

Issue No. 06/2017: Alternator failure due to oil ingress

When an alternator fails, it is often necessary to have a close look at the environment to determine the cause. Traces of oil and residue can be an important clue, as these cause considerable damage inside the alternator.

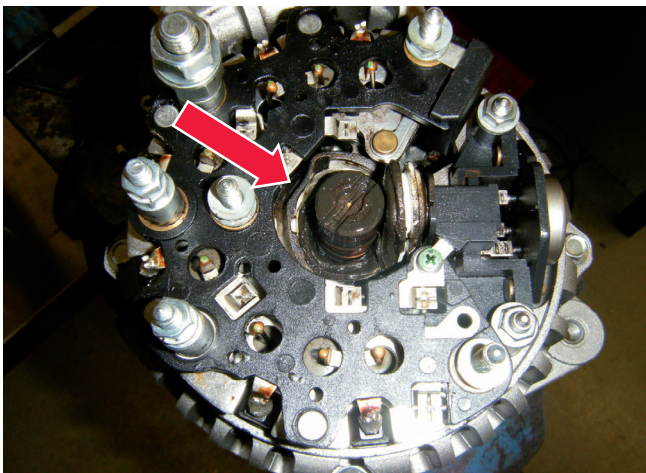


Figure 1: Oil residue in the alternator

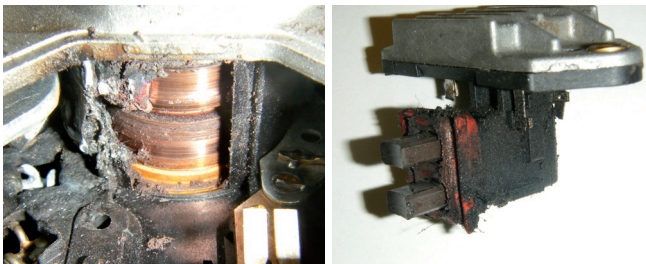


Figure 2: Heavy wear on the slip rings (left) and carbon brushes (right)

There are a number of ways that engine oil can find its way into the alternator: through a leak in the cylinder head area, for example, or when adding engine oil or changing the oil filter without exercising due caution.

The consequences are always the same, however: Oil enters the alternator, reaching the slip rings and carbon brushes of the voltage regulator. The oil binds the abrasions, so that they can no longer be removed along with the cooling air. This in turn leads to increased brush sparking and wear; the voltage regulator overheats, and the brushes seize up. Moreover, the sludgy mixture of oil and carbon dust is electrically conductive. If this sludge collects between the slip rings of the rotor and the alternator housing, short-circuiting will occur.



Figure 3: Depending on the installation position, it is important to keep oil from entering the alternator during oil changes.

Important: Find and fix all leaks in and around the engine, fuel system, and hydraulic system. When changing the oil filter, use a cloth, for example to keep oil out of the alternator. Remove all traces of engine oil, diesel, and hydraulic oil residue!