# 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 5 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:**

**2,150 to 2,450 rpm**

**Evaluation:**

| Test Result | Possible Cause |
|---|---|
| Stall speed is lower than standard value | • Stator one-way clutch is not operating properly<br>• Torque converter is faulty (stall speed is less than standard value by 600 rpm or more)<br>• Engine power may be insufficient |
| Stall speed is higher than standard value | • Line pressure is low<br>• C1 clutch slipping<br>• F3 one-way clutch is not operating properly<br>• F4 one-way clutch is not operating properly |

**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).

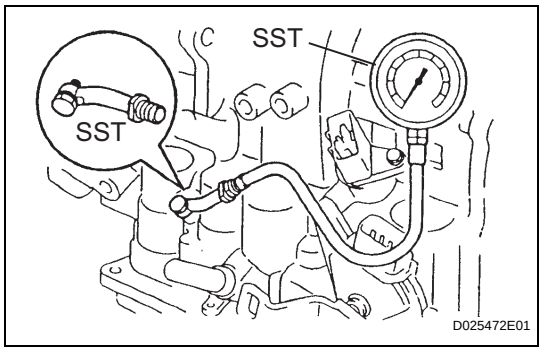
(c) Allow the engine to idle with the air conditioning OFF.

(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 | • Line pressure is low<br>• C1 clutch is worn<br>• F3 one-way clutch is not operating properly<br>• F4 one-way clutch is not operating properly |
| R range time lag exceeds standard value | • Line pressure is low<br>• C3 clutch is worn<br>• B4 brake is worn<br>• F1 one-way clutch is not operating properly |




# HYDRAULIC TEST

**1. MEASURE 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.**

(a) Warm up the ATF.
(b) Remove the test plug on the transaxle case center right side and connect SST.
  **SST 09992-00095 (09992-00231, 09992-00271)**
(c) Fully apply the parking brake and chock the 4 wheels.
(d) Start the engine and check the idling speed.
(e) Keep your left foot firmly on the brake pedal and move the shift lever to D.
(f) Measure the line pressure when the engine is idling.

(g) Depress the accelerator pedal as much as possible with your right foot. Quickly read the highest line pressure reading when the engine speed reaches stall speed.
(h) Perform the measure line pressure test again with the shift lever on R.

**Specified line pressure:**

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| Condition | Shift Lever on D | Shift Lever on R |
|---|---|---|
| Idling | 372 to 412 kPa (3.8 to 4.2 kgf/cm$^2$, 54 to 60 psi) | 672 to 742 kPa (6.9 to 7.6 kgf/cm$^2$, 97 to 108 psi) |
| Stall | 931 to 1,031 kPa (9.5 to 10.5 kgf/cm$^2$, 135 to 150 psi) | 1,768 to 1,968 kPa (18.0 to 20.0 kgf/cm$^2$, 256 to 285 psi) |

**Evaluation:**

| Problem | Possible Cause |
|---|---|
| Measured values at all positions are higher than specified | • Shift solenoid valve SLT defective<br>• Regulator valve defective |
| Measured values at all positions are lower than specified | • Shift solenoid valve SLT defective<br>• Regulator valve defective<br>• Oil pump defective<br>• U/D (underdrive) direct clutch defective |
| Pressure is low when shift lever is on D only | • D position circuit fluid leak<br>• Forward clutch defective |
| Pressure is low when shift lever is on R only | • R position circuit fluid leak<br>• Direct clutch defective<br>• 1st and reverse brake defective |