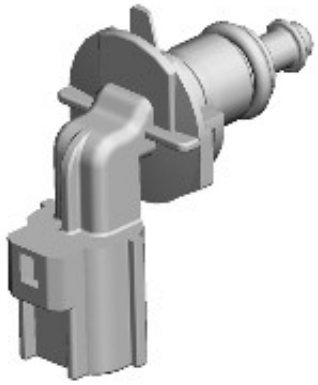


E108397

The engine coolant temperature (ECT) sensor is installed in the radiator upper hose, in the tee connection with the thermostat hose.

The ECT sensor is a NTC thermistor that receives a 5V reference voltage from the ECM. The ECM uses the temperature information for the following functions:

- Fueling calculations
- Limiting engine operation if engine coolant temperature becomes too high
- Glow plug activation time.

The ECM also transmits coolant temperature information on the high speed CAN bus to the instrument cluster, for temperature gauge operation.

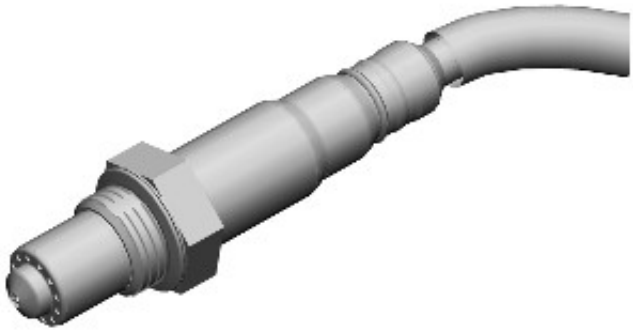
If the ECT sensor fails, the following symptoms may be observed:

- Difficult cold start
- Difficult hot start
- Engine performance compromised
- Temperature gauge inoperative or inaccurate reading.

The ECM may also illuminate the MIL, depending on the fault.

In the event of ECT sensor signal failure, the ECM applies a default value of 88 °C (190 °F) coolant temperature for fueling purposes.

## HEATED OXYGEN SENSOR (ONLY FITTED TO VEHICLES WITH DPF)



E139409

The HO2S is installed in the inlet of the catalytic converter and DPF.

The HO2S allows the ECM to measure the oxygen content of the exhaust gases, for closed loop control of the fuel:air mixture.

The heater element of the HO2S is controlled by a PWM (pulse width modulation) signal from the ECM. The heater element is operated immediately after each engine start and during low load conditions when the temperature of the exhaust gases is insufficient to maintain the required sensor temperature. The PWM duty cycle is carefully controlled to prevent thermal shock to cold sensors. A non-functioning heater delays the sensor’s readiness for closed loop control and increases emissions.

If there is a fault with the HO2S (heater or sensor circuits) the ECM illuminates the MIL and defaults to open loop fueling.

## MANIFOLD ABSOLUTE PRESSURE SENSOR