

# TECHNICAL REPORT

Recommendation for the  
assembly of head gasket on  
engine 18K16 for Land Rover  
Freelander 196CC

## PURPOSE

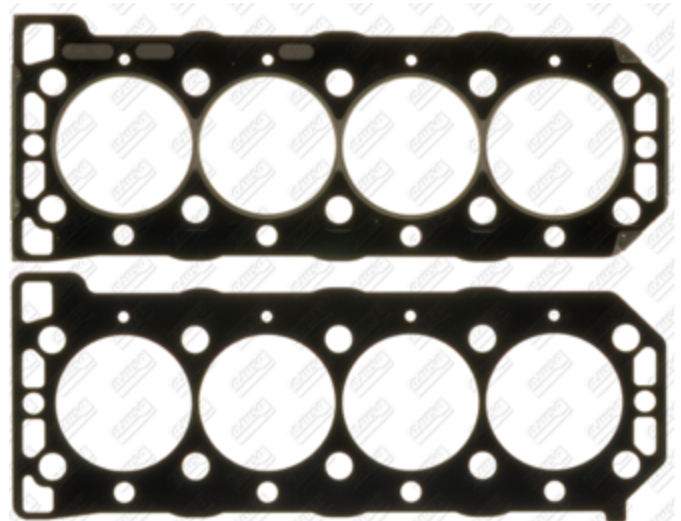
Introduce the **head gasket kit 55013000** for K engines for Land Rover Freelander 1800cc.

## INTRODUCTION

K engines came into the market for the first time in 1988 by the Land Rover Group. **For these engines there were 2 types of heads** for the same block; these heads are called **K8** (8 valve SOHC) and **K16** (16 valve DOHC). Further on, the system VVC (Variable Valve Control) was incorporated, thanks to which **power was increased** without jeopardizing flexibility or torque at a low speed.

In this type of heads, the position of the thermostat is not the best, **what makes the engine to get hot** before the system and the same time, to be very hot when the thermostat opens to bring coolant, causing a **difference of temperature** that can cause the failure of the weakest component, the head gasket.

Ajusa offers **the last generation** of head gaskets for K engines, made of multilayer Steel gaskets, two dowel pins to help the head gasket center and position the head on the cylinder block, and a shim used when head are machined and the limit is over 0,20 mm.



## RECOMMENDATIONS FOR DISASSEMBLY AND ASSEMBLY OF HEAD GASKET

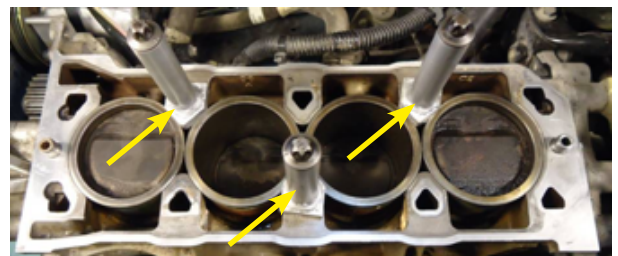
- Before disassembly of the head, it is recommended **to let the engine cool down.**

Disconnect ground cable off the battery..

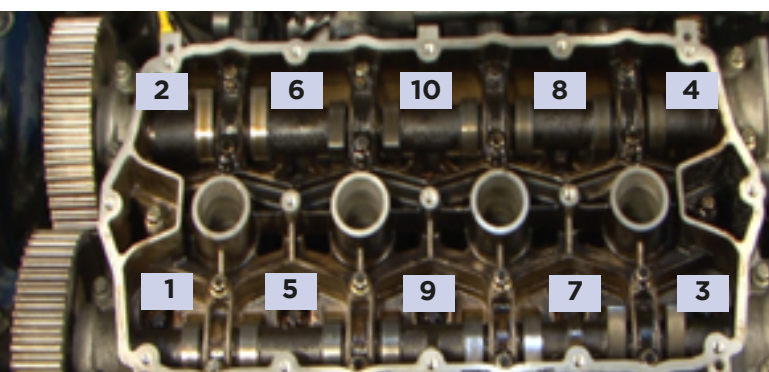
- **Empty the cooling system**
- **Disassemble** intake and exhaust manifolds, valve cover and **all those components** detailed in the vehicle repair manual.
- **Turn the crankshaft** until cylinder 1 is on the upper deadlock, then block it.
- **Disassemble the timing belt**, the accessory belts and tensors following the manufacturer specs.
- **Disassemble camshafts** following specs on the repair manual.
- **Pull the head up;** for this, loosen the bolts on the head as shown in the following the sequence of the drawing.

- Once the old head gasket is removed, **block the liners of the engines with supports;** in this way you pin up the liners and avoid mixing cooling system with lube system.

**Do not turn crankshaft before assembling toolings to block liners**



- Disassemble old dowel pins.
- **Clean and degrease the contact surface** between head and block.



- Check flatness of head and block. Maximum value of deformation allowed is 0,05 mm. If deformation is higher than allowed, the head of these engines can be machined.

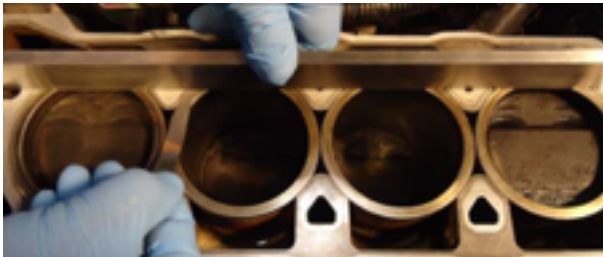
For a value of **0,20 mm** or under, it is not necessary to use the shim included in the set.

- Si por el contrario, **el rectificado es > 0,20 mm, es necesario montar la lámina de suplemento** que forma parte del juego 55013000. En este caso, el orden de montaje de la junta de culata y el suplemento, es el que mostramos a continuación.

head



block



shim



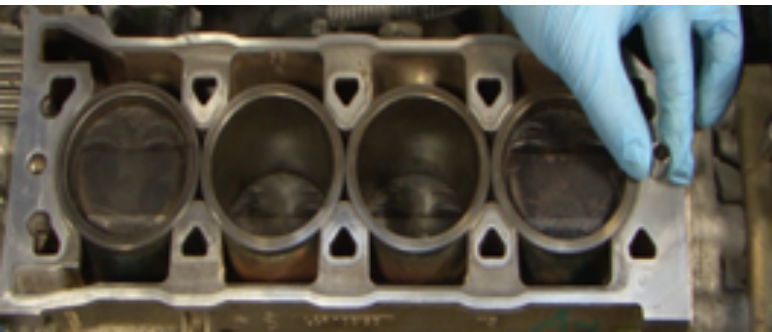
head gasket

Our head gaskets are marked with AJUSA on the head side, indication assembling.



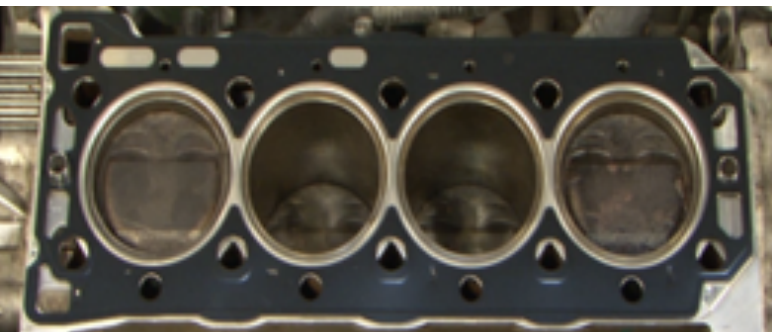


- Place the 2 dowel pins of kit 55013000 to make the centering **of the head gasket on the cylinder block easier.**



*Do not turn the crankshaft once you remove the tools to pin up liners.*

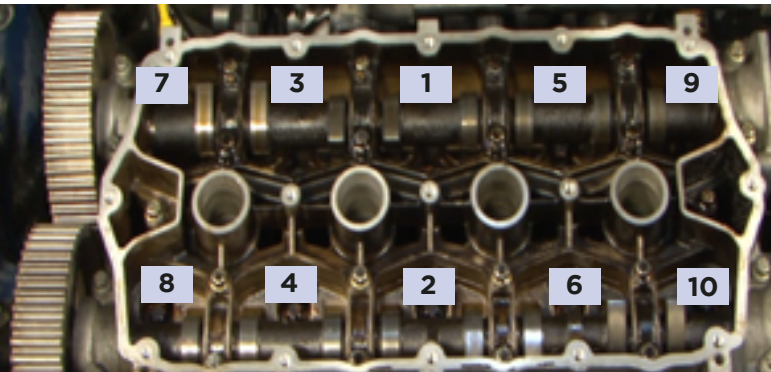
- Disassemble toolings **to block the liners of the engine** and place the new head gasket of kit 55013000.



- Place **the head on the block**, adjusting with dowel pins; do not drop or hit the head gasket; if this happens, it is recommended to replace the head gasket.
- Lube the bolts under the head and thread and place in their housing by hand.



- Proceed **to tightening following the specs** included in the AJUSA kit 55013000.



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#### 1st STAGE: 2 kpm

With the torque wrench, apply 2kpm to all head bolts in the specified order.

#### 2nd STAGE: 90°

Apply 90° to all head bolts with a goniometer in the specified order.

#### 3rd STAGE: 90°

Apply 90° to all head bolts with a goniometer in the specified order.

#### 4th STAGE: 90°

Apply 90° to all head bolts with a goniometer in the specified order.

#### 5th STAGE: 90°

Apply 90° to all head bolts with a goniometer in the specified order.

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- **Assemble camshafts** following the specs on the repair manual.
- **Assemble intake and exhaust manifolds,** valve cover and all those components detailed in the vehicle repair manual.