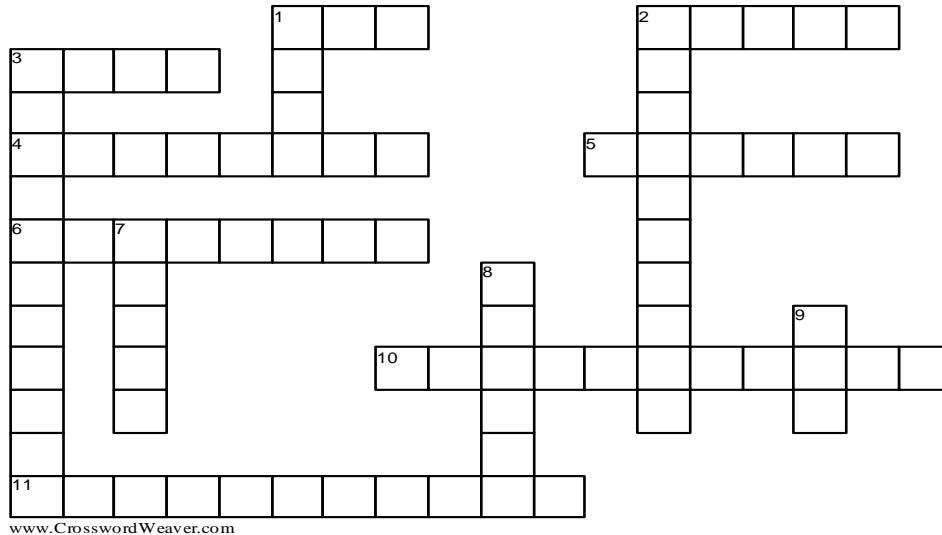


Advanced Engine Performance Diagnosis 8th Edition

Chapter 23

Gasoline Direct-Injection (GDI) Systems



ACROSS

- 1 The _ _ _ uses internal drivers to control the power feed and ground for the pressure control valve.
- 2 _____ combustion: This design uses the shape of the piston and the position of the injector at the side of the combustion chamber to create turbulence and swirl of the air-fuel mixture.
- 3 GDI systems operate at _____ pressure and the injectors can often be heard with the engine running and the hood open.
- 4 Each high-pressure fuel injector assembly is an electrically _____ injector mounted in the cylinder head.
- 5 _____ is often an issue in engines equipped with GDI systems.
- 6 _____ direct injection: A fuel-injection system where fuel is injected directly into the combustion chamber, rather than into the intake port or manifold.
- 10 The purpose of _____ knock protection mode is to reduce the possibility of spark knock from occurring under heavy loads at low engine speeds.
- 11 _____-_____ combustion: In this design, the injector is placed in the center of the combustion chamber and injects fuel into the dished-out portion of the piston.

DOWN

- 1 Unlike a _____ fuel-injection system, a GDI system varies the fuel pressure to achieve greater fuel delivery using a very short pulse time, which is usually less than one millisecond.
- 2 _____ mode: An operating mode in a GDI system where the air-fuel mixture is richer near the spark plug than in the rest of the cylinder, often used during cold starts or low-load conditions to reduce emissions.
- 3 _____ mode: An operating mode in a GDI system where the air-fuel mixture is evenly distributed throughout the combustion chamber, used during high-speed or high-torque conditions.
- 7 _____ ignition direct injection: A system where the fuel is directly injected into the combustion chamber and ignited by a spark plug, enhancing fuel efficiency and reducing emissions.
- 8 _____ combustion: Depending on when the fuel is injected into the combustion chamber helps determine how the air-fuel mixture is moved or tumbled.
- 9 A direct-injection system sprays high-pressure fuel, up to 2,900 PSI, into the combustion chamber as the piston approaches the _____ of the compression stroke.