ajusa

Technical Report #67

Failure reasons for oil seals

Technical Report

Reason

Due to the claims received by oil leakage of the oil seals, we want to report the common faults observed in their installation, as well as advice our customers tips in order to avoid the oil leakage.

Development

Oil seals are elements of great precision in their manufacture and therefore it requires special care in their installation to increase their service life. It is proved that the service life of a seal is directly related with the procedures of the installation.

Next, we are going to detail several tips or warnings for the installation of the oil seals:

1.   Status of housing

Remember to check the housing in which the seal is installed, and make sure that it has no irregularities that can cause leakage of oil.

2.   Shaft Status

The shaft must be checked to found imperfections that can affect the sealing lip. In some cases, the sealing lip can wear out the surface of the shaft, creating a groove which through of it can produce leakage.

The duration and operation of the seal can be affected by shaft imperfections such as burrs, scrapes, rust, etc.

If the shaft is worn in depth, or has been damaged during the disassembly process of the old seal, it will be necessary to repair or replace the shaft, to ensure that the contact surface is in perfect condition.
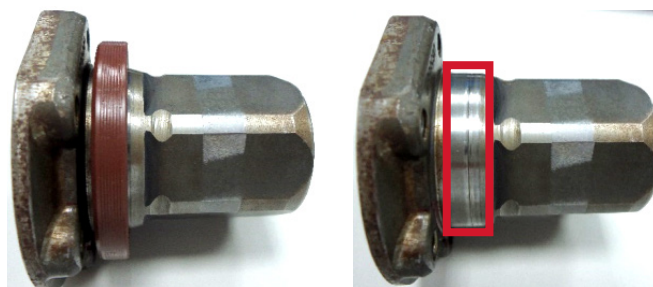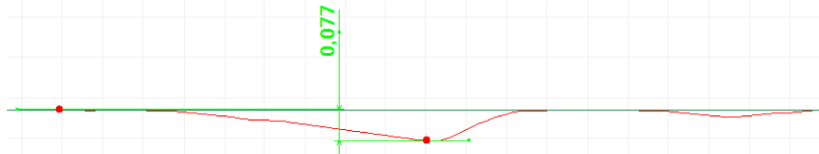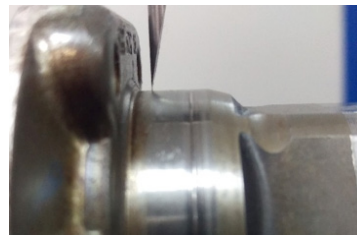
Profile of the contact surface between the seal and the shaft where it's observed wear generated by the sealing lip (mm)

3.   Use of Sealants

No sealants or oil must be applied to the external diameter of the seal or in the housing. The contact of these places should be dry and tight so it can seal properly. This seal could reach the sealing lip canceling the operation of the oil seal.
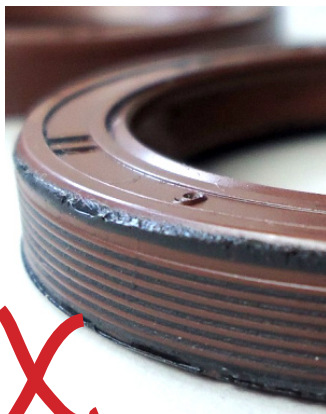

Sealant remains in the external diameter of the seal

4.   Lubrication in the assembly

Before installing the oil seal, except for PTFE seals, lightly lubricate the sealing lip with oil. This facilitates the mounting of the seal on the shaft and prevents a dry start that could damage the lip or cause premature wears.

5.   PTFE Seals (Polytetrafluoroethylene)

It is very important to assemble them without lubricating the internal sealing lip, using the applicator that comes with the seal to mount it on the shaft without damaging the lip.
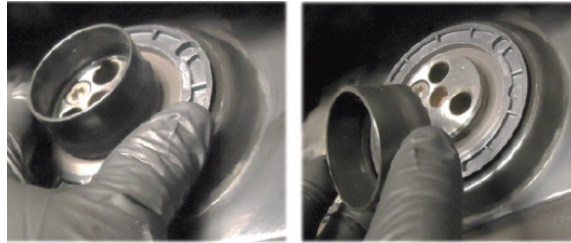
Also, it is necessary to wait 4 hours before starting the engine, so the sealing lip is fully seated on the shaft.

By scanning the following QR code, it will take you to a specific TIP about PTFE seals, where some assembly tips are given:


6.   Sense of rotation

The direction of the rotation of the seal is fundamental. If the seal that we mount is not appropriate in terms of measures or direction of rotation, leakage will be produced.

Generally, the seals are marked with their dimensions and direction of rotation. The direction of rotation is indicated by an arrow and it must have to coincide with the direction of the axis.

The seal must always be inserted into the housing in such a way that the marks (dimensions and arrows) must always be facing the outside (air side).
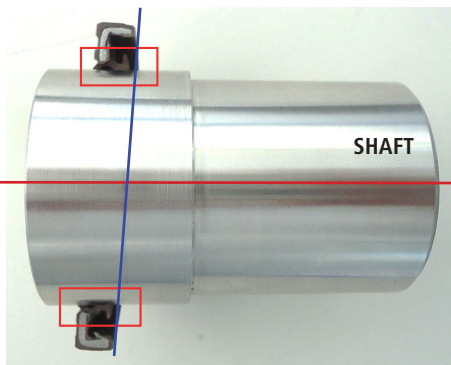
7.   Assembling

It is totally forbidden to directly strike with the hammer the seal or to use of any punch element to insert it into its housing, as this could cause deformations in the metal core, resulting leakage of oil.
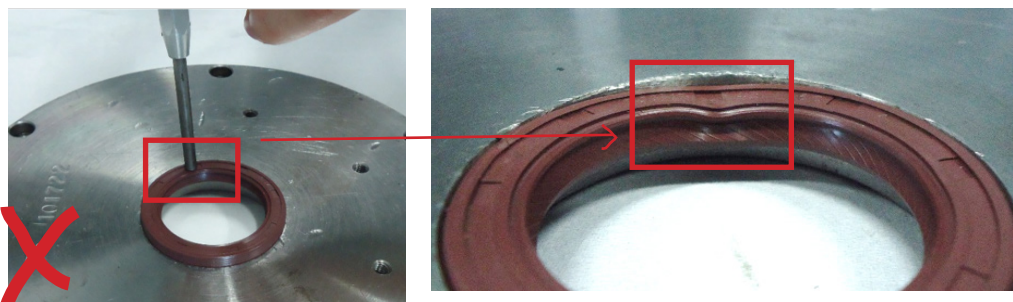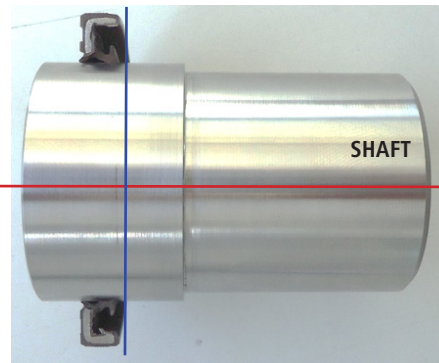
In the following picture, we can see how the seal cannot be perpendicular to the shaft due to the deformation produced in the metal core.

The following pictures we can see the indicated mounting defect:

Seal perpendicular to the axis

Seal not perpendicular to the axis

Area Max. Wear

Area Min. Wear

The assembling it must be done by an adequate tool that allows the oil seal to be inserted into its housing at the same time throughout its diameter, in this way, we can ensure that the oil seal is perfectly perpendicular to the axis where it is mounted, making sure that the internal lip acts in the same way on the entire surface of contact with the shaft.

Examples of installing tools