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# TECHNICAL REPORT

Check and preparation for the  
reuse of torque tightening bolts:  
Jeep Cherokee 4.0



## PURPOSE

To indicate the different checks and the preparation required to reuse torque tightening bolts.

## INTRODUCTION

Over the years the **cylinder head bolt has undergone many design** and properties changes in order to adapt to the increasingly demanding needs of today's engines. High performance mechanics where internal pressure in the combustion chamber is becoming higher have led to the need of developing more complex and efficient cylinder head sealings, which makes the bolts play a vital role when repairing a vehicle.

The main function of the cylinder head bolt is to **apply the closing force** evenly among all the different engine parts involved, generally the block and the cylinder head, and keep it stable ensuring the correct sealing of liquids and gasses in the cylinder head gasket, bearing the temperature variation, vibrations and position changes that take place inside the engine during its functioning.



Nowadays, the use of angular tightening bolts is widespread because they adapt to the specifications of the manufacturers of modern mechanics. This kind of bolts must be replaced always when repairing the engine.

## Torque tightening

- ▶ There are older motorizations in which the type of **tightening** is only the **torque** one, and therefore it is possible to reuse the bolts, as long as they meet the following requirements.

The pictures correspond with the process of checking and preparing the cylinder head bolts of a Jeep Cherokee 4.0 Petrol.



## Check

- ▶ **Check that the bolt's length, from under the head to the end of the stem,** within the tolerances specified by the manufacturer in the workshop manual corresponding to the vehicle and engine type. In case the length is within tolerances, proceed with the next step.
- ▶ **Check the condition of the thread and the surface under the bolt's head.** This surfaces must not have neither burrs nor metal shavings produced during the previous tightening. In case they are in good conditions, continue with the next step.



## Preparation

- ▶ Clean the threaded surface, using a die wrench with the appropriate thread pitch and metric. In this step **we prepare that surface cleaning any traces of oxidation, cinder, etc.** It is also necessary to carry out this operation inside the threaded holes of the engine block, using a tap with the appropriate pitch and metric.



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*Check the thread type with the metric gauge. Whitworth 1/2 - 13. Choose the die corresponding with this thread type.*

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*Use the corresponding die in each one of the bolts.*

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- ▶ **Apply grease or oil in the thread and under the bolt's head.** With this step, we lubricate the zones where the highest stresses are reached during the tightening, reducing the friction coefficient in order to ensure a more homogeneous tightening in all the cylinder head gasket surface.



- This concrete bolts set mounts 2 different kind of bolts, 7 units of each one.

All the bolts must be greased in the thread and under the head, except for one of the longest bolts. In this bolt it is necessary to apply grease under the head and threads sealant in the threaded zone. This is due to the fact that the bolt hole where it mounts in the block is communicated to the water pump, and it is necessary to seal it so that no water leakages occur.



Threads sealant

Grease

Once these operations have been carried out, **the bolts are ready for their reuse** in the replacement of the cylinder head gasket.



Water Pump

Bolt with threads sealant