THERMAL CONTACT RESISTANCE OF A SOLID WHEEL MOUNTED BRAKE DISC

The thermal contact resistance between disc and web depends on the contact conditions between the two surfaces and the tension in the bolts clamping them together. The contact conditions are likely to vary between different discs but they may also vary, for the same disc, due to warping resulting from temperature gradients generated during braking. These tests were made to obtain a typical value of thermal contact resistance of a solid disc, comparisons being made between a normal and an insulated disc-web contact so as to identify cooling contribution by conduction.

The report concludes that:

- The cooling behaviour of a disc insulated from the wheel web is consistent with that observed in earlier experiments. Heat is lost by convection from the disc surface at the same rate as obtained previously and by conduction into the web at a rate determined by the thermal conductivity of the insulating layer.
- With no insulating layer, thermal contact between the web and disc is good and it was confirmed that for the purpose of calculating heat loss, the two masses could be combined and be assumed to lose heat by convection from the disc surface.
- A value for the thermal resistance of the contact between the web and the solid disc under test was obtained.

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