# Service Bulletin

Bulletin No.: 20-NA-136
Date: July, 2020

# INFORMATION

**Subject: 9T65 Automatic Transmission Replacement Pilot Program (U.S. Only)**

| Brand: | Model: | Model Year: | | VIN: | | Engine: | Transmission: |
|---|---|---|---|---|---|---|---|
| | | from | to | from | to | | |
| Buick | Enclave | 2018 | 2020 | — | — | — | M3W |
| Cadillac | XT5 | 2020 | | | | | |
| | XT6 | 2020 | | | | | |
| Chevrolet | Blazer | 2019 | | | | | M3V |
| | Traverse | 2018 | | | | | |
| GMC | Acadia | 2020 | | | | | M3W |

| Involved Region or Country | United States |
|---|---|

## Overview

The purpose of this bulletin is to help the Service Department Personnel become familiar with the 9T65 transmission replacement pilot program. The intent of the pilot is reduction in days to complete vehicle repair and reduction in repair visits.

This program will increase customer confidence in their new vehicle equipped with a GM 9T65 transmission (RPO M3V and M3W), if a problem occurs, by directing the technician to replace the transmission assembly instead of repairing it in most cases, if certain checks are made and guidelines followed.

1. Only applies to vehicles sold and serviced in the U.S.
2. Only applies to vehicles less than 18 months from Date of Delivery and have less than 18,000 miles on the odometer.
3. Program pilot will only run for 12 months from the date of bulletin release.
4. Transmission assembly orders should be coded as CSO order type and not Stock Unit.
5. Certain repairs can still be made to the transmission, which include:
   - Replacement of external seals including; axle, v/b cover, torque converter.
   - Replacement of transmission oil cooler, lines and accumulator.
   - Replacement of external mounts, sensors, plugs, and caps.
   - Replacement of external transmission controls; lever, cables, knobs, and module.
   - Replacement of torque converter assembly.
6. Transmission assemblies replaced during this pilot will be requested to be returned to the Warranty Parts Center (WPC) for engineering analysis. Refer to the latest version of Corporate Service Bulletin Number 99-00-89-019 for part return process.
7. In addition to the complaint, cause, and correction notes on the repair order, this other information is required to be noted:
   - DTCs found during vehicle diagnosis – include the DTC, what module it was in and if it was history or current. Search all modules including TCM, ECM, BCM, EBCM, IPC, and TRCM.
   - Oil level test findings – overfill, under-fill, and correct level. If over or under, estimate of how much fluid.
   - Oil pressure test results. Record actual pressure reading taken.

If a customer is commenting on transmission operation concerns on a 9T65 transmission (RPO M3W and M3V), follow the steps below to determine repair strategy.

Please refer to these service publications for resolutions to customer comments prior to proceeding with this bulletin.

1. 18-NA-359 – Information on Flashing D in PRNDL and/or Transmission Slip/Flare on 1-2 Upshift with Zero to Very Light Throttle Input
2. 20-NA-060 – High Pitch Noise Heard When Vehicle is Decelerating

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3. PIP5697B – DTC P0747 Setting At Engine Start-Up When The Transmission Is In Park
4. PIP5720 – 2020 GF9 9T45/50/60/65 Transmission Fluid Leak
5. Torque converter shudder.
   - PIE0570 – Engineering Information - Torque Converter Clutch (TCC) Shudder Occurring On Light Throttle Acceleration 2-6 Gears
   - Refer to PIP5608C – TCC Shudder Surge Fish bite Chuggle
   - Refer to latest version of 08-07-30-035 – Information on Water or Ethylene Glycol in Transmission Fluid
   - Refer to *Torque Converter Diagnosis* in SI.
   - If not resolved, contact Technical Assistance (TAC). Refer to *PIP5621A: GM TAC Support On Vehicle Automatic Transmission Concerns That Can Be Duplicated*.

## Step One — DTCs

1. Check all Modules for DTCs. Records of all DTCs, Current or History, and Module Located In/On Repair Order.

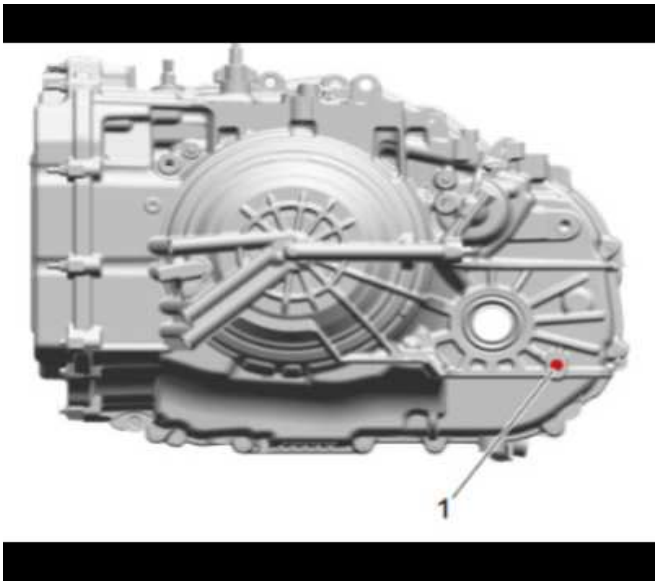
## Step Two — Fluid Level and Condition Check

**Note:** Ensure the transmission has enough fluid in it to safely start the vehicle without damaging the transmission. With the vehicle off and the transmission fluid temperature at approximately 20–25°C (68–77°F), there must be at least enough fluid to drain out of the fluid level hole. This will ensure that there is enough fluid in the sump to fill the components once the vehicle is started.

1. Start the engine.
2. Depress the brake pedal and move the shift lever through each gear range, pausing for about 3 seconds in each range. Then move the shift lever back to PARK (P).
3. Allow the engine to idle 500–800 rpm for at least 3 minutes to allow any fluid foaming to dissipate and the fluid level to stabilize. Release the brake pedal.
4. Keep the engine running and observe the transmission fluid temperature (TFT) using the Driver Information Center (DIC) or a scan tool.

**Caution:** The transmission fluid level must be checked when the transmission fluid temperature (TFT) is at 85–95°C (185–203°F). If the TFT is not at this temperature, operate the vehicle or allow the fluid to cool as required. Setting the fluid level with a TFT outside this temperature will result in either an under or over-filled transmission. TFT 95°C under-filled, TFT 85°C 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, fluid foaming, or pump cavitation.

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

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6. While the vehicle is idling, remove the oil level set plug (1). 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.
7. Record fluid level; overfilled, under-filled, correct on repair order and how much was needed to fill or came out:
   - If fluid is overfilled, set correct level and retest.
   - If fluid is under-filled, inspect for external leaks. Refer to *Fluid Leak Diagnosis*.
8. If fluid level is correct, then check condition of the fluid.
   8.1. Inspect the fluid color. The fluid should be red or dark brown.
      – If the fluid color is very dark or black and has a burnt odor, record on the repair order and replace transmission assembly.
   8.2. Inspect the fluid for excessive metal particles or other debris. A small amount of “friction” material is a “normal” condition.
      – If large pieces and/or metal pieces are noted in the fluid, record on the repair order and replace the transmission assembly.
      – Fluid that is cloudy or milky or appears to be contaminated with water indicates engine coolant or water contamination. Refer to the latest version of Corporate Service Bulletin Number 08-07-30-035 for testing and, if confirmed, find the source of the coolant/water and repair then replace transmission assembly.
   8.3. Inspect for external leaks. Refer to *Fluid Leak Diagnosis*.
      – If fluid level and condition are ok, proceed to next step.

### Step Three — Line Pressure Check

***Warning: Keep the brakes applied at all times in order to prevent unexpected vehicle motion. Personal injury may result if the vehicle moves unexpectedly.***

**Note:** You may need to remove or disconnect components in order to gain access to the transmission line pressure test hole plug.

1. Remove the line pressure test hole plug. Refer to *Automatic Transmission Fluid Pressure Test Hole Plug Replacement* in SI.
2. Install the *GE-21867* Pressure Gauge (1).
3. Start the engine.
4. Verify the Transmission Fluid Pressure = Greater than 345 kPa (50 psi).
   - If pressure is below 50 psi, record on the repair order and replace the transmission assembly.
   - If above 50 psi, proceed to next step.
5. Turn the engine OFF.
6. Remove the *GE-21867* Pressure Gauge.
7. Install and tighten line pressure test hole plug. Refer to *Automatic Transmission Fluid Pressure Test Hole Plug Replacement* in SI.

### Step Four — Perform Road Test

Perform step 1-4 first in order to ensure the electronic transmission components are functioning properly. If these components are not checked, a simple electrical condition could be misdiagnosed.

1. Connect the scan tool.
2. Ensure the gear selector is in PARK and set the parking brake.
3. Start the engine.
4. Verify that the following scan tool data can be obtained and is functioning properly.
   – Refer to Control Module References for typical data values. Data that is questionable may indicate a concern.
5. Check the garage shifts.
   5.1. Apply the brake pedal and ensure the parking brake is set.
   5.2. Move the gear selector through the following ranges:

⇒ PARK to REVERSE
⇒ REVERSE to NEUTRAL
⇒ NEUTRAL to DRIVE
⇒ DRIVE to REVERSE
⇒ REVERSE to DRIVE

   5.3. Pause 2 to 3 seconds in each gear position.
   5.4. Verify the gear engagements are immediate (less than 2 seconds to complete if transmission fluid temperature is above **20° C (68°F)** and not harsh. Note that these shifts may be almost imperceptible in some applications. Using the scan tool to monitor Transmission ISS, achieving 0 rpm can be used to check delay in these cases.

**Note:** Harsh engagement may be caused by any of the following conditions:

– High engine idle speed – Compare engine idle speed to desired idle speed.
– A default condition caused by certain DTCs that result in maximum line pressure to prevent clutch slippage.
– Incomplete adapting or incorrect adapting – Repeat maneuver multiple times to see if shift quality improves. If it does not, record on the repair order and replace the transmission assembly.

**Note:** Delayed engagement may be caused by any of the following conditions:

– Low idle speed – Compare engine idle speed to desired idle speed.
– Low fluid level.
– Cold transmission fluid temperature (TFT) – Use the scan tool to determine TFT.
– Selector linkage – Inspect and adjust as necessary.
– Incomplete adapting or incorrect adapting – Repeat maneuver multiple times to see if delay improves. If it does not, record on the repair order and replace the transmission assembly.

6. Check Upshifts – The TCM calculates the upshift points based primarily on 2 inputs: throttle position and vehicle speed. When the TCM determines that conditions are met for a shift to occur, the TCM commands the shift by varying current to the appropriate PC solenoids to control oncoming and off going clutch pressures.
   6.1. Monitor the following scan tool parameters:

⇒ Calc. Throttle Position
⇒ Vehicle Speed
⇒ Engine Speed
⇒ Transmission ISS
⇒ Transmission OSS
⇒ Command Gear
⇒ TCC PC Sol. Pressure Cmd.
⇒ TCC Slip Speed
⇒ TFP Switch 1
⇒ TFP Switch 2
⇒ TFP Switch 3
⇒ TFP Switch 4
⇒ PC Sol. 2 Pressure Cmd.
⇒ PC Sol. 3 Pressure Cmd.
⇒ PC Sol. 4 Pressure Cmd.
⇒ PC Sol. 5 Pressure Cmd.
⇒ Shift Solenoid 1 and 2

   6.2. Place the gear selector in the DRIVE position.
   6.3. Accelerate the vehicle using a steady throttle position between 15 and 20 percent. Hold the throttle steady.

6.4. As the transmission upshifts, there should be a noticeable shift feel or engine speed change within 1 to 2 seconds of the commanded gear change. The PC solenoid pressure command should change to “YES” for the oncoming clutch and the PC solenoid pressure command should change to “NO” for the off going clutch.

6.5. Note any harsh, soft or delayed shifts or slipping. Note any noise or vibration.

6.6. The torque converter clutch (TCC) feel may not be noticeable. In many applications the TCC will apply after the 1-2 shift and TCC events will not be easily detected using engine speed. Monitor TCC PC solenoid pressure command while driving and check TCC slip speed when the pressure command indicates that the TCC is commanded to apply.

6.7. When the TCC applies, slip speed should be controlled to below 100 RPM when the transmission is not shifting and the throttle is held steady. If the TCC slip exceeds this value for more than 6 seconds after the TCC PC Sol. Pressure Command indicates that the TCC is commanded on:

⇒ Check for DTCs.

⇒ Refer to *Torque Converter Diagnosis* in SI.

**Note:** This transmission is equipped with an electronically controlled capacity clutch (ECCC), which allows operation of the clutch without fully locking to the torque converter cover. The clutch maintains a small amount of slippage, approximately 20 RPM, in 2nd, 3rd, 4th, 5th, and 6th gears, depending on the vehicle application. ECCC was developed to reduce the possibility of noise, vibration or chuggle caused by TCC apply. Full lockup is available at highway speeds on some applications.

7. Part Throttle Step-in Downshifts:

7.1. Place the gear selector in the DRIVE position.

7.2. Accelerate the vehicle at light throttle (5-10 percent) until 3rd gear is just achieved.

7.3. Quickly increase throttle angle until commanded gear indicates that a downshift to 2nd gear is commanded.

7.4. Verify that the transmission downshifts within 2 seconds of the throttle movement.

7.5. Repeat steps 2 to 4 at higher speed to achieve 4th gear and then step in to command a 4th gear to 3rd gear downshift.

7.6. Repeat steps 2 to 4 at higher speed to achieve 5th gear and then step in to command a 5th to 4th gear downshift.

7.7. Repeat steps 2 to 4 at higher speed to achieve 6th gear and then step in to command a 6th gear to 5th gear downshift.

7.8. Note any harsh, soft or delayed shifts or slipping. Note any noise or vibration.

8. Coasting Downshifts:

8.1. Place the gear selector in the DRIVE position.

8.2. Accelerate the vehicle to 6th gear with the TCC applied.

8.3. Release the throttle and apply the brakes.

8.4. Verify that the downshifts occur as commanded by monitoring gear ratio, which should change after commanded gear changes.

8.5. Note any harsh, soft or delayed shifts or slipping. Note any noise or vibration.

9. Reverse:

9.1. With the vehicle stopped, move the gear selector to REVERSE.

9.2. Slowly accelerate the vehicle to a 10-15 percent throttle position.

9.3. Verify that there is no noticeable slip, noise or vibration.

10. Road Test Results:

10.1. Diagnostic TIP : If completion of the above tests are inconclusive to isolate if the transmission shifting concern(s) are internal transmission or input/command, can use the control function feature in GDS2 to command all shifts. If when using GDS2 to command shifts and transmission shifts into each range commanded, the concern is generally an input/command concern, and not an internal transmission concern. If ranges are not completed when using GDS2 to command, then generally the concern is an internal transmission concern and not an input/command concern.

10.2. If one of these conditions is present during the road test, document on the repair order and replace the transmission assembly:

⇒ Vehicle does not move in drive

⇒ Vehicle does not move in reverse

⇒ There is a harsh garage shift

⇒ There is no park gear

10.3. If noise or vibration concern is noted, follow *Noise and Vibration Analysis* in SI using Chassis Ears and PICO scope in diagnosis.

10.4. If upshifts and downshifts are harsh, soft, delayed, or slip, follow SI diagnosis for condition.

### Step Five — DTC

If any of the following DTCs are Current or reset during the road test, record on the repair order and replace the transmission assembly.

- P0721 Output Speed Sensor Performance
- P0722 Output Speed Sensor Circuit No Signal
- P0723 Output Speed Sensor Circuit Intermittent
- P0741 Torque Converter Clutch (TCC) System Stuck Off
- P0746 Transmission Control Solenoid Valve 1 Stuck Off

- P0747 Transmission Control Solenoid Valve 1 Stuck On
- P0776 Transmission Control Solenoid Valve 2 Stuck Off
- P0777 Transmission Control Solenoid Valve 2 Stuck On
- P0796 Transmission Control Solenoid Valve 3 Stuck Off
- P0797 Transmission Control Solenoid Valve 3 Stuck On
- P2714 Transmission Control Solenoid Valve 4 Stuck Off
- P2715 Transmission Control Solenoid Valve 4 Stuck On
- P2723 Transmission Control Solenoid Valve 5 Stuck Off
- P2724 Transmission Control Solenoid Valve 5 Stuck On
- P2731 Transmission Control Solenoid Valve 6 Performance
- P2732 Transmission Control Solenoid Valve 6 Stuck Off
- P2733 Transmission Control Solenoid Valve 6 Stuck On
- P2817 Transmission Control Solenoid Valve 8 Stuck Off
- P2818 Transmission Control Solenoid Valve 8 Stuck On
- P2820 Transmission Control Solenoid Valve 9 Stuck Off
- P2821 Transmission Control Solenoid Valve 9 Stuck On

If the vehicle is equipped with Electronic Transmission Range Selection (ETRS), the following additional DTCs if remain Current or reset during the road test, record on the repair order and replace the transmission assembly.

- P187D Transmission Park Valve Stuck On
- P187E Transmission Park Valve Stuck Off
- P18E7 Transmission Park Valve Position Sensor 1 Performance
- P18E8 Transmission Park Valve Position Sensor 2 Performance
- P18AA Transmission Range Control Valve 1 Position Switch Circuit Stuck On
- P18AB Transmission Range Control Valve 1 Position Switch Circuit Stuck Off
- P18AC Transmission Range Control Valve 2 Position Switch Circuit Stuck On
- P18AD Transmission Range Control Valve 2 Position Switch Circuit Stuck Off
- P18AE Transmission Range Control Enable Valve Stuck Off
- P18A8 Transmission Park Control Solenoid Actuator Stuck Off
- P27EC Transmission Range Control Valve 1 Position Switch Performance
- P27F0 Transmission Range Control Valve 2 Position Switch Performance

If any of these DTCs is History and are not able to be reproduced, perform the *Transmission Service Fast Learn Procedure*. If no DTCs, reset and return the vehicle to the customer.

Symptoms other than listed above should be diagnosed using SI procedures and repaired as necessary. If parts needed to complete transmission repair are internal to the transmission, then transmission assembly replacement should be performed.

The intent of this pilot is to favor replacement over internal repair. If diagnosis determines internal repairs are the root cause, further disassembly should not occur, and the unit should be replaced.

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| **Version** | 1 |
| **Modified** | Released June 26, 2020 |

**GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.**

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