

DTC	P0441	EVAPORATIVE EMISSION CONTROL SYSTEM INCORRECT PURGE FLOW
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CIRCUIT DESCRIPTION

The circuit description can be found in the EVAP INSPECTION PROCEDURE (see page [05-313](#)).

INSPECTION PROCEDURE

Refer to the EVAP INSPECTION PROCEDURE (see page [05-313](#)).

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 (refer to the Leak Check graphic).

P0441

The EVAP VSV has the following uses:

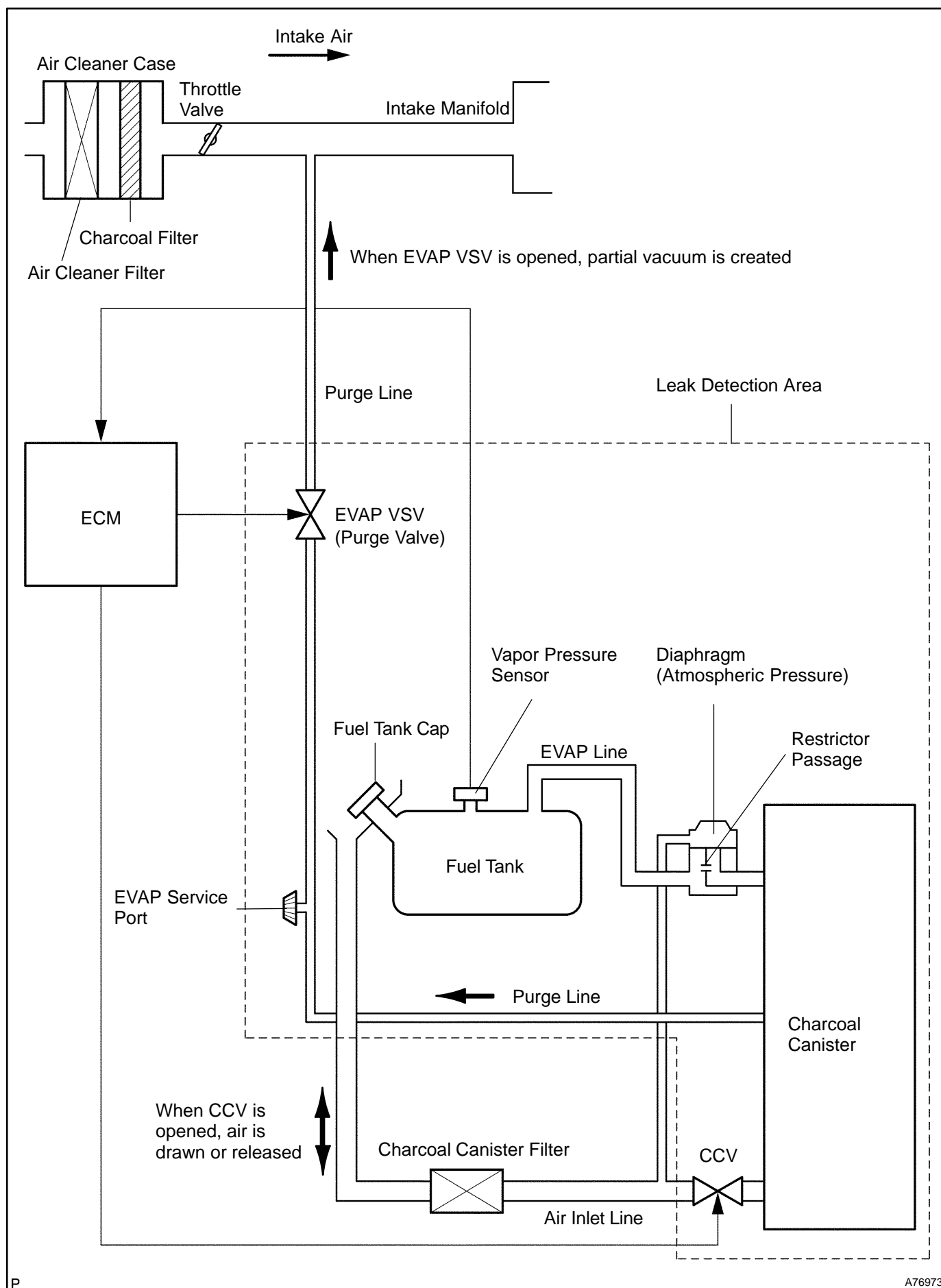
- (1) Purges the evaporative emissions from the fuel tank to the intake manifold.
- (2) Works with the CCV to create negative pressure (vacuum) inside the fuel tank and performs leak tests.

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.

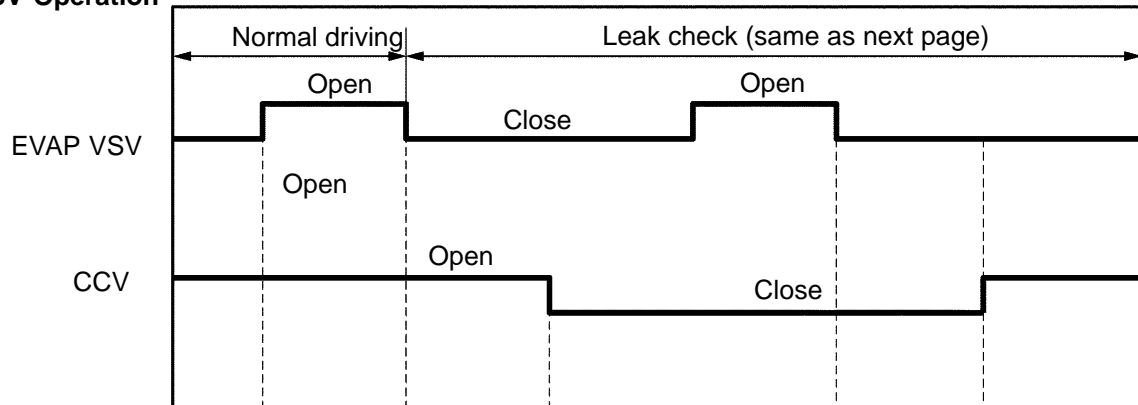
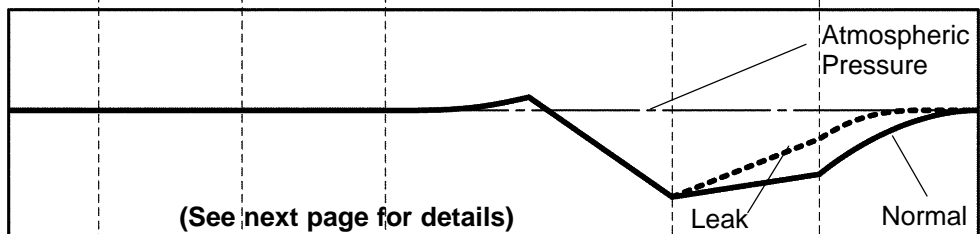
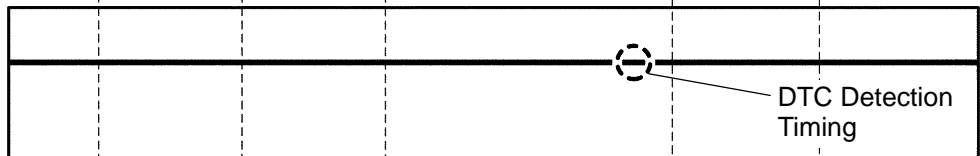
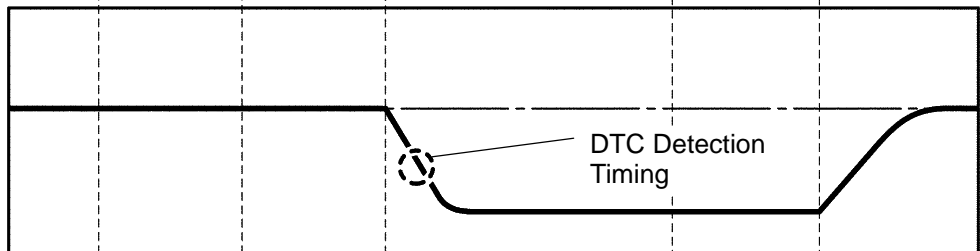
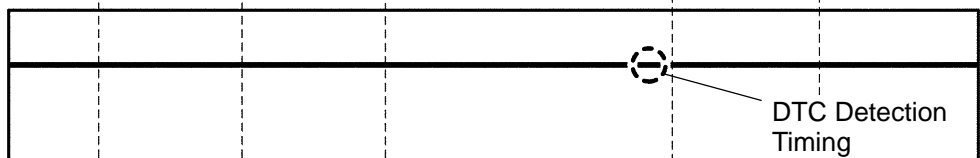
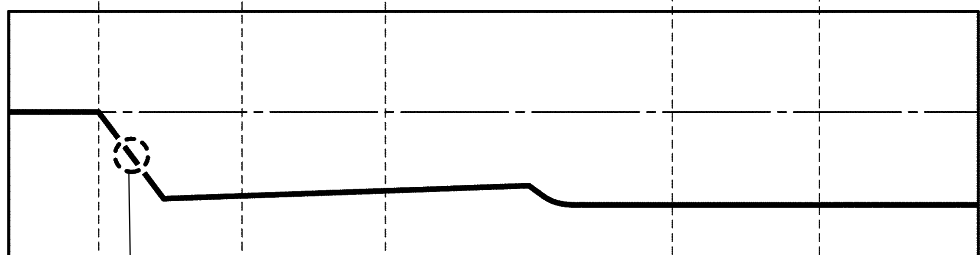
DTC No.	DTC Detection Condition	Trouble Area
P0441	<ul style="list-style-type: none"> Pressure in charcoal canister and fuel tank does not drop during purge control (2 trip detection logic) During purge cut-off, negative is pressure entering charcoal canister and fuel tank (2 trip detection logic) 	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



VSV Malfunction Condition and Leak Check

EVAP VSV is Open: ON

CCV is Open: OFF

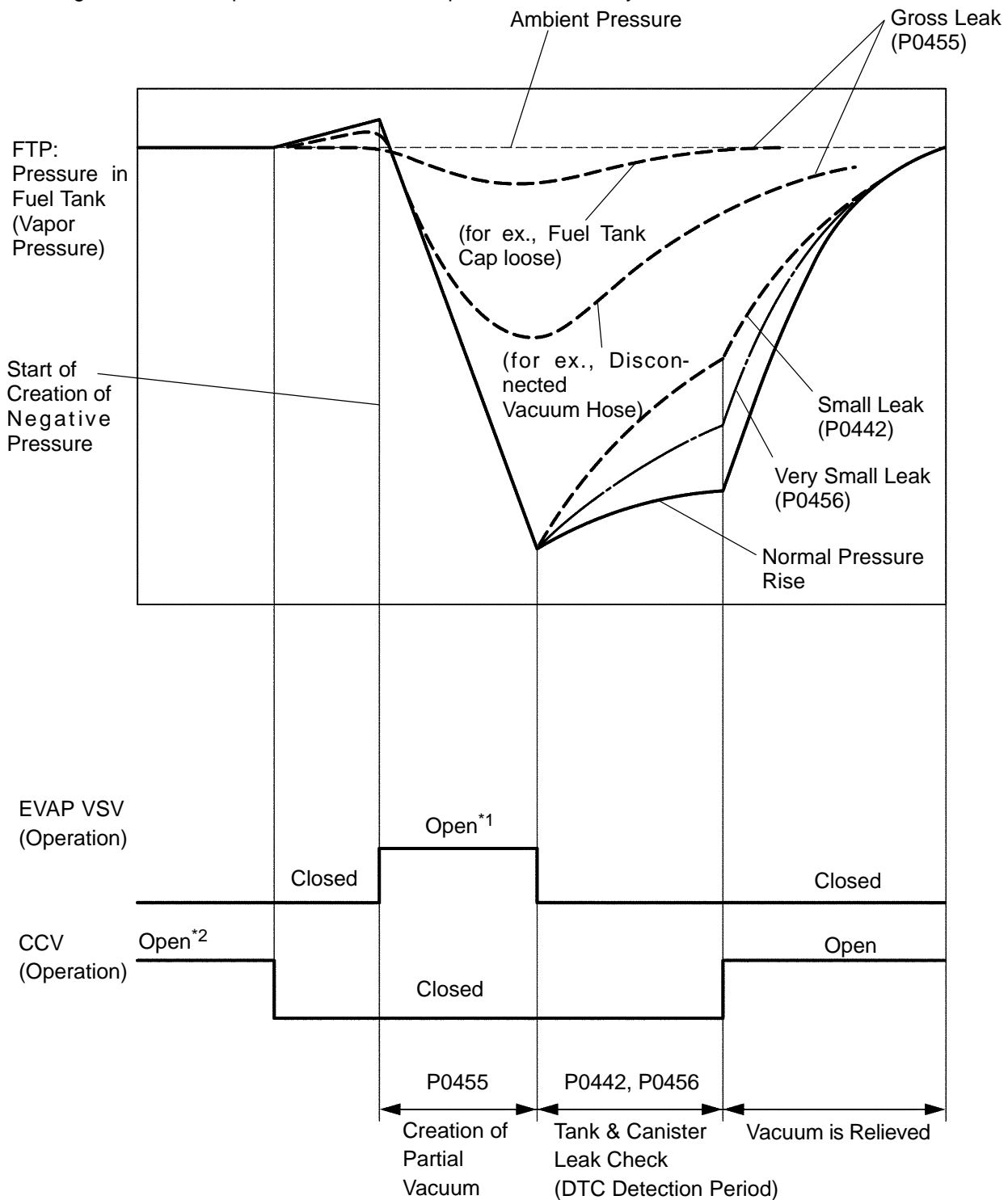
VSV Operation**Pressure in Fuel Tank**Normal Condition or
EVAP System Leak
(Normal Pressure Line)EVAP VSV
Close Malfunction
(P0441)EVAP VSV
Open Malfunction
(P0441)CCV Open
Malfunction
(P0446)CCV Close
Malfunction
(P0446)

DTC Detection Timing

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

MONITOR STRATEGY

Related DTCs	P0441: Purge VSV stuck open P0441: Purge VSV stuck closed
Required sensors/ components (Main)	CCV, EVAP canister, EVAP hose, Fuel cap, Fuel tank and EVAP VSV
Required sensors / components (Related)	ECT, FTP, IAT, MAF and VSS (Vehicle Speed Sensor)
Frequency of operation	Once per driving cycle
Duration	Within 90 seconds
MIL operation	2 driving cycles
Sequence operation	None

TYPICAL ENABLING CONDITIONS

P0441 (EVAP VSV)

The monitor will run whenever the following DTCs are not present	See page 05-16
Battery voltage	11 V or more
Altitude	Less than 7,874 ft. (2,400 m)
Throttle position learning	Completed
FTP sensor malfunction	Not detected
IAT at engine start – ECT at engine start	–7 to 11.1°C (–12.6 to 20°F)
EVAP VSV and CCV	Not operated by scan tool
Either of the following conditions is met:	Conditions 1 or 2
1. Purge duty cycle	10 % or more when intake air amount is 12 g/sec. or more
2. Purge concentration for 30 seconds	–5 % or more when vehicle speed is less than 6.25 mph (10 km/h)
Refuel	Not refueled with engine running
FTP	–1.7 kPa (–12.75 mmHg) 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

P0441 (EVAP VSV stuck closed):

EVAP pressure change during vacuum introduction	Less than 0.7 kPa (5.25 mmHg) or more
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P0441 (EVAP VSV stuck open):

Duration that the following condition is met	4 seconds or more
EVAP pressure before vacuum introduction	Below –1.333 kPa (–10 mmHg)

MONITOR RESULT

Refer to page [05-25](#) 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 [05-27](#)).

- 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