Technical Service Information | TSI No.: 03/04

Professional repairs with PTFE (polytetrafluoroethylene) radial shaft sealing rings

When it comes to overhauling combustion engines, every workshop is familiar with radial shaft sealing rings. Such seals typically have an elastomer sealing lip of high-quality fluorocaoutchouc and a metal spring that presses the sealing edge onto the rotating shaft with a precise amount of spring force, ensuring a reliable seal.

Because of the high rpm and oil temperature of modern Diesel and Otto engines, sealing rings must fulfill every more exacting requirements. The length of time between oil changes continues to increase as well, while the types of oil used are becoming more and more aggressive to the sealing material because of their numerous additives. Fluorocaoutchouc can meet these more stringent demands only to a limited extent.

A PTFE radial shaft sealing ring has now been developed that can withstand such extreme stress. In contrast to the fluorocaoutchouc sealing ring, its sealing surface is solid, much wider, and does not have a metal spring. It can withstand high temperatures, is resistant to modern motor oils, has exceptionally low frictional loss and provides a very good seal, making it ideally suited to modern engine designs (fig. 1 and fig. 2, Elring).

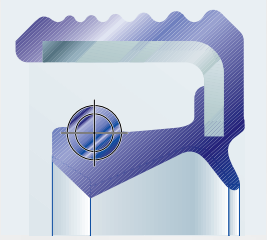

Fig. 1
Standard radial shaft sealing ring (ASW design)

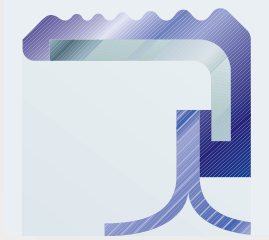

Fig. 2
PTFE radial shaft sealing ring

This PTFE design is used instead of conventional radial shaft sealing rings on new engines. And it is also a good idea to use this design when overhauling an engine.

For repairs, PTFE sealing rings are available as a single replacement part or as a component with a fixed integrated sealing ring. In the latter case, the complete housing must be replaced.

Integrated radial shaft sealing ring with housing and mounting sleeve.

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radial shaft sealing rings

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Important factors for professional repair:

- Observe the general installation instructions specified by the engine manufacturer.
- In most cases, the PTFE radial shaft sealing ring is equipped with a plastic sleeve to protect the delicate sealing lip. The sleeve also makes sure that the geometric shape of the sealing lip does not change and that it fits the shaft surface optimally. The sleeve can often be used as a mounting sleeve as well.
- It is very important that the sleeve not be removed until the seal is about to be installed - and not before! The delicate sealing lip should not be moved or turned outwards since that would prevent proper sealing without being noticeable.
- Before the radial shaft sealing ring is installed, the shaft surface must be checked carefully to ensure that it is free of marks or other damage, and any marks or damage found must be eliminated. If in doubt, it is best to consult an engine repair specialist who can machine the surface professionally if required.
- Important: The PTFE sealing ring is mounted dry. Do not use any oil or grease!
- The sleeve is placed on the shaft such that the sealing ring can be moved smoothly onto the shaft.

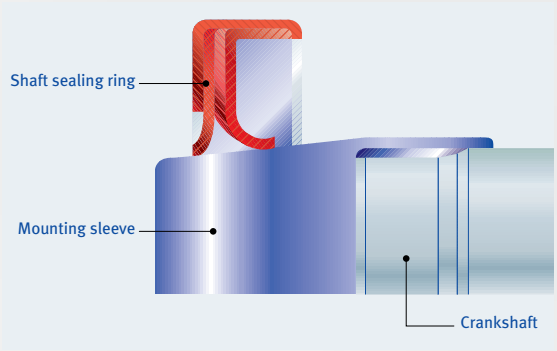

Fig. 3
Mounting a PFTE radial shaft sealing ring

- When sliding or pressing the ring onto the shaft, use suitable tools to apply pressure. This must be done smoothly and evenly without subjecting the seal and shaft to any impact. Otherwise the sealing lip could be damaged and the seal would not function properly.
- If these installation instructions are followed closely, you can be certain that this high-performance PTFE radial shaft sealing ring will work properly.

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