

How Nitrous Oxide Works

Nitrous Oxide is a molecule composed of two nitrogen atoms bonded to one oxygen atom. When compressed into a cylinder nitrous oxide takes on a liquid form. When exposed to the atmosphere or great pressure drop, nitrous oxide phase changes in a gaseous state. People often think that the nitrous in cylinder is cold, when in fact the nitrous within the cylinder is at ambient temperature. Nitrous oxide only gets cold in its expanding state from liquid to gaseous form.

Nitrous Oxide itself does not increase an engines horsepower capability. The nitrous increases the oxygen content in the combustion chamber allowing the engine to burn more fuel, resulting in an increase in horsepower. Supplemental fuel is always necessary in a nitrous system whether it be "dry" or "wet". The difference between the two is that in a "wet" system the supplemental fuel is injected through the nitrous nozzle, and in a "dry" system the supplemental fuel is introduced through the vehicle fuel injectors, via an increase in fuel pressure or a change in pulse width (the injectors amount of open time per cycle).

The introduction of the nitrous oxide and additional fuel into the cylinder increases the burn rate, heat, and cylinder pressure that the piston is exposed to, resulting in an increase of horsepower. Retarding the ignition timing when the nitrous is activated is usually necessary to control the accelerated burn rate and rise of cylinder pressure in the combustion chamber. If this is not done properly, pre-ignition and detonation will result, damaging very expensive engine components. All of Speedtech's tune ups provide a recommended timing retard for each horsepower level.

An engines spark plugs are designed for the burn rate and temperatures that are present under normal driving conditions. It is always a good idea to install colder spark plugs in a nitrous application, because the burn rate and temperatures are increased. This is also another way to keep pre-ignition and detonation under control. An engine's ignition system is designed to have enough power to arc the gap in the spark plug at the predetermined cylinder pressure under normal driving conditions. With the introduction of nitrous oxide and additional fuel, the engine's cylinder pressure is increased, leaving the ignition system short of having the power to fire the spark plug. There are two ways to solve this problem one is to lessen the gap of the spark plug to .030-.035" stock is usually .045-.055". The second way to solve this problem is to install an aftermarket ignition system that has more power on hand to fire the spark plug. MSD ignition has several quality ignition systems, for a vast amount of applications. On most street cars with 150 h.p. or less simply lessening the gap will solve the problem.