Warning: Stop Repeated Forced Regens!

By Clinton Brett

In this issue's article we take a look at the popular Mitsubishi Triton 2015 to 2018 MQ.

As these vehicles age we are seeing increasing faults and therefore enquiries from our Diesel Help members. We use these enquiries from members to build our Technical Bulletin databases.

Pajero 18 sport

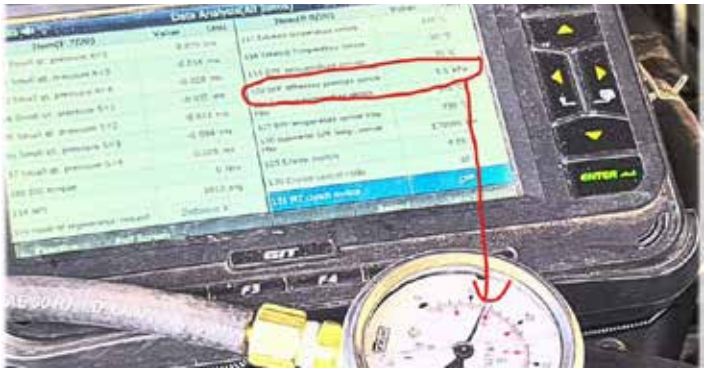
Triton 4N15

This model vehicle was released with a new engine platform in June 2015, the 2.4L 4N15 diesel engine. This engine was also released in the Pajero Sport which we have also experienced repeated common faults from our members in the past 12 months. The previous Pajero engine was the 3.2L 4M41 which we have found to be the most reliable pick of the bunch.

A popular diagnostic tool that we designed, manufactured, and released in April 2022, is our DPF & Turbo test kit. A DPF can become restricted when it doesn't complete its regeneration and a reliable tool to use is an analogue gauge to compare what the scan tool is reading at the differential pressure sensor. This basic analogue gauge test tool has been well received as we have now sold more than 100 units in 12 months proving its value to technicians nationally.

A manometer can also be used but we found it was inconclusive with this differential pressure sensor fault especially when a venturi/vacuum is created.

In this example we failed to match the differential pressure reading on the scan tool to the test gauge reading after a new sensor was fitted. The vehicle, a 2016 Mitsubishi Triton 4N15 with 220k was driven at speed 2000rpm at 80km/h and we



Using test tool

recorded 12kpa on gauge and the scan tool displayed 5kpa after a genuine sensor had been fitted. It wasn't until I asked the technician to disconnect the rear hose from the sensor that our pressure soon matched what our gauge was reading. Knowing this vehicle is fitted with the differential pressure sensor that has 2 hoses feeding the sensor, it could only be somehow creating a vacuum on the rear of the DPF. Which BTW, makes it difficult to determine the same fault on those DPF sensors using one hose such as Amarok 4 cylinder and Ranger 3.2L.

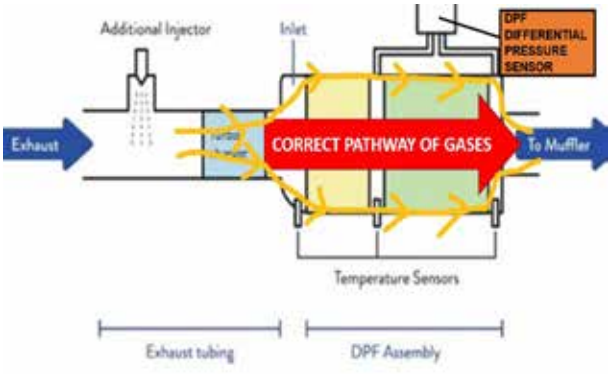
Rear pressure pickup of DPF

Its quite scientific when you think about it which is something I seemed to be able to achieve in this business without labelling myself as a scientist. It's important to know how everything works and any previous work carried out which is why I went down this route.

The first thing that came to mind was that this vehicle had experienced repeated forced regens before arriving at our members for assessment. This is not recommended as damage can result. Forced regens is what causes the DPF to melt and in fact like we experienced in this case study, distorted and expanded the outer steel casing, causing the DPF filter substrate to loosen from the housing.

By understanding the pathway of the exhaust gases are designed to enter the centre of the DPF, if we were experiencing the gases to travel around the outer perimeter, this would in fact create a venturi effect which is why we witnessed a vacuum on the rear hose. The DPF cleaning centre also reported after it was removed and sent to them for final clarification- A higher than normal soot level, suspected the DPF is bypassing. It's difficult to explain in an article, that's why it is important to attend our training courses.

I demonstrate the fault with an actual failed DPF. For now, check out this image following. The yellow lines display a bypass occurring.



DPF flow pathway

Other causes can be a restriction caused by either a foreign material, carbon, internal damage of hoses or incorrect fitment of the hose with the test gauge. This can create a venturi effect thus causing a negative pressure in the pipe and therefore an incorrect pressure difference will be noted between the DPF and the sensor.

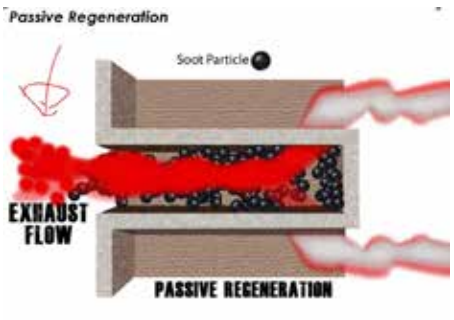
Diagnosis and/or early detection of the fault: During testing of the DPF, ensure all hoses are correctly connected, check for a clear passageway from the DPF to the sensor. Ensure the hoses have no signs of internal deterioration. In cases where the DPF is damaged, pieces of the DPF can become lodged in the rear section of the DPF.

Solution: Once you have confirmed the differential pressure sensor has failed, remove and replace hoses from the DPF to the sensor with new and preferably genuine. Use a small diameter brush or wire to clean the steel pipes after the hoses.

Sensor

Final tip when testing a DPF differential pressure:

Try to retain an engine speed of 2000 rpm at 80kmh to avoid a higher than normal reading. This will also simulate the ideal conditions for a passive regeneration (recommended instead of forced regen) Under load at 2000rpm the differential pressure should be less than 20 kPa. If the RPM is too high, say around 4000rpm, there is almost no diesel being injected, combustion temperatures are greatly reduced resulting in excessively higher and cooler airflow creating an abnormal back pressure from the exhaust.



Passive regen

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