
EGR System

EGR System Eg-1

EGR System

EGR Flow Insufficient

MONITOR DESCRIPTION

If the ECM does not sense the opening of the EGR valve during the diagnostic test, it will conclude that there is a fault in either the EGR valve or the VSV for EGR-cut. The ECM will illuminate the MIL and set a DTC. The EGR system is used to lower combustion temperatures and thus reduce the quantity of NOx generated in the combustion process. Without EGR, under high load conditions, the combustion temperature would be high and large quantities of NOx would be generated. With the EGR system, exhaust gas is “recirculated” by diverting a percentage of the exhaust back into the intake manifold. The recirculated exhaust lowers the combustion temperature and NOx production is reduced. In some driving conditions, EGR gasses can affect driveability. In these driving conditions, the ECM commands the VSV for EGR-cut to block the engine vacuum source that opens the EGR valve. Blocking the vacuum signal allows the EGR valve to close and stop recirculation of the exhaust gas to the intake manifold.

During the ECM’s diagnostic test of the EGR system, the VSV for EGR-cut is turned ON and OFF while the intake manifold vacuum is monitored. If the ECM does not detect significant changes in the intake manifold vacuum, it will conclude that either the EGR valve did not open or the VSV for EGR-cut is malfunctioning. The ECM will illuminate the MIL and set a DTC.

MONITOR STRATEGY

Related DTCs	P0401	EGR valve does not open
Required sensors/Components	Main	Vacuum sensor
	Sub	ECT sensor, Crankshaft position sensor, Throttle position sensor, Vehicle speed sensor, A/C switch, MAP sensor
Frequency of operation	Once per driving cycle	
Duration	10 sec.	
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present	See page In-4	
A/C switch	Not switched ON	
ECT	60°C (140°F)	–
Engine RPM	1,500 rpm	3,500 rpm
Intake manifold pressure	–	–200 mmHg (–26.66 kPa)
Throttle angle	9°	15°
	Constant	
Vehicle speed	Constant	

TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
Intake manifold pressure change	Less than 7.3 mmHg (0.97 kPa) [M/T models]
	Less than 9.8 mmHg (1.31 kPa) [A/T models]

COMPONENT OPERATING RANGE

Parameter	Standard Value
Intake manifold pressure change when EGR valve opens	14.4 mmHg (1.91 kPa) or more

READINESS MONITOR DRIVING PATTERN

See page In-9

EGR Flow Excessive

MONITOR DESCRIPTION

If the ECM does not sense the opening of the EGR valve during the diagnostic test, it will conclude that there is a fault in either the EGR valve or the VSV for EGR-cut. The ECM will illuminate the MIL and set a DTC. The EGR system is used to lower combustion temperatures and thus reduce the quantity of NO_x generated in the combustion process. Without EGR, under high load conditions, the combustion temperature would be high and large quantities of NO_x would be generated. With the EGR system, exhaust gas is “recirculated” by diverting a percentage of the exhaust back into the intake manifold. The recirculated exhaust lowers the combustion temperature and NO_x production is reduced. In some driving conditions, EGR gases can affect driveability. In these driving conditions, the ECM commands the VSV for EGR-cut to block the engine vacuum source that opens the EGR valve. Blocking the vacuum signal allows the EGR valve to close and stop recirculation of the exhaust gas to the intake manifold.

During the ECM's diagnostic test of the EGR system, the VSV for EGR-cut is turned ON and OFF while the intake manifold vacuum is monitored. If the ECM does not detect significant changes in the intake manifold vacuum and there is engine misfire present, the ECM will conclude that the EGR valve did not close properly. The ECM will illuminate the MIL and set a DTC.

MONITOR STRATEGY

Related DTCs	P0402	EGR valve does not close
Required sensors/Components	Main	Vacuum sensor
	Sub	ECT sensor, Crankshaft position sensor, Throttle position sensor, Vehicle speed sensor, A/C switch, MAP sensor
Frequency of operation	Once per driving cycle	
Duration	10 sec.	
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present	See page In-4	
A/C switch	Not switched ON	
ECT	60°C (140°F)	–
Engine RPM	1,500 rpm	3,500 rpm
Intake manifold pressure	–	–200 mmHg (–26.66 kPa)
Throttle angle	9°	15°
	Constant	
Vehicle speed	Constant	

TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
• Intake manifold pressure change	Less than 7.3 mmHg (0.97 kPa) [M/T models] Less than 9.8 mmHg (1.31 kPa) [A/T models]
• Misfire count	20 or more

COMPONENT OPERATING RANGE

Parameter	Standard value
Intake manifold pressure change when EGR valve closed	14.4 mmHg (1.91 kPa) or more
No misfire is detected when EGR valve closed	

READINESS MONITOR DRIVING PATTERN

See page In-9