

*Krystian SZEWCZYŃSKI, Mateusz BŁACH*

# **THE MOST COMMON DAMAGE TO THE FIRST GENERATION BOSCH UNIT INJECTORS**

## **Introduction**

Unit injectors are one of the technical solutions for fuel supplying of self-ignition engines. First generation unit injectors are responsible for the success of the 1.9 TDI Volkswagen group diesel engine. This solution has dominated the market of diesel engines until 2006, when the European emission standard EURO 4 was introduced. A huge number of vehicles equipped with unit injectors is caused by the fact that the engines used in these vehicles are characterized by high reliability and long life.



Fig. 1. Unit injector. [1]

## **Types of damages**

Unit injectors may be subject to wear as a result of standard operation as well as a result of mistake or oversight of the person providing maintenance. The most popular elements that are damaged include: seals, the injector's tip and the electric connector of the coil.

Damage to unit injectors can be divided into two main groups. The first of them is damage due to daily operation, which can not be prevented, but only delayed in time through regular technical servicing and refueling at trusted distributors.

The second group includes damage resulting from human errors, which are caused by non-compliance with the manufacturer's instructions or the lack of required qualifications.

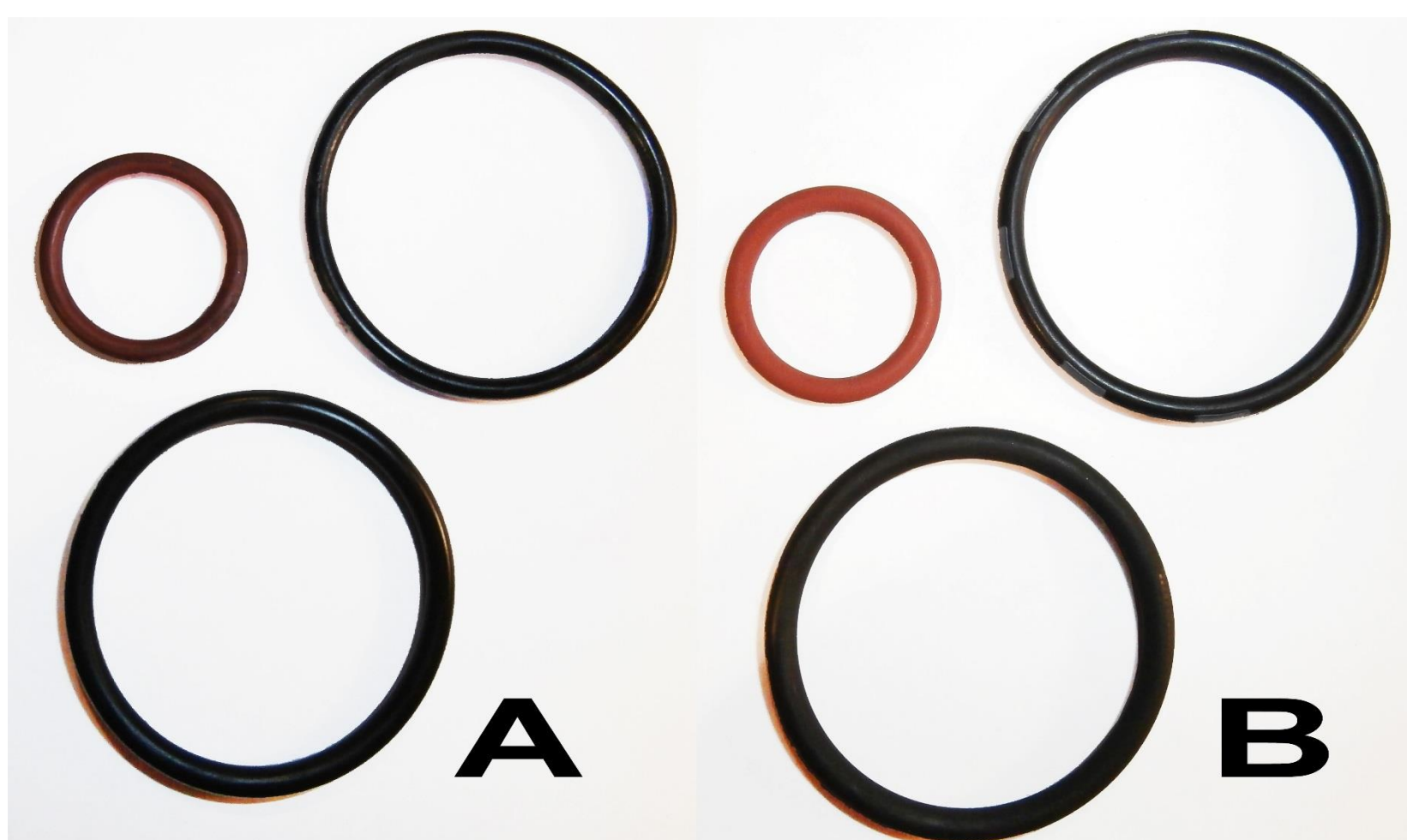


Fig. 2. External unit injector seals; A) old, B) new.



Fig. 3. Example of wear of the injector tip. [2]

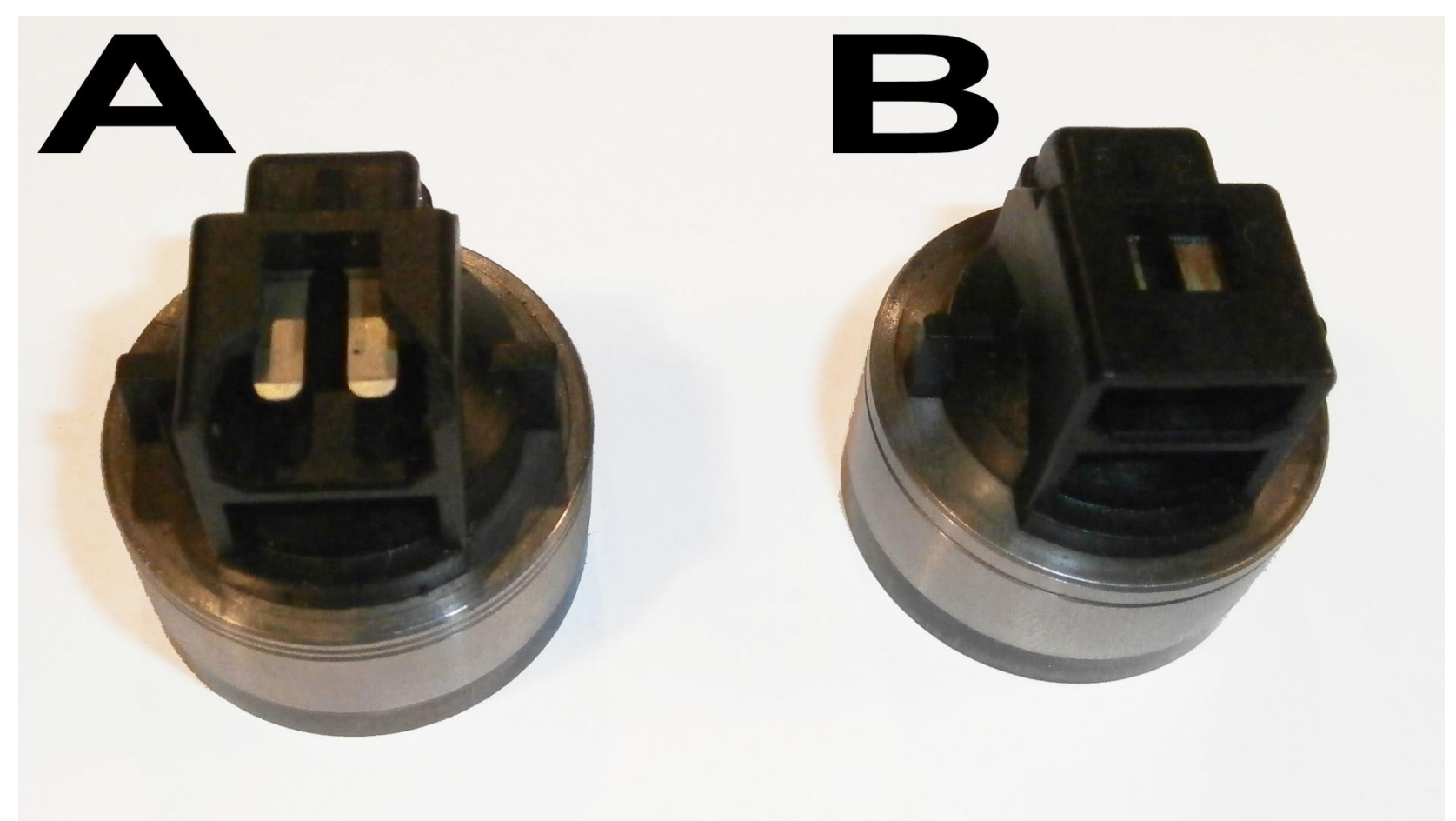


Fig. 4. Damaged (A) and undamaged (B) coil connector.

## **Summary**

Repairing diesel engine injection systems is a very responsible job and should be carried out by specialized employees who have knowledge about this type of systems. Lack of such knowledge may result in improper engine operation, accelerated wear of components or their complete failure in a short time. During the remanufacturing it is recommended to follow strictly the repair procedures provided by the manufacturer or instructions of regeneration companies with the authorization of the manufacturer.

## **References**

- [1] "Volkswagen Bora 1.9 TDI Injector." Internet: <https://www.pfjones.co.uk/volkswagen-bora-1.9-tdi-2001-2005-reconditioned-bosch-diesel-injector-0414720215.html>, Oct. 28, 2018
- [2] "Gallery of damages" Internet: <http://www.turbo-tec.eu/uk/pump-injectors-gallery-of-damages>, Oct. 28, 2018