



Sealing methods on water pumps

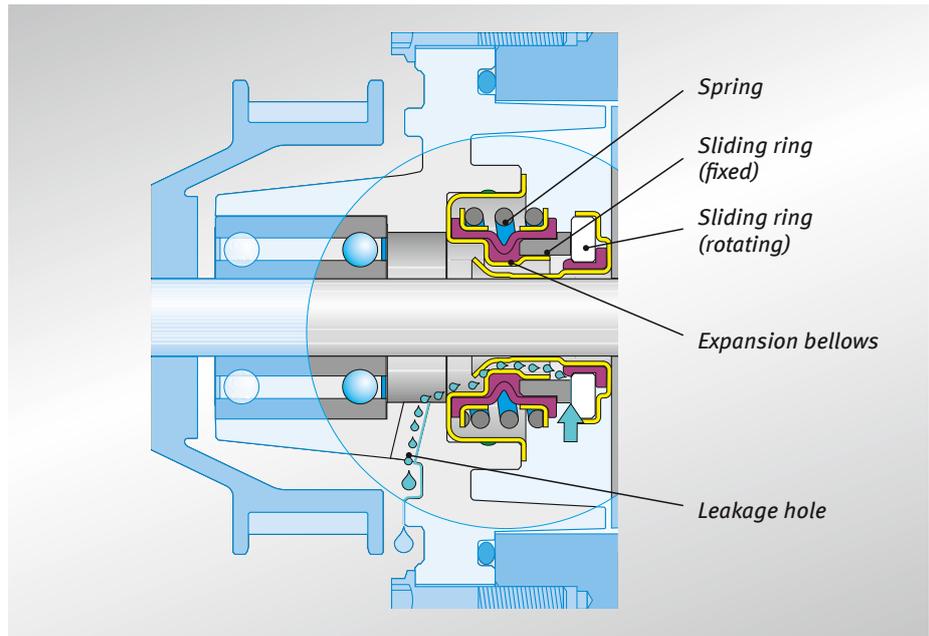
In comparison with the sealing method used on shaft exits on combustion engines with elastomeric radial shaft sealing rings, the sealing principle on coolant pumps is completely different.

The seals used for water pumps are known as sliding ring seals. Sliding rings are made of graphite, aluminium oxide, tungsten carbide or silicon carbide, depending on the required service life and the conditions of application. The two sliding rings are usually fitted into a sealing cartridge. Fig. 1 shows such a cartridge sliding ring seal. To ensure effective sealing even when the cooling system is not under pressure, the sliding rings are pressed against each other by spring force.



Fig. 1

In order to warrant the correct function and durability of the seal, a minimal flow of coolant through the seal is needed to lubricate and cool both sliding surfaces. Any leakages that find a way between the contact surfaces of the sliding rings are insignificant and generally evaporate in the pump. Despite this, it is not always possible to prevent the accumulation of



coolant deposits at the drainage hole of the pump. This is quite normal and is not a cause for complaint. A small quantity of water escaping at the leakage hole of the pump subsequent to installing a new pump is likewise normal and unavoidable. This will usually disappear once the sliding rings are “run-in” after 1–3 operating hours.

Some pumps are consequently fitted from the outset with small pans that catch the escaping coolant and keep it in the pump until it has evaporated. This prevents the minor deposits from becoming visible on the outside of the pump and causing uncertainty on the part of the user.

Damage to the sliding ring seal occurs, as a rule, as a result of the pump running

dry (lack of coolant). In this case, the two sliding rings run dry without the protective film of water between them. This generates frictional heat which destroys the sliding ring seal.

A further problem results from the use of old, contaminated coolant. When a pump is replaced, it is frequently neglected to clean the cooling system. The consequence of this is that lime, corrosion or dirt can scratch the sliding surfaces causing damage to the seal.

The sliding rings can also break as a result of using force (impact due to hammering or banging) on the pump shaft, necessitating a replacement of the pump.

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