

Issue no. 07/2017 – Power loss as a result of defective crankcase ventilation

In vehicles with turbochargers, power loss, rough idling, or whistling noises are indicators of a defective crankcase ventilation system.

Crankcase ventilation is an important component of the combustion engine. It removes the blow-by gases that form in the cylinder during combustion from the crankcase, thereby controlling the pressure ratios. For example, special pressure control valves, known as PCV valves, have been installed for this purpose in the VW Group's 1.8 and 2.0 TFSI engines. PCV stands for "positive crankcase ventilation" and has the task of ensuring the crankcase is properly ventilated in different load cases:

1. Idling or overrunning

The blow-by gases are supplied downstream of the throttle flap and thus also downstream of the turbocharger, as in this load case there is negative pressure in the inlet manifold (see Figure 2).

2. Partial or full load

The blow-by gases are supplied upstream of the turbocharger, as in this load case there is overpressure in the inlet manifold (see Figure 3).

In the second case (under partial/full load), the boost pressure presses on a diaphragm, which causes the PCV valve to supply the blow-by gases accordingly. If there is a defect, for example a crack in the diaphragm (see Figure 4), the boost pressure may escape directly into the crankcase and the above faulty symptoms occur.

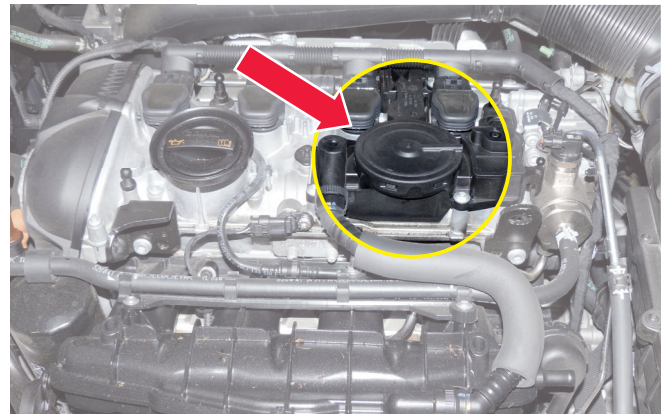


Figure 1: Installation position of the PCV valve on the cylinder head

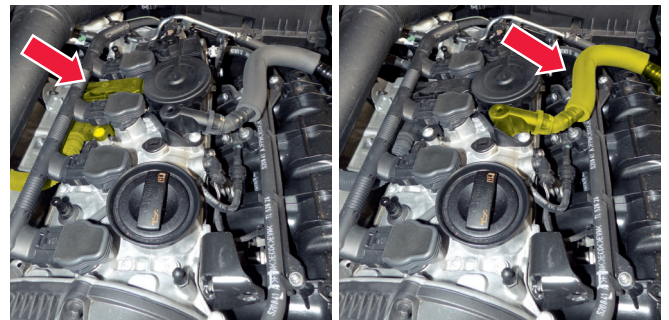


Figure 2: Ventilation downstream of the turbocharger directly into the inlet manifold

Figure 3: Ventilation upstream of the turbocharger



Figure 4: Cracked PCV diaphragm

Important! Because of the installation position of the PCV valve, it is easily overlooked during troubleshooting. When replacing the turbocharger, the engine periphery must therefore always be checked thoroughly and the engine control unit's fault memory read!