



ELECTRIC AUXILIARY WATER PUMP



ALL VEHICLE/ENGINE MODELS WITH ELECTRIC AUXILIARY WATER PUMPS

PROBLEM ELECTRIC WATER PUMP FAILURE

INSUFFICIENT PUMPING CAPACITY > IMPROPER EC SYSTEM OPERATION PUMP BURN OUT > ENGINE AND OR ITS EQUIPMENT OVERHEATING

BACKGROUND

Various modern and high-output engines are equipped with an electric water pump for the engine cooling and cooling of its equipment e.g. turbocharger. The auxiliary water pump offers a precise regulation of the coolant flow thus considerably improves the system efficiency. It can also operate without necessity of running the engine and that is why ensures much higher thermal protection of the engine and water cooled parts. Due to electric motor, steering electronics, bearing system and plastic elements in some models the pumps are prone to overheating or coolant contamination.

FAULTY PUMP SYMPTOMS*

Coolant leaks	> aged/overheated seals and gaskets of the pump cause the coolant to leak
Dashboard warning lights, OBD / ECU errors	> typically related to: improper pumping capacity/speed when too low, coolant sensors reading indicating too high temperature, electronics sensor temperature when too high
EC fans improper operation	> fans commanded to constantly run due to too high coolant temperature
Noises	> a bad water pump will often emit unusual noises indicating its improper operation
Steaming	> is a sign of the coolant boiling thus engine overheating caused by lack/insufficient coolant circulation
Engine overheating	> is the most severe failure that a bad/insufficient water pump leads to

*Please notice, the symptoms may not necessarily link to the auxiliary pump alone and may have root cause in other engine cooling system problem.



COMMON FAILURES (AUXILIARY WATER PUMP)

FAILURE	POSSIBLE ROOT CAUSE	INFO
Inner, rotating component failure , e.g. impeller breaks apart, bearing seizure	<ul style="list-style-type: none"> High mileage, wear Excessive load on the engine Poor quality inner components 	Several car models run typically in to the water pump wear problems caused by wear that happens already by 100.000 km / 60.000 miles.
Overheating of electric motor and/or electronics or housing, seals and gaskets	Improper EC system sealing causes heat impact on the pump or hot condensate intrusion	Mounting location in the engine compartment exposes the pump to high temperature fluctuations. If the EC system is not tight or the pump correctly protected against heat, air condensation or moisture intrusion, its fragile electronics components will be exposed to premature failure
Pump stuck/seized	<ul style="list-style-type: none"> Use of improper antifreeze Antifreeze contamination 	Majority of OE/OE approved antifreeze contain compounds with lubricants and corrosion inhibitors to protect the pump bearing. Keep in mind, the antifreeze's properties fade by time and the engine mileage, in excessive working conditions and by mixing it with other substances

RECOMMENDED SOLUTION

- Inspect the water pump and the EC system on a regular basis and by the major service according to the prescribed intervals. Keep in mind, the pump's operation is influenced by several other factors such as electricity, coolant, heat etc. (Some of the car models offer the pump self-diagnosis commanded via a diagnostic tool.
- Recognize if the car make/model is known for the auxiliary pump premature failures, e.g. some BMW with N51, N52, N53, N54, N55, N63 engines, Range Rover III/IV and Range Rover Sport I, VW T4
- Always use proper antifreeze type and volume prescribed by the car manufacturer
- Always replace the antifreeze according to the manufacturer recommendation regarding mileage / time
- Flush the EC system every three years (aluminum alloy engines) or by its major parts replacement, e.g. pump, radiator etc.
- Whenever replacing the pump due to overheating, replace the system thermostat
- Use good quality water pump replacement with improved design, e.g. with metal impeller
- Do not ignore OBD-detected errors related to the water pump speed, engine coolant temperature or electronics temperature.



The material and its contents are provided without warranty of any kind, and by publishing it, we disclaim any liability. Always follow the given vehicle manufacturer's instructions to comply with the right service and maintenance procedures. Nissens Automotive A/S shall not be held responsible for any property damage or personal injury, direct or indirect damage, due to failure or down time in vehicle operation caused by incorrect application, installation and/or abuse of our products.

©Nissens Automotive A/S, Ormhøjgårdvej 9, 8700 Horsens, Denmark. For further technical and contact information visit www.nissens.com

Nissens
Training
Concept



Nissens
DELIVERING THE DIFFERENCE