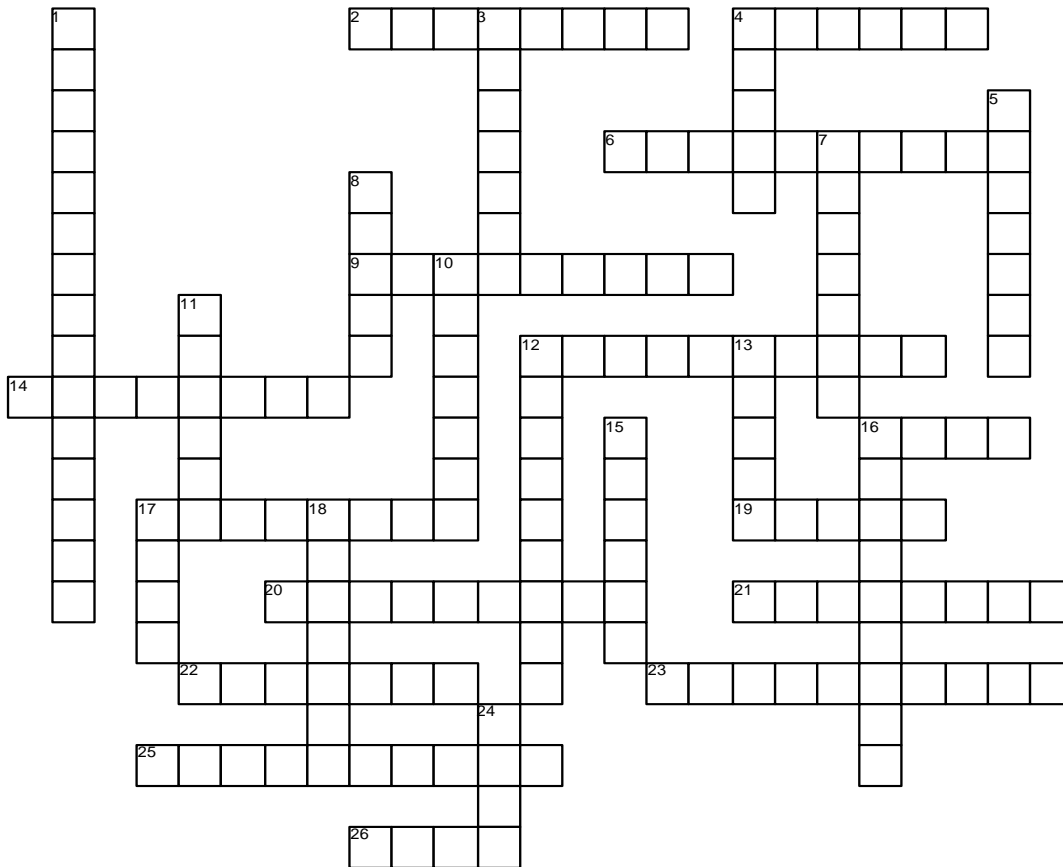


## Automotive Electrical and Engine Performance 9th Edition

### Chapter 29 - Ignition System Parts and Operation



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#### ACROSS

- 2 \_\_\_\_\_ Position (CMP) Sensor: A sensor that monitors the position of the camshaft to help synchronize the firing of the ignition system with the engine's valve timing.
- 4 Ignition \_\_\_\_\_: The precise timing of the spark plug firing to ensure efficient combustion, controlled by the vehicle's computer.
- 6 A semiconductor device used to switch or amplify electronic signals, commonly found in ignition modules.
- 9 The process of tuning the primary circuit on and off to create a spark in the ignition system.
- 12 \_\_\_\_\_ Position (CKP) Sensor: A sensor that monitors the position and rotational speed of the crankshaft to control ignition timing and fuel injection.
- 14 \_\_\_\_\_ Coil: A transformer-like component that converts low-voltage battery power into the high voltage needed to create a spark in the combustion chamber.
- 16 \_\_\_\_\_-Induction: The phenomenon where a change in current in a coil induces a voltage within the same coil.
- 17 \_\_\_\_\_ Spark Plugs: Spark plugs with platinum electrodes that offer longer service life compared to standard plugs.
- 19 \_\_\_\_\_ Sensor (KS): A sensor that detects abnormal combustion events (ping or detonation) and signals the engine control unit to adjust timing.
- 20 \_\_\_\_\_ Reactance: The opposition to the change in current flow in a coil or inductor, which can affect ignition system performance.
- 21 \_\_\_\_\_ Sensor: A sensor that detects changes in magnetic fields, commonly used in ignition systems for timing purposes.
- 22 Ignition \_\_\_\_\_ Module (ICM): An electronic module that controls the operation of the ignition coil, ensuring the spark occurs at the right time.
- 23 An uncontrolled explosion within the combustion chamber that occurs when the air-fuel mixture ignites prematurely, causing knocking or pinging sounds.
- 25 A state in which the ignition coil is fully charged and ready to discharge a spark.
- 26 \_\_\_\_\_-Effect Switch: A sensor that generates a voltage signal in response to a magnetic field, used in ignition systems for timing purposes.

#### DOWN

- 1 \_\_\_\_\_ Interference (EMI): Electrical noise that disrupts signals in the ignition or computer systems, typically caused by improperly shielded wires or components.
- 3 \_\_\_\_\_ Trigger: A circuit that converts an analog signal into a digital signal with a precise on/off threshold.
- 4 \_\_\_\_\_ Ratio: The ratio of windings in the primary and secondary coils of the ignition coil, which determines the voltage increase.
- 5 \_\_\_\_\_ Ignition Circuit: The low-voltage side of the ignition system, which controls the operation of the ignition coil.
- 7 \_\_\_\_\_ Timing: The base timing setting for the ignition system, typically set at or near top dead center (TDC).
- 8 \_\_\_\_\_-Spark Ignition: An ignition system where one coil fires two spark plugs simultaneously, with one plug firing on the exhaust stroke.
- 10 \_\_\_\_\_ Spark Plugs: Spark plugs with iridium electrodes that offer improved durability and performance compared to conventional plugs.
- 11 \_\_\_\_\_ Induction: The process by which a magnetic field in one coil induces a voltage in another coil, used in ignition systems to generate high voltage.
- 12 \_\_\_\_\_ Cylinder: In a waste-spark ignition system, two cylinders that fire simultaneously, with one on the compression stroke and the other on the exhaust stroke.
- 13 \_\_\_\_\_ Knock: Another term for detonation, where the air-fuel mixture ignites prematurely, causing knocking.
- 15 \_\_\_\_\_ Cylinder: Two cylinders in a waste-spark ignition system that share a coil and fire simultaneously.
- 16 \_\_\_\_\_ Ignition Circuit: The high-voltage side of the ignition system, including the coil's secondary winding, distributor, and spark plugs.
- 17 A knocking sound caused by detonation or abnormal combustion within the engine.
- 18 A component that acts as an electronic switch, controlling the flow of current through the primary winding of the ignition coil to generate a spark.
- 24 \_\_\_\_\_-on-Plug (COP) Ignition: An ignition system where each spark plug has its own coil mounted directly on top, eliminating the need for spark plug wires.