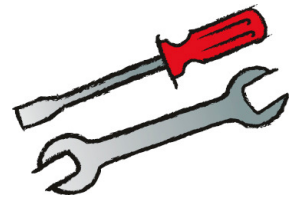




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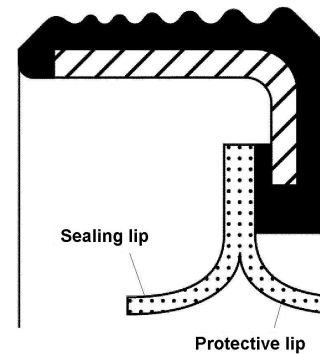
TSI 09/11



Tips from the gasket expert

Professional Assembly of PTFE oil seals

Modern diesel and gasoline engines make increasingly high demands on oil seals. This is particularly due to the higher engine speed and oil temperature. In addition, increasingly long maintenance intervals for oil changes are required, which makes the utilized additive-rich oils more aggressive toward the sealing material. Oil seals made from fluoro rubber (FKM), which are often used, can only fulfill these increased demands to a limited extent.



The material polytetrafluorethylene (PTFE), however, provides a solution. PTFE oil seals do withstand these extreme stresses since they

- have a considerably wider sealing overlay without metal spring
- are resistant to high temperatures and modern motor oils
- exhibit low friction losses
- offer very good sealing performance

In addition, PTFE enables the application in case of insufficient lubrication and dry run, as well as the application with un-tempered shafts. The PTFE sealing lip and PTFE protective lip are directly moulded on and can either point toward the inside or outside, depending on the respective assembly. Due to the PTFE dry run qualities, oil or grease must NOT be used as an assembly agent.

For commercial vehicles, PTFE oil seals are used in

- crankshaft seals
- camshaft seals
- transmission seals
- wheel hub and axle seals

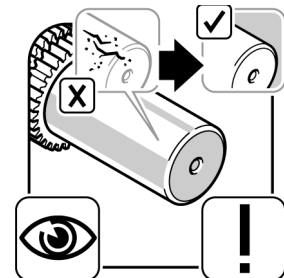
Professional assembly is especially important for the successful use of PTFE oil seals.

Please adhere to the following instructions:

- In most cases, the PTFE oil seal is equipped with a plastic cover in order to protect the sensitive sealing lip. This also ensures the even geometrical shape of the sealing lip and its optimal alignment with the shaft surface. It is important to make sure that the cover will be removed for assembly—not earlier. The sensitive sealing lip must neither be moved nor upended since this can negatively affect the sealing function, even without being obviously detectable.



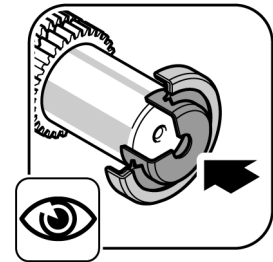
- Before assembly of the oil seal, the shaft surface must be carefully inspected to ascertain that it is free of grooves or other damages. If this is not the case, these must be removed. If in doubt, it is absolutely necessary to consult an engine specialist/repairer who will possibly perform a professional surface finishing, if needed.



- Important: The PTFE oil seal must be installed dry. Oil or grease of any kind must NOT be used as an assembly agent.



- For assembly, the plastic cover is positioned such that the oil seal can smoothly slide onto the shaft. An appropriate insertion tool must be used when sliding or pressing the oil seal onto the shaft, and it must be ensured that this occurs evenly and without impact load. Otherwise there is a risk of damaging the sealing lip, and flawless sealing function is no longer guaranteed.



- In order to guarantee that the high-performance PTFE oil seal will optimally perform its function, a minimum of 4 hours, and in some cases depending on engine application a minimum of 8 hours after assembly should pass before the shaft is moved or rotated.

