

## Issue no. 12/2024

### Alternator damage due to oil ingress

*When replacing a defective alternator, it's important to identify the underlying cause of the failure. Otherwise, the alternator may fail again before long.*

#### Inspecting the defective alternator and its environment

Oil traces or residues in or around the alternator may indicate the cause of the defect. Oil could have entered the alternator in various ways. It may be due to carelessness when refilling engine oil or replacing the oil filter. Alternatively, a defective engine gasket or a leaky hydraulic line could be the culprit.

#### Damage caused by oil ingress

Engine or hydraulic oil inside an alternator can cause damage, potentially leading to complete failure. If oil reaches the slip rings and carbon brushes, it binds the abrasion particles so they can no longer be removed by cooling air. This results in increased brush sparking and accelerated wear: the voltage regulator may overheat, and the brushes may seize up. Furthermore, the paste-like mix of oil and carbon dust is electrically conductive. If this mixture accumulates between the rotor slip rings and the alternator housing, it will eventually lead to a short circuit to ground.

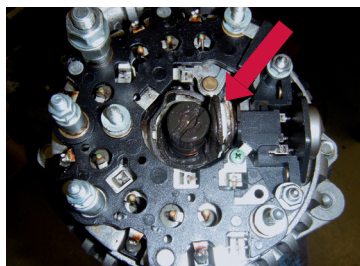


Figure 1: Oil residue in the alternator

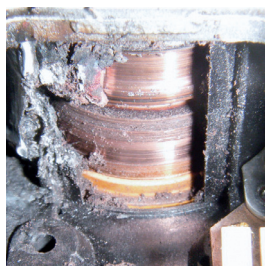


Figure 2: Oily carbon dust causes severe wear to the slip rings (l) and the carbon brushes (r)

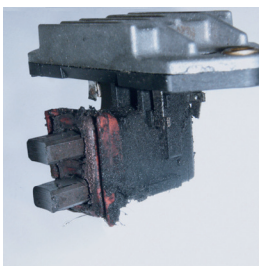


Figure 3: When topping up the engine oil or changing the oil filter, the alternator may need to be protected

#### Important!

The cause of a defective alternator should always be investigated. Any leaks in the engine, fuel system, or hydraulic system must be eliminated before installing a new alternator. If the oil filler opening or oil filter is located near the alternator, the alternator must be protected—for example, by covering it with a cloth—when refilling the oil or changing the filter.