Special Testing Procedures

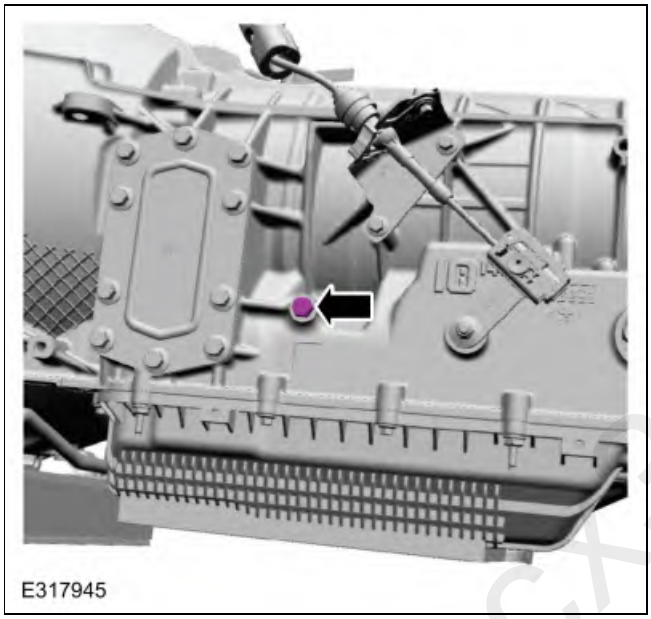
Line Pressure Test

NOTE: *Carry out the Line Pressure Test prior to the Stall Speed Test. If line pressure is low, do not carry out the stall test or additional transmission damage will occur. Do not maintain Wide Open Throttle (WOT) in any gear range for more than 5 seconds.*

This test verifies the line pressure is within specification.

1. Connect the transmission fluid pressure gauge (307-004) to the line pressure tap using an M10 X 1.00 fitting.

NOTE: *The line pressure tap is an M10 X 1.00 thread. Do not us a National Pipe Thread (NPT) fitting when installing a pressure gauge. If a NPT fitting is used, damage to the transmission case will occur.*



2. Start the engine and check the line pressure.
3. Using a diagnostic scan tool, monitor and compare the PID LINEDSD# to actual measured pressure. Actual measured pressure should be within 10 PSI (69 kPa). Raise engine RPM to 2000 RPM and verify LPC operation by monitoring LINE pressure while commanding LINEDSD# up and down.
4. If the line pressure is not within specification, see the Line Pressure Diagnosis Chart for possible sources.
5. When the pressure tests are complete, install the line pressure tap plug.
   - Tighten to 13.5 Nm (120 lb-in).

Test Results	Possible Source
HIGH at IDLE	• Wiring harnesses • LPC solenoid • LPC valve

LOW at IDLE **OR** Does not change when commanding LINESD# up and down	• LPC solenoid mechanically stuck OFF • Fluid inlet filter/seal • Transmission fluid pump gasket or seal • Transmission fluid pump gear teeth damaged • Main control valve body • Main pressure regulator valve stuck in spring compressed position • Broken or missing main pressure regulator valve spring • Transmission fluid pump • Separator plate

A no-drive condition can exist even with correct transmission fluid pressure because of inoperative clutches. Refer to the Clutch Application Chart to determine which clutch is applied in each gear range. A clutch concern can be further diagnosed by performing the air pressure test.

Stall Speed Test

NOTE: *Carry out the Line Pressure Test prior to the Stall Speed Test. If line pressure is low, do not carry out the stall test or additional transmission damage will occur. Do not maintain Wide Open Throttle (WOT) in any gear range for more than 5 seconds.*

NOTE: *If the engine speed exceeds maximum specified rpm, release the accelerator pedal immediately.*

NOTE: *Only perform the stall speed test with the engine and transmission at normal operating temperatures.*

To prevent damage to transmission and driveline components, the PCM will truncate engine torque output when a stall condition exists. Because of this torque truncation, the stall test cannot be used as a diagnostic test for determining the health of the transmission clutches.

The PCM monitors clutch performance and will set one or more DTCs when an undesired slip is detected.

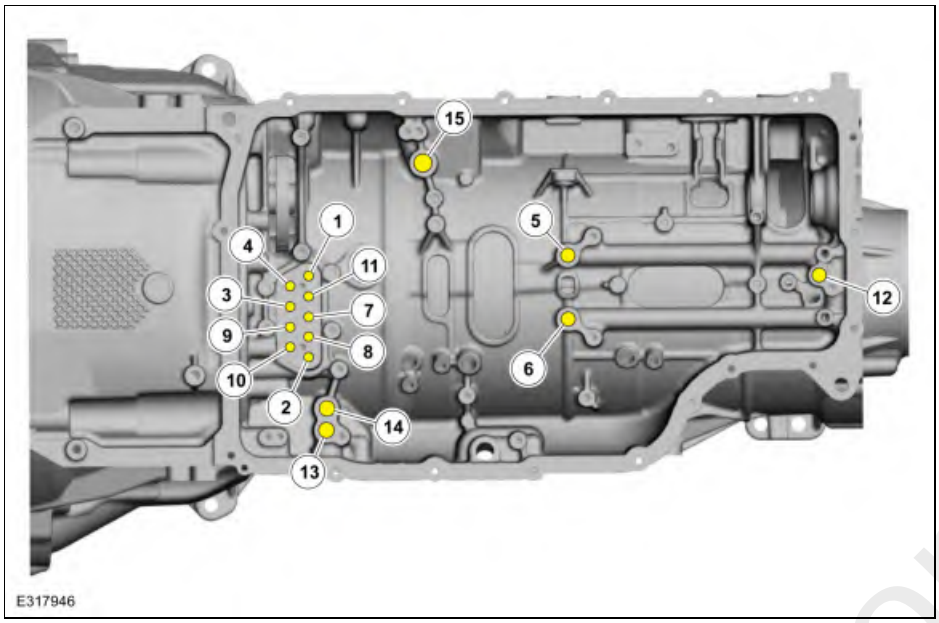
The torque converter stator one-way clutch should hold at idle and during acceleration. A failed one-way clutch can be identified if **all** of the following conditions/symptoms exist:

- Transmission fluid is clean and free of excessive contamination
- Normal/expected vehicle performance at cruising speed
- Poor engine idle quality. The engine may even stall
- Very poor acceleration/Lack of power
- Very low stall RPM: <1500 RPM. Perform test procedure below:

1. Apply the parking brake.
2. Connect the scan tool. Navigate to Datalogger: PCM
3. Monitor the PIDs: APP (%), RPM, LOAD (%) and GEAR_CMD
4. Start the engine.
5. Place the transmission in reverse.
6. Start datalogger recording.
7. With the brake pedal firmly applied, press the accelerator pedal to 100% for 2-3 seconds until engine RPM stabilizes. Release the accelerator pedal.
8. Place the transmission in neutral.
9. Press the accelerator pedal to maintain 1500 RPM for 10 seconds to allow the torque converter to cool. Release the accelerator pedal.
10. Place the transmission in drive.
11. With the brake pedal firmly applied, press the accelerator pedal to 100% for 2-3 seconds until engine RPM stabilizes. Release the accelerator pedal.
12. Place the transmission in neutral.
13. Press the accelerator pedal to maintain 1500 RPM for 10 seconds to allow the torque converter to cool. Release the accelerator pedal.
14. Turn the engine off.

15. Review the recording. A properly functioning stator one-way clutch should fall within the following parameters:
    - APP = 100%
    - RPM > 1500
    - LOAD < 100%
    - GEAR_CMD = Reverse or 1st Gear commanded

Air Pressure Test



10R140 Air Ports

Item	Description
1	A clutch
2	B clutch
3	C clutch
4	D clutch
5	E clutch
6	F clutch
7	TCC apply
8	Torque converter charge feed
9	Torque converter out
10	Lube
11	Lube
12	Slip yoke lube
13	To transmission cooler
14	From transmission cooler
15	Line pressure tap

NOTE: *When applying air pressure to the clutches using the indicated ports, restrict air pressure to no more than 40 PSI (276 kpa).*

NOTE: *The D clutch apply chamber contains a small bleed hole to provide fluid to the F clutch balance circuit. Some leakage in the D clutch circuit may be normal.*

1. Using a high volume (3/8" diameter) rubber tipped blow gun, apply **40 PSI (276kpa)** to the suspect clutch port for 2-3 seconds.
    - A dull thud indicates the clutch piston applied.
    - A hissing noise may indicate a leak in the hydraulic passages.

- Cross leaks between the C, D and F clutches will be noticed if the volume of air is not sufficient to seat the Teflon sealing rings.

2. While holding the blow gun nozzle firmly against the port in the transmission case, release the trigger.
3. Wait 1-2 seconds.
   - A hissing noise may indicate a leak in the hydraulic passages.
4. Remove the blow gun from the port.
   - A sudden release of air pressure indicates the hydraulic passages are capable of holding pressure.
   - No noise may indicate a leak in the hydraulic passages.
