Service Bulletin

Bulletin No.: 16-NA-019
Date: July, 2024

INFORMATION

Subject: **Information on Transmission Adaptive Functions and Correcting Low Mileage Harsh Shifts, Slips, or Flares**

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission: (8-Speed Automatic)
		from	to	from	to		
Cadillac	ATS	2016	2019	—	—	All	M5N, M5U
	CTS	2016	2019				M5N, M5U
	CT6	2016	2018				M5N, M5X
	CT4	2020	2024				M5N
	Escalade Models	2015	2017				M5U
Chevrolet	Camaro	2016	2023				M5T, M5U
	Corvette	2015	2019				M5U
	Colorado (VIN S/T)	2017	2024				M5T
	Express	2017	2023				M5U, MQD
	Silverado	2015	2018				M5U, M5X
	Silverado 1500 (New Model)	2019	2019				MQE
	Silverado 1500	2020	2021				MQE
	Silverado 1500 - LTD (RPO J21, VIN Digit 5 = W/Y)	2022	2022				M5X, MQE
	Silverado 1500 - New (RPO J22, VIN Digit 5 = A/D)	2022	2022				M5X, MQE
	Silverado 1500	2023	2024				MQE
GMC	Canyon	2017	2024				M5T
	Sierra	2015	2018				MQE
	Sierra 1500 (New Model)	2019	2019				MQE
	Sierra 1500	2020	2021				MQE
	Sierra 1500 - Limited (RPO J21, VIN Digit 5 = 8/9)	2022	2022				M5X, MQE

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission: (8-Speed Automatic)
		from	to	from	to		
	Sierra 1500 - New (RPO J22, VIN Digit 5 = H/U)	2022	2022				M5X, MQE
	Sierra 1500	2023	2024				MQE
	Savana	2017	2023				M5U, MQD
	Yukon Models	2015	2017				M5U

Involved Region or Country	North America, Argentina, Brazil, Colombia, Ecuador, Guatemala, Peru, Europe, Middle East, Japan, GM Korea Company, Cadillac Korea (South Korea), Thailand, Egypt, Israel, India, China, Indonesia, Vietnam, Uzbekistan, South Africa, Venezuela, Philippines, Albania, Kuwait
Condition	Some customers may comment on low mileage vehicles with an automatic transmission that the shifting may feel too firm (harsh), slips, or flares. Customers should be advised that the transmission makes use of an adaptive function that will help to refine the shift feel while driving and improve shift quality. **Note:** Low mileage would be considered vehicles that have approximately 8050 km (5000 mi) or less or on vehicles that have had a valve body, clutch repair or transmission replacement in the last approximate 8050 km (5000 mi) or less.

Important: Service agents must comply with all International, Federal, State, Provincial, and/or Local laws applicable to the activities it performs under this bulletin, including but not limited to handling, deploying, preparing, classifying, packaging, marking, labeling, and shipping dangerous goods. In the event of a conflict between the procedures set forth in this bulletin and the laws that apply to your dealership, you must follow those applicable laws.

Correction

Important: Check the ECM/TCM Software/Calibrations against what is currently in the vehicle and if the description of the update is relevant to the customer concern, perform the update prior to proceeding with the learns below. By completing the software/calibration update, the clutch adapts will clear and thus a Service Fast Learn (SFL) followed by Adaptive Learning may be needed to further learn specific clutches if shift concern exists.
The following should be used to determine what steps should be followed within this document. The 8-Speed transmission utilizes a total of 5 clutches to obtain all the ratios. Utilize the chart within this document to determine which clutch may require additional adaptive learning.

- If a valve body replacement, clutch repair/overhaul, or transmission replacement was required, reset the adapts using Service Fast Learn. Evaluate the shifts and further learn pressures and volumes if required using the procedure below.
- If a customer has a specific shift concern, the Service Fast Learn (SFL) should be skipped. Complete the Adaptive Learn procedure to further learn pressures and volumes for the specific shift concern.
- The Adaptive Learn procedure should be used on vehicles that have approximately 8050 km (5000 mi) or less or on vehicles that have had a valve body, clutch repair or transmission replacement in the last approximate 8050 km (5000 mi) or less. Performing the Adapt procedure on high mileage vehicles may improve shift quality for a limited amount of time but the vehicle will most likely return with the same symptoms.

Transmission Adaptive Functions
The Hydra-Matic® 8-Speed RWD transmission utilizes a line pressure and volume control system during upshifts to compensate for new transmission build variation as well as the normal wear of transmission components. The variation from new and normal wear of the apply components within the transmission over time can cause shift time (the time required to apply a clutch) to be longer or shorter than desired.

In order to compensate for these changes, the transmission control module (TCM) adjusts the pressure commands to the various pressure control (PC) solenoids to maintain the originally calibrated shift timing. The automatic adjusting process is referred to as “adaptive learning” and it is used to ensure consistent shift feel plus increase transmission durability.

The TCM monitors the A/T input speed sensor (ISS) and the A/T output speed sensor (OSS) during commanded shifts to determine if a shift is occurring too fast (harsh) or too slow (soft) and adjusts the corresponding PC solenoid signal to maintain the set shift feel. The purpose of the adapt function is to automatically compensate the shift quality for the various vehicle shift control systems. The adapt function is a continuous process that will help to maintain optimal shift quality throughout the life of the vehicle.

How to Adapt Your Transmission
Transmission adapts can be reset and relearned on most vehicles through GDS2 by using the Transmission Service Fast Learn procedure. This procedure is completed in the service stall and no vehicle driving is required.

To complete the Transmission Service Fast Learn procedure, enter GDS2 Diagnosis and navigate to:

- Module diagnostics
- Transmission Control Module
- Configuration / Reset Function
- Transmission Service Fast Learn

Transmission Service Fast Learn is the recommended method to reset and relearn adapts. This procedure is available on all 2015-2021 MY Trucks, Cars and SUVs with 8L45 and 8L90 Automatic Transmissions (RPOs: M5U, M5T, M5N, M5X, MQD, MQE).

When the Service Fast Learn is complete, perform a test drive and note any soft or harsh shifts.

To improve these complaint shifts further, locate the clutches that need to be learned in the table below, and perform the required learning procedure for each clutch listed in the table. Execute the steps below with the vehicle warmed up on a smooth level road. The driver may observe a brief pulse behavior or firm shift feel while the transmission is optimizing the clutch learn characteristics.

Please note that the information currently in GDS2 that displays whether a clutch has learned can be misleading. In the clutch learn data list, when the transition from “No” to “Yes” takes place, this does NOT mean the clutch has completed a learn. What this does mean is that the conditions for learning the clutch have been met at least twice. If the clutch learn reads “Yes,” it is still possible for a unsatisfactory shift to be present as the transmission will continue to learn if driven in the same manner.

Note: The transmission fluid temperature must be between 35°C (95°F) and 95°C (203°F). Drive the vehicle under normal conditions until this temperature range is achieved. If the temperature is outside of this range, the clutches will not be learned.

To Correct The Shift Feel	Learn These Clutches	
	Applying Clutch	Releasing Clutch
1–2	C4	C3
2–3	C3	C1
3–4	C5	C3
4–5	C3	C4
5–6	C4	C2
6–7	C1	C4
7–8	C4	C3
3–1	C1	C4
2–1	C3	C4
N-D	C3 – Perform garage shift adaptive learning	
N-R	C5 – Perform garage shift adaptive learning	
Power Downshifts	Just perform the shifts and they will adapt	

Note: Ensure Service Bulletin #16-NA-411 or #16-NA-412 has been completed on the 2015 -2016 Silverado, Sierra, Yukon and Escalade models before performing this procedure.
Note: For the 2015 Corvette, use the latest version of Service Bulletin #14-07-30-001.
Note: The following adaptive learning procedure was developed to further learn clutch pressures and volumes required for specific shifts. To expedite the learning process, it is recommended to utilize a road with minimal traffic volume that has as smooth and level surface as possible.
Note: Within GDS2, a Transmission Service Fast Learn Data page has been created to aid in performing adaptive learn by showing throttle percentage, engine speed, transmission fluid temperature, and gear command.
Note: 2018-2022 Model Year vehicles show the clutch learn status within GDS2. A Transmission Service Fast Learn Data page has been created to aid in performing adaptive learn by showing throttle percentage, engine speed, transmission fluid temperature, and gear command.
To Learn C1 (For 6-7 or 3-1 Shift)

1. Pressure Learns:

Note: It is recommended to utilize a road with a speed limit between of 48-72 km/h (30-45 mph) for this procedure.

- Shift the transmission into 6th gear with the PRNDM in the M position. Obtain an engine speed between 1000 and 1600 engine rpm. Maintain this condition for a total of about 8 km (5 mi). Cruise control may be used and has been found to result in faster learning of the clutch values.

2. Volume Learns:

- Complete 15 light throttle 6-7 upshifts at approximately 15% throttle to further learn C1.

To Learn C2 (For 6-5 Shift)

1. Pressure Learns:

Note: It is recommended to utilize a road with a speed limit 64-72 km/h (40-45 mph) for this procedure.

- Perform 10 normal mode 6-5 coast down shifts (zero/light brake) to learn the C2 Return Spring pressure.

2. Volume Learns:

- Shift the transmission into 8th gear with the PRNDM in the M position. Obtain an engine speed between 1000 and 1750 rpm. Maintain this condition for a total of about 8 km (5 mi). Cruise control may be used and has been found to result in faster learning of the clutch values.

To Learn C3 (For 2-3, 4-5, or N-D Shift)

Important: Application Specific Silverado & Sierra e-Assist (RPO M5X) Trucks: To enable Adaptive Learn on 8-7 Coast downs, a power on (~15% throttle through the upshift) 7-8 upshift must be performed prior to each downshift. This action enables torque converter clutch (TCC) controlled slip-on downshift to occur vs. TCC unlocked, which occurs on normal downshifts and disables Adaptive Learn. As a supplement, if the previous procedure is unsuccessful using GDS TCC Control Functions, TCC can be left enabled during 8-7 Coast downs to aid in learning C3 pressure.

1. Pressure Learns:

- Perform 10 normal mode 8-7 coast down shifts (zero/light brake) to learn the C3 Return Spring.

2. Volume Learns:

- Complete 15 light throttle 2-3 upshifts at approximately 15% throttle to further learn C3.

To Learn C4 (For 1-2, 5-6, or 7-8 Shift)

1. Pressure Learns:

Note: It is recommended to utilize a road with a speed limit between of 64-72 km/h (40-45 mph) for this procedure.

- Shift the transmission into 7th gear with the PRNDM in the M position. Obtain an engine speed between 1000 and 1750 rpm. Maintain this condition for a total of about 8 km (5 mi). Cruise control may be used and has been found to result in faster learning of the clutch values.

Important: Application Specific Express & Savana Vans Pressure Learns: Perform 10 normal mode 7-6 coast down shifts (zero/light brake) to learn the C4 Return Spring.

2. Volume Learns:

- Complete 15 light throttle 1-2 upshifts at approximately 15% throttle to further learn C4.

To Learn C5 (For 3-4 or N-R Shift)

1. Pressure Learns:

Note: It is recommended to utilize a road within a Business Park or similar area, where it is safe to drive at very slow speeds of approximately 8-40 km/h (5-25 mph).

- Shift the transmission into 3rd gear with the PRNDM in the M position. Start a very slow acceleration, starting at about 1000 rpm. Maintain the slow acceleration until you reach about 2500 rpm. Once you reach 2500 rpm, slow back down to 1000 rpm and repeat the slow acceleration up to 2500 rpm. Repeat this 10 times.

2. Volume Learns:

- Complete 15 light throttle 3-4 upshifts at approximately 15% throttle to further learn C5.

Power Downshift Adaptive Learning

Starting with the vehicle operation in 8th gear, slowly apply pressure to the accelerator pedal until downshift occurs. Repeat as necessary in each gear (8, 7, 6, 5, 4, 3 and 2).

Note: This procedure will learn the off-going clutch adapts for desired power downshift control.

Garage Shift Adaptive Learning (For N-D or N-R Shift)

1. After above clutches are learned C3 –Drive and C5 – Reverse. With the vehicle at a stop, hold foot on brake pedal and move the shifter from Neutral to Drive and release the brake once in gear allowing the vehicle to roll 5-10 feet or Neutral to Reverse and release the brake once in gear allowing the vehicle to roll 5-10 feet. Repeat as necessary until desired shift quality is achieved.

Note: This procedure will learn the C13567 (C3-Drive) and C45678R (C5 – Reverse) oncoming clutch adapts.

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
8480318*	Transmission Service Fast Learn	Use Actual Clock Time
*This is a unique Labor Operation for bulletin use only.		

Version	12
Modified	Released January 25, 2016

	Revised August 19, 2016 – Added the 2017 Model Year and updated information. Revised November 13, 2019 – Added the 2018 Model Year and a Warranty statement. Revised September 02, 2020 – Removed Buick from Models table, added the 2015 and 2019-2021 Model Years, added RPO MQE, updated the Involved Region or Country section, updated the two bullet items under Correction, added a Note to the Condition and Correction sections and updated the Notes just below the Shift/Clutch table. Revised November 16, 2020 – Added RPO MQD and updated Description of Labor Operation. Revised December 01, 2020 – Changed Labor Operation Description back to previous Description. Revised July 20, 2021 – Changed Models from GM Passenger Cars and Trucks to specific Models and Years. Revised May 06, 2022 – Added the 2022 Model Year to applicable vehicles and updated the Involved Region or Country section. Revised March 21, 2023 – Added the 2023 Model Year to applicable vehicles. Revised April 14, 2023 – Removed TIS information from Correction section. Revised May 02, 2023 – Added the last bulleted item under Correction and the last paragraph under How to Adapt Your Transmission. Revised July 09, 2024 – Added the 2024 Model Year and transmission RPOs to applicable vehicles.