

Filter Fizz

This article is a true description of an AECS technical help desk problem and how it was solved



Picture sourced from internet

Vehicle:
2011 Nissan Navara, YD25DDTI 2.5 ltr common rail Diesel.

Problem presented to the Helpdesk

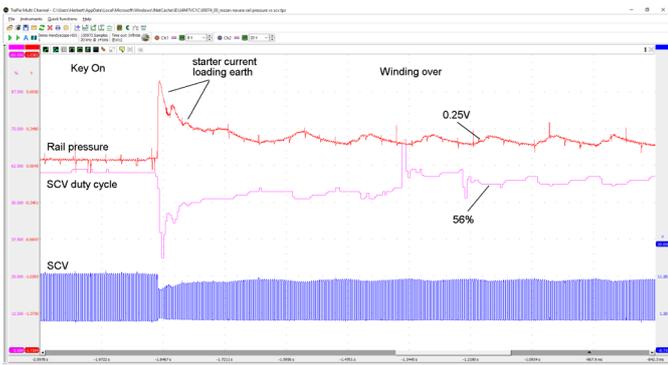
This Nissan Navara was towed into our workshop, it is winding over but does not start. We scanned it, it has no fault codes.

The customer (a colleague workshop) said that it had starting issues when cold, but it would start and then cut out,

Now it does not start at all.

We have your ATS scope, I would like some help with the following recordings please.

It looks like the rail pressure is too low.



Picture 1 - ATS scope picture of Suction Control Valve (SCV) vs rail pressure

Where could the fault be

The pressure staying too low could be the result of

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several faults, and in reality every one of them needs to be eliminated:

- Diesel flowing into the pump could be restricted
- Diesel could be leaking away from the high pressure side of the pump
- The pump can be faulty

On the input side of the pump you need to consider for example; a restriction in the tank (e.g. Diesel bug), fuel line to the filter, the filter unit itself, the line from the filter to the pump.

On the output side you need to consider for example; leakage from the injector returns to the tank, pressure relief valve to the tank, leaking injector lines and connections (e.g. reused lines), damaged injectors.

In the pump you need to consider for example; stuck plungers (e.g. corrosion), damaged non return valves, broken pump shaft or drive gear.

Start point

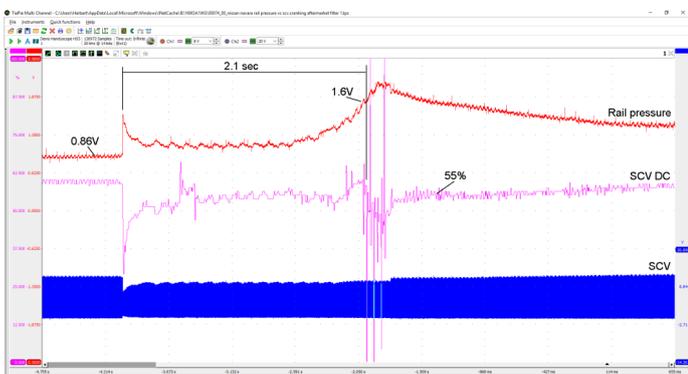
The technician started at the beginning and looked at the pump supply.

He simply by passed all the input problems by letting the high pressure pump suck Diesel from a canister with clean Diesel. There is no problem doing this as long as you work very clean!

That made the engine start and fire up!!

Found it!??

As soon as the original fuel line from the fuel filter was connected to the fuel pump again, the engine would still start but it took a very long to fire up (more than 2 seconds) and was running rough (surging).



Picture 2: ATS scope recording of starting and firing up engine when the pump is drawing fuel through the filter.

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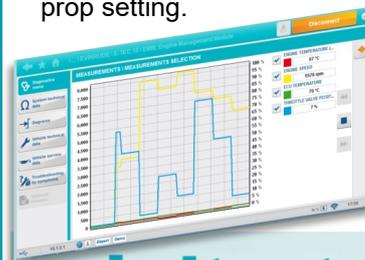
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Strange

“Mmm, that made the diagnostician think, no filter good start, filter fitted bad start.”

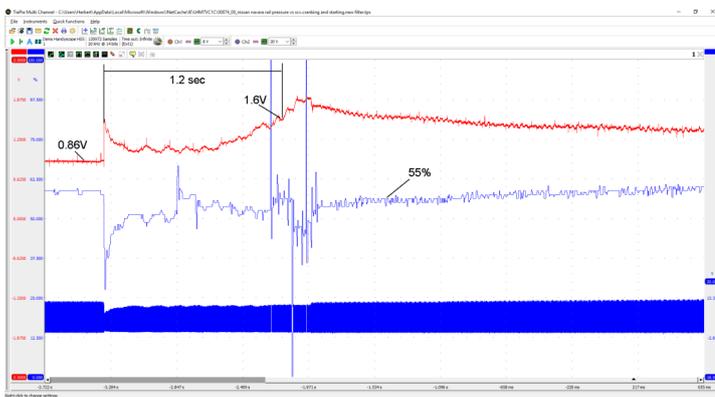
He decided to remove the filter and fit a new filter, just on the off chance that this virtual new aftermarket filter was blocked.

It was only now that he found out that this filter was fitted directly leading up to the starting problems.

Solved!

The new filter the diagnostician fitted was a genuine Nissan filter, which cured the problem instantly! The diagnostician had the kindness to record the ‘after’ pattern.

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Picture 3: ATS scope recording of starting and firing up engine with the genuine filter fitted.

The engine started well and ran nice (no more surging). A quick and clinical solution for this towed vehicle.

Conclusion

Fitting a brand new filter out of the box does not mean that this item is correct for the job, even though it is listed for that vehicle. The workshop that passed the car on could have concluded that the filter was the only item in the fuel system they had touched, so that the problem very likely was in that item. However, would you have doubted the new filter or would you first have doubted something else you might have possibly done wrong?

What are the chances that an aftermarket filter is actually faulty?

At the AECS help desk, in the last 3 months or so we have dealt with about 10 (!) faulty aftermarket fuel filters on common rail Diesel vehicles. I am not sure what is going on out there, but we have found that they are not all branded the same. They might all be coming from the same factory; we do not know. We are waiting at the help desk for filter paper to fly out of the filter into the very expensive high pressure pump and injectors, or water traps not working correctly with similar very expensive results.

I am not sure if a filter supplier takes care of the engine damage costs, because how do you prove that the problem is the filter? In this case it was easy, black and white, but that won't always be the case as not every shop that does maintenance has got



Actual faulty common rail Diesel filter

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this sort of equipment. The filter supplier refunded the filter and some of the labour for this very large company, easy as no further damage was done to the vehicle. An ATS scope and an experienced diagnostician, made this job quick and certain. No arguments at the end of it.



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