



## Variable Geometry Turbocharger ( VGT ) Function Test ( 2551-08-03-02 ), OBD13 Model Year ( MY ) 2014 And Newer



> Internal Content

### Overview

The VGT Function Test has been improved to provide an accurate graphical representation of turbo position during a sweep test. Changes that have been made include:

- 2551-08-03-02 Variable Geometry Turbocharger Function test is replacing the sector gear gauge tool as the primary method of VGT diagnosis with more accuracy and less discrepancy.
- VGT actuator motor effort has been removed from the operation because it was resulting in misdiagnosis of the turbocharger.
- A plot of Variable Geometry Turbocharger position (black) and error / status codes from Variable Geometry Turbocharger ( VGT ) / Smart Remote Actuator ( SRA ) (blue) has been added to the operation for diagnosis.

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### Test Information

#### When performing the test:

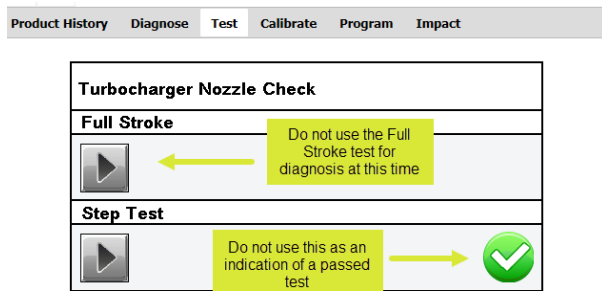
- Use the Step Test under option A for analysis. The step test is a sweep of the VGT mechanism from open-close-open that takes approximately 10 seconds. The graph must be manually evaluated to determine a pass on the Step Test. Do not rely on the green check mark status to determine a pass. The following linked videos use a cutaway to illustrate what is happening during the Step Test:

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Live UI [Actuator view](#) [End view](#) [Side view](#)

- Do not use the Full Stroke Test for VGT analysis as it is currently under revision.
- The Step Test can be repeated multiple times and at any temperature that there is believed to be a problem.
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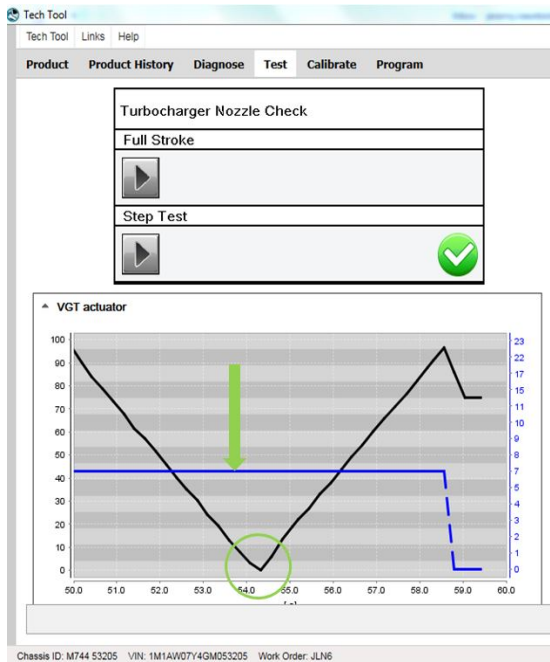
See the image below for more information:



## Interpreting Results:

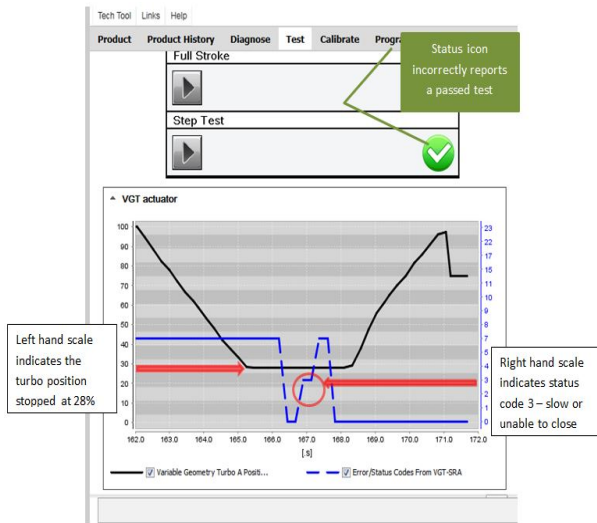
### Example 1 – Normal function turbocharger

- Actuator closes to 0 - 5% during the step test **AND**
  - Status code from the VGT / SRA equals 0 or 7
  - No further troubleshooting is required, no component replacement is required.
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### Example 2 – Turbocharger actuator is unable to close to 0 - 5%

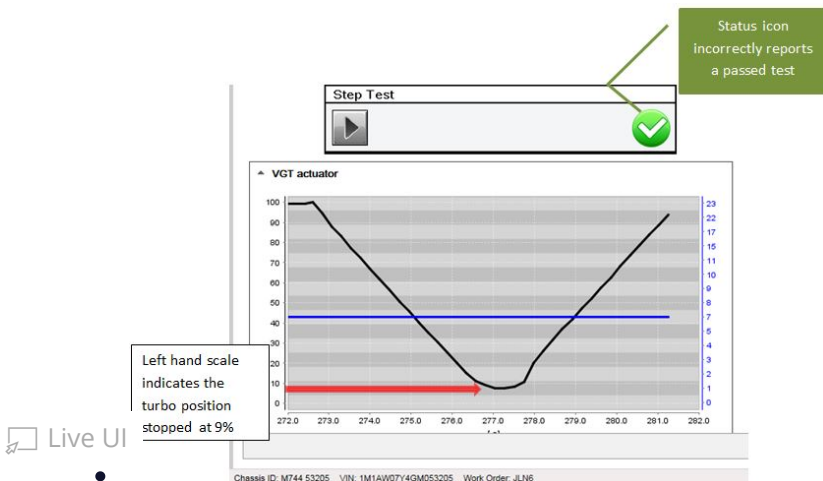
- Symptom: VGT Actuator is unable to close to 0 - 5% during the step test **OR**
  - Status code from the VGT / SRA changes from 7 - Test Mode to 3 - Slow or Unable to Close
  -
- Result: Requires further troubleshooting to determine if the actuator or the turbocharger is the defective component. Dismount the actuator from the turbocharger and repeat the Step Test with the actuator free. If the test again fails replace only the actuator. If the actuator test passes, replace the complete turbocharger.
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### Example 3 – Turbocharger actuator is unable to close to 0 - 5%

- Symptom: Turbo actuator is unable to close to 0 - 5% during the Step Test.
  - **Note:** In this example, the status code from the VGT / SRA **does not change** from 7 - Test Mode
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- Result: Requires further troubleshooting to determine if the actuator or the turbocharger is the defective component. Dismount the actuator from the turbocharger and repeat the Step Test with the actuator free. If the test again fails replace only the actuator. If the actuator test passes, replace the complete turbocharger.

Note: This is a problem that will typically cause parked regeneration failure.





Tags

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### Related links and attachments

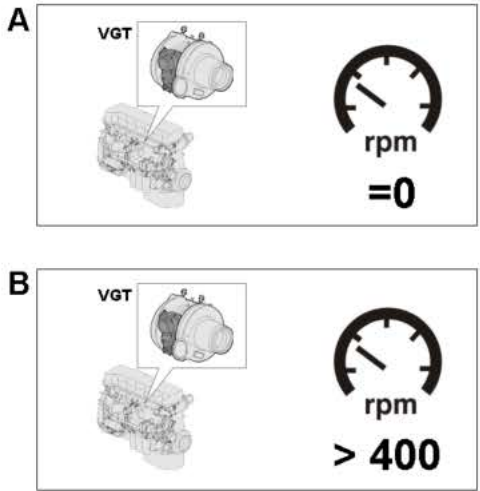
No links or attachments available



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### 2551-08-03-02 Variable Geometry Turbo Function

Simulation

Information >> Conditions >> Execution

#### Purpose

Check the Variable Geometry Turbocharger (VGT) function

#### Components to be tested are:

- Variable Geometry Turbocharger (VGT)
- VGT actuator

#### Description

The (VGT) Variable Geometry Turbocharger uses a movable nozzle to adjust the intake manifold pressure for various operating conditions. Nozzle movement is controlled by an actuator mounted on the turbocharger.

During the test it is possible to check VGT function conditions, monitor sensor values and check that the turbo nozzle moves

#### Selections

Select the illustration corresponding to the method or test to be performed

**A**

Perform forced activation in order to test the full range of motion of the turbo nozzle

**B**

Sensor Values, Monitoring