



SI 1003
For technical personnel only!
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SERVICE INFORMATION

CREEPING COOLANT LOSS

LEAKY EGR COOLERS OFTEN GO UNNOTICED

SITUATION

Since the introduction of emission standard Euro 4, the use of EGR systems with EGR coolers is becoming increasingly widespread. EGR coolers are not typical wear parts. But the EGR cooler can still fail over the life of the engine.

BACKGROUND

In EGR coolers, the engine coolant acts as the cooling medium. The coolers are made of stainless steel or aluminium. In unfavourable or unintended operating states (e.g. if running the engine with highly sulphurous fuel or biofuel), the formation of aggressive combustion products can increase. Over longer periods, this may lead to internal leakage, which is also associated with a gradual loss of coolant. In the search for the cause of this loss of coolant, cylinder head gaskets, cylinder heads or the seals of wet cylinder liners are frequently replaced – without success.

CAUSES OF FAILURE

The most frequent cause of failure is a leak originating from the exhaust-gas side. One less common cause is pitting originating from the coolant side. Unsuitable cooling agents can result in corrosion or cavitation agents can result in corrosion or cavitation here.

As the exhaust gas back pressure is greater than the pressure in the cooling system during operation, the loss of coolant is not always immediately noticeable. When the engine is switched off, the coolant agent seeps into the engine's exhaust tract or intake air system.

If the EGR cooler is positioned higher than the intake and exhaust valves, this can cause coolant to accumulate in the combustion chamber of one or more cylinders. When the engine is started, “water claps” occur, with severe damage to pistons, cylinders or connecting rods.

SUMMARY

To prevent expensive and time-consuming engine repairs when searching for coolant leaks, check for leakage from the EGR cooler before you start to dismantle the engine.



Fig. 1: EGR valve with EGR cooler

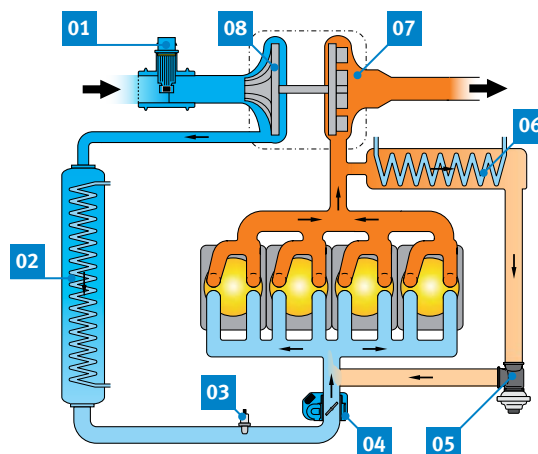


Fig. 2: Schematic diagram of cooled exhaust gas recirculation

- 01 Air mass sensor
- 02 Charge air cooler
- 03 Charge-air temperature sensor
- 04 Regulating throttle
- 05 EGR valve
- 06 EGR coolers
- 07 Turbocharger (turbine)
- 08 Turbocharger (compressor)

All content including pictures and diagrams is subject to change. For assignment and replacement, refer to the current catalogues or systems based on TecAlliance.