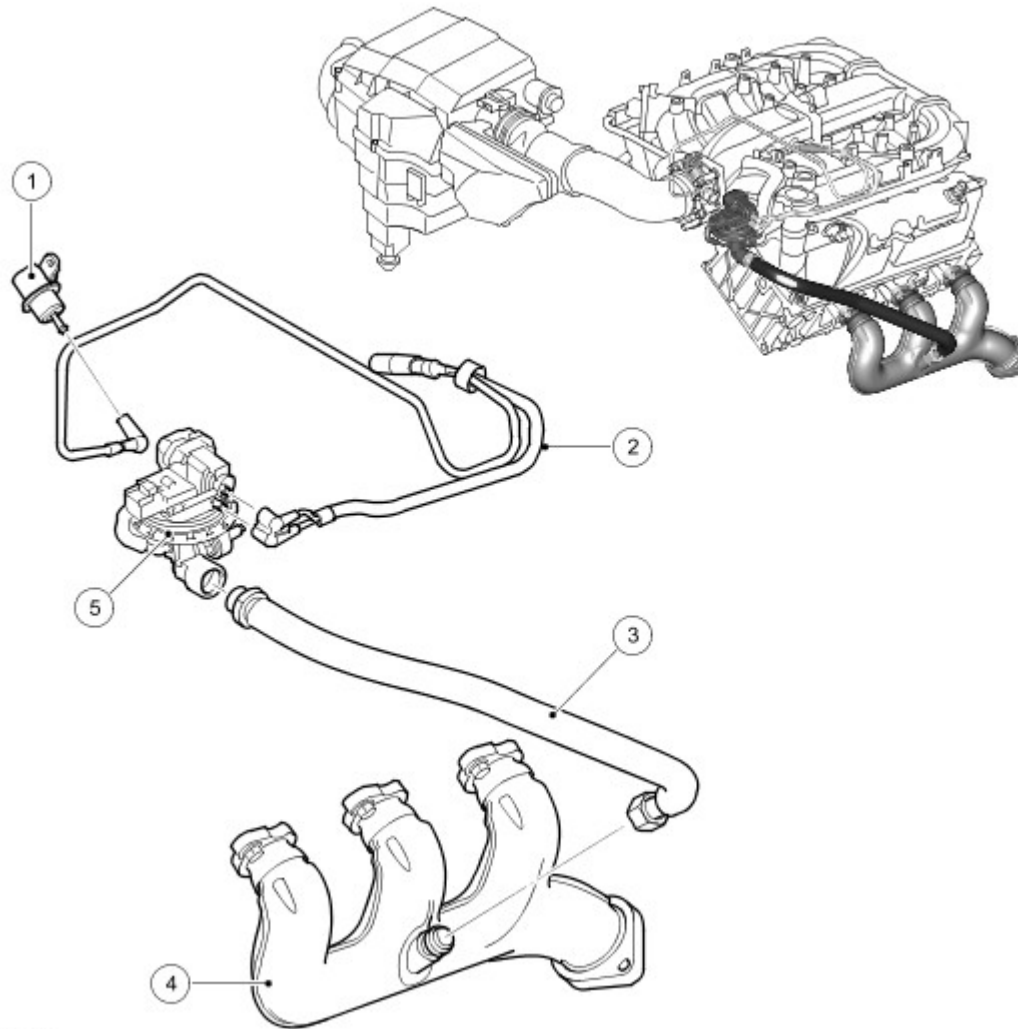




Engine Emission Control

Exhaust Gas Recirculation Component Location



E48510

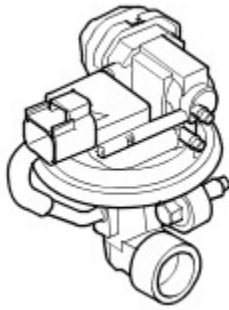
Item	Part Number	Description
1	-	Fuel rail damper
2	-	Vacuum control hoses
3	-	Exhaust manifold to Exhaust Gas Recirculation (EGR) hose
4	-	Exhaust manifold
5	-	ESM valve

Engine emissions on the V6 petrol engine are controlled by the Engine Control Module (ECM). The engine emission control system comprises:

- EGR system
- Crankcase emission system

EGR SYSTEM

ESM Valve



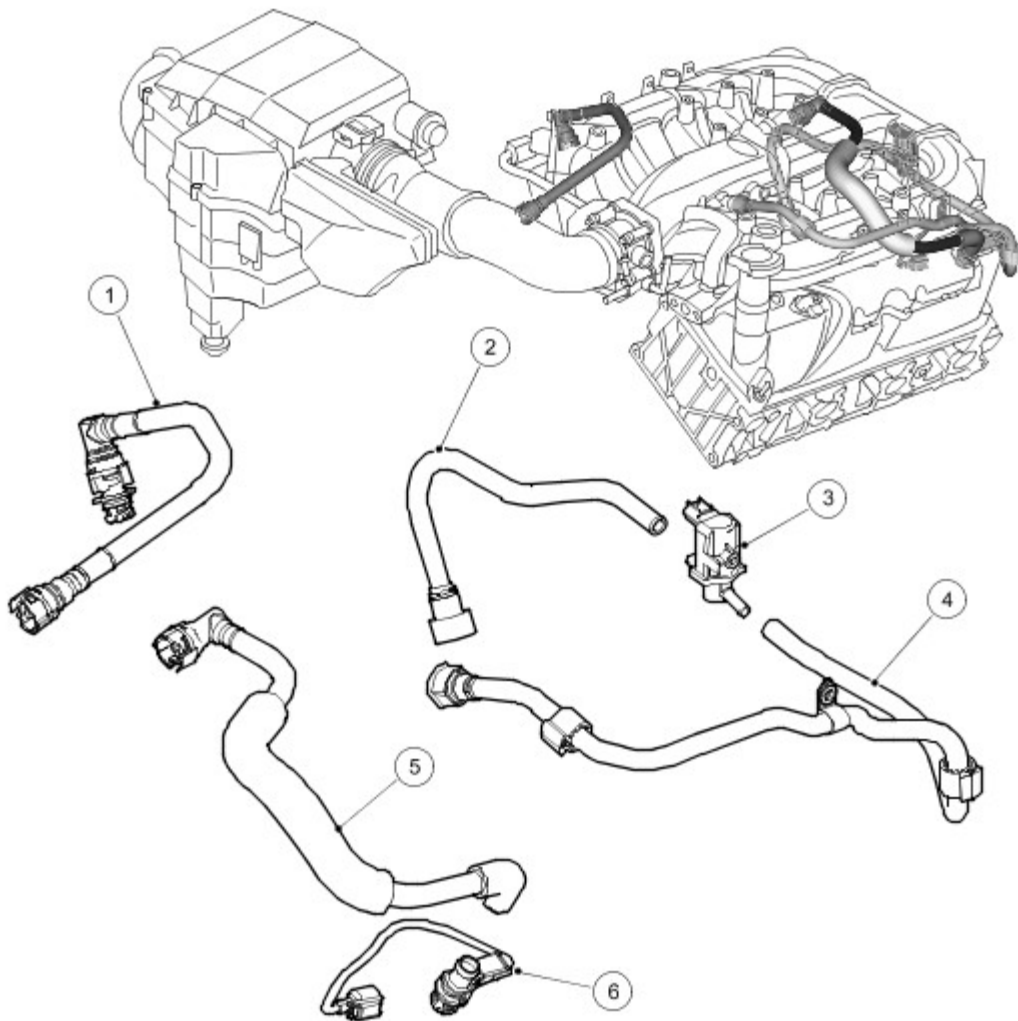
E48511

The EGR System Module (ESM) valve is located on the intake manifold with a pipe connecting the exhaust manifold to the valve. Connection between the sensor and the harness is via a six-way connector. The ESM valve is electrically controlled by a Pulse Width Modulated (PWM) signal. The ESM valve allows burned exhaust gas to be recirculated back into the engine. Since exhaust gas has much less oxygen than air, it is basically inert. The exhaust gas takes the place of air in the cylinder and reduces combustion temperature. As the combustion temperature is reduced, so are the oxides of nitrogen (NOx) emissions.

The ESM valve has an integrated Differential Pressure Feedback-Electronic/Manifold Absolute Pressure (DPFE/MAP) sensor. This pressure transducer monitors the pressure differential on either side of an orifice in the ESM system flow path and then transmits that information to the ECM. The pressure drop measured across this orifice is used to estimate the flow rate of recirculated exhaust gas. An Electronic Vacuum Regulator (EVR) is used to control the vacuum signal to the ESM valve based on the electrical signal from the ECM. The ECM monitors the ESM level based on the feedback from the DPFE/MAP sensor, which creates a closed loop system.

CRANKCASE VENTILATION SYSTEM

Crankcase Ventilation System Component Location



E48512

Item	Part Number	Description
1	-	Crankcase Ventilation (CCV) Hose and cam lock connector
2	-	Engine to evaporative emissions control tube
3	-	Evaporative emissions control valve
4	-	Crankcase Ventilation (CCV) hose
5	-	Positive Crankcase Ventilation(PCV) hose and PCV valve
6		PCV jump lead with integral thermistor

Positive Crankcase Ventilation (PCV) Valve



E48513

The crankcase ventilation system comprises:

- Positive Crankcase Ventilation (PCV) valve
- Positive Crankcase Ventilation (PCV) hose
- Crankcase Ventilation (CCV) hose

The PCV is an electrically heated control valve that allows the gas from left hand cylinder head to flow into the air intake. The PCV valve is electrically heated to allow it to remain operational in cold climates. The PCV heater power is fed from the fuel pump relay, therefore heating is always active while the engine is running. The current supplied is internally regulated by the PCV.