

THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



Absolutely, The Most Motor For Your Money! Guaranteed

Sehr Performance
going the
"EXTRA MILE"

Engine Blueprinting 101

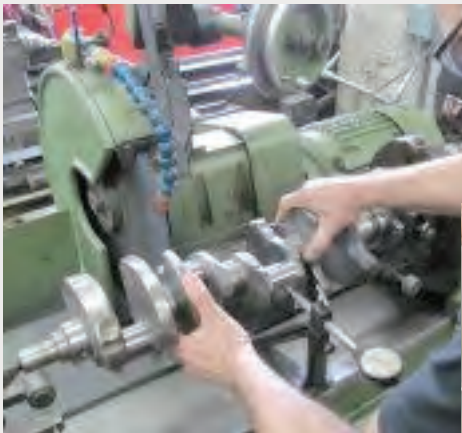
In our industry the term "balanced and blueprinted" is used quite often as a sales tool but even though seasoned engine builders understand these terms many consumers do not. Many that I speak to think that the two are one in the same, if the engine is balanced then it must be blueprinted but this is not the case. Balancing the engine is a procedure of equalizing all reciprocating and rotating mass in the rotating assembly and then dynamically balancing the crankshaft using the related mass weights. Blueprinting is another whole different series of measurements and operations to make an engine maximize durability and power. Automakers do the best they can when casting, machining and building an engine but they are stuck into the "close enough" syndrome due to mass production. When we engine builders perform an actual engine blueprint many things must be considered

and attended to. True blueprinting is a time consuming and expensive task.

The first thing is to make sure that we are working with the correct and quality engine cores of the block, heads, crankshaft, and connecting rods. Next we must correct the alignment of the main bore. The main bore is where every measurement of the block originates. Then the cylinder bores have to be corrected in alignment with the main bore centerline and in cylinder diameter size. The heights of the decks are then corrected to the specific specification and the deck plane must be relative to the corrected main bore centerline. Connecting rod length, pin and bearing housing bores are all equalized to the correct specification. The crankshaft then is corrected in main alignment and the strokes are equalized to the desired specification. The angle of each connecting rod journal

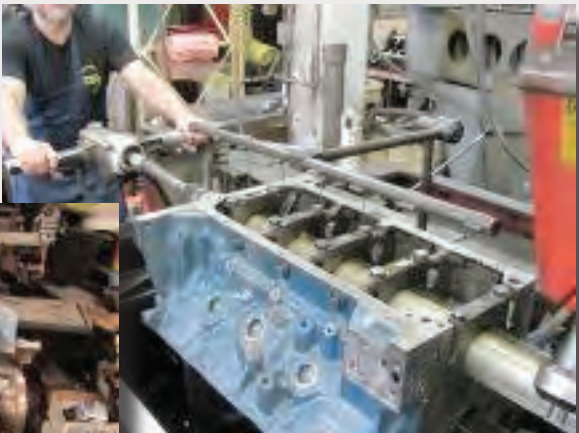
is equalized as well. Crankshaft journal diameters are equalized and journal width and endplay is corrected. Cylinder head combustion chamber volume and piston head volume is measured and equalized. Head port volume and flow, valve placement and depth, valve tip height and rocker geometry are all corrected and equalized. Another procedure is the correction of the intake port to intake manifold alignment and improvement of the cooling and oiling systems. These are just a few procedures that must be done when blueprinting an engine.

Here at Sehr Performance we go the "Extra Mile" when machining your engine for you. We automatically perform many of these procedures of engine blueprinting and that is one of the many reasons our engines perform so well.



Checking stroke equalization

Crankshaft balancing



Correcting main bore housing