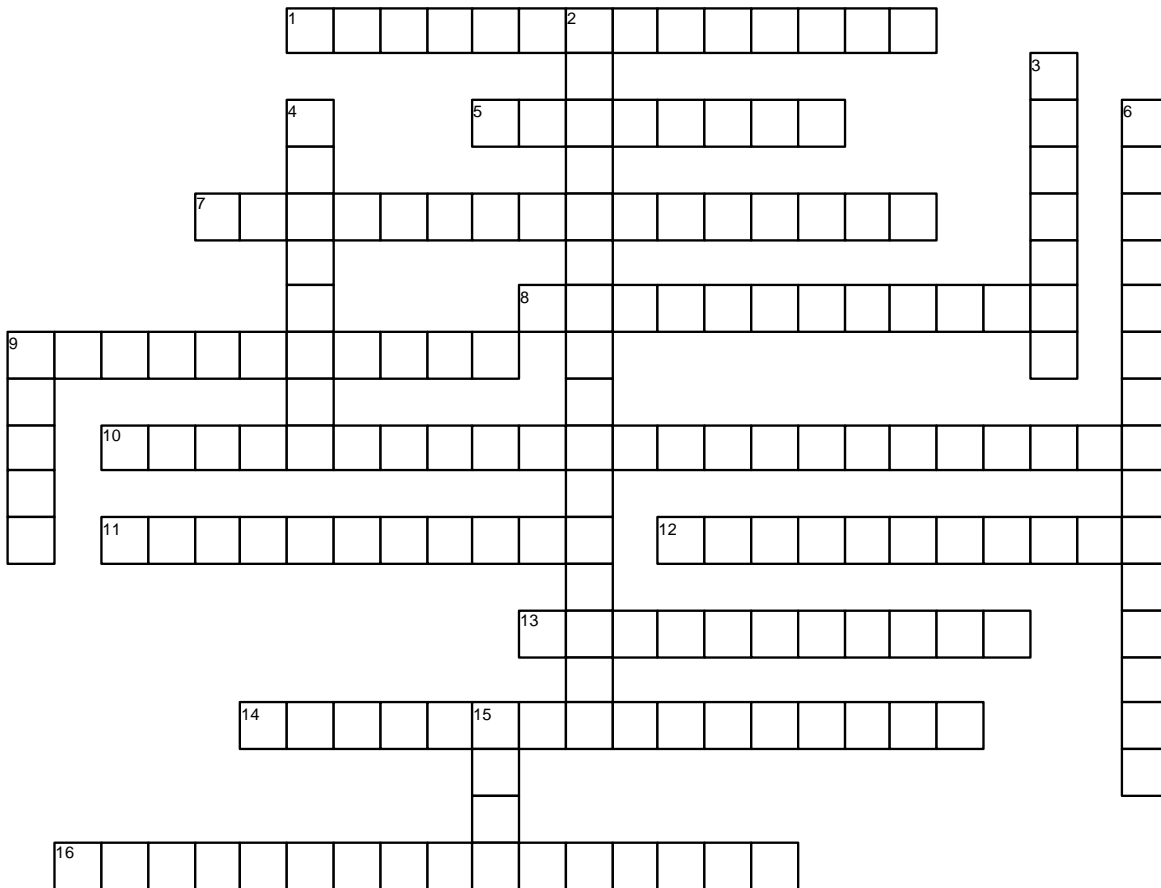


Gasoline Direct-Injection Systems

Chapter 81



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ACROSS

- 1 In the _____ of operation, the injection occurs just before the spark occurs resulting in lean combustion, reducing fuel consumption.
- 5 The _____ stores the fuel from the high-pressure pump and stores high pressure fuel for use to each injector.
- 7 One advantage of direct injection v.s. port-injection is improved cold starting and _____.
- 8 In a typical GDI system, the ECM controls the output of the _____ pump, which has a range between 500 to 2,900 PSI.
- 9 In the _____ combustion design, the injector is placed in the center of the combustion chamber and injects fuel into the dish out portion of the piston.

10 Several vehicle manufacturers are using _____, _____

- _____ , which sprays high-pressure fuel into the combustion chamber as the piston approaches the top of the compression stroke.
- 11 In _____ mode, the injector is pulsed one time to create an even air-fuel mixture in the cylinder.
- 12 One advantage of direct injection v.s. port-injection is that it allows the use of _____ gasoline.
- 13 One advantage of direct injection v.s. port-injection is up to 25% improvement in _____.
- 14 An advantage of direct injection v.s. port-injection is a 12% to 15% reduction in _____.
- 16 One advantage of direct injection v.s. port-injection is the higher _____.

DOWN

- 2 The _____ sensor connects to the PCM with three wires.
- 3 Depending on when the fuel is injected into the combustion chamber, helps determine how the air-fuel is moved or tumbled.
- 4 In a _____ injection system, the fuel is squirted into the intake manifold or intake port upstream from the valve.
- 6 _____ has more components compared with port fuel injection.
- 9 With the combination of high-pressure _____ injectors and modified combustion chamber, almost instantaneous vaporization of the fuel occurs.
- 15 GM refers to GDI systems as _____ systems.