



This Flowmaster exhaust kit features high-flow mandrel-bent pipes to reduce frictional flow losses.

effect travels outward toward the exit of the pipe, which maintains a lower pressure. The leading side raises the pressure while the trailing side reduces pressure in the manifold or header. By the time the piston reaches the end of the pumping loop, the compression wave will hopefully have reached the end of the tailpipe.

The speed of the pressure-wave pulse far exceeds the gas discharge speed created by the sweep of the piston toward TDC. Since most factory exhaust manifolds utilize short branch pipes before they merge, there will be insufficient time for the compression wave to leave behind a low-pressure region capable of pulling out the stagnant gas. The problem with an exhaust manifold is that both a pressure wave and a gas column are present simultaneously. The pressure wave is formed by sound waves that travel at the speed of sound (nearly 1,400 feet per second or approximately 954 mph at sea level). The average speed of the gas in the exhaust port of the cylinder head is keyed to the piston velocity and usually averages 300 feet per second, or 205 mph.

In practice, peak exhaust gas velocity occurs twice during the exhaust valve cycle. The first time this happens is approximately 60 crankshaft degrees after the exhaust valve opens when blowdown is the strongest. The second high-speed event occurs during the pumping loop when piston speed is the