

## Engine Control Components

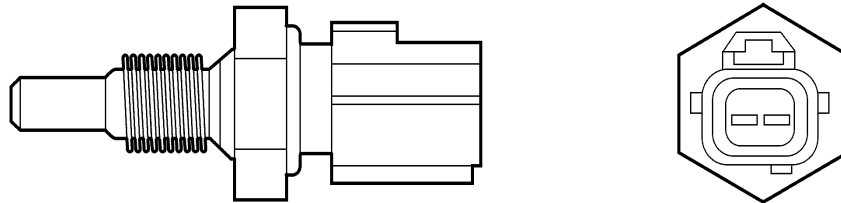
### Cylinder Head Temperature (CHT) Sensor

**Note:** If the CHT sensor is removed from the cylinder head for any reason it must be replaced with a new sensor.

The CHT sensor is a thermistor device in which resistance changes with the temperature. The electrical resistance of a thermistor decreases as temperature increases, and the resistance increases as the temperature decreases. The varying resistance affects the voltage drop across the sensor terminals and provides electrical signals to the PCM corresponding to temperature.

Thermistor-type sensors are considered passive sensors. A passive sensor is connected to a voltage divider network so varying the resistance of the passive sensor causes a variation in total current flow. Voltage that is dropped across a fixed resistor (pull-up resistor) in series with the sensor resistor determines the voltage signal at the PCM. This voltage signal is equal to the reference voltage minus the voltage drop across the fixed resistor.

The CHT sensor is installed in the cylinder head and measures the metal temperature. The CHT sensor provides complete engine temperature information and is used to infer coolant temperature. If the CHT sensor conveys an overheating condition to the PCM, the PCM initiates a fail-safe cooling strategy based on information from the CHT sensor. A cooling system concern, such as low coolant or coolant loss, could cause an overheating condition. As a result, damage to major engine components could occur. Using both the CHT sensor and fail-safe cooling strategy, the PCM prevents damage by allowing air cooling of the engine and limp home capability. For additional information, refer to [Powertrain Control Software](#) for Fail-Safe Cooling Strategy in this section.



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*Typical CHT Sensor*

### Differential Pressure Feedback Exhaust Gas Recirculation (EGR) Sensor

The differential pressure feedback EGR sensor is a piezo resistive type pressure transducer that monitors the differential pressure across a metering orifice located in the orifice tube assembly. The differential pressure feedback EGR sensor receives this signal through 2 hoses referred to as the downstream pressure hose (REF signal) and upstream pressure hose (HI signal). The HI and REF hose connections are marked on the differential pressure feedback EGR sensor housing for identification (note the HI signal uses a larger diameter hose). The differential pressure feedback EGR sensor outputs a voltage proportional to the pressure drop across the metering orifice and supplies it to the PCM as EGR flow rate feedback.