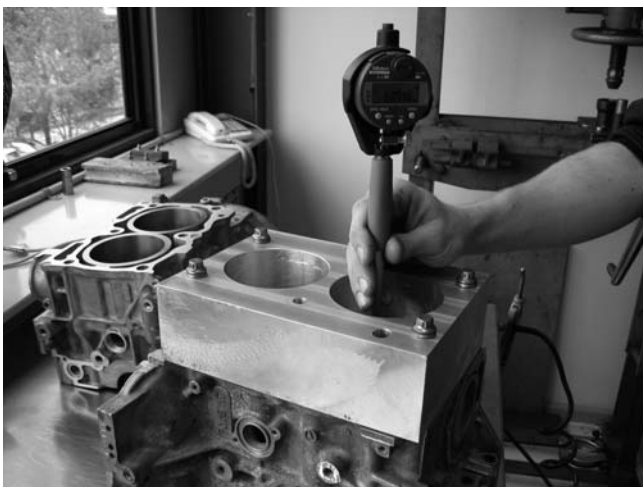


Torque Plate

fit. Piston to bore clearance is absolutely critical to an engine's performance and longevity, especially when using forged pistons. Too much clearance and the engine will rattle excessively and will suffer problems with oil consumption and large amounts of blow-by. Pistons that have insufficient clearance run the risk of seizing within the cylinder bore at high temperatures from expansion. All machining work and measurements are taken with a torque plate bolted up to the cylinder block. A torque plate simulates the effect on the cylinder block when the heads are installed and fully torqued up. A cylinder block that is machined in its unstressed state can develop problems with the cylinder bores either going out of round or becoming tapered when the cylinder heads are bolted on due to minute distortions of the cylinder block. However small, these differences can rapidly become a real headache at very high power outputs, as it reduces the accuracy of piston ring to bore contact promoting ring leakage and ultimately piston failures. Does your engine builder understand and appreciate this? You did choose your engine builder wisely?



Measuring Cylinder Bore



Checking Piston Weight

Once the pistons have been matched to a specific cylinder, one final check is made of piston weight. Differences in piston weights cause balancing issues and funny harmonics between cylinders. Good quality aftermarket pistons normally have very tight weight ranges, but in the case of any difference, material is removed from the heaviest piston in order to match the lightest of the set.

Final checks of the piston include careful examination of the circlips or spiral locks that will secure the gudgeon pin into the piston, along with a check of actual piston pin fit into the piston to ensure there are not any clearance problems.

Piston Rings – as with the pistons themselves, there are a number of very critical checks to be made prior to fitting the piston rings. Best practice dictates that piston rings should be matched to individual cylinder bores and are graded on the basis of installed ring end-gap.



Checking Piston Ring End Gap