



Technical Report #18

Report about the application of different cylinder head bolts in BMW engines M52

Informe Técnico

Purpose

Expose differences between cylinder head bolts in BMW engine M52 in which could be assembled 3 different bolt sets depending on manufacturing year and materials of those engines.

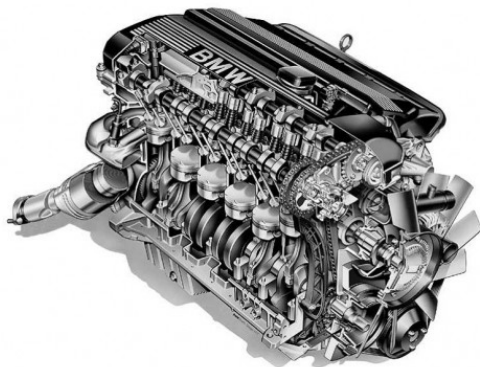
Description

The M52 engine series was released first in 1995. For these engines are two sets of different cylinder head bolts to August 1998, and a third set different from the previous two for engines built after that date.

At the beginning of the production of M52, the engine block was manufactured in an aluminum alloy which is widely used in engines, especially those of large capacity because it is lighter than cast iron and is able to obtain engines with much lower final weight. This fact has a direct influence on the behavior of the vehicle and other factors such as improved fuel economy, mainly due to the reduction of overall vehicle weight. Apart from dynamic improvements, aluminum has other thermal characteristics that may be interesting to use as raw material for the manufacture of a vehicle engine, such as having good conductivity metal and therefore good heat dissipation capacity.

This type of aluminum blocks need to be covered in the cylinders with some other ferrous alloy which resists high temperatures and friction of the piston without deforming. For this particular engine, the manufacturer used a silicon and nickel alloy commonly named "Nikasil", performing a coating as a cylinder liner inside that block.

BMW had serious problems with the M52 in countries like USA, whose petrol possess a high level of sulfur which attack the Nikasil coating, producing engine failure. This fact forced the manufacturer to build a variant where the aluminum block was replaced by cast iron in all engines where the problem was detected.



Many of these aluminum blocks were replaced by cast iron, not only in the manufacturing of the engines but also in repairs to vehicles under warranty.

From August 1998 the manufacturer re-launched again this aluminum-block engine improving the problematic areas which forced the brand to replace it in the past. Thus, from that date, the new M52 aluminum block is applicable in all models everywhere.

For this reason, AJUSA provides for vehicles produced from 09/1995 to 08/1998, the cylinder head bolts set with part number 81024300 (110mm long) for aluminum block engines and set with part number 81008500 (95mm in length) for those with cast iron block.

In the same way, AJUSA offers cylinder head bolts set for vehicles manufactured after 08/1998, with part number 81027600 (110mm in length) for new aluminum blocks.

Although the manufacturer has unified the two cylinder head bolts sets for aluminum blocks, AJUSA remains three available part numbers to ensure the best coverage for their customers.

