

Remaining Neutral



Jim Investigates...

Nissan Navara



Whilst at a recent garage visit, we met a technician who had a peculiar problem with a 2003 Nissan Navara 2.5TD. He'd spent many hours trying to figure out why it kept losing power, yet there was no fault stored in the ECU and no engine warning light (MIL). This style of fault could be a result of any one of a number of things such as the turbo, EGR valve, fuelling, etc... After 'gambling' with a few new parts that had made no difference whatsoever, he was running out of ideas (and patience). One thing that made the problem somewhat unique was the fact that it seemed to happen when the vehicle was in 3rd or 4th gear.

We needed to see what was going on...

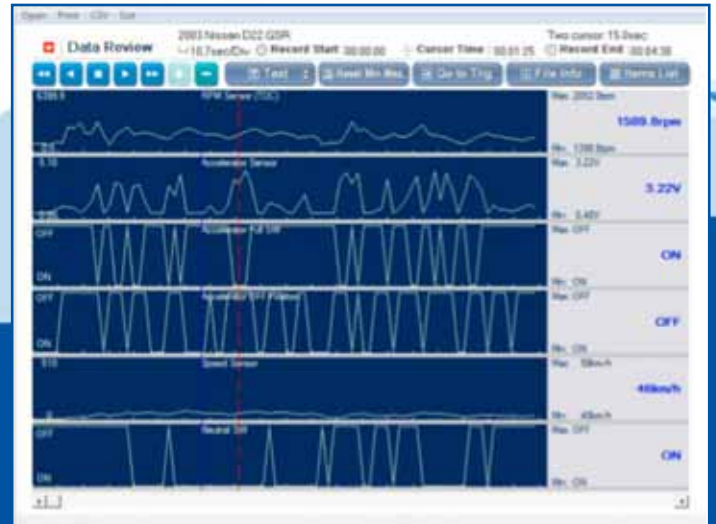
We plugged a Blue Print G-Scan into the Navara and carried out a road test while recording all parameters of live data from the engine – just one of G-Scan's really useful features. Having used lots of scan tools over the last 25 years, I know many have had the ability to record data, but the G-Scan stands out because of how easy it is to use.

When you are viewing live data just press the **'Record'** button and choose **'Consecutive Record'**, then simply press **'Stop'** when you have recorded what you need. You can also add a **'Trigger'** point during a recording to revisit a specific moment.

You can record for up to one hour and that's all parameters – the data is there for you to manipulate on the G-Scan screen immediately, although most people prefer to transfer it onto a PC to use the brilliant PC Utility which allows you to see more information in one go and lets you order the parameters. The top 8 parameters can then be graphed with cursors placed on the screen, which lets you line up information for analysis.



Reviewing data as text



Reviewing data as graphs

I was looking for a gear change followed by a substantial loss of power, so I chose the accelerator full switch as prime indicator and began matching it with boost pressures. After a little data analysis I noticed a very erratic neutral switch reading. It was occasionally indicating neutral while the accelerator was fully open, with boost pressure reading high and the engine and road speeds both increasing, albeit slowly. It was pretty conclusive there was an issue with the switch.

Sample	Accelerator Full SW	RPM Sensor (TDC) (rpm)	Neutral SW	Supercharging Pressure Sensor
11	ON	3127.9	OFF	148.0
12	OFF	1782.8	OFF	101.3
13	OFF	843.0	OFF	121.3
14	ON	1760.9	OFF	189.3
15	ON	2202.9	OFF	194.7
16	OFF	2675.0	OFF	117.3
17	ON	1894.9	ON	148.0
18	ON	1955.9	ON	149.3
19	OFF	1997.9	ON	118.7
20	OFF	1977.9	ON	104.0



So what was the neutral switch for? Well, the Navara is fitted with a heat switch which causes the engine to idle at around 1200rpm for a faster warm-up while the driver is scraping the ice off the windscreen. The system only operates in neutral and is turned off when being driven to avoid flare-up between gears. Secondly to prevent the engine being over-fuelled when there is no load on the engine, fuelling is restricted when in neutral, thus causing the problem we experienced.

Using this 'new found' and conclusive evidence a new neutral switch was ordered, fitted and the problem cured. A 'simple' fix that had been proving very difficult and time consuming to diagnose without the proper equipment.