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# TECHNICAL REPORT

Coolant holes on Ajusa  
cylinder head gaskets



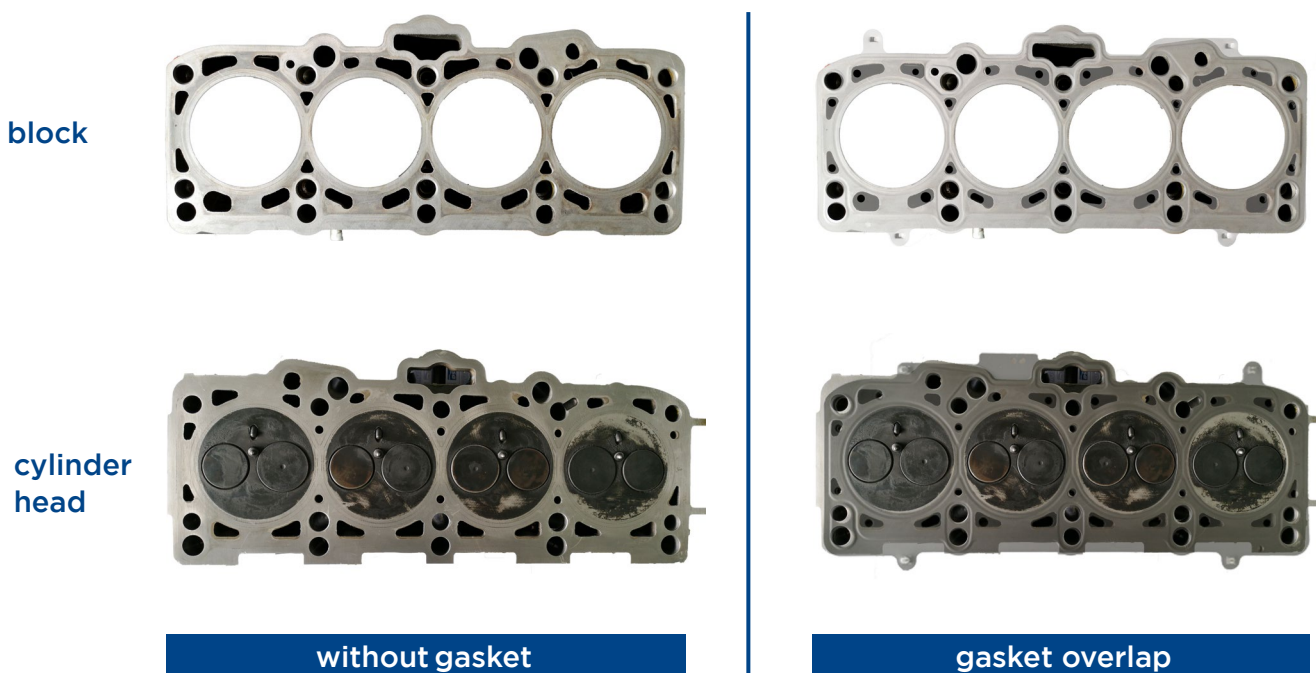
## REASON

Information for all our customers, explaining about the shape, layout and size of the **coolant holes** in cylinder head gaskets.

## SUBJECT

It is very common to find smaller sizes of coolant holes in the cylinder head gaskets, even sometimes they are misaligned or non-existent in relation to the cylinder head or block holes.

It is not caused by a production mistake or similar but have an intentional function: **maintaining optimum engine temperature.**



This way, the **flow of coolant** around the cylinders and through the cylinder head **is controlled**, regulating the temperature of the coolant avoiding overheating.

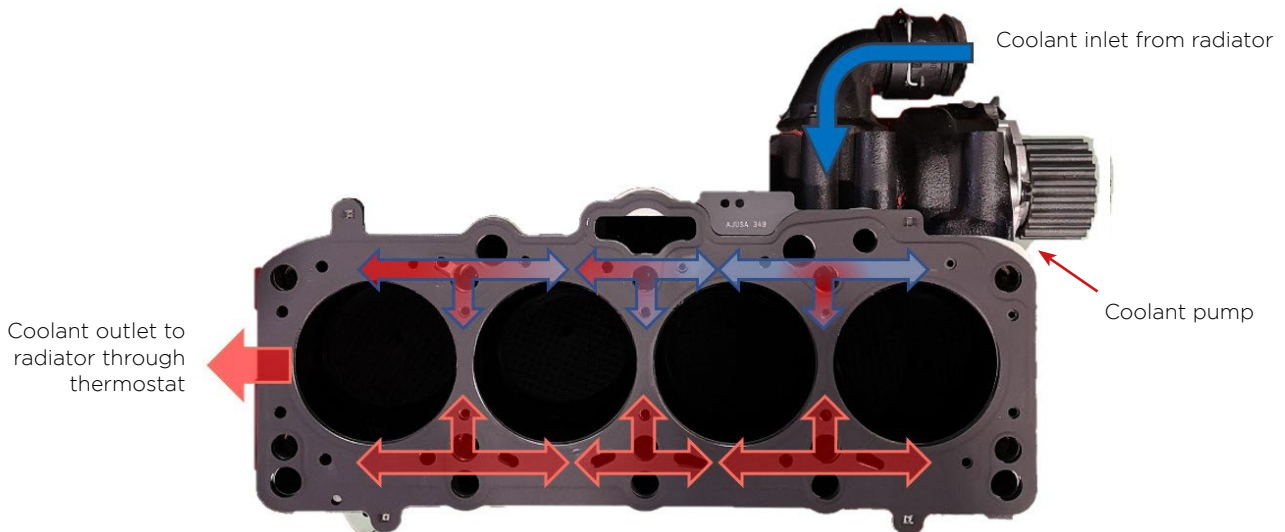
Usually the block holes and cylinder head holes are bigger than gasket ones. It makes block manufacturing easier and increase coolant volume in contact with the external surface cylinders area.

## TWO REASONS

**1. Reduces the coolant flow through the gasket**, increasing the time in contact with the high temperature areas of the engine block, allowing a more effective temperature transfer, absorbing heat enough.

**2. It matches the coolant flow through the holes**, to prevent it from taking the easiest path, the closest to the pump, avoiding overheating in remote areas.

Engine **cooling must run** through the engine with **similar flow**, so it is necessary to reduce this flow near the water pump, where pressure is higher, it can be achieved reducing the holes on cylinder head gasket.



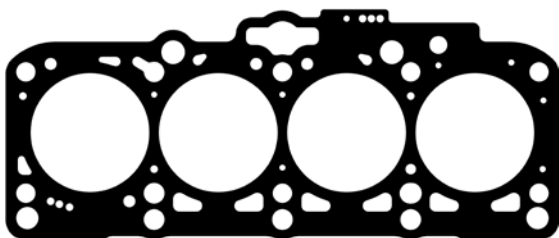
Coolant holes are **bigger away from the pump**, in these areas it is not necessary to hold coolant for so long given that pressure is lower because of loss of load in the fluid.

## CHANGES HANGES ON CYLINDER HEAD GASKETS DESIGNS

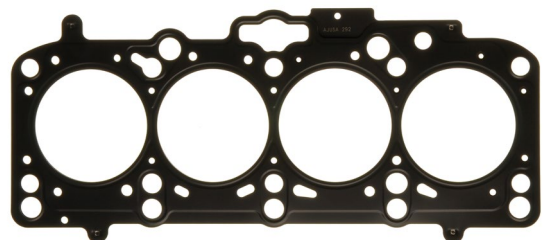
Sometimes **OE manufacturers make changes** in gasket design, modifying the size and shape in coolant holes to make it more effective.

It is probably that you can notice smaller holes when fitting Ajusa gasket. It happens as in the example below:

10121700 old design



10177000 new design

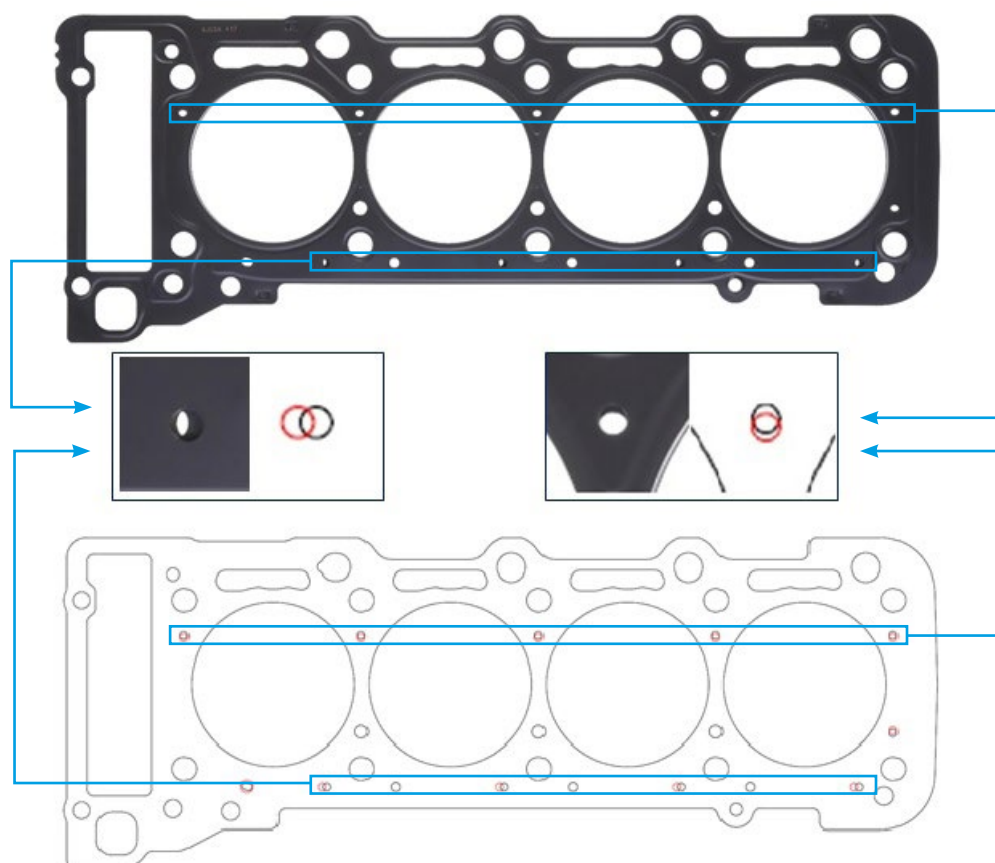


## DESIGNS THAT USUALLY LEAD TO CUSTOMER CONFUSION: 10188400

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Other manufacturers such as Mercedes-Benz **modifies the coolant holes** area using a peculiar way.

In this MLS gasket, **coolant holes** in all sheets are made with **the same diameter**, however disposition after assembling is misaligned some millimetres, this way the resulting hole is oval and smaller.



This fact usually makes the customer think that it is a manufacturing mistake, however the truth is that **it is designed on purpose** to improve engine cooling.

## WARNING

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**New acquired** cylinder head gasket **must not be modified** in any case, since the coating can be damaged, holes may not have required dimensions, and damages in gasket materials can happen, affecting seriously to the tightness between engine block and cylinder head.

## TECHNICAL ASSISTANCE

**Ajusa recommends** that before assembling the new gasket it **must be visually inspected** and compared with disassembled one, to verify that there have been no mistakes when selected in the catalog.

You can **call our technical support department** if you notice any difference or any doubt, in order to verify if it is a design change or you must install a different part number.



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