

THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



Absolutely, The Most Motor For Your Money! *Guaranteed*

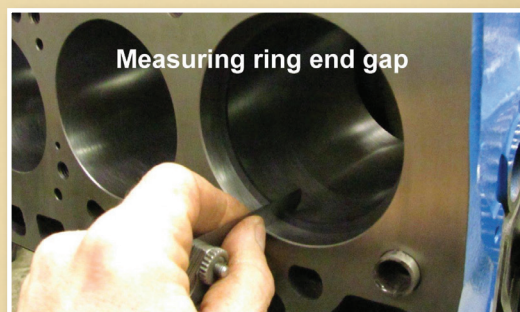
Let's get some more things cleared up.

Proper clearance in all aspects of today's hot rod engine is imperative for dependable use of the engine or disaster can occur. When clearancing engine parts one must know what materials are used in the parts and the expansion rates of those materials. Engine part clearance recommendations are a great place to start but knowing the use, extra RPM, the extra heat applied and the response of the parts to these things is wise to leave up to the experience and expertise of a high performance engine builder, like us here at Sehr Performance.

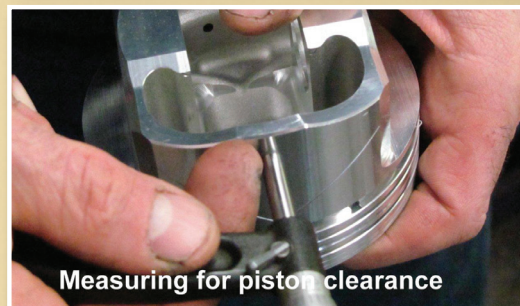
Piston to wall clearance is just as important as having a straight and round cylinder bore. It is very important to measure the piston at perfect room temperature and at the correct position on the piston skirt since all pistons are machined at a slight oval to the bore and they are also tapered to be slightly smaller at the top. The next thing the builder needs to know is the piston material expansion rate verses the heat applied. Obviously the more heat applied in the cylinder, the more the piston will expand, and the more clearance is needed. This extra clearance can also cause some slight engine noise at a lower RPM which is annoying but the added clearance is essential for engine life once the engine is at full load and at wide open throttle. In street performance engines where the exhaust is muffled, this noise is more noticeable. In aluminum engines this noise is amplified even more. If the piston clearance is too tight for the use then piston scuffing and seizing will occur and the result is the loss of power and engine failure.

Ring end gap clearance is another critical measurement to set. The same rules apply to the ring as they do the piston, the more heat, the more gap needed. There are things to consider on piston rings. Some pistons dissipate the heat more through the piston due to the material of the piston so more end gap is needed. There are many different styles and material of rings. Ring technology is constantly changing, so choosing the correct application for your purpose should be left up to an experienced professional engine builder. If the end gap is too tight for the use then the rings will butt up against each other and start to grow in diameter and will actually dig into the cylinder bore wearing the cylinder dramatically or it may break a ring land or it can pop the top off the piston. A ring gap that is too wide can leak compression into the crankcase and loose power. When it comes to ring gap it is a fine line between power and longevity and here at Sehr Performance we have the expertise to make sure the job is done right.

Stay with us as we will discuss more engine clearances next month...to be continued.



Measuring ring end gap



Measuring for piston clearance



Checking Rod Bearing Clearance

For those who noticed our mistake on the pictures last month, this is what it should have said.