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New turbocharger, but still no power output? This could be the cause.

If a vehicle does not deliver full power even after a new turbocharger has been installed, or if the new component becomes defective soon after installation, the load condition of the diesel particulate filter (DPF) should always be checked.

The diesel particulate filter traps the finest soot particles in the exhaust gases that are produced by the combustion of the fuel in the engine. Unlike a catalytic converter, however, a particulate filter has a limited absorption capacity and must therefore be regenerated or replaced regularly. If this is not done, the DPF can reach or even exceed its load limit. And this will result in an increase in differential pressure, which can lead not only to a drop in performance and malfunctions, but even to complete turbocharger failure.

Consequences of a saturated DPF

Normally, the exhaust gases flow from the engine through the turbocharger to the particulate filter. When the DPF is saturated, the exhaust gases can no longer flow freely through the component due to the excessive counterpressure. In extreme cases, they penetrate the turbocharger's bearing housing, where they strip the oil film from the radial bearings (see Fig. 1). This results in increased wear and may even lead to burnout and subsequent

breakage of the rotor shaft (see Fig. 2). Coked residue in the oil return line leading to the oil pan is a clear indication of this damage scenario (see Fig. 3).



Figure 1: When the DPF is saturated, exhaust gases flow through the turbocharger: from the turbine wheel (1) into the bearing housing (2) and through the oil drain (3) into the return line (4)



Figure 2: Broken rotor shaft due to inadequate lubrication of the radial bearings



Figure 3: Coked oil return line as a result of exhaust gas penetration

Important!

When fitting a new turbocharger, the load condition of the diesel particulate filter should also be checked.