

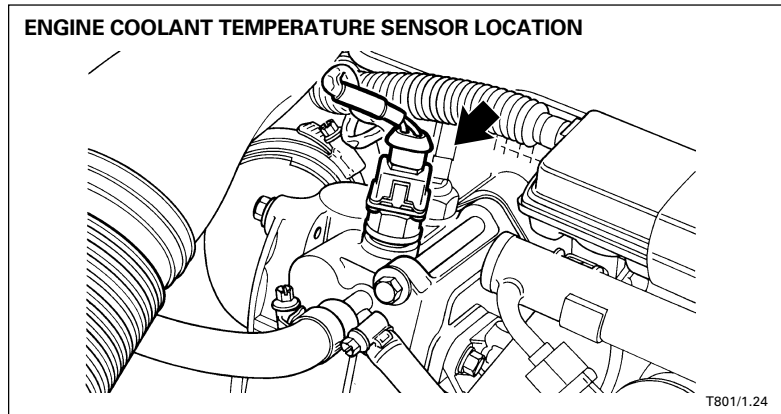
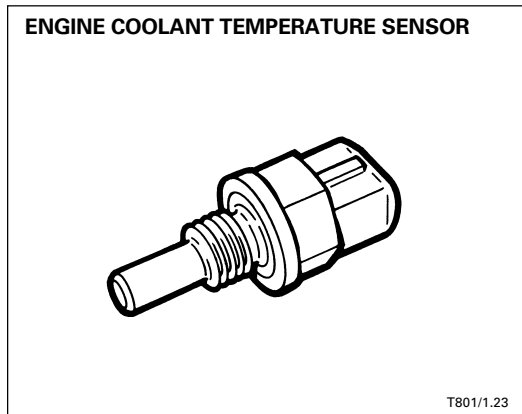
# AJ16 4.0 Liter Engine Management System

## EMS Main Sensing Components (continued)

### Engine Coolant Temperature

#### Engine coolant temperature sensor (ECTS)

The engine coolant temperature sensor is a negative temperature coefficient (NTC) thermistor. It is identical to the sensor used in AJ6 engine management systems, however, the connector and leads are revised. Engine coolant temperature is determined by the ECM by a change in resistance within the sensor. The ECM applies 5 volts to the sensor and monitors the voltage across the pins to detect the varying resistance.



#### Coolant temperature sensor – temperature versus resistance:

Coolant temperature		Resistance (kilo ohms)
°F	°C	
14	-10	9.20
32	0	5.90
50	10	3.70
68	20	2.50
86	30	1.70
104	40	1.18
122	50	0.84
140	60	0.60
158	70	0.435
176	80	0.325
193	90	0.25
212	100	0.19

#### Coolant temperature sensor – temperature versus typical approx. voltage:

Coolant temperature		Voltage
°F	°C	
14	-10	4.05
32	0	3.64
59	15	2.89
78	25	2.42
86	30	2.20
104	40	1.78
122	50	1.44
140	60	1.17
158	70	0.95
176	80	0.78
193	90	0.65
212	100	0.55

#### ECTS Monitoring for OBD II

Three tests are performed to check the ECTS:

- 1 The range of the sensor is checked for values outside the normal range.
- 2 A "time to warm-up" test check that the sensor responds to a rise in coolant temperature.
- 3 A third test checks for an abnormal fall in coolant temperature once the temperature rise is confirmed. A fault must occur on two consecutive trips before the CHECK ENGINE MIL is activated. Refer to Systems Readiness Test, page 53.

#### NOTES