ACROSS

3 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.

5 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.

8 The air filter is made of a chemically treated paper stock that contains tiny _______ in the fibers.

12 The size and shape of _______ engine intake manifolds can be optimized because the only thing in the manifold is air.

13 The muffler and tailpipe are supported with brackets, called _______, which help to isolate the exhaust noise from the rest of the vehicle.

14 _______ are used on new engines with tubing- or header-type exhaust manifolds.

15 Just as fuel filters are used to clean impurities from gasoline, an _______ _______ is used to remove contaminants from the air.

DOWN

1 A resonance tube is often called a _______ _______, named for the discoverer of the relationship between shape and value of frequency.

2 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.

4 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.

6 One _______ is equal to 0.000039 in.

7 To reduce the emission of NOx, engines have been equipped with _______ valves.

9 A _______ _______ fuel injector forces finely divided droplets of liquid fuel into the incoming air to form a combustible air-fuel mixture.

10 The _______ _______ is a tube that is often designed to be long so that the exhaust gas is cooled before it enters the EGR valve.

11 The _______ _______ is also called an inlet manifold.