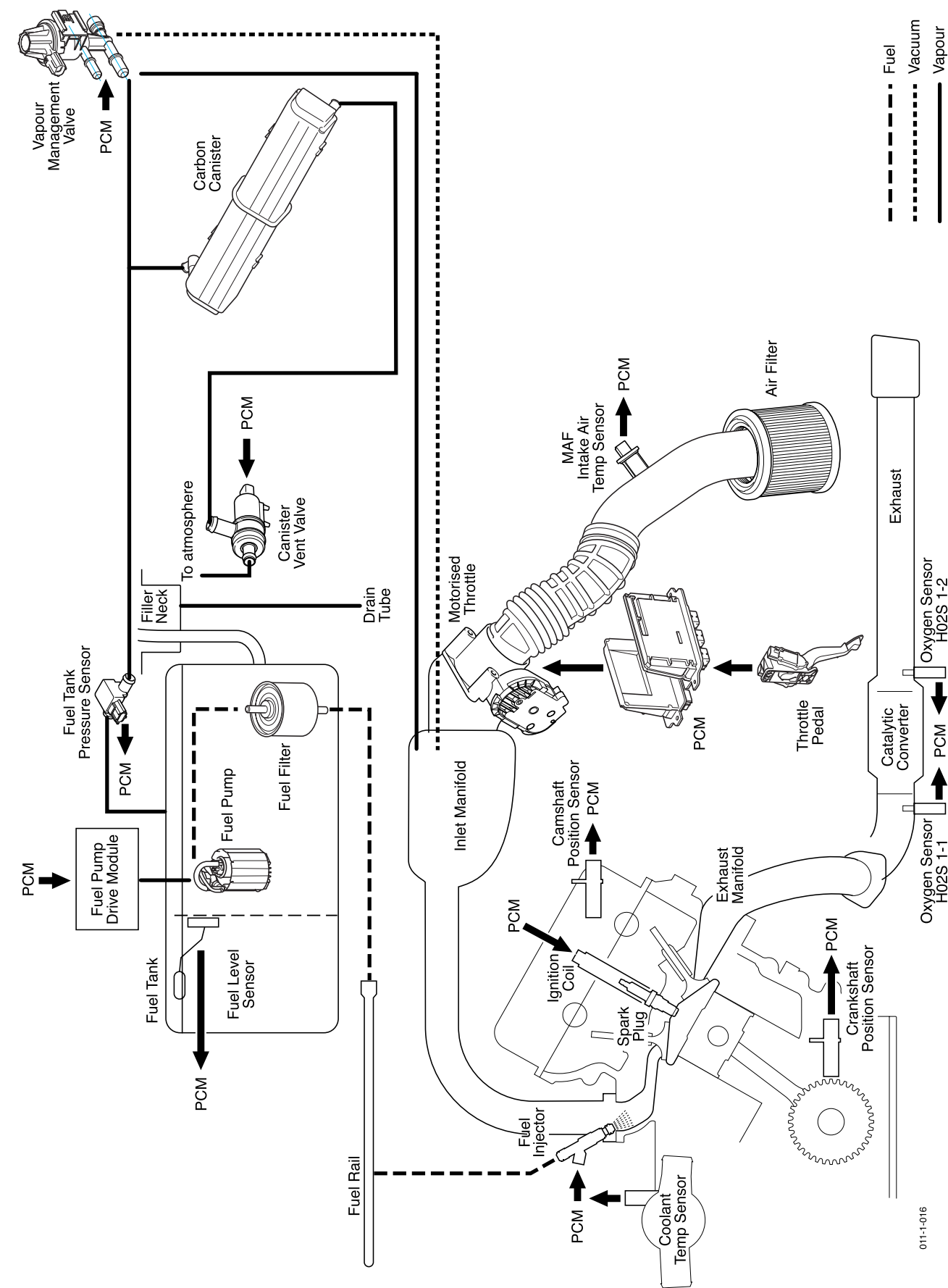


Engine Management - Schematic Diagram



Description of Components

Powertrain Control Modules (PCMs) - Primary and Secondary

The engine management system is controlled by the Powertrain Control Modules (PCMs), which receive signals from the sensors, compares them to the required standards and then modify the fuel and ignition settings to maintain an optimum, stoichiometric, fuel and air mixture under all conditions. Sensor information is supplied to the Control Module Inputs, and control commands are issued through the Control Module Outputs. The PCMs are located one under each front wing.

The Mass Air Flow Sensor (MAF)

The Mass Air Flow Sensor (MAF), measures the quantity of air drawn into the engine and reports to the PCM.

The Air Temperature Sensor (IAT)

An Inlet Air Temperature Sensor (IAT), is located inside each mass airflow meter and measures the temperature of the air entering either side of the engine. These sensors are fitted so that the engine management system can compensate for air density changes.

The Engine Coolant Temperature Sensors (ECT)

The Engine Coolant Temperature Sensor (ECT), monitors the coolant temperature and reports to the primary PCM. The secondary PCM receives the current temperature information from the primary PCM over the CAN bus.

The Fuel Pumps

The Fuel Pumps, situated in the fuel tank, supply fuel to the Fuel Rails. The fuel pressure at the fuel rails is regulated by changing the run speed of the fuel pumps.

Fuel Injectors

The twelve Injector solenoids are operated by the PCMs in sequence to inject fuel into the area behind each inlet valve. The volume of fuel injected is governed by the length of time each injector solenoid is actuated and the pressure in the fuel rail.

Ignition Coils

Ignition is by long life Spark Plugs supplied with HT voltage from the Ignition Coils mounted on each plug. The timing of ignition is varied by the PCM according to vehicle speed and engine load.

Catalytic Convertor / Heated Oxygen Sensors (H02S)

The combustion gases, after passing through the exhaust manifolds, enter the Catalytic Convertors, where the quality of the exhaust gas emission is modified. The quality of the exhaust gas emission is constantly checked by the four Upstream Heated Oxygen Sensors (H02S1 on either bank), which are situated at the entrance of the catalysts. The catalyst efficiency is checked using four Downstream Heated Oxygen Sensors (H02S2 on either bank). By comparing the signal outputs of pre and post catalyst heated oxygen sensors the PCM can make corrections to the fuel and ignition settings as necessary. The sensors contain integral heaters which accelerate the warming-up of the sensors to enable a rapid correction of initial settings which may be causing the emission of low quality exhaust gases.