



## MECHANICAL SYSTEM TESTS

### 1. STALL SPEED TEST

HINT:

This test is to check the overall performance of the engine and transaxle.

**NOTICE:**

- **Do not perform the stall speed test longer than 10 seconds.**
  - **To ensure safety, perform this test in an open and level area that provides good traction.**
  - **The stall speed test should always be performed with at least 2 people. One person should observe the condition of the wheels and wheel chocks while the other is performing the test.**
- (a) Connect the intelligent tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
  - (b) Run the vehicle until the transmission fluid temperature has reached 50 to 80°C (122 to 176°F).
  - (c) Allow the engine to idle with the air conditioning OFF.
  - (d) Chock all 4 wheels.
  - (e) Set the parking brake and keep the brake pedal depressed firmly with your left foot.
  - (f) Move the shift lever to the D position.
  - (g) Depress the accelerator pedal as much as possible with your right foot.
  - (h) Read the engine rpm (stall speed) and release the accelerator pedal immediately.

**Standard value:**

**2,450 to 2,750 rpm**

**Evaluation:**

Test Result	Possible Cause
Stall speed is lower than standard value	<ul style="list-style-type: none"> <li>• Engine power output may be insufficient</li> <li>• Stator one-way clutch not operating properly</li> </ul> <p>HINT: If the value is less than the specified value by 600 rpm or more, the torque converter could be faulty.</p>
Stall speed is higher than standard value	<ul style="list-style-type: none"> <li>• Line pressure is too low</li> <li>• Forward clutch slipping</li> <li>• U/D (underdrive) brake slipping</li> <li>• U/D (underdrive) one-way clutch is not operating properly</li> <li>• No. 1 one-way clutch not operating properly</li> <li>• Improper fluid level</li> </ul>

**NOTICE:**

**Perform the test at the normal operating ATF temperature of 50 to 80°C (122 to 176°F).**

### 2. SHIFT TIME LAG TEST

HINT:

This test is to check the condition of the direct clutch, forward clutch, 1st brake and reverse brake.

- (a) Connect the intelligent tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
- (b) Run the vehicle until the transmission fluid temperature has reached 50 to 80°C (122 to 176°F).

- (c) Allow the engine to idle with the air conditioning OFF.
- (d) Set the parking brake and keep the brake pedal depressed firmly.
- (e) Check the D range time lag.
  - (1) Move the shift lever to N and wait for 1 minute.
  - (2) Move the shift lever to D and measure the time until the shock is felt.
  - (3) Repeat the 2 procedures above 3 times, and calculate the average time of the 3 tests.
- (f) Check the R range time lag.
  - (1) Move the shift lever to N and wait for 1 minute.
  - (2) Move the shift lever to R and measure the time until the shock is felt.
  - (3) Repeat the 2 procedures above 3 times, and calculate the average time of the 3 tests.

**Standard value:**

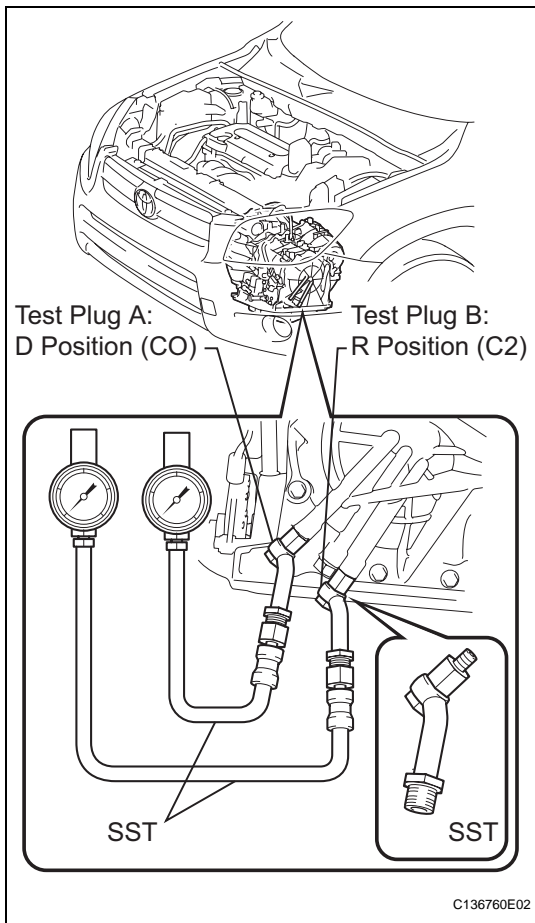
**D range time lag is less than 1.2 seconds**

**R range time lag is less than 1.5 seconds**

**Evaluation:**

Test Result	Possible Cause
D range time lag exceeds standard value	<ul style="list-style-type: none"> <li>• Line pressure is too low</li> <li>• Forward clutch worn</li> <li>• No. 1 one-way clutch is not operating properly</li> <li>• U/D (underdrive) one-way clutch is not operating</li> <li>• U/D (underdrive) brake worn</li> </ul>
R range time lag exceeds standard value	<ul style="list-style-type: none"> <li>• Line pressure is too low</li> <li>• Reverse clutch worn</li> <li>• 1st and reverse brake worn</li> <li>• U/D (underdrive) brake worn</li> </ul>

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## HYDRAULIC TEST

### 1. PERFORM HYDRAULIC TEST

- (a) Measure the line pressure.

**NOTICE:**

- Perform the test at the normal operating ATF temperature: 50 to 80°C (122 to 176°F).
- The line pressure test should always be performed with at least 2 people. One person should observe the condition of the wheels or wheel chocks while the other is performing the test.
- Be careful to prevent SST's hose from interfering with the exhaust pipe.
- This test must be performed after checking and adjusting the engine.
- Perform the test with the A/C OFF.
- When conducting the stall test, do not continue for more than 10 seconds.

- (1) Warm up the ATF (Automatic Transmission Fluid).
- (2) Lift the vehicle up.
- (3) Remove the engine under cover.
- (4) Connect the intelligent tester to the DLC3.
- (5) Remove the test plug A on the transaxle case front left side and install SST.

**SST 09992-00095 (09992-00231, 09992-00271)**

**NOTICE:**

**There is a difference between the installation point of the D position and R position.**

- (6) Start the engine.
- (7) Using intelligent tester, shift to D position and hold 3rd gear by active test, and measure the line pressure in idling.

**Specified line pressure:**

Condition	D position kPa (kgf/cm <sup>2</sup> , psi)
Idling	372 to 412 kPa (3.8 to 4.2 kgf/cm <sup>2</sup> , 54 to 60 psi)

- (8) Turn the ignition switch off.
- (9) Disconnect the connector of the transmission wire.

**HINT:**

Disconnect the connector only when performing the position stall test.

- (10) Start the engine.
- (11) Firmly depress the brake pedal, shift to the D position, depress the accelerator pedal all the way down and check the line pressure while the stall test is performed.

**Specified line pressure:**

Condition	D position kPa (kgf/cm <sup>2</sup> , psi)
Stall test	931 to 1,031 kPa (9.5 to 10.5 kgf/cm <sup>2</sup> , 135 to 150 psi)

- (12) Turn the ignition switch off.
- (13) Remove SST, and install the test plug A.
- (14) Remove the test plug B, install SST and start the engine.

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- (15) Connect the transmission wire connector, depress the brake pedal firmly, shift to the R position and check the line pressure while the engine is idling and during the stall test.

**Specified line pressure:**

Condition	R position kPa (kgf/cm <sup>2</sup> , psi)
Idling	672 to 742 kPa (6.9 to 7.6 kgf/cm <sup>2</sup> , 97 to 108 psi)
Stall test	1,768 to 1,968 kPa (18.0 to 20.0 kgf/cm <sup>2</sup> , 256 to 285 psi)

- (16) Remove SST, and install the test plug B.
- (17) Clear the DTC.

**Evaluation:**

Problem	Possible cause
Measured values at all positions are higher than specified	<ul style="list-style-type: none"> <li>• Shift solenoid valve SLT defective</li> <li>• Regulator valve defective</li> </ul>
Measured values at all positions are lower than specified	<ul style="list-style-type: none"> <li>• Shift solenoid valve SLT defective</li> <li>• Regulator valve defective</li> <li>• Oil pump defective</li> <li>• U/D (underdrive) direct clutch defective</li> </ul>
Pressure is low when shift lever is on D only	<ul style="list-style-type: none"> <li>• D position circuit fluid leak</li> <li>• Forward clutch defective</li> </ul>
Pressure is low when shift lever is on R only	<ul style="list-style-type: none"> <li>• R position circuit fluid leak</li> <li>• Reverse clutch defective</li> <li>• 1st and reverse brake defective</li> </ul>

