

# AJ16 4.0 Liter Engine Management System

*Not fitted x R (Aust.)*

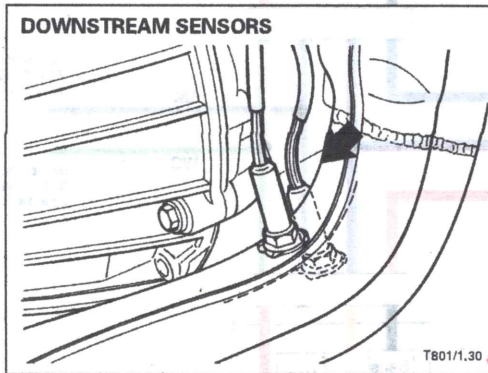
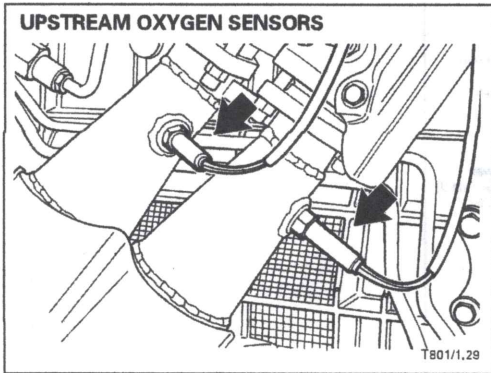
Four oxygen sensors are installed on the exhaust system, two upstream and two downstream of the primary catalysts. The two downstream sensors are used by the ECM for closed loop fuel metering correction. The upstream sensors are used for OBD catalyst monitoring. Refer to Catalytic Converters on page 48.

If the oxygen sensors are to be removed or the exhaust system replaced, the sensors and harness connectors must be labeled to ensure that they are installed in their original locations.

## Oxygen Sensor Orientation

If the sensors and connectors are not installed in their original locations, the ECM can be reprogrammed using PDU to match the sensor locations to the ECM. This PDU routine is called Oxygen Sensor Orientation.

**CAUTION:** When a new ECM or new sensors are installed or the wiring harness is changed, the ECM must be reprogrammed using PDU.



## HO2S Monitoring for OBD II

Both the oxygen sensor and tip heater circuits are monitored. When the key is switched on, the sensors are tested for voltage outside the normal range. The oxygen sensors are also tested when a fuel system fault is suspected. Periodically, the sensor response rate is compared to a standard. The tip heater circuits are checked for open and short circuits.

A fault must occur on two consecutive trips before the CHECK ENGINE MIL is activated. Refer to Systems Readiness Test, page 53.

### NOTES

#### Defining Open Loop and Closed Loop o2

Open loop is when the ECU is not referring to the o2 sensor for feedback. Meaning that the o2 sensor might as well not be there, because the ECU is not using it to modify its timing and fuel maps. If your asking yourself why the ECU would ever want to do this? It is because there are times when you want the motor to run a set amount of timing and fuel, no matter what the conditions. For reference, most OEM cars are tuned to run closed loop o2 on partial throttle driving to get the best gas mileage, and then run open loop on wide open throttle (WOT) to be sure the motor runs the safest it can, and that the factory fuel map is not modified in any way. Closed loop is when the ECU does refer to the o2 sensor for feedback. Using the o2 sensor the ECU will modify its fuel table based on the readings the o2 sensor is seeing. This is important in maintaining a perfect A/F ratio as there are so many variables affecting the tune of a motor at any given time. For example, air temperature, altitude, humidity, and so on.

*EEPROM = Control Data*

*EEPROM = OBD*

*= Adaptive functions*

*(o2 orientation)*