

Secondary Air System

Secondary air system monitor

Automatic monitoring is carried out to ensure that the secondary air system is functioning correctly. For this purpose, operation of the secondary air injection and of the shut-off and air switch-over valves is monitored each time they are activated. The secondary air injection serves as an exhaust gas treatment during the engine warm-up phase. For this purpose, fresh air is injected directly into the exhaust manifold to ensure the catalytic converter heats up at a faster rate.

Shortly after the engine is started, the secondary air pump is activated by the SLP relay. The time until it is switched on is dependent on the following fringe conditions:

- Engine temperature
- Load signal
- Engine speed

Monitoring principle

The operation of the secondary air system is monitored as part of on-board diagnosis. The DME evaluates the oxygen sensor signal during activation of the secondary air pump. During problem-free operation of the secondary air system, the oxygen sensor signal is primarily in the lean range.

The oxygen sensor signal is registered in the control unit at regular intervals (every 20 ms) during the system test. Each measurement in which the oxygen sensor signal is registered as being in the lean range is counted by an internal counter. If this count exceeds a predefined threshold, the system is recognized as being fully operational. If this threshold is not reached the engine control unit assumes there is a fault in the secondary air system. Malfunctions cause fault codes to be entered in the DME fault code memory.

The diagnostic program provides the option of carrying out both the complete system test as well as the separate secondary air pump test.