

<b>DTC</b>	<b>P0441</b>	<b>EVAPORATIVE EMISSION CONTROL SYSTEM INCORRECT PURGE FLOW</b>
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## CIRCUIT DESCRIPTION

The circuit description can be found in the EVAP INSPECTION PROCEDURE (see page [05-679](#) ).

## INSPECTION PROCEDURE

Refer to the EVAP INSPECTION PROCEDURE (see page [05-679](#) ).

## MONITOR DESCRIPTION

The ECM tests the Evaporative Emissions (EVAP) system using the fuel tank pressure sensor, Canister Close Valve (CCV), and EVAP VSV. The ECM closes the EVAP system and creates negative pressure (vacuum) into it. The ECM then monitors the internal pressure using the fuel tank pressure sensor.

### P0441

The EVAP VSV has the following features:

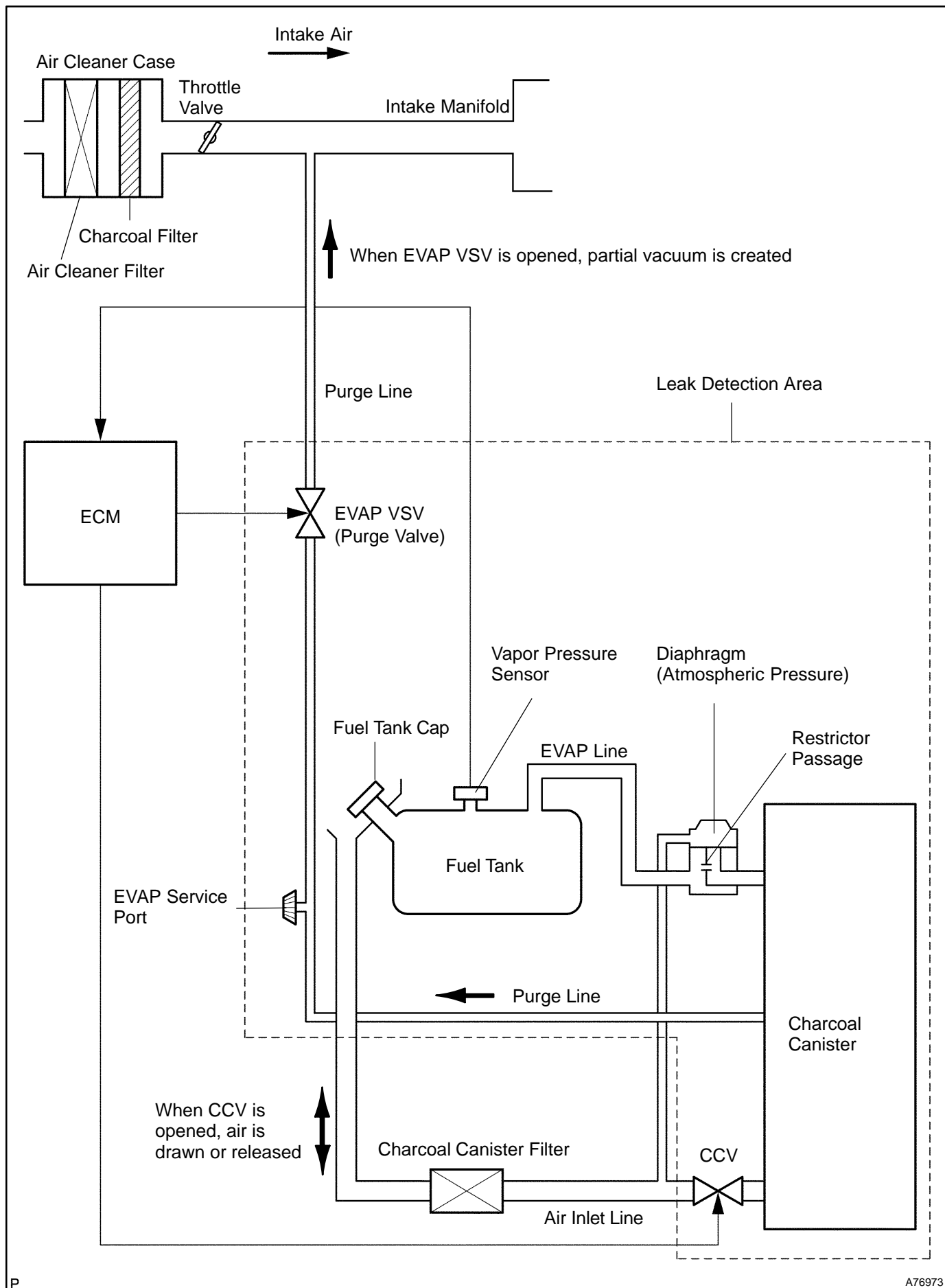
- (1) Purges the evaporative emissions from the fuel tank to the intake manifold.
- (2) Works with the CCV to create negative pressure (vacuum) inside the fuel tank and performs leak tests.

Opening or closing malfunctions in the EVAP VSV prompt the ECM to set DTC P0441.

The ECM checks if the EVAP VSV is "stuck closed". The ECM commands the EVAP VSV to open while the CCV is closed. Under these circumstances, a high negative pressure(vacuum) should develop in the fuel tank. If no negative pressure develops, the ECM determines that the EVAP VSV remains closed despite the open command. The ECM would then turn on the MIL and output a DTC.

The ECM also checks if the EVAP VSV is "stuck open". The ECM commands the EVAP VSV to close while the CCV is closed and the fuel tank is at ambient pressure. Under these circumstances, the fuel tank should remain at ambient pressure. If negative pressure develops in the fuel tank, the ECM determines that the EVAP VSV remains open despite the close command. The ECM would then turn on the MIL and output a DTC.

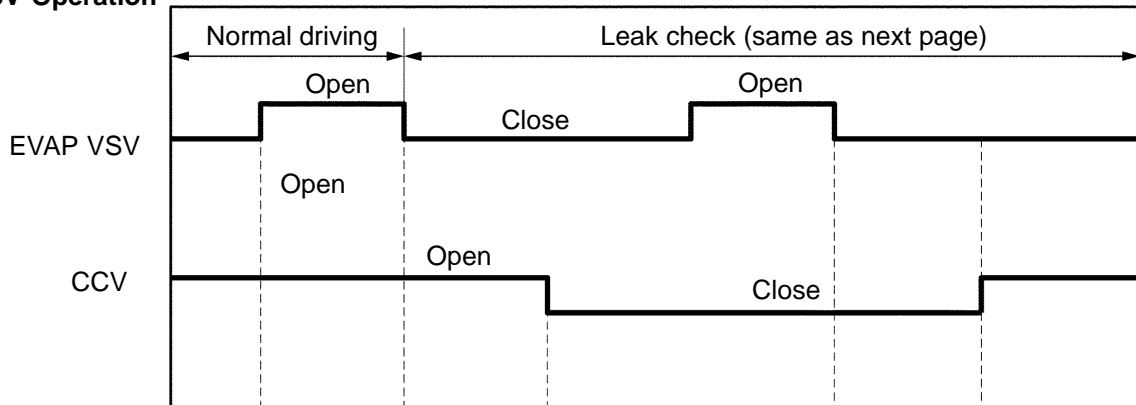
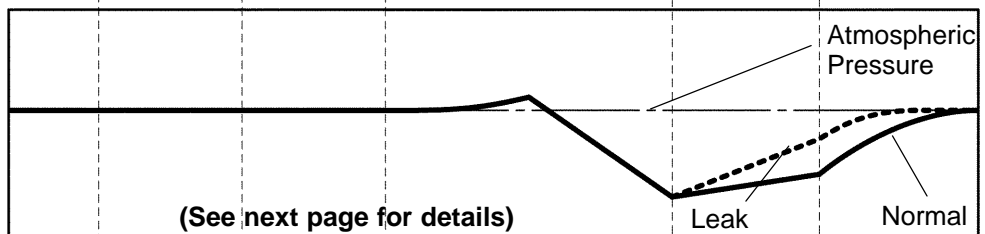
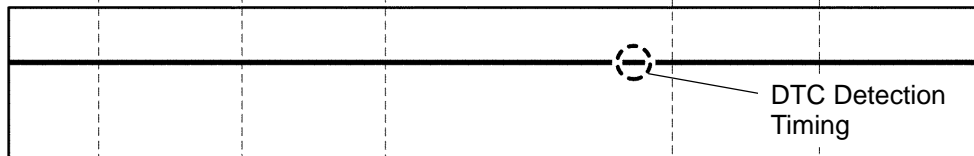
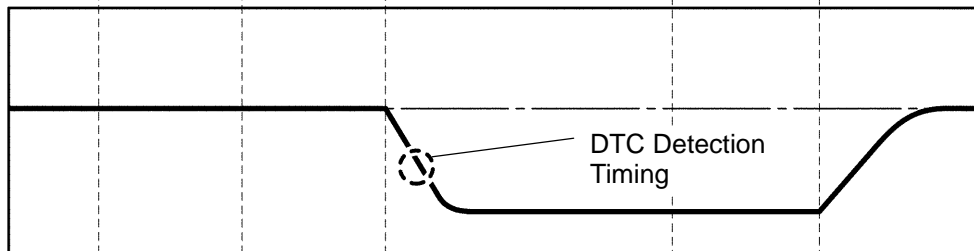
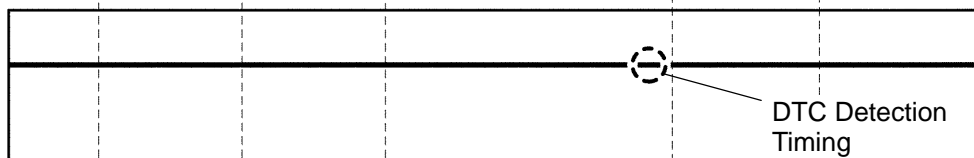
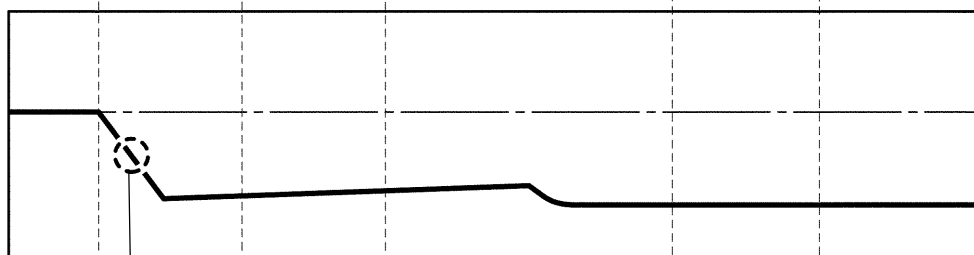
DTC No.	DTC Detection Condition	Trouble Area
P0441	<ul style="list-style-type: none"> <li>• Pressure in charcoal canister and fuel tank does not drop during purge control (2 trip detection logic)</li> <li>• During purge cut-off, negative is pressure entering charcoal canister and fuel tank (2 trip detection logic)</li> </ul>	<ul style="list-style-type: none"> <li>• Vacuum hose has cracks, holes, or is blocked, damaged or disconnected</li> <li>• Fuel tank cap incorrectly installed</li> <li>• Fuel tank cap has cracks or is damaged</li> <li>• Open or short in vapor pressure sensor circuit</li> <li>• Vapor pressure sensor</li> <li>• Open or short in EVAP VSV circuit</li> <li>• EVAP VSV</li> <li>• Open or short in CCV circuit</li> <li>• CCV</li> <li>• Fuel tank has cracks, holes, or is damaged</li> <li>• Charcoal canister has cracks, holes, or is damaged</li> <li>• Fuel tank over fill check valve cracks, or is damaged</li> <li>• ECM</li> </ul>



**VSV Malfunction Condition and Leak Check**

EVAP VSV is Open: ON

CCV is Open: OFF

**VSV Operation****Pressure in Fuel Tank**Normal Condition or  
EVAP System Leak  
(Normal Pressure Line)EVAP VSV  
Close Malfunction  
(P0441)EVAP VSV  
Open Malfunction  
(P0441)CCV Open  
Malfunction  
(P0446)CCV Close  
Malfunction  
(P0446)

DTC Detection Timing

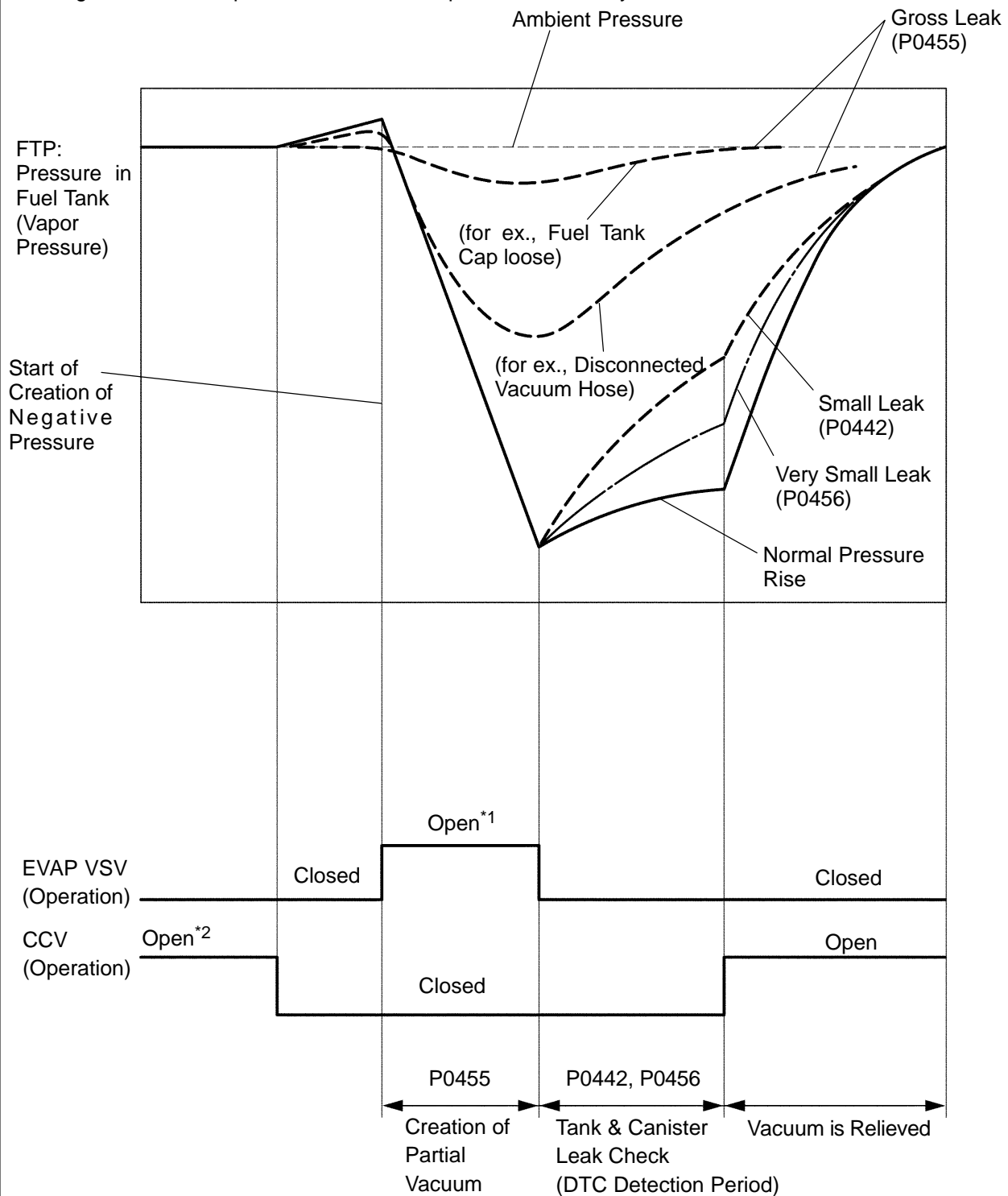
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**Leak Check**

Initial Condition:

- Cold start
- Engine coolant temperature/intake air temperature are nearly the same



\*1: EVAP VSV is Open: ON

\*2: CCV is Open: OFF

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## MONITOR STRATEGY

Related DTCs	P0441: Purge VSV stuck open P0441: purge VSV stuck close
Required sensors / components (Main)	CCV, EVAP canister, EVAP hose, Fuel cap, Fuel tank and Purge VSV
Required sensors / components (Related)	ECT sensor, FTP sensor, IAT sensor, MAF meter, Vehicle speed sensor
Frequency of operation	Once per driving cycle
Duration	Within 60 seconds
MIL operation	2 driving cycles
Sequence operation	None

## TYPICAL ENABLING CONDITIONS

The monitor will run whenever these DTCs are not present	See page <a href="#">05-377</a>
Altitude	Less than 7,870 ft. (2,400 m)
Battery voltage	11 V or more
Throttle position learning	Completed
IAT at engine start - ECT at engine start	-7 to 11.1°C (-12.6 to 20°F)
EVAP VSV and CCV	Not operated test by scan tool
Either of the following conditions is met	Condition 1 or 2
1. Purge duty cycle	8% or more (vary with MAF)
2. Purge concentration for 30 seconds	-5 %/% or more when vehicle speed is less than 10 km/h (6.25 mph)
Refuel	Not refueled with engine running
FTP	12.75 mmHg (-1.7 kPa) or more
ECT at engine start	4.4 to 35°C (39.9 to 95°F)
IAT at engine start	4.4 to 35°C (39.9 to 95°F)
IAT	4.4°C (39.9°F) or more
Vehicle speed change	Vehicle is driven by steady speed
Fuel slosh	No sloshing (i.e. fairly smooth road)
Time after engine start	Within 50 minutes
FTP change before vacuum introduction	Minimum change
Fuel level	Less than 90 %

## TYPICAL MALFUNCTION THRESHOLDS

### Purge VSV stuck close P0441:

FTP change during vacuum introduction	Less than 5.25 mmHg (0.7 kPa)
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### Purge VSV stuck open P0441:

Duration that of the following condition is met	4 seconds or more
FTP before vacuum introduction	Less than -10 mmHg (-1.333 kPa)

## MONITOR RESULT

Refer to page [05-385](#) for detailed information.

The test value and test limit information are described as shown in the following table. Check the monitor result and test values after performing the monitor drive pattern (see page [05-387](#) ).

- TID (Test Identification Data) is assigned to each emissions-related component.
- TLT (Test Limit Type):  
If TLT is 0, the component is malfunctioning when the test value is higher than the test limit.  
If TLT is 1, the component is malfunctioning when the test value is lower than the test limit.
- CID (Component Identification Data) is assigned to each test value.
- Unit Conversion is used to calculate the test value indicated on generic OBD II scan tools.

### TID \$02: EVAP system - LEV II Vacuum monitor

TLT	CID	Unit Conversion	Description of Test Data	Description of Test Limit
1	\$01	Multiply by 0.183 (mmHg)	Test value of EVAP VSV stuck close: Determined by fuel tank pressure change during vacuum introduction	Malfunction criteria for EVAP VSV stuck closed
0	\$02	Multiply by 0.0655 (seconds)	Test value of EVAP VSV stuck open: Determined by duration that fuel tank pressure is higher than criteria	Malfunction criteria for EVAP VSV stuck open
0	\$03	Multiply by 0.0655 (seconds)	Test value of canister closed valve (CCV): Determined by duration that fuel tank pressure is lower than criteria	Malfunction criteria for Canister Closed Valve (CCV)
0	\$04	Multiply by 0.0458 (mmHg)	Test value 0.04 inch leak: Determined by fuel tank pressure change	Malfunction criteria for 0.04 inch leak
0	\$05	Multiply by 0.0458 (mmHg)	Test value 0.02 inch leak: Determined by fuel tank pressure change	Malfunction criteria for 0.02 inch leak