

THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



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

GEOMETRY OF THE ENGINE BLOCK

The engine block has many duties that are crucial to the performance of an engine. The block is designed to harness cylinder combustion, stabilize the crankshaft rotation, guide the pistons, help provide ring seal, distribute critical engine oiling, cool the engine from the high combustion temperatures and in some blocks, house and stabilize camshaft dynamics just to name a few. The accuracy of the points and planes of the engine block will make a huge difference on the reliability, performance and power that the engine will provide. It is assumed that engine blocks are precision machined and accurate right from the factory but that is often not the case. It has been proven that factory blocks are often severely off and sometimes can't even be used in a performance engine application.

The main bore centerline is an imaginary center line where the crankshaft runs and is the most crucial measurement of an engine block. It is from this point that the cylinder bores, deck angles, deck heights, camshaft and cylinder alignment are established. If the main bore centerline is not right, nothing else can be truly correct or be made correct and there is no possibility of a successful performance engine build. The main bore must be machined straight and round to start the process. From this point the deck heights are measured from front to back. Deck heights from the factory can vary by more than .020" and this affects compression ratios in each cylinder and twist will affect cylinder head seal. To correct these conditions the block is dialed in on the main bore centerline and the decks are machined equal, parallel and flat, squaring off the decks. With the main bore centerline still used as our base the cylinders are addressed. Cylinder angles and centerlines are often incorrect as received from the factory and must be machined to correct the

angles and centers. In some cases the camshaft alignment, lifter bore angles or alignment may also need to be corrected to match the main bore centerline to provide the proper camshaft dynamics. Many new engine blocks now on the market are advertised as being precision CNC machined for dynamic accuracy but upon precise measuring are found to be in need of correction in one or more of these areas.

Attention to all of the geometry of the engine block and precision machining will increase the power, efficiency and reliability of your engine. There are many ways to machine an engine but there is only one correct way. Here at Sehr Performance we pride ourselves in going the "Extra Mile" in critically checking every angle and our precise machining in order to harness all the potential performance of your engine.

