, or shut off the vehicle to allow the fluid to cool as required. Setting the fluid level with a TFT outside this range will result in either an under or over-filled transmission. $TFT > 45^{\circ}\text{C} = \text{under-filled}$, $TFT < 35^{\circ}\text{C} = \text{over-filled}$. An under-filled transmission will cause premature component wear or damage. An over-filled transmission will cause fluid to discharge out the vent tube, possibly causing a fire that may result in serious bodily injury or severe vehicle damage, fluid foaming, or pump cavitation.*

Note: Silverado and Sierra Models equipped with a thermal bypass valve, the transmission fluid level should be checked only after the TFT has reached or exceeded an operating temperature of 90°C (194°F). Once the TFT has reached or exceeded 90°C (194°F), then turn OFF the vehicle and allow the TFT to cool back down to 35–45°C (95–113°F) before checking the fluid level as required. Reaching or exceeding an operating temperature of 90°C (194°F) opens the bypass valve and allows the cooler to fill up with fluid, which will result in a more accurate fluid level check.

1. Observe the TFT using the driver information center (DIC) or a scan tool.
2. Start and idle the engine.
3. Depress the brake pedal and move the shift lever through each gear range.
 - 3.1. Pause for at least 3 seconds in each range.
 - 3.2. Move the shift lever back to PARK.
 - 3.3. Ensure the engine RPM is low (500–800 RPM).
4. Allow the engine to idle for a minimum time of 1 minute.

Caution: THE ENGINE MUST BE RUNNING when the trans oil level check plug is removed or excessive fluid loss will occur, resulting in an under-filled condition. An under-filled transmission will cause premature component wear or damage.

5. Raise the vehicle on a hoist.
 - ⇒ The vehicle must be level, with the engine running and the shift lever in the PARK range.

Note: Continue to monitor the TFT. If the TFT is not within the specified values, reinstall the trans oil level check plug and repeat the previous steps.

6. Remove the transmission oil level check plug (1) from the transmission fluid pan.
7. Allow any fluid to drain.
 - If the fluid is flowing as a steady stream, wait until the fluid begins to drip.
 - If no fluid comes out, add fluid until fluid drips out. Refer to *Transmission Fluid Fill Procedure* in SI.
8. Reinstall the transmission oil level check plug.

Tighten

Torque the plug to 9 N•m (80 lb in).

9. Inspect for external leaks. Refer to *Fluid Leak Diagnosis* in SI.

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
N/A		19418066 (Canada - 0.946L/1 qt)	
N/A		Drum 55 gallon 19417904 (US)	1
N/A	RETAINER, TRANS FLUID CLR PIPE FTG	24205103	2
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
8480818*	Diagnostic Testing and Fluid Exchange	1.4 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 June 04, 2019

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