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TECHNICAL REPORT

Failure reasons in rocker cover gasket

PURPOSE

Inform the **main instruction** that should be taken **to change the rocker cover gasket** and the consequences that can occur if it's done in an incorrect way.

DESCRIPTION

The main function of the rocker cover gasket is **sealing the area between** the **top of the cylinder** head **with the cylinder head cover** to prevent oil leakage.

There are several materials for the manufacturing of these gaskets, focusing on this TIP only in those which are made of elastomer.

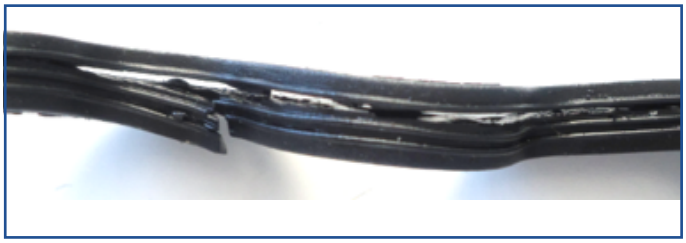
Several reasons may lead to failure of an elastomer rocker cover gasket:

1. Overpressure

They are generally housed in the cylinder head cover, which is made of aluminum or plastic, and by their distribution the main work is by compression forces.

When an overpressure is applied, the material start **begins to work in tensile** forces and shear, for which it's not designed, ending up cracking.

In the following picture, we can see how **the material has cracked due to the overpressure** made by an excessive tightening:



It should be considered that the tightness of these type of gasket usually is between 8-12Nm, and if the screws are tightened without using a dynamometer, it's probable that its reaching the 25Nm easily without realizing it.

2. Wrong positioning

Other common fault, is **to incorrectly place the gasket in its housing**, so if we do the tightening processes with the gasket out of the socket, the cover would act as a shear cutting the gasket itself.

3. Poor state of fastening elements

When the **cover is provided with nuts**, it is important to clean them up. In the image below, a nut is shown as it leaves the cover (with rust residues), while the second nut is completely clean.

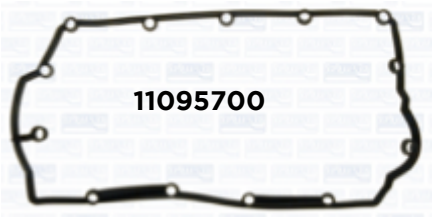
It **must be cleaned in its central part** because is where the gasket is sealing, and if the surface of the nut isn't completely clean, it may produce oil leakage in that area.

Dirty nut Clean nut

4. Aplication error

There are many occasions where for the same type of engine, **are several types of rocker cover gasket.** This is usually produced to a modification by the origin brand of the cover, such as modifications of material, design etc., being possible to be mounted in their general contour, but different in design and section.

Here is an example of a very similar contour of gasket which mount a different rocker cover:



5. Sealant application

This type of gaskets has a design of nerves, studied to prevent the leakage of the oil between the cylinder head with the cover. If **the sealant is applied in areas where it's not recommended** by the vehicle workshop manual, this will prevent the design from being functional, **resulting leakage of the oil.**

Measures to ensure the correct sealing:

- **Clean the working area**, to avoid getting dirt in the cylinder head.
- Dismount the cover in the way that's indicated by the manufacturer.
- Apply sealant in the critical areas if it's necessary.
- I**nsert the gasket into the socket** of the cover ensuring that it is correctly positioned.
- **Apply the tightening torque indicated** in the workshop manual of the corresponding vehicle.