THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR

Sehr PERFORMANCE MACHINE

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The Nitrous Oxide Engine

We have been discussing different kinds of popular engine power additions that can be used to increase horsepower and torque in a hot rod engine. Nitrous oxide is one of the more popular and less expensive options for large power gains. However, the cost of the nitrous package is not the only cost there is of a properly engineered nitrous engine. The first thing to understand is what this compound actually does. Nitrous oxide is a fuel oxidizer not fuel, in other words, this compound, which is an oxide of nitrogen adds oxygen to the intake charge over and above what the atmosphere can provide which results in a much more powerful combustion. The more nitrous that is added the more fuel must also be added or the fuel charge will be very lean which can and will destroy an engine and its components extremely quickly. NOS also cools down the intake charge dramatically, which creates a denser charge allowing more air-fuel mix into the cylinder. The balance of this 'fuel dance' is critical and if it is missed by a fraction, disaster will occur. These results can be viewed on the many Internet sites.

One of the major problems in using nitrous oxide is that it can produce enough power to damage or destroy the engine if the tune is missed. The more nitrous oxide and fuel that is fed into the engine the more power is made. The engine must be built to hold up to the huge increase in cylinder pressures. Everything from the engine block, crankshaft, connecting rods, pistons, rings, bearings, head gaskets, valves, and fasteners all need to be considered for upgrading when building a nitrous engine. Detonation and pre-ignition are one of the main enemies when using nitrous. Melted pistons, broken rings, spun bearings, burnt valves, and blown head gaskets, are just a few of the problems of an incorrectly tuned nitrous engine. By increasing the strength and quality of the engine components as the increase in horsepower is made will help keep your nitrous engine together longer.

When using a nitrous oxide system a separate fuel delivery system must be used with a wet system and carburetion. A dry system, which is used with fuel injection, will increase the fuel pressure delivering more fuel to the mix when using nitrous. Constant bottle temperature and pressure must also be maintained. Less bottle pressure means less nitrous and a rich condition will hurt engine performance and components. This pressure is also affected by ambient temperature. NOS also requires different camshaft lobe profiles, separation, duration and lift.

There are many things to be aware of in a high performance nitrous engine, here at Sehr Performance we have years of engine experience to provide you with the correct building blocks to get

"THE EXTRA MILE"

out of your hot rod.

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