

THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



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Cylinder Head Mating Surfaces

In the past we have discussed the importance of having the mating surfaces of the cylinder head and cylinder block true and flat, this month we are going to talk a bit about the other two mating surfaces on the cylinder head and some of the problems they can lead to.

First off is the intake side of the cylinder head. If the intake side of the head and the intake manifold do not mate up as they should coolant leaks, oil leaks or intake vacuum leaks are a real possibility. This mismatch can be caused by heat or other stresses that result in a cylinder head or intake manifold that cause misalignment so these two surfaces do not mate up as they should. This type of leak can be hard to find because it usually occurs towards the lifter valley side of the head and intake and cannot be detected using the typical search methods. If this leak is small it will keep you hunting for the reason why your engine won't idle like it should or throw a code and drive your computer nuts trying to tune it out. With this type of leak a piston or valve can be burned. If your heads or block have been milled or decked beyond a certain point the alignment of these mating surfaces has been changed and the intake manifold will have to be corrected to insure a proper fit between the two surfaces and the associated gaskets. I should also mention that a lot of intake manifolds on computer-controlled engines are made of composite materials and are prone to warping.

Another possible problem is an oil leak into the intake side of the head, which can lead to detonation, a poor tune or even engine

failure. Beyond this, there is a possibility of getting engine coolant in the oil, which is never a good thing.

On the other side of the head exhaust leaks can drive your computer controlled engine crazy trying to adjust the fuel air ratio to compensate for a false lean reading. This false reading is caused by an exhaust leak that scavenges outside air and your computer will tune to the rich side trying to compensate for this error. This can result in washing down the cylinders and ring failure in a couple of different ways or if you are really unlucky, piston failure. If your engine is not computer controlled your issues are usually going to be limited to less severe problems such as a noisy exhaust that can sound like a valve train problem and added heat under the hood.

To avoid these problems we strongly suggest that you rely on the skills of a Certified Engine Machinist.

Here at Sehr Performance I have
27 years of experience to help you go
"THE EXTRA MILES".

