

THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



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THE INDUCTION FUNCTION

We will be talking about naturally aspirated induction at this time. We are going to dispel some mysteries about the differences between and benefits of a single plane and a dual plane intake. Before even deciding what type of intake to use, we need to establish how the engine will be used and what rpm range it will usually be used in the most. Other things that need to be considered are: vehicle weight, transmission type, converter stall speed for automatics, cam design, cylinder head flow, type of exhaust system and gear ratios. There are basically two types of intake manifolds, single plane and dual plane. Both types of intakes are capable of making excellent torque and horsepower but they produce their power at different rpm ranges and work best with different types of use. These two types of intake use intake runner size, runner volume, plenum volume, intake height and velocity to produce their power.

A dual plane intake serves very well in a street performance engine where most of the driving is in the low to midrange rpm. The left and right runners of these intakes are separated. This increases runner length and helps the engine make more low-end torque and work best in the 2,000-6,500 rpm range. Some sacrifice is made in top end horsepower as a trade-off for the drivability, torque and throttle response gained.

A single plane intake is better suited for the higher rpm performance engine. This type of intake and only a single plenum or runner and thus have a higher volume. They also have shorter runner length for better delivery of the intake charge at a higher rpm range, typically 4000 rpm and above. A single plane intake is better served when using higher flowing heads and a more aggressive cam profile.

Both types of intakes are available in a multitude of heights and profiles and both can be had with an air gap between the bottom of the intake runners and the lifter valley area. This air-gap helps to keep the intake charge a little cooler which helps with a denser intake charge and more torque and horsepower. Taller intake designs are useful in that they help increase top end performance by straightening out the runner curves and angles which increases flow and velocity of the intake charge. A third intake design that we didn't touch on is an open plenum design, which is pretty much specific to racing.

Here at Sehr Performance, we do our research and homework before we choose components and start a build. This is just one of the ways we insure that our customers get the most value out of every dollar spent.

