

THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



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

Is Your Head On Straight?

The cylinder head has several jobs and one of the more important jobs is to seal the coolant and compression pressures that an engine produces. Cylinder heads must be straight and free of any warpage and twist; both of these issues are common. Engine overheating, improper tuning including improper fuel, timing and detonation are just some of the factors that can cause cylinder heads to warp or twist and head gaskets to fail. We get a lot of cylinder heads in our shop to be checked for warpage and find that the culprit is the deck surface of the cylinder block. Since the head and the block mating surfaces work together to correctly compress the head gasket and seal the engine, the deck surface straightness is also critical in helping to seal in those engine pressures.

Two more surfaces to consider that are often overlooked are the intake and exhaust manifold mating surfaces of the head. If the intake side is warped or twisted an intake leak can occur which can lean out a cylinder or two leading to a catastrophic failure. The computer-controlled engines of today will try to correct for this condition but sometimes there isn't enough tuning to compensate. On the other hand, in today's computer controlled engines if the exhaust side is warped and leaking it can result in a false O2 sensor causing a too rich condition and failure due to washing down of cylinders. Non-computer engines can have the same fate

only quicker. Everything has to be right not just close.

There are several different machining methods to prepare cylinder heads and block deck surfaces. They range from the common milling machine with a stone grinding head, a milling machine with a CBN cutting head, a rotary-broach head, a platen grinder or a vertical mill with a fly-cutter head to name just a few. Each of these machines will give a different finish but can give the correct finish in the hands of a capable machinist.

When the heads go back on the block there are strict torque sequences and specifications depending on the application that must be followed. Some require new head bolts each time, torque to yield, which are designed to stretch a fixed amount one time only and must be replaced. In the world of fasteners torque is a measure of bolt stretch and it is this stretch that provides the clamping force holding your parts together. Performance engines may require aftermarket fasteners that are stronger and provide a more reliable clamping force.

Here at Sehr Performance we will go the "Extra Mile" to insure your head is on straight so you get the performance that you expect.

Let us help you get the "**EXTRA MILE**" out of your next build.

