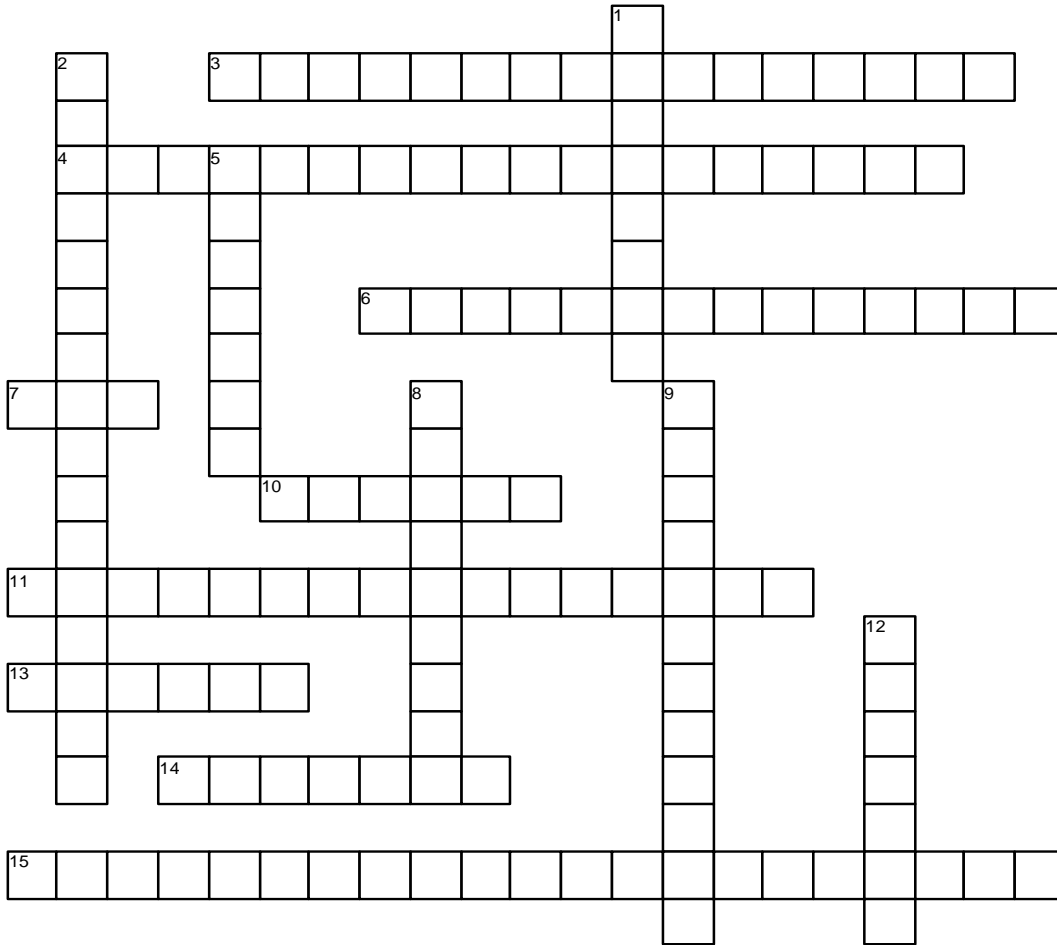


Intake And Exhaust Systems

Chapter 21



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ACROSS

- 3 Many _____ have heat shields to help keep exhaust heat off the spark plug wires and to help keep the heat from escaping to improve exhaust emissions.
- 4 A resonance tube is often called a _____, named for the discoverer of the relationship between shape and value of frequency.
- 6 The _____ is also called an inlet manifold.
- 7 To reduce the emission of NO_x, engines have been equipped with _____ valves.
- 10 One _____ is equal to 0.000039 in.
- 11 The size and shape of _____ engine intake manifolds can be optimized because the only thing in the manifold is air.
- 13 An upper manifold, usually called the _____, connects to the lower unit and includes the long passages needed to help provide the ram effect that helps the engine deliver maximum torque at low engine speeds.
- 14 The muffler and tailpipe are supported with brackets, called _____, which help to isolate the exhaust noise from the rest of the vehicle.

- 15 Some air filter _____, especially on diesel engines, include an electrical switch used to light a dash-mounted warning lamp when the air filter needs to be replaced.

DOWN

- 1 The air filter is made of a chemically treated paper stock that contains tiny _____ in the fibers.
- 2 The _____ is a tube that is often designed to be long so that the exhaust gas is cooled before it enters the EGR valve.
- 5 The _____ catches the large bursts of high-pressure exhaust gas from the cylinder, smoothing out the pressure pulses and allowing them to be released at an even and constant rate.
- 8 Just as fuel filters are used to clean impurities from gasoline, an _____ is used to remove contaminants from the air.
- 9 A _____ fuel injector forces finely divided droplets of liquid fuel into the incoming air to form a combustible air-fuel mixture.
- 12 _____ are used on new engines with tubing- or header-type exhaust manifolds.