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SAE International

Date:

Wednesday, May 5, 2010

DOI:

<http://dx.doi.org/10.4271/2010-01-1524>

In order to increase engine capacity of close-deck single-bore type engine blocks, bore diameter is usually enlarged that results in thinner intra-bore sections. Enlarged intra-bore sections affect thermal loads around the cylinders as well as manufacturing complexities due to thinner water jacket cores. As a possible remedy, intrabore cores can be removed and passages can be created in the intrabore region by multiple drills. However, it should be ensured that sufficient heat transfer from ring reversal area is possible and effect on bore distortion is acceptable. The second item is particularly important considering the recent trends due to its effect on exhaust emissions, fuel and oil consumption. The effect of intra-bore drilling of a diesel Vee-engine block on thermal loading, assembly / hot bore distortion are assessed during the course of this study. For assembly loading condition, intra-bore drilling has little effect on bore distortion. During engine operation, the effect is more emphasized although bore distortion is thought to be in specified limits.

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