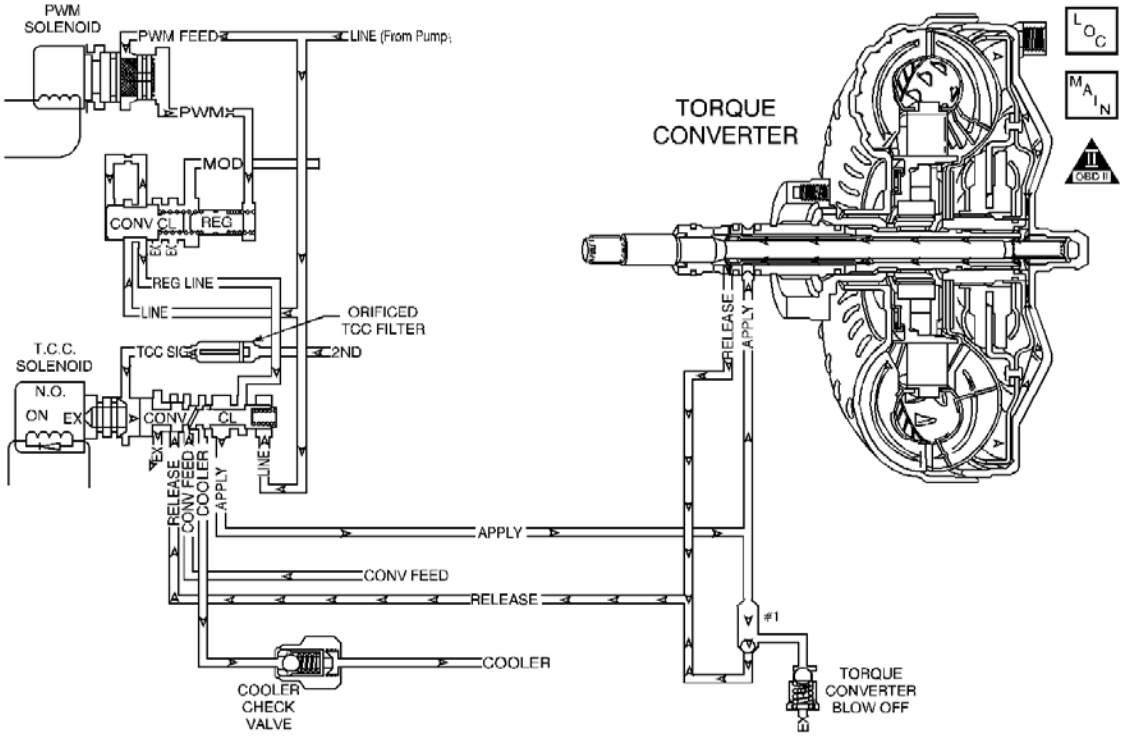
DTC P1870 Transmission Component Slipping Buick Built Before 6/17/97



Thumbnail, DTC P1870 (Modified 4T60-E Range Ref.) for use with gc28119

Range	Gear	1-2 Solenoid Valve	2-3 Solenoid Valve	4th Clutch	2nd Clutch	3rd Clutch	3rd Sprag Clutch	1/2 Support Roller Clutch	Forward Band
Overdrive	2nd	OFF	ON	--	Applied	--	--	Holding	Applied
	3rd	OFF	OFF	--	Applied	Applied	Holding	Overrun	Applied
	4th	ON	OFF	Applied	Applied	Applied, but not effective	Overrun	Overrun	Applied
• ON = the solenoid valve is energized. • OFF = the solenoid valve is de-energized									

Circuit Description

The Powertrain Control Module (PCM) monitors the Torque Converter Clutch (TCC) slip by calculating the difference between the engine speed and the transmission output shaft speed.

If the PCM detects an excessive amount of slip when the TCC is engaged, then DTC P1870 sets. DTC P1870 is a type A DTC.

Conditions for Setting the DTC

- No TP DTCs P0122 or P0123
- No VSS DTCs P0502 or P0503.
- No 1-2 solenoid performance DTC P0751
- No 1-2 solenoid electrical DTC P0753
- No 2-3 solenoid performance DTC P0756
- No 2-3 solenoid electrical DTC P0758
- No TCC PWM solenoid electrical DTC P1860
- No TCC solenoid electrical DTC P0740
- The engine speed is 800-5000 RPM.
- Not in fuel shut off
- The throttle angle is 8.5-35%.
- The transmission is not in first gear.
- The transmission gear range is D4.
- The transmission fluid temperature is 20-130°C (68-266°F).
- The engine torque is 70-230 N·m (50-170 ft lbs.).
- The speed ratio is 0.70-0.98
- The vehicle speed is 56-120 km/h (35-75 mph).
- The TCC is commanded ON and at maximum apply for 5 seconds.
- The TCC slip is 200-1500 RPM for 8 seconds.
- The above conditions must occur three times with the TCC commanded OFF between each occurrence.

Action Taken When the DTC Sets

- The PCM inhibits TCC operation.
- The PCM inhibits 4th gear, if the transmission is in the hot mode.
- The PCM illuminates the Malfunction Indicator Lamp (MIL).

Conditions for Clearing the MIL/DTC

- The PCM turns OFF the MIL after three consecutive ignition cycles without a failure reported.
- A scan tool can clear the DTC from the PCM history. The PCM clears the DTC from the PCM history if the vehicle completes 40 warm-up cycles without a failure reported.
- The PCM cancels the DTC default actions when the fault no longer exists and the ignition is OFF long enough in order to power down the PCM.

Diagnostic Aids

- Ensure that the vehicle's final drive ratio matches the PCM's calibration.
- Ensure that the transmission will shift through all four gears with the gear select lever in the D4 range.

Test Description

The numbers below refer to the step numbers on the diagnostic chart.

4. This Step inspects the modulator assembly, which could cause P1870 to set.

5. These are the components that could cause P1870 to set.

DTC P1870 Transmission Component Slipping (Early Buick)

Step	Action	Value (s)	Yes	No
1	Was the Powertrain On-Board Diagnostic (OBD) System Check performed?	--	Go to	Go to Powertrain On Board Diagnostic

			Step 2	(OBD) System Check
2	Have you performed the fluid checking procedure?	--	Go to Step 3	Go to Transmission Fluid Checking Procedure
3	1. Install the Scan Tool ®. 2. With the engine OFF, turn the ignition switch to the RUN position. **Important** Before clearing the DTCs, use the scan tool in order to record the Freeze Frame and Failure Records for reference. Using the Clear Info function will erase the stored Freeze Frame and Failure Records from the PCM. 3. Record the DTC Freeze Frame and Failure Records. 4. Select TCC Slip Speed. 5. Drive the vehicle with the gear select lever in D4 range. Ensure that the TCC engages. Is the TCC slip speed greater than the specified value?	200 RPM	Go to Step 4	Go to Diagnostic Aids
4	1. Inspect the modulator assembly. Refer to Line Pressure Check Procedure . 2. Repair the item if necessary. Did you find and correct a problem?	--	Go to Step 6	Go to Step 5
5	Inspect the following components for the indicated condition: • Is the TCC solenoid checkball stuck? Refer to Converter Clutch Apply Rough, Slips, or Shudders • Does the TCC apply valve fit poorly? Refer to No Torque Converter Clutch (TCC) Apply • Is the converter clutch valve stuck? Refer to Converter Clutch Does Not Release Refer to No Torque Converter Clutch (TCC) Apply • Is the regulator valve stuck? Refer to Converter Clutch Apply Rough, Slips, or Shudders Refer to No Torque Converter Clutch (TCC) Apply • Is the TCC PWM solenoid checkball stuck? Refer to Converter Clutch Does Not Release • Is the turbine shaft 0-ring seal cut or missing? Refer to Converter Clutch Apply Rough, Slips, or Shudders Refer to No Torque Converter Clutch (TCC) Apply • Is the torque converter fiber material worn or glazed? Refer to Converter Clutch Apply Rough, Slips, or Shudders Did you find and correct a problem?	--	Go to Step 8	Go to Step 6
	Inspect the following components for the indicated condition: • Is the 3-4 shift valve stuck? Refer to No 3-4 Shift • Are the 4th clutch fiber plates burned or damaged? Refer to No 3-4 Shift • Are the 4th clutch piston seals cut or rolled? Refer to No 3-4 Shift			

6	• Is the driven sprocket support ring rolled or twisted, or is a sleeve worn in the 2nd clutch housing? Refer to First Gear Only Refer to Harsh or Soft 1-2 Shift Feel Refer to Shudder 1-2 Shift Refer to No 2-3 Shift • Are the 2nd clutch fiber plates burned or damaged? Refer to First Gear Only Refer to Shudder 1-2 Shift • Are the 2nd clutch piston seals cut or rolled? Refer to First Gear Only Refer to Shudder 1-2 Shift Did you find and correct a problem?	--	Go to Step 8	Go to Step 7
7	Inspect the following components for the indicated condition: • Are the input shaft seals cut or rolled Refer to No Drive in Drive Range Refer to No 2-3 Shift • Are the 3rd clutch fiber plates burned or damaged? Refer to No 2-3 Shift • Are the 3rd clutch piston seals cut or rolled? Refer to No 2-3 Shift • Is the forward band burned or damaged? Refer to No Drive in Drive Range • Is the forward band apply piston oil seal cut or rolled? Refer to Delayed Engagement Refer to Slips in Drive Refer to No Drive in Drive Range Did you find and correct a problem?	--	Go to Step 8	--
8	In order to verify your repair, perform the following procedure: 1. Select DTC. 2. Select Clear Info. 3. Operate the vehicle under the following conditions: ○ The transmission fluid temperature is 20-130°C (68-266° F). ○ The throttle position is 8.5-35%. ○ The engine speed is 800-1500 RPM. ○ The vehicle is not in fuel shut off. ○ The gear range is D4. ○ The gear is not 1st. ○ The Speed Ratio is 0.70-0.98. ○ The vehicle speed is 56-120 km/h (35-75). ○ The engine torque is 70-230 N·m (50-170 lb. ft). ○ The PCM commands the TCC ON and at maximum apply for more than 5 seconds. ○ The TCC slip speed is -20 to +50 RPM for more than 5 seconds. 4. Select Specific DTC. Enter DTC P1864. Has the test run and passed?	--	System OK	Begin the diagnosis again. Go to Step 1