

Problems Concerning VAG Engines – Unit Injectors

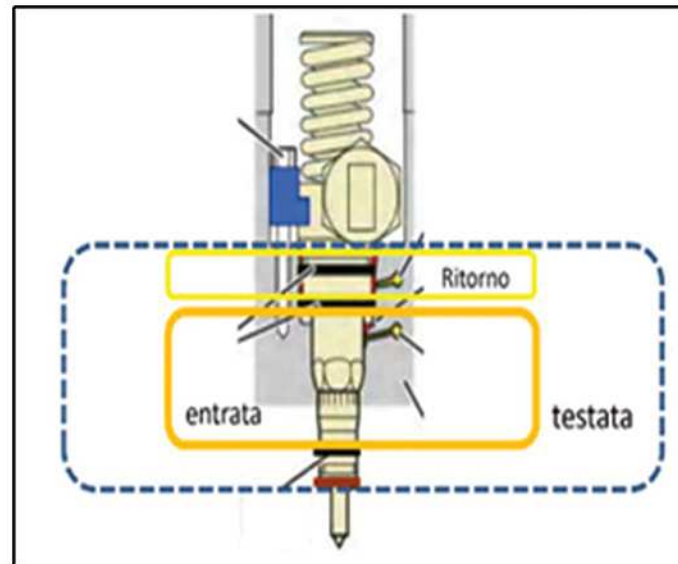
Oil mixed with Diesel or Diesel mixed with Oil

Oil level increased in the carter: possible causes

1) The first cause to eliminate can be worn O-rings in the Unit Injectors, that cause diesel leak in fuel supply and fuel return circuits.

In this case, changing the injector's O-rings sometimes is not enough; in fact vibrations may have ruined the cylinder head.

2) The second cause of diesel mixing with oil could come from missing steps of DPF regeneration, since the injector produces an excess of diesel that leaks through the piston rings into the carter.

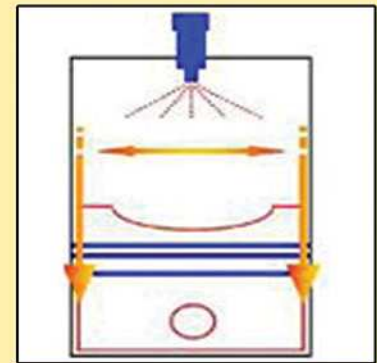


All owners of VW models that mount this engine type are warned: in intense city and traffic use of the vehicle, interrupted regeneration cycles that happen very often under these driving conditions, could make the DPF filter to block and CAUSE DIESEL TO MIX WITH OIL. This means it is appropriate for longer engine life to check the oil level, in order to verify dangerous diesel contaminations into the oil circuit that may damage the whole engine.

In - Depth Analysis Of ECU Driven Regeneration Mode

In order to increase the exhaust gases temperature into the DPF and burn the soot deposits (regeneration process) the E.C.U. actuates some corrections on the injection duration and other parameters.

An extra fuel injection cycle (post injection) takes place when the piston is at bottom dead center and that allows a temperature increasing of exhaust gases at a fixed value of 600° C as the excess fuel amount is burned inside the outlet manifold (pre-catalyst and catalyst). This process generates diesel leaks into the oil carter.



When the engine activates Post injection (see photo on top) the fuel nebulization on cylinder walls causes an increase of fuel leaking into the oil carter.

The most immediate consequence is that the automatic DPF regeneration will start every 200 km or even less, instead of every 800 km. But the worst consequence is that the probability of stopping the regeneration after the vehicle is stopped will increase. As in every regeneration cycle a little amount of diesel leaks into the carter, the leak will be greater once the cycle is interrupted. Eventually, there will be some liters of diesel mixed with oil (this possibility may seriously damage the DPF filter and the engine).

In any case the E.C.U., in order to prevent dangerous working conditions for the engine, automatically calculates oil deterioration and when it reaches the security level the oil change warning light switches on.

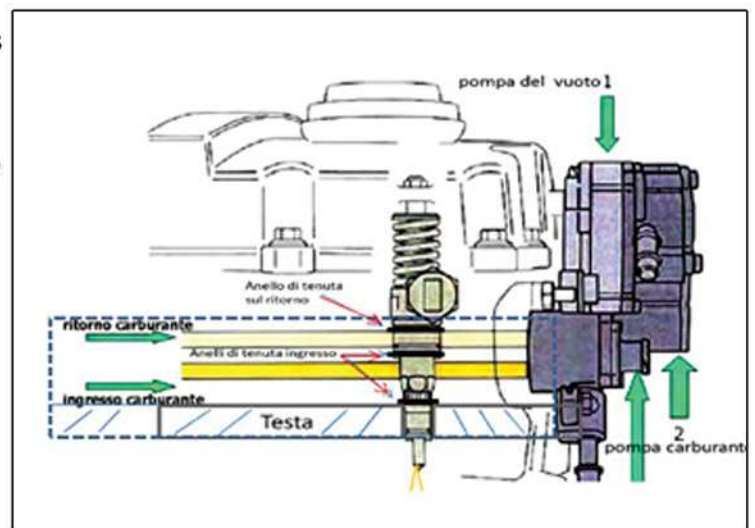
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This kind of issues are often attributed to the **tandem pump (vacuum pump)**.

The vacuum pump is one of the critical places in which oil and diesel may mix.

In fact, the pump has two separate chambers. The first chamber is used to aspirate diesel and pump it to the unit injectors, while the second chamber creates vacuum. Both chambers share the same shaft.

For its proper functioning, both internal paddles and shaft are oil lubricated. If the internal gaskets, that separate the two chambers, lose their sealing oil and diesel will mix. In this case, there will also be other signs such as pressure loss and fumes in the exhaust.



To summarize:

When fuel is found into the oil carter as a result the oil level is increased and the most frequent causes are the unit injector O-rings that don't seal properly or DPF missing regenerations.

When oil is found into the fuel, the most frequent causes are the O-rings that don't seal properly into the tandem pump.

N.B. loss of sealing between the two chambers of tandem pump (91093) may occur due to bad lubrication due to low oil quantity or quality.