

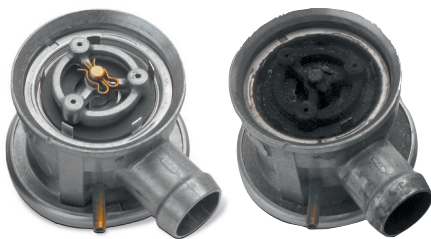
Quick inspection of secondary air valves

Secondary air valves are often overlooked when a secondary air pump is replaced. Pierburg provides a quick and easy way to determine if the secondary air valve has caused the pump to fail, or if the valve needs to be replaced.

The following customer complaints can occur during the cold-running phase in vehicles that have a secondary air system:

- Secondary air pump (SLP) makes noises
- SLP does not work
- Repeated failure of the SLP after a brief running period
- Variation in revs when engine is cold
- Possible OBD codes are: P0410 or P0411

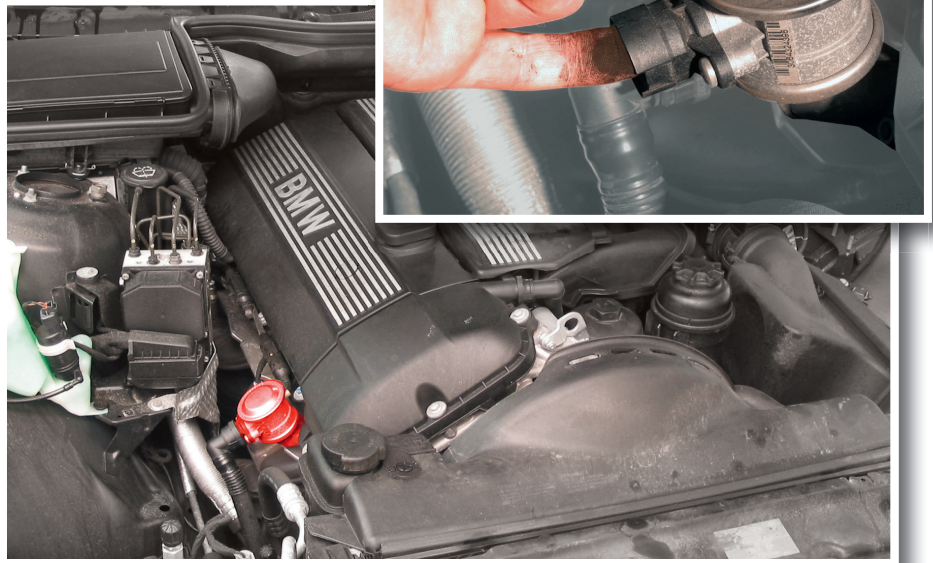
In almost all cases this damage is caused by exhaust gas soot in the secondary air pump. During repairs, often only the secondary air pump is replaced. However, the actual cause of the damage is not the secondary air pump. The root cause for this damage remains in the vehicle and can lead to failure of the replacement secondary air pump. When replacing the secondary air pump, the electrical reversing valve and the secondary air valve must be inspected for leaks as a standard procedure.



A clean secondary air valve and a soot filled one that needs to be replaced

Secondary air valves are an integral part of the secondary air system. They are fitted between the secondary air pump (1) and exhaust manifold. They prevent pressure peaks in the exhaust flow from damaging the secondary air system and exhaust gas or soot from entering the secondary air pump. There are different designs of secondary air valves:

Switch-off non-return valves (3) are generally vacuum-operated valves. Later designs, from approximately 1998, are opened by the pressure of the secondary air. This does



A 'finger test' inspection of the secondary air valve (highlighted red) on a BMW 520i

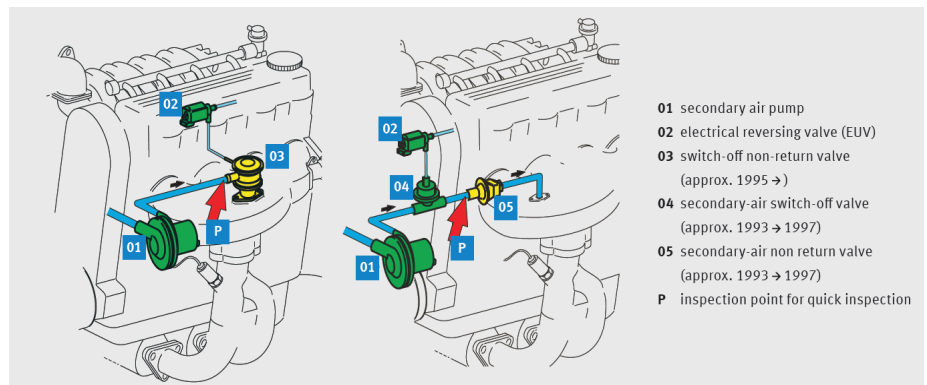
away with pneumatic control by an electrical reversing valve (2).

Secondary-air non-return valves (5) open as a result of the pressure of the secondary airflow.

The secondary air valve can be quickly and easily inspected in this way:

- Loosen the connecting hose on the secondary air non-return valve leading to the secondary air pump. See inspection point "P" on the graphic below.

- If there are deposits on this side of the valve (use the finger test), the non-return valve is leaky and must be replaced. In this situation, the secondary air pump may already have been damaged.
- Inspect the secondary air pump and replace it if necessary.



Two variants of a secondary air system and their components

- 01 secondary air pump
- 02 electrical reversing valve (EUV)
- 03 switch-off non-return valve (approx. 1995 →)
- 04 secondary-air switch-off valve (approx. 1993 → 1997)
- 05 secondary-air non return valve (approx. 1993 → 1997)
- P inspection point for quick inspection