P0490: EXHAUST GAS RECIRCULATION "A" CONTROL CIRCUIT HIGH

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$200-$350**
Can I Still Drive?	:	**Yes**

What Does The P0490 Code Mean?

These engine trouble codes refer to a failure in the EGR (exhaust gas recirculation) system. To be more specific — the electrical aspect. The EGR is an integral part of the vehicles emission system whose function is to prevent the formation of harmful Nox (oxides of nitrogen) from forming in the cylinders.

The EGR is operated by the engine management computer. The computer opens or closes the EGR as load, speed and temperature dictate in order to maintain the proper cylinder head temperature. There are two wires to the electrical solenoid on the EGR with which the computer activates it.

A potentiometer is also located in the EGR solenoid that signals the position of the EGRs pintle (operating mechanism that opens and closes the passage.)

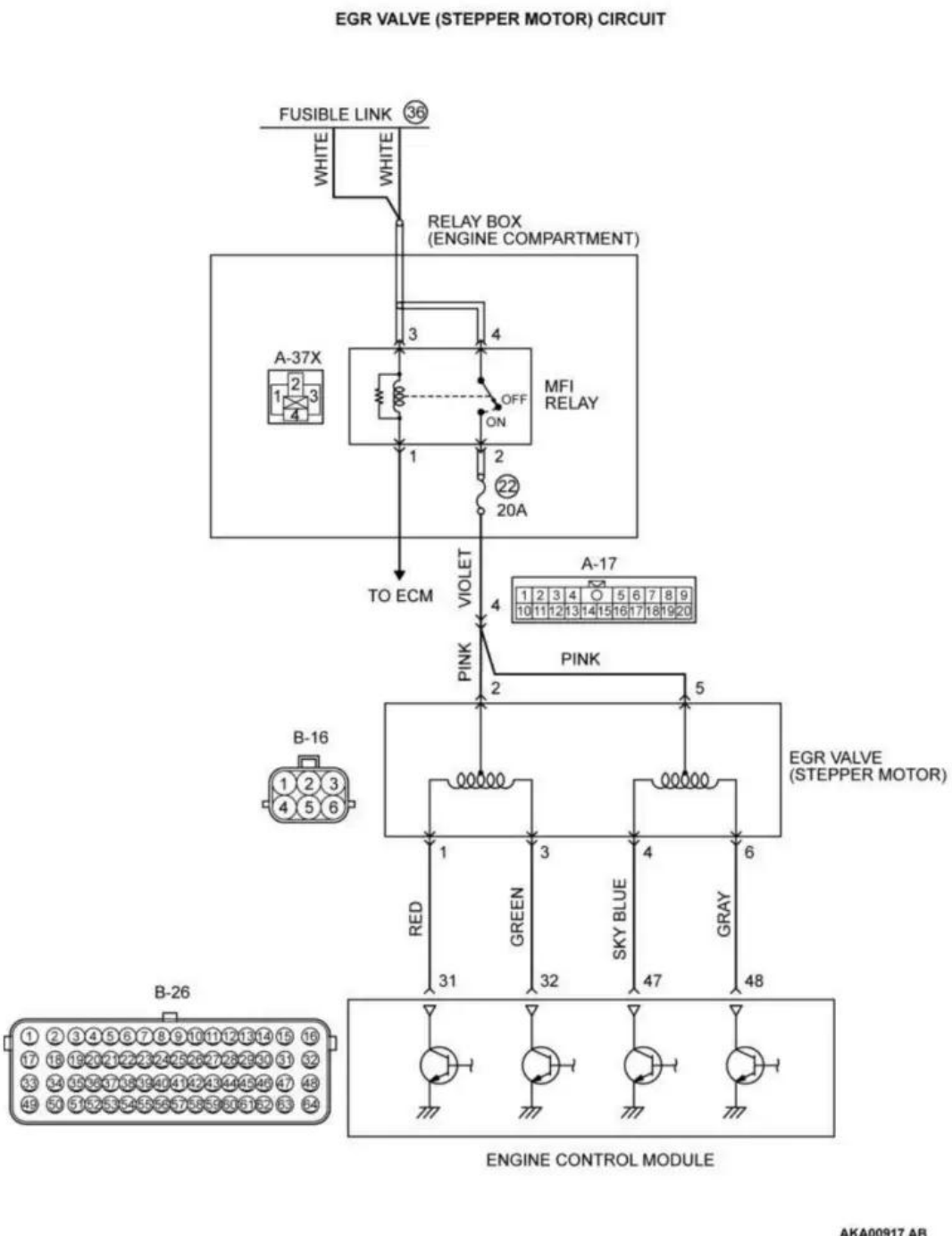
This works much like dimming your lights in the home. As the switch is turned the lights get brighter as you increase the voltage. Your engine computer fails to see any voltage change as it attempts to open or close the EGR indicating it is stuck in one position.

Codes P0490 EGR control circuit “A” means no high voltage change to indicate the EGR is opening or closing. P0489is basically identical but it means circuit low as opposed to high.

Unleaded fuel is prone to producing Nox when under extreme temperatures in the engine’s

cylinders. The EGR routes a regulated amount of exhaust gas back into the intake manifold. The purpose is to dilute the incoming fuel mixture sufficiently to reduce the cylinder head temperature below that at which Nox forms.

EGR operation is essential for more reasons than preventing Nox emissions — it allows more advanced timing for more power without detonation, and a leaner fuel mixture for better fuel economy.



P0490 wiring diagram

What Are The Symptoms Of The P0490 Code?

Symptoms will vary depending on the position of the pintle in the EGR at the time of failure.

- Extremely rough running engine
- Check engine light illuminated
- Drop in fuel economy
- Decrease in power
- No start or very difficult to start followed by rough idle

What Are The Potential Causes Of The P0490 Code?

The causes for this DTC may include:

- Short to ground
- Short to battery voltage
- Bad connector with pushed out pins
- Corrosion in connector
- Fouled EGR pintle
- Failed EGR solenoid
- Bad EGR
- Faulty ECU or computer

How Can You Fix The P0490 Code?

If your vehicle has under 100,000 miles, it is advisable to read your warranty. Most vehicles have either an 80 or 100,000 mile warranty on emission controls. Secondly, go online and check for any relevant TSBs (technical service bulletins) related to these codes and their repair.

Tools

To accomplish these diagnostic procedures the following tools will be needed:

- Volt/Ohmmeter
- EGR wiring schematic
- Jumper wire
- Two paper clips or sewing needles

Procedure

Open the hood and start the engine. If the engine has a rough idle, pull the plug on the EGR. If the engine smooths out the pintle is stuck in the EGR. Shut the engine off and replace the EGR.

Look at the wire connector on the EGR. There are 5 wires, the two outside wires supply battery

voltage and the ground. The center three wires are the potentiometer used to signal the computer as to the amount of EGR flow. The center terminal is the 5-volt reference terminal.

Inspect the connector thoroughly for pushed out pins, corrosion or bent pins. Look closely at the wiring harness for any missing insulation or possible shorts. Look for broken wires that could cause and open circuit.

- With the voltmeter, probe either end terminal with the red lead and ground the black lead. Turn the key on and look for 12-volts and both end-terminals.
- If no voltage is displayed there is a broken wire between the EGR and ignition buss. If 12-volts displays on one side only, the EGR has an internal open. Replace the EGR.
- Pull the connector off the EGR and with the key on and the engine off, probe both outer terminals for power. Make a note of which one has 12-volts and replace the connector.
- Place a paper clip in the end terminal that had no power, this is the ground terminal. Attach the jumper to the paper clip. Ground the jumper wire. There will be an audible “click” as the EGR energizes. Disconnect the ground wire and start the engine. Ground the wire again and this time the engine will begin to run rough as the EGR is energized and smooth out as the ground is removed.
- If the EGR clicked and caused the engine to run rough, the EGR is good, the problem is electrical. If not, shut off the engine and replace the EGR.
- Probe the center terminal on the EGR connector. Turn the key on. There is 5.0-volts displayed if the Computer is working properly. Turn the key off.
- Use the EGR wiring diagram and locate the “EGR Reference Voltage” terminal on the computer. Place a pin or paper clip in the computer connector at this point to back-probe the terminal.
- Turn the key on. If 5-volts is present the computer is good and the problem is in the harness to the EGR. If no voltage is present the computer is bad.

A tip to repair the EGR circuit without replacing the computer: Look on the wiring diagram and locate the coolant temperature voltage reference terminal. Probe this terminal with the key on. If the 5-volt ref. Voltage is there, turn the key off and mark the two reference terminals used in these tests. Pull the computer’s connector, solder a jumper wire between these two terminals. Install the connector and the EGR will operate normally without replacing the computer.

Reference Sources

P0490 Exhaust Gas Recirculation (EGR) "A" Control Circuit High, OBD-Codes.