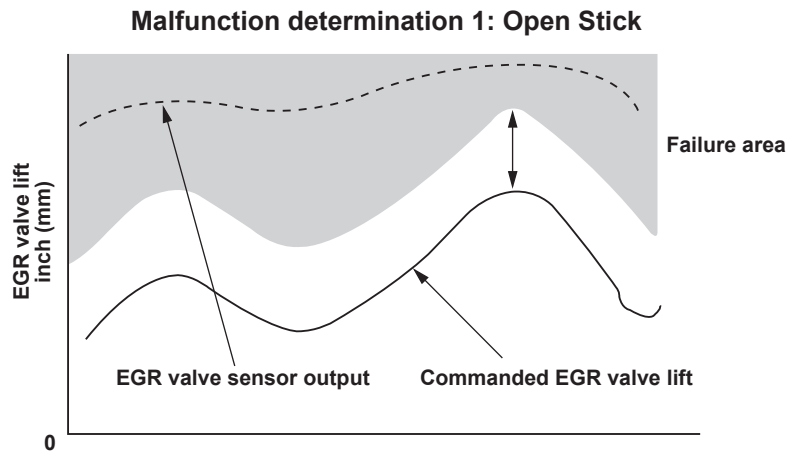
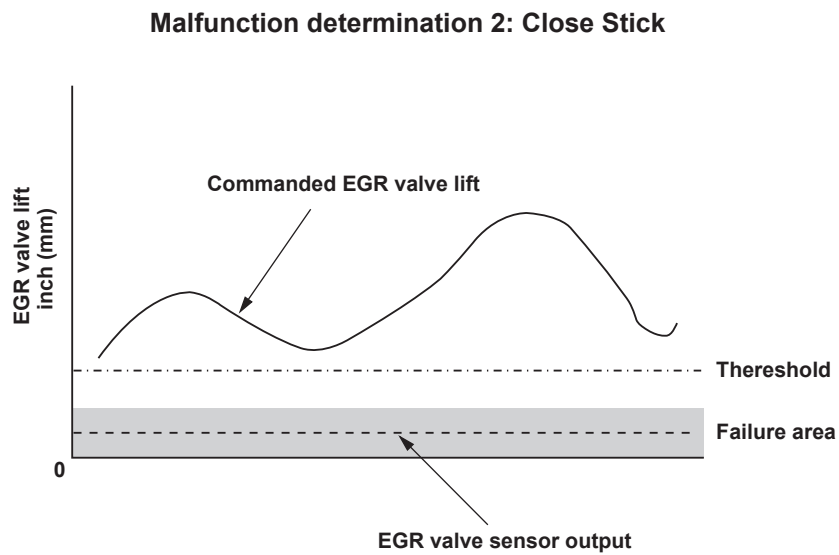


Advanced Diagnostics

DTC P1491: Exhaust Gas Recirculation (EGR) Valve Insufficient Lift



P1491-0271



P1491-0272

General Description

The exhaust gas recirculation (EGR) valve is opened and the inactive exhaust gas reflows in the intake manifold through the exhaust manifold and the EGR passage while the engine control module (ECM) controls the EGR valve. The inactive exhaust gas is recirculated into the air/fuel mixture and the gas is drawn into the combustion chamber to lower the combustion temperatures, thus reducing oxides of nitrogen (NOx) emissions.

A sensor (lift sensor) is built into the EGR valve and detects the amount of valve lift. The command value for the target valve lift is stored in the ECM so that exhaust gas recirculation can be optimized according to driving conditions.

Comparing this command value with the lift sensor output signal value, the ECM controls the EGR valve to make the amount of actual valve lift equal to the command value.

Malfunction determination 1: Stuck open

If the lift sensor output (actual valve lift) is greater than the commanded valve lift, an abnormality in the EGR valve or the lift sensor output is determined.

Malfunction determination 2: Stuck closed

If the valve sensor output is insufficient for the commanded valve lift, a malfunction is detected.

Monitor Execution, Sequence, Duration, DTC Type

Execution	Under the Enable Conditions
Sequence	—
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON

Enable Conditions

Condition	Minimum	Maximum
Engine speed	—	4,000 rpm
Battery voltage	10.6 V	—
Monitoring priority	EGR	
No active DTCs	ECM, A/F Sensor, A/F Sensor Heater, MAP, CKP, ECT, EGR	

Malfunction Threshold

Malfunction determination 1:

If the difference between the commanded valve lift in the ECM and the actual valve lift is 0.781 mm (0.031 in.) or more for at least 5 seconds, it is considered that the valve is stuck open.

Malfunction determination 2:

If the actual valve lift is 0.416 mm (0.016 in.) or less for at least 5 seconds, it is considered that the valve is stuck closed.

Driving Pattern

1. Start the engine. Hold the engine at 3,000 rpm with no load (in park or neutral) until the radiator fan comes on.
 2. Drive the vehicle at a steady speed between 30 - 60 mph (48 - 96 km/h) with the engine speed at 4,000 rpm or less for at least 5 seconds.
- If you have difficulty duplicating the DTC, retest after turning off electrical components such as the audio system and A/C, and try a different gear position.
 - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details

Conditions for illuminating the MIL

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs. The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.