

ELECTRIC EXHAUST GAS RECIRCULATION (EGR) SYSTEM MONITOR

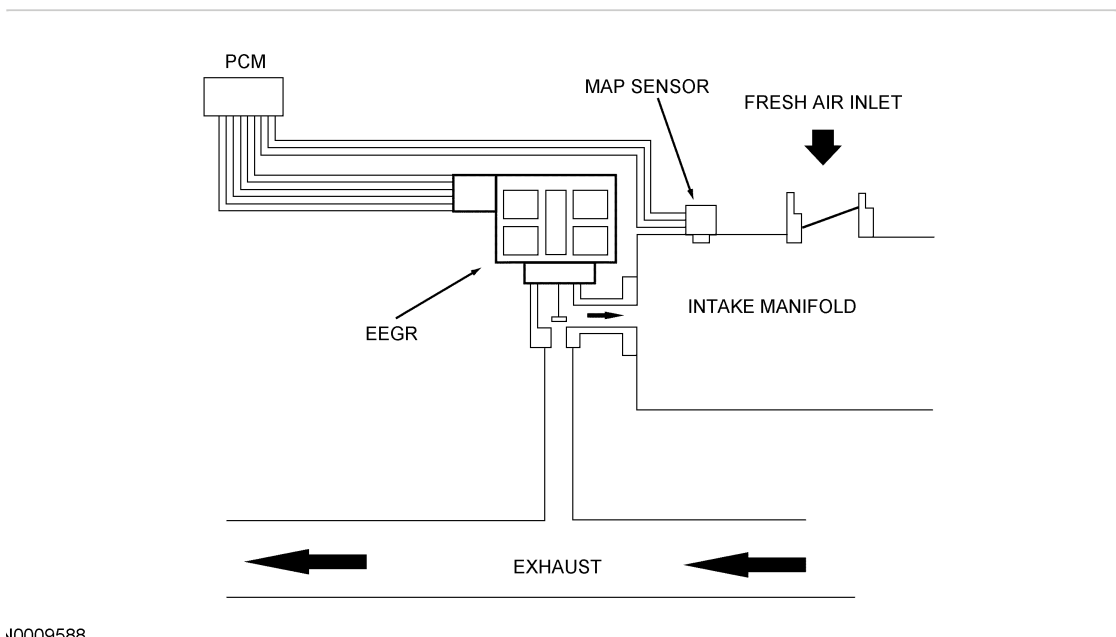
2020 PCEd Gasoline Engines

SECTION 1: Description and Operation

Electric Exhaust Gas Recirculation (EGR) System Monitor

The electric EGR system monitor is an on board strategy designed to test the integrity and flow characteristics of the EGR system. The electric EGR system monitor consists of an electrical and functional test that checks the stepper motor and the EGR system for correct flow. The PCM controls the electric EGR valve by commanding from 0 to 52 discrete increments or steps to get the valve from the fully closed position to the fully open position. The stepper motor electrical test is a continuous check of the 4 electric stepper motor coils and circuits to the PCM. A concern is indicated if an open circuit, short to voltage, or short to ground has occurred in one or more of the stepper motor coils or circuits for a calibrated period of time. If a concern has been detected, the EGR system is disabled, setting a diagnostic trouble code (DTC). Additional monitoring is suspended for the remainder of the drive cycle, or until the next engine start.

The intake manifold pressure is higher when EGR is flowing than when it is not flowing. Therefore, when the exhaust gas is delivered into the intake manifold, the manifold absolute pressure (MAP) sensor reading increases. The detection of EGR flow occurs by monitoring this increase in pressure. If the difference in the pressure between EGR commanded ON versus commanded OFF is below a minimum threshold, then an EGR valve concern has occurred.



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