Design Principles of Bi-Metallic Disc Alternatives

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JAGUAR, LAND ROVER, MERCEDES & TESLA

Several manufacturers (including Jaguar, Land Rover, Mercedes and Tesla) fit Bi-Metallic brake discs to certain models. These discs consist of a traditional cast iron braking ring, and a pressed steel hub which is mechanically attached to the braking ring.

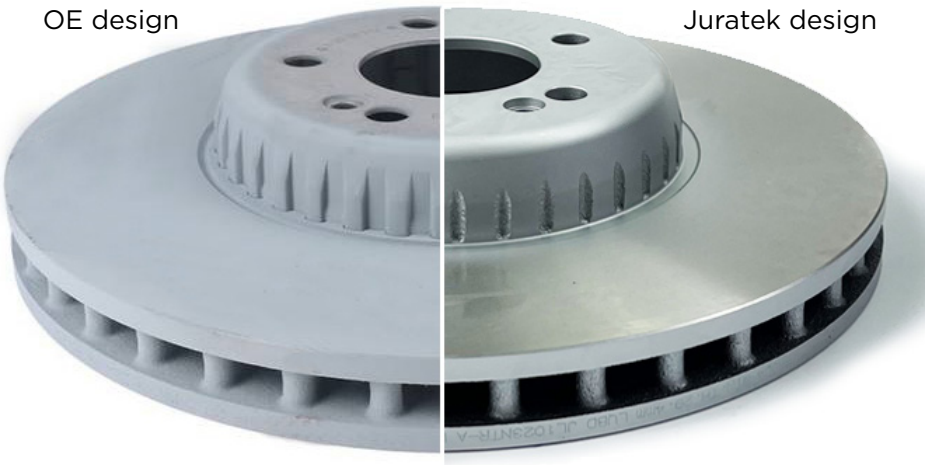
The main reason for this type of design is to reduce the weight and improve handling on high performance cars. These discs are patented which means they can only be purchased from the OE source.

To make these discs available on the aftermarket it is necessary to change the design to avoid infringing the patent. The Juratek version of these discs is made entirely from cast iron.

However there are critical dimensions that must be adhered to, to ensure the disc not only fits correctly but works effectively in-service.

The Juratek design has the same dimension on the usual areas:

- Outer Diameter
- Centre Diameter
- Bolt holes.
- PCD (Bolt Hole Diameter)
- Disc Thickness

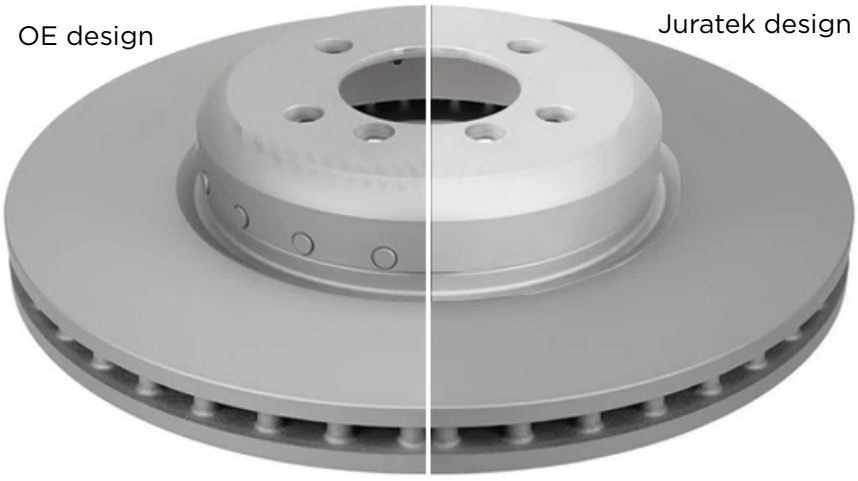


However the hub section of the disc on the OE version is made from pressed steel and is only 3mm thick. Cast iron is not as strong as pressed steel so in order to achieve the same tensile strength, the cast iron hub needs to be a minimum of 6mm.

Juratek introduced this design in 2019 to MERCEDES C-Class models. These concept discs were installed on test vehicles, and were subsequently approved for fitting to one of the largest taxi fleets in London.

BMW

The BMW range of composite discs features an aluminium hub that is connected to the cast iron braking surface by steel pins. Again, the reason for this design is to reduce weight and improve handling on high performance cars.



As this design is also protected by a patent, it is neccesary to design a one-piece cast iron version, which is fully interchangeable with the OE version.