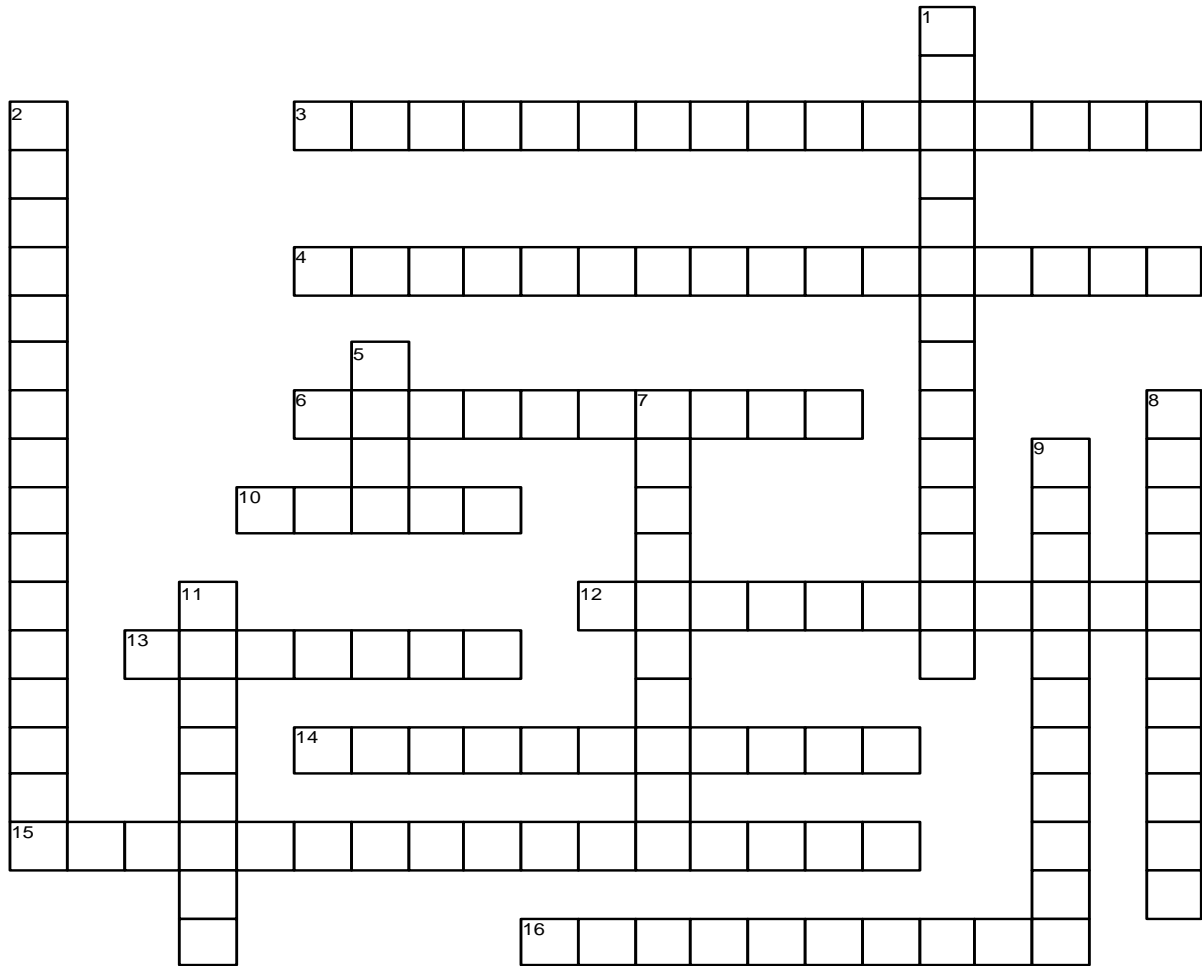


# Gasoline Direct-Injection Systems

## Chapter 28



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### ACROSS

- 3 The \_\_\_\_\_ sensor connects to the PCM with three wires.
- 4 One advantage of direct injection vs. port-injection is the higher \_\_\_\_\_.
- 6 On disadvantage of direct injection vs. port-injection is the \_\_\_\_\_ due to high-pressure pump and injectors.
- 10 With the combination of high-pressure \_\_\_\_\_ injectors and modified combustion chamber, almost instantaneous vaporization of the fuel occurs.
- 12 One advantage of direct injection vs. port-injection is that it allows the use of \_\_\_\_\_-\_\_\_\_\_ gasoline.
- 13 Depending on when the fuel is injected into the combustion chamber, helps determine how the air-fuel is moved or tumbled.
- 14 In \_\_\_\_\_ mode, the injector is pulsed one time to create an even air-fuel mixture in the cylinder.
- 15 One advantage of direct injection vs. port-injection is a 12% to 15% reduction in \_\_\_\_\_.
- 16 In the \_\_\_\_\_ mode of operation, the injection occurs just before the spark occurs resulting in lean combustion, reducing fuel consumption.

### DOWN

- 1 Several vehicle manufacturers are using \_\_\_\_\_ injection, which sprays high-pressure fuel into the combustion chamber as the piston approaches the top of the compression stroke.
- 2 One advantage of direct injection vs. port-injection is improved cold starting and \_\_\_\_\_.
- 5 GM refers to GDI systems as \_\_\_\_\_ systems.
- 7 On disadvantage of direct injection vs. port-injection are there are more \_\_\_\_\_.
- 8 One advantage of direct injection vs. port-injection is up to 25% improvement in \_\_\_\_\_.
- 9 In the \_\_\_\_\_-\_\_\_\_\_ combustion design, the injector is placed in the center of the combustion chamber and injects fuel into the dished out portion of the piston.
- 11 The \_\_\_\_\_ stores the fuel from the high-pressure pump and stores high pressure fuel for use to each injector.