



Cylinder Block Boring Caution on 2000-2006 Toyota 1.8L 2ZZGE Engines

The AERA Technical Committee offers the following information on a cylinder block boring caution for 2000-2006 Toyota 2ZZGE engines. This information should be considered anytime the block is being evaluated for reuse as estimate totals will vary greatly.

For the previously new (2000 year) 2ZZGE engine model, a new Metal Matrix Composite material for the cylinder block bores was developed. The new material makes it possible to reduce engine weight and overall size. The MMC material is reinforced crystallized alumina-silica fiber (Vf5%) and 12 μm mullite particle (Vf10%) was selected as optimal material, because this combination MMC material supported the desired wear characteristic and tensile strength. Electrochemical machining (ECM) was adopted to ensure the scuffing resistance, which is a highly-specialized process.

This uncommon material possesses boring and honing issues for most if not all machine shops. Currently, the most common bore repair is to sleeve all four cylinders with iron liners and hone with conventional methods.

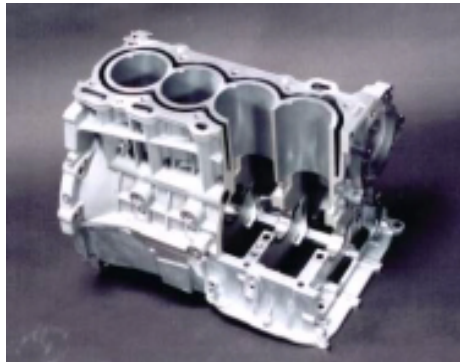


Figure 1. All Aluminum 2ZZGE Cylinder Block