Technical Report #55

Cylinder head bolts: design changes on head & washer

Technical Report

Purpose

To inform our customers about Ajusa's washers inclusion in cylinder head bolts policy and the design changes about head carried out in some bolts sets.

Introduction

Frequently, we find a ***washer under the head*** *of the cylinder head bolt. The main function of this washer is to* ***increase the supporting surface against the cylinder head.*** *This way, the closing forces are better distributed and there is no need to use bigger heads.*

Moreover, having an increased contact area against the cylinder head, we avoid damaging its surface, which is usually made of aluminium casting and therefore has a lower hardness than the steel of the bolts. We achieve it by lowering the pressure per square centimeter.

The washer inclusion policy in AJUSA bolts is the following:

- ***It will include the washer****, in those cases in which it cannot be pulled out of the bolt through the threaded zone.*
- ***It will not include the washer****, in those cases in which it can be pulled out of the bolt, understanding that in these cases it can be reused. It is necessary to check the washer condition before reusing it.*

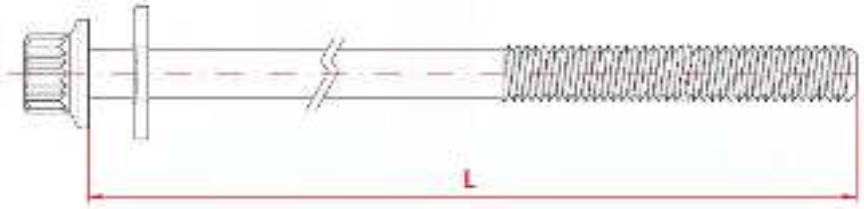
On the other hand, some bolts, instead of the washer, include a "flange" together with the head that has the same function

Bolt with washer under the head

Bolt with flange in its head

In some part numbers, the original manufacturer ***changes the original design of the bolt****, which turns* ***from having a loose washer to include it in the head as a flange.*** *When the flange is included, the length of the bolt stem decreases (measured form under the head to the threaded end), because the thickness of the washer is included.*

In these cases, Ajusa also adapts its bolts to the new design, being the part numbers involved the following:



Bolts set	Head change Previous ➔ Current	L (mm) Previous		L (mm) Current
81002000		178,5		173
81007100		103		99
81007100		85		83,5
81010100		95		91
81010100		60		56
81016100		119	119	121
81017400		146		142
81022300		106		103
81024700		131,5	131	126
81029300		144		140
81033400 & 81037800		225		219
81044800 & 81045000		204		200

Therefore, it is possible that, when dismounting the original bolts in order to replace the cylinder head gasket, we find a bolt with washer instead of the current bolt with flange. In these cases, the current bolt can be perfectly mounted.