

EGR Gas Temperature and EGR Lift Monitor General Description

MONITOR DTC TABLE

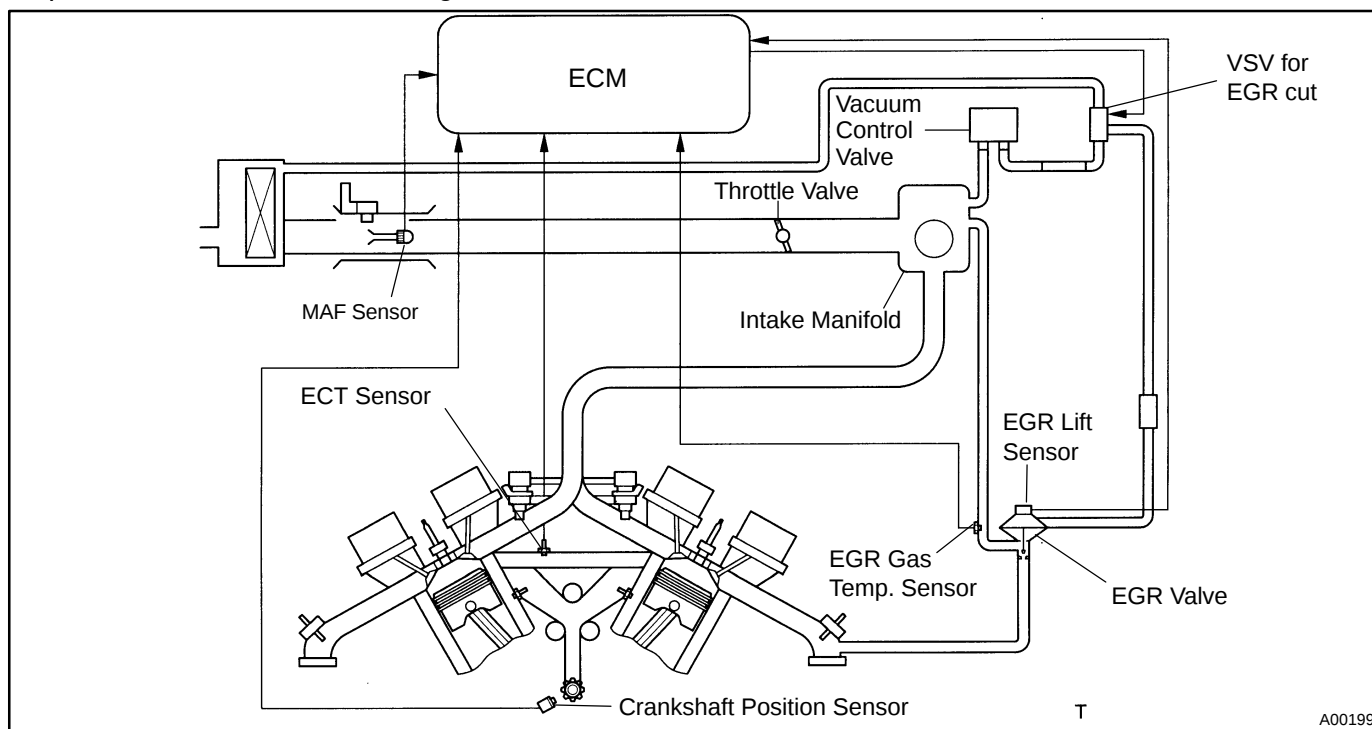
DTC		Document Title	See Page
Extended Code	Previous Code		
P0401	P0401	EGR Flow Insufficient Monitor Description	Eg-8
P0402	P0402	EGR Flow Excessive Monitor Description	Eg-11
P0405	P1410	EGR Lift Sensor Monitor Description	Eg-2
P0406			
P0409	P1411	EGR Lift Sensor Range/Performance Monitor Description	Eg-4

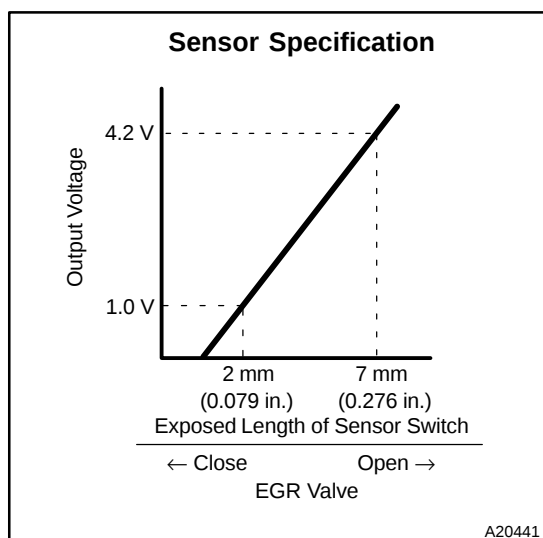
NOTE:

Some DTCs may have different meanings from those listed above depending upon the EGR Monitoring strategy. To identify which strategy is used on each model, refer to EGR Monitor Summary (See page [Eg-1](#)).

GENERAL DESCRIPTION

The EGR system is used to lower combustion temperatures and thus reduce the quantity of NO_x generated in the combustion process. Under high load conditions without the EGR system, the combustion temperature is high and large quantities of NO_x are generated. In the EGR system, exhaust gas is “recirculated” by diverting a percentage of the exhaust gas back into the intake manifold. The recirculated exhaust gas lowers the combustion temperature and NO_x production is reduced. Under some driving conditions, EGR gases affect driveability. Under these driving conditions, the ECM commands the VSV for EGR-cut to block the engine vacuum source to the EGR valve. Blocking the vacuum signal allows the EGR valve to close and stop recirculation of the exhaust gas to the intake manifold.





The EGR lift sensor detects to what extent the EGR valve opens. The ECM supplies 5 V to this sensor, which then varies the voltage between 1.0 V and 4.2 V according to what extent the EGR valve opens. When the EGR valve is open, the output voltage of the EGR lift sensor is high. When it is closed, the output voltage is low.

1. EGR Flow Insufficient Monitor (DTC P0401)

There are two malfunctions that will set DTC P0401:

- (1) The ECM senses the opening of the EGR valve using the EGR gas temperature sensor. When conditions for EGR flow are met, the ECM monitors the EGR gas for an increase in temperature. If there is low variation in the temperature of the EGR gas flow, the ECM will conclude that either the EGR valve did not open or that the EGR gas temperature sensor is malfunctioning. This will cause the ECM to illuminate the MIL and set this DTC.
- (2) The ECM checks the exhaust gas temperature when the engine is not fully warmed-up. The exhaust gas should be relatively cool. If the ECM detects a high exhaust gas temperature at a time when the exhaust gas should still be relatively cool, the ECM will conclude that there is a malfunction of the EGR gas temperature sensor and set this DTC.

2. EGR Flow Excessive Monitor (DTC P0402)

The ECM checks the position of the EGR valve using the EGR lift sensor. The ECM can determine the valve position after commanding the valve to close. If the ECM finds that the EGR valve is open to any degree after it has been commanded to close, the ECM will conclude that the EGR valve is not closed. The ECM will illuminate the MIL and set a DTC.

3. EGR Lift Sensor Monitor (Previous DTC: P1410) (Extended DTC: P0405/P0406)

If the output voltage of this sensor is out of the normal range, the ECM will interpret this as a malfunction of the EGR lift sensor or circuit. This will cause ECM to illuminate the MIL and set a DTC.

4. EGR Lift Sensor Range/Performance Monitor (Previous DTC: P1411) (Extended DTC: P0409)

If the ECM finds that the signal from the EGR lift sensor is out of the normal range for a closed valve, it will interpret this as a malfunction of the EGR lift sensor. This will cause ECM to illuminate the MIL and set a DTC.