

NRF TECHNICAL ARTICLE

THE OIL COOLER - THE BIG UNKNOWN OF THE LUBRICATION SYSTEM



*by Dave Talbot technical specialist

The oil cooler is a heat exchanger that reduces the oil temperature.

OIL COOLER TYPES

There are two types of oil coolers, cooled by air and cooled by liquid.

> **Cooled by air:** They are heat exchangers where oil flows. They use the same working principle that a radiator uses; hot oil flows through some tubes with fins that join them. Those fins lower the fluid temperature.



> **Cooled by liquid:** In this type of coolers there flows oil and coolant. They have independent circuits, and heat exchange produces inside the cooler, where the coolant absorbs the oil's heat excess. This type of cooler can be installed in different areas of the engine bay, it's not necessary the exterior air to his function.



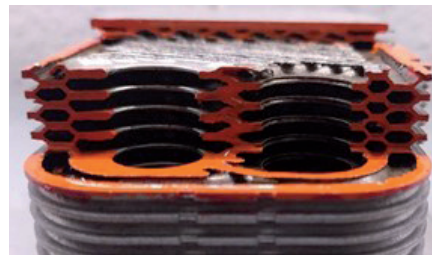
WHY IS AN OIL COOLER NECESSARY?

Modern vehicles works with highly exigent conditions and regimes for the oil. Those engines where charge was so low and didn't need oil cooling they are so far.

Oil have (as same as water) freezing and boiling point. If we submit the oil to a high charge during a long time, this heat excess can degrade it, so if oil reach a temperature limit, it decomposes and loses all his properties, even can cause a catastrophyc failure of the engine.

SYMPTOMS OF A DEFECTIVE OIL COOLER

- > External agents and corrosion: An oil cooler cooled by air is susceptible to the same external agents as a normal radiator, the troubles it could have are knocks, projections of stones or other elements, salt and various contaminants present in the environment.
- > System contamination: An Oilcooler refrigereted by liquid is an element in direct contact with both the oil and the coolant. Impurities from both circuits can pass through its ducts, deteriorating the structure until it becomes clogged or cracked.



> Viscous fluid in the expansion tank: When an oil cooler of this type is at the end of it is useful life, a brown (like coffee) viscous fluid can be perceived inside the expansion tank, which means that the oil is mixing with the coolant, being able to produce both lubrication and cooling failures.



RECOMENDATIONS

- > It is always recommended to use a quality, approved coolant that matches the engine specifications.
- > It is recommended to respect the periodicity of the oil change. The oil, with use, becomes acidified by the products derived from combustion, which filter into it. Aluminum is very reactive to acids, so that an oil with a lot of use, due to its acidity, deteriorates the structure of the oilcooler and finally causes its failure.

Good vehicle maintenance prevents most failures derived from this element.

Please also watch our video on how to replace an oil cooler:
<https://www.youtube.com/watch?v=Q54kGRWeGYo>

