

# DMF Stress Testing

ZF Aftermarket has issued some useful advice to garages on how to conduct a DMF stress test, before embarking on the time consuming job of component removal and replacement. This simple advice could save garages a huge amount of time and save customers money.

**Z**F says that all too often mechanics assume a faulty DMF is the cause of unusual noises, when this is very often not the problem. That is why ZF Aftermarket experts have issued advice on how to identify the possible cause of an unusual noise, before leaping to the wrong conclusion and exchanging the component unnecessarily.

Firstly, technicians should carry out a test drive. If there are unusual noises when starting the engine, it may indicate a defective DMF, but it could also be due to the engine cranking speed being too low. Other causes could be: poor starter performance, or low battery voltage due to oxidation or corrosion of the electrical contact surfaces. To rule this out, ZF recommend a thorough cleaning; using a special cleaning system developed by ZF Aftermarket with which workshops can easily, quickly and professionally clean affected electrical contact surfaces.

Another possible cause of unusual noises could be defective bearings in the belt tensioner freewheel. It is reasonable to suspect a faulty DMF if the noises occur during normal acceleration and gear changes and to determine this, the tester should accelerate the vehicle in a high gear above idle speed from approx. 1200 rpm, with constant full throttle. If there are no banging noises, unusual vibrations or vehicle bucking while doing this, the DMF can be largely ruled out as a source of error.

Engine diagnostics can provide additional information, for example, the measurement of engine starting speed and the injection quantity regulation. Cylinder-specific values of the idle resting regulation can indicate incorrectly operating injectors. If they are vibrating, it can overload the DMF, especially operating in full-throttle. The same applies to imprecise engine control, which may be caused by incorrectly adjusted timing gears on the belt drive. The test devices can also identify faults directly in the engine control unit (ECU) as well as changes caused by chip tuning, both of which can damage the DMF.

After the test drive and engine diagnosis, perform a visual and mechanical inspection of the actual DMF. A discolored friction surface on the



**A technician using the ZF tool to assess the condition of the DMF**

secondary flywheel indicates a heavily overheated or overloaded DMF. This occurs when the driver allows the clutch to slip for too long. Such overheating over an extended period of time can cause the special grease in the DMF to harden. If there are visible cracks in the friction surface, the DMF must be replaced, as it may crack at certain speeds and in the worst case scenario, total failure can occur. Yellowish discolourations under the friction surface, between rivets, for example, are also a reason for component replacement, since the DMF axial bearing is prematurely worn in this case and this can cause a noise when driving. Other visible signs of a faulty DMF include both lubricant and fragments escaping from inside the component. However, ZF says that slight traces of grease do not pose any problems. In some cases, traces of grease can be due to the design, or are approved, depending on the vehicle manufacturer and have no influence on the function of the DMF.

ZF Aftermarket offers its workshop partners a high-quality bespoke tool for quick and professional inspection of Sachs dual-mass flywheels in passenger cars and light commercial vehicles. The tool allows the user to check the free travel of the torsional damper, the regularity of the torsional damper's spring force, the axial

bearing condition and the displacement travel of the radial bearing position. In a fully functioning and properly performing part, all angles and the perceived applied force in both directions should be identical. There should be no unusual movement and it should never stick or rub. Any of the above can indicate defective components inside the DMF, such as broken springs or slide shoes. These may wear through the inside of the DMF housing, allowing lubricant to leak. In these situations the DMF must be replaced.

ZF experts say that a 'smacking' sound during the mobility test is a positive sign, indicating the right consistency of the special DMF grease.



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