

Last Modified: 6-2-2008	5.1 C	From: 200601
Model Year: 2007	Model: Camry	Doc ID: RM000000SWH00TX
Title: 2GR-FE ENGINE CONTROL SYSTEM: SFI SYSTEM: P0455: Evaporative Emission Control System Leak Detected (Gross Leak) (2007 Camry)		

DTC	P0455	Evaporative Emission Control System Leak Detected (Gross Leak)
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DTC	P0456	Evaporative Emission Control System Leak Detected (Very Small Leak)
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DTC SUMMARY

DTC NO.	MONITORING ITEM	MALFUNCTION DETECTION CONDITION	TROUBLE AREA	DETECTION TIMING	DETECTION LOGIC
P0455	EVAP gross leak	Vacuum pump creates negative pressure (vacuum) in EVAP system and EVAP system pressure measured. 0.02 inch leak pressure standard measured at start and at end of leak check. If stabilized pressure higher than [second 0.02 inch leak pressure standard x 0.2], ECM determines that EVAP system has a large leak	<ul style="list-style-type: none"> • Fuel tank cap (loose) • Leakage from EVAP line (Canister - Fuel tank) • Leakage from EVAP line (EVAP VSV - Canister) • Pump module • Leakage from fuel tank • Leakage from canister 	While engine switch off	2 trip
P0456	EVAP small leak	Vacuum pump creates negative pressure (vacuum) in EVAP system and EVAP system pressure measured. 0.02 inch leak pressure standard measured at start and at end of leak check. If stabilized pressure higher than second 0.02 inch leak pressure standard, ECM determines that EVAP system has a small leak	Same above	While engine switch off	2 trip

DESCRIPTION

The circuit description can be found in the EVAP (Evaporative Emission) System  .

INSPECTION PROCEDURE

Refer to the EVAP System  .

MONITOR DESCRIPTION

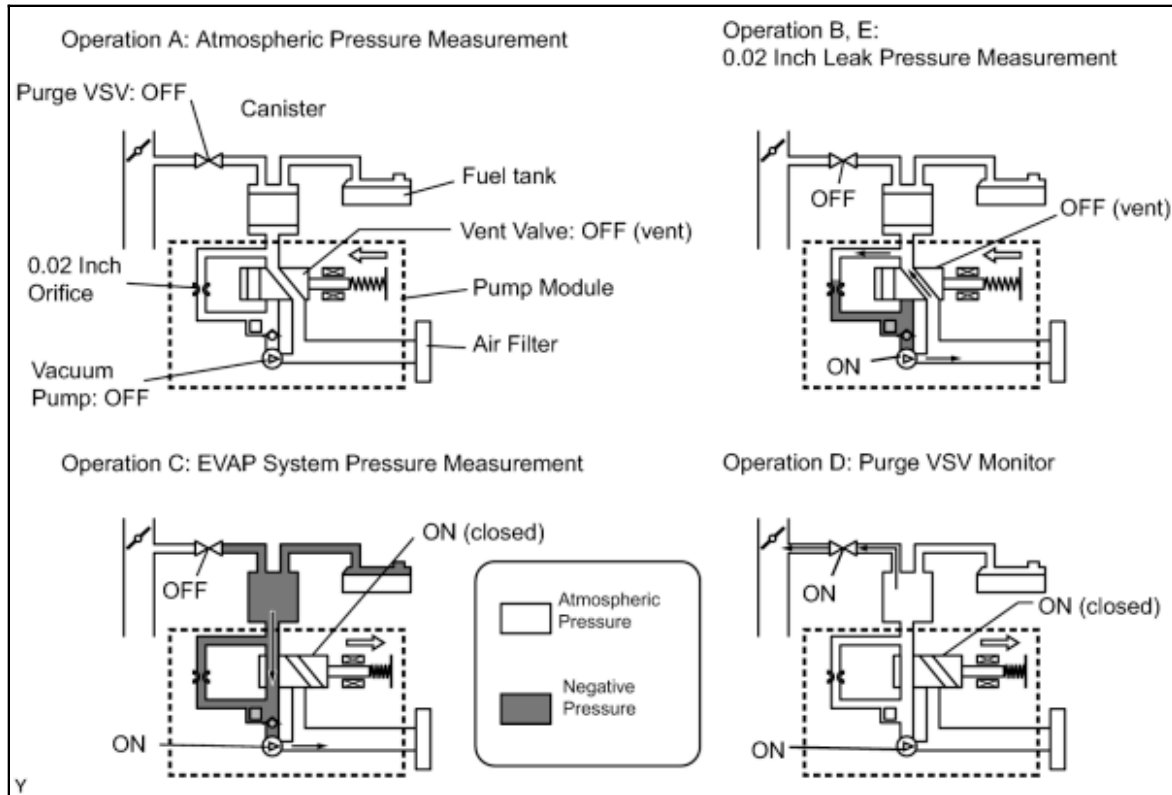
5 hours* after the engine switch is turned off, the electric vacuum pump creates negative pressure (vacuum) in the EVAP (Evaporative Emission) system. The ECM monitors for leaks and actuator malfunctions based on the EVAP pressure.

***: If the engine coolant temperature is not below 35°C (95°F) 5 hours after the engine switch is turned off, the monitor check starts 2 hours later. If it is still not below 35°C (95°F) 7 hours after the engine switch is turned off, the monitor check starts 2.5 hours later.**

SEQUENCE	OPERATION	DESCRIPTION	DURATION
-	ECM activation	Activated by soak timer, 5 hours (7 or 9.5 hours) after engine switch turned off.	-
A	Atmospheric pressure measurement	Vent valve turned OFF (vent) and EVAP system pressure measured by ECM in order to register atmospheric pressure. If pressure in EVAP system not between 70 kPa and 110 kPa (525 mmHg and 825 mmHg), ECM cancels EVAP system monitor.	10 seconds
B	First 0.02 inch leak pressure measurement	In order to determine 0.02 inch leak pressure standard, vacuum pump creates negative pressure (vacuum) through 0.02 inch orifice and then ECM checks if vacuum pump and vent valve operate normally.	60 seconds
C	EVAP system pressure measurement	Vent valve turned ON (closed) to shut EVAP system. Negative pressure (vacuum) created in EVAP system, and EVAP system pressure then measured. Write down measured value as they will be used in leak check. If EVAP pressure does not stabilize within 15 minutes, ECM cancels EVAP system monitor.	15 minutes*
D	EVAP VSV monitor	EVAP VSV opened and then EVAP system pressure measured by ECM. Large increase indicates normal.	10 seconds
E	Second 0.02 inch leak pressure measurement	After second 0.02 inch leak pressure measurement, leak check performed by comparing first and second 0.02 inch leak pressure standards. If stabilized system pressure higher than second 0.02 inch leak pressure standard, ECM determines that EVAP system leaking.	60 seconds

SEQUENCE	OPERATION	DESCRIPTION	DURATION
F	Final check	Atmospheric pressure measured and then monitoring result recorded by ECM.	-

***: If only a small amount of fuel is in the fuel tank, it takes longer for the EVAP pressure to stabilize.**

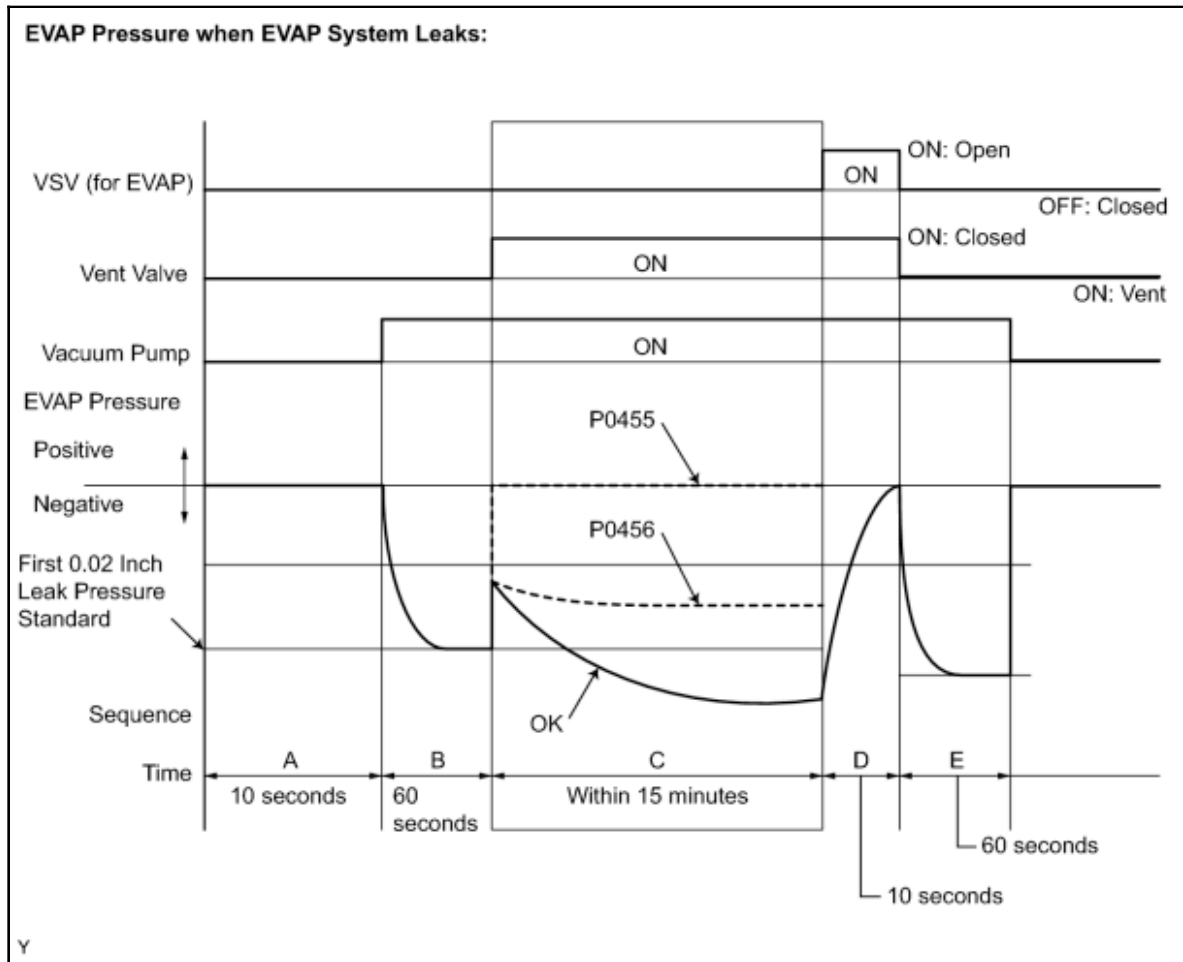


1. P0455: EVAP (Evaporative Emission) gross leak

In operation C, the vacuum pump creates negative pressure (vacuum) in the EVAP system and the EVAP system pressure is measured. If the stabilized system pressure is higher than [second 0.02 inch leak pressure standard x 0.2] (near atmospheric pressure), the ECM determines that the EVAP system has a large leak, illuminates the MIL and sets the DTC (2 trip detection logic).

2. P0456: EVAP very small leak

In operation C, the vacuum pump creates negative pressure (vacuum) in the EVAP system and the EVAP system pressure is measured. If the stabilized system pressure is higher than the second 0.02 inch leak pressure standard, the ECM determines that the EVAP system has a small leak, illuminates the MIL and sets the DTC (2 trip detection logic).



MONITOR STRATEGY

Required Sensors/Components	EVAP VSV and pump module
Frequency of Operation	Once per driving cycle
Duration	Within 15 minutes (varies with amount of fuel in tank)
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

EVAP key-off monitor runs when all of following conditions are met:	-
Atmospheric pressure	70 to 110 kPa (525 to 825 mmHg)
Battery voltage	10.5 V or more

Vehicle speed	Below 2.5 mph (4 km/h)
Engine switch	OFF
Time after key off	5, 7 or 9.5 hours
EVAP pressure sensor malfunction (P0450, P0451, P0452 and P0453)	Not detected
EVAP VSV	Not operated by scan tool
Vent valve	Not operated by scan tool
Leak detection pump	Not operated by scan tool
Both of following conditions are met before key OFF:	Conditions 1 and 2
1. Duration that vehicle is being driven	5 minutes or more
2. EVAP purge operation	Performed
ECT	4.4 to 35°C (40 to 95°F)
IAT	4.4 to 35°C (40 to 95°F)

1. Key-off monitor sequence 1 to 8

1. Atmospheric pressure

Next sequence is run if following condition is met:	-
Atmospheric pressure change	Less than 0.3 kPa (2.25 mmHg) for 1 second

2. First reference pressure

Next sequence is run if all of following conditions are met:	Conditions 1, 2 and 3
1. EVAP pressure when 4 seconds after reference pressure measurement	-1 kPa (-7.5 mmHg) or less
2. Reference pressure	-4.85 to -1.05 kPa (-36.38 to -7.87 mmHg)
3. Reference pressure	Saturated within 1 minute

3. Vent valve stuck closed check

Next sequence is run if following condition is met:	-
EVAP pressure change after vent valve is ON	0.3 kPa (2.25 mmHg) or more

4. Vacuum introduction and leak

Next sequence is run if both of following conditions are met:	-
Vacuum introduction time	15 minutes or less

5. EVAP VSV stuck closed check

Next sequence is run if following condition is met:	-
EVAP pressure change after purge VSV ON	0.3 kPa (2.25 mmHg) or more

6. Second reference pressure measurement

Next sequence is run if all of following conditions are met:	Conditions 1, 2, 3 and 4
1. EVAP pressure just after reference pressure measurement	-1 kPa (-7.5 mmHg) or less
2. Reference pressure	-4.85 to -1.05 kPa (-36.38 to -7.87 mmHg)
3. Reference pressure	Saturated within 1 minute
4. Reference pressure difference between first and second	Less than 0.7 kPa (5.25 mmHg)

7. Leak check

Next sequence is run if following condition is met:	-
EVAP pressure when vacuum introduction was complete	Less than second reference pressure

8. Atmospheric pressure

Monitor is complete	-
Atmospheric pressure difference between sequence 1 and 8	0.3 kPa (2.25 mmHg) or less

TYPICAL MALFUNCTION THRESHOLDS

"Saturated" indicates that the EVAP pressure change is less than 0.1 kPa (0.75 mmHg) in 30 seconds.

P0455: EVAP gross leak

EVAP pressure when vacuum introduction is complete	Higher than reference pressure x 0.2
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P0456: EVAP small leak

EVAP pressure when vacuum introduction is complete	Between reference pressure and reference pressure x 0.2
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MONITOR RESULT

Refer to CHECKING MONITOR STATUS .

