

Transmission Control Systems: Testing and Inspection Procedures

Dynamic Testing - Engine ON

Dynamic testing is the final step in the Transmission Tester usage. It allows the transaxle to be proven out electronically and hydraulically.

PRELIMINARY SET UP

1. Set the Bench/Drive switch to Drive mode.
2. Rotate the gear select switch on tester to Gear Select "1" position.
3. Vehicle in PARK (P).
4. Start the vehicle.

EPC SOLENOID

1. Observe the line pressure. Record the value. Line pressure should go to maximum. If line pressure does not drop, refer to Diagnosis by Symptom charts, or Pinpoint Test E concerning EPC solenoid.

CAUTION: Do not attempt to hold the EPC switch depressed (minimum line pressure) and stall the transaxle (holding the vehicle with the brake while depressing the throttle with the transaxle in gear); transaxle damage will result.

2. Depress the EPC switch. The line pressure should drop to a minimum value. Record the value. If line pressure does not drop, refer to Diagnosis by Symptom charts or Pinpoint Test E concerning EPC solenoid.

TRANSAXLE ENGAGEMENTS

1. Verify that the Mode switch is in Drive mode.
2. Turn Gear Select dial to "1".
3. Start engine.
4. Turn GEAR SELECT dial to 3/R.
 - Shift vehicle from PARK to REVERSE.
 - Did the vehicle shift into REVERSE?
 - Was the engagement harsh?
 - Shift transaxle range selector lever from REVERSE to PARK.
5. Turn GEAR SELECT dial to 1.
 - Depress EPC switch. Line pressure should drop to idle pressure.
 - While holding the EPC switch down, shift transaxle range selector lever from PARK to DRIVE.
 - Did the vehicle shift into DRIVE?
 - Was engagement smooth?
 - Shift the transaxle range selector lever from DRIVE to PARK.
 - Release EPC switch. Pressure should return to maximum.
 - With the EPC switch released, repeat Step 5. Engagement should be firm.

UPSHIFTS/DOWNSHIFTS

NOTE:

- Gear Select Switch must be in Gear Select "3/R" to get REVERSE gear.
- Upshifts and downshifts will be firm during this procedure.
- Pressure gauges may be removed from the vehicle during these tests.
- These tests should be performed on the road. If performed on the hoist the technician may not feel all of the shifts when they are engaged.

1. LEDs will turn green when solenoids are activated and turn off when deactivated. Refer to the appropriate overlay for the proper status/shift sequence of the shift solenoids during upshifts and downshifts.

CAUTION: Transaxle range selector lever must be in the DRIVE (D) position or internal damage could result.

2. Verify that the Gear Select Switch is in first position. Move the transaxle range selector lever into the D position. Depress the 3-2T/CCS button and accelerate the vehicle. If there is no vehicle movement proceed directly to the transaxle disassembly for inspection of the forward one-way clutch. If movement occurs, proceed to next step and continue diagnosis.
3. Verify that the Gear Select Switch is in first position. Move the transaxle range selector lever into Overdrive (O/D) and accelerate to 23 km/h (15 mph). Select second gear by rotating the switch to second position.
 - Did the vehicle upshift to Second gear?
 - Did the appropriate shift solenoids activate/deactivate?
4. Accelerate to 40 km/h (25 mph) and select Third gear.
 - Did the vehicle upshift to Third gear?
 - Did the appropriate shift solenoids activate/deactivate?
5. Accelerate to 56/72 km/h (35/45 mph) and select Fourth gear.
 - Did the vehicle upshift to Fourth gear?
 - Did the appropriate shift solenoids activate/deactivate?

NOTE:

- 4-3 downshifts will be harsh unless the 3-2T/CCS button is depressed during 4-3 downshift.
- The vehicle must be below 56 km/h (35 mph) before selecting gear select "1" position, or the transaxle could overrun.

6. Reverse the order to downshift.

- Did the vehicle downshift from 4 to 3, 3 to 2, and 2 to 1?
- Did the appropriate shift solenoids activate/deactivate?

TORQUE CONVERTER CLUTCH (TCC) ENGAGEMENT

CAUTION: Do not depress TCC switch with transaxle in gear and the vehicle at a stop. Damage to torque converter clutch may result.

NOTE: This test should be performed on the road. If performed on a hoist the technician may not feel the torque converter clutch engage.

1. Accelerate and shift vehicle up into Third gear. Hold speed steady and depress the TCC switch.

- Did the torque converter engage?
- Did the engine rpm drop?
- Did the TCC solenoid activate?

2. Release the TCC switch.

- Did the TCC solenoid deactivate?
- Did the TCC release?
- Did the rpm increase?

3-2 TIMING/COAST CLUTCH ENGAGEMENT

NOTE: This test should be performed on the road. If performed on the hoist the technician may not feel the 3-2 timing/coast clutch disengage.

1. Accelerate and upshift the vehicle into Third gear. Go to closed throttle, depress the 3-2T/CCS switch.

- Does the coast clutch disengage?
- Did the 3-2T/CCS solenoid deactivate (light on)?

2. Press lightly on the throttle, then release 3-2T/CCS switch.

- Did the coast clutch engage?
- Did engine braking occur?
- Did the 3-2T/CCS solenoid activate (light off)?

TURBINE SHAFT SPEED SENSOR FUNCTION CHECK

NOTE: Set voltmeter to 20 volts AC. Connect voltmeter positive lead to the Turbine Shaft Speed (TSS) jack. Connect voltmeter negative lead to the TSS jack. Slowly accelerate vehicle and monitor voltmeter.

1. This test may be performed on the hoist or on the road.

- Does the voltage increase with an increase in vehicle speed? After testing is finished, continue disconnecting tester if TR/MLP testing is not required. If TR/MLP testing is required, continue.