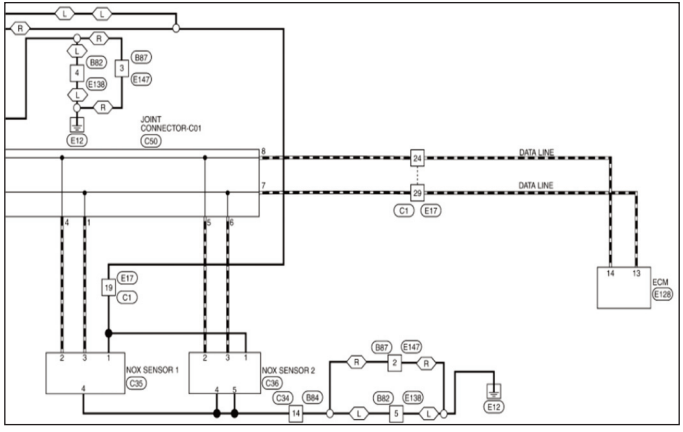
A Nissan Navara 2.3 dCi with sensor confusion



Wiring diagram of the Navara's NOx sensors

Frequently at the Technical Helpline, more questions are arising regarding AdBlue system errors. The most common, concerns the mileage countdown displayed on the instrument cluster that warns the driver to seek help as the impending non-start mileage approaches.

A recent case was a Nissan Navara 2.3 dCi D23 YS23DDT with just such a message. The diagnosis revealed a NOx sensor code, U059E (Additive system invalid data received from nitrogen sensor A). Being unfamiliar with the testing process for these selective Catalytic Reduction (SCR) systems, the technician called the Helpline for a plan to diagnose the issue.

The first level of the diagnosis involved a serial check of the data from both sensors, upstream and downstream of the catalytic converter. Understanding the readings from both sensors is paramount to an accurate diagnosis. This reading is best done during a drive cycle, not at idle. We were looking for a reduction of 90% of NOx after the SCR Catalyst. Please note that the system must be at operating temperature for the NOx conversion to take place.

Be certain to check the output data from both sensors during acceleration and deceleration to prove they are both reactive. On deceleration, expect to see a zero NOx reading from both. A high reading from sensor 2 on deceleration can indicate a failed sensor or a failed SCR catalytic converter, as the sensor may be reading excess ammonia. The sensor can not differentiate NOx from ammonia. A high reading from sensor 2 may also indicate a leaking dosing injector.

A typical NOx sensor

The NOx sensors fitted to the Navara have power and ground supplies, and are on the high-speed CAN network.

Sensor 2 on this Navara was stuck displaying 6000 ppm of NOx, a totally implausible reading. Testing the circuit to the sensor, showed that the wiring was correct and functioning. A new sensor was fitted, and after the required extended road test, all codes were cleared. It is important to remember the sensors are specific to their location and are not interchangeable. We have seen the wrong sensor fitted to the wrong position in the vehicle and this will create an error in the data displayed.