

02 Sensor Notes from AJ16 Engine management dealer training publication

The ECM contains adaptive idle fuel metering software function that automatically makes a baseline correction to the ideal fuel metering strategy using long term information from the oxygen sensors. The adaption values are held in a non-volatile memory (EEPROM) and will be retained even if the battery is disconnected.

If the oxygen sensors are removed or the exhaust replaced, the sensors and harness connectors **MUST** be labelled to ensure they are installed in their original locations.

Should the oxygen sensors not be installed in their original locations, the ECM can be reprogrammed using PDU (Portable diagnostic unit) to match the sensors locations to the ECM. This routine is called **“Oxygen sensor orientation”**

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

Comment – It does appear that the ECM not only stores adaption info for the sensors individually and is also sensitive enough to take into account the resistance of the wiring harness to each sensor.

It is not possible to “flash” new software or calibration into the GEMS6 ECU for a AJ16 .
It is possible to initiate a -

: **Throttle adaption** – needs to be undertaken after tinkering with the throttle sensor (TPS), butterfly or base air change (cleaning the throttle changes base air)

: **Oxygen sensor orientation** – the ECM figures out just where each O2 sensor is connected

: **Reset adaptive terms** – Clearing ECM adaptations (AMFR & FMFR) unfortunately only the old Jaguar PDU is able to perform this.

The first two can be done with WDS, IDS, SDD, Legacy and PDU and Autologic.

Comment – When the engine is running and in closed loop it looks at the O2 sensors & adjusts the fuel trim to optimise the performance & economy. If the sensors fail (including switched around) the ECM will get false readings and over time may correct to the stage where it does not know where it is at, at that point the ECM will switch to “limp mode” (open loop) and runs off the default values.

It apparently does not self correct nor trigger engine codes.