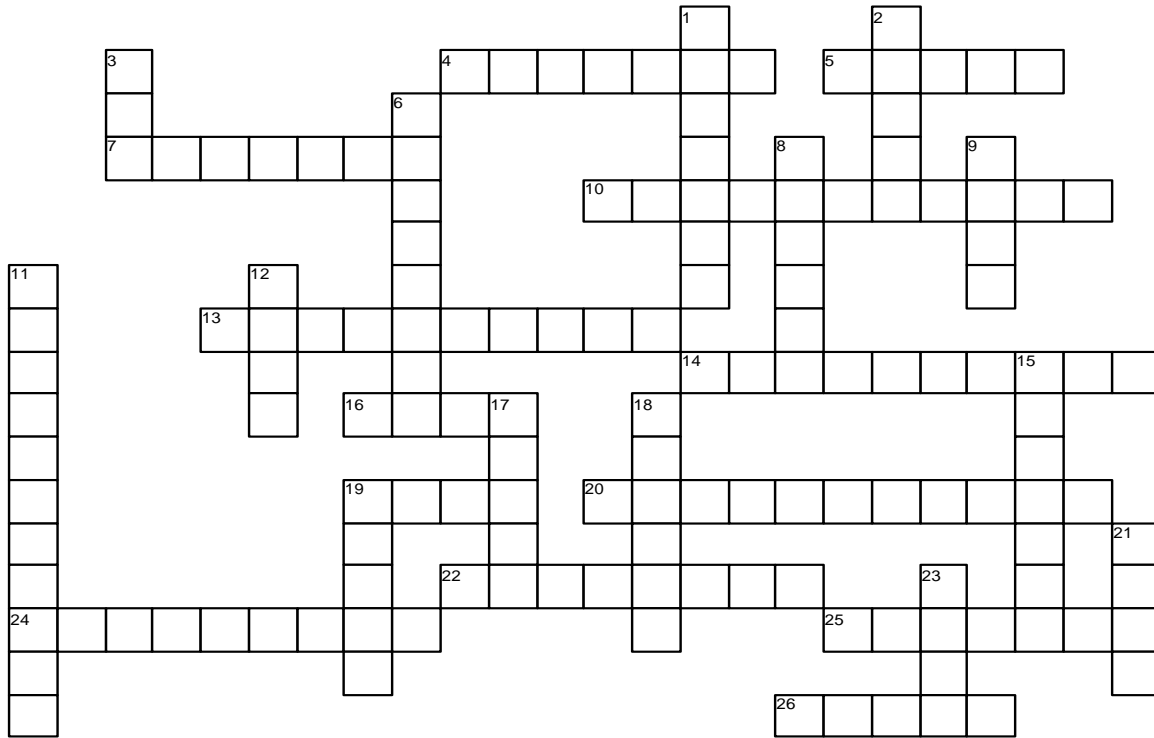


Automotive Electrical and Engine Performance 9th Edition

Chapter 13 - Starting System Parts and Operation



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ACROSS

- 4 _____ drive: The component of the starter motor that transmits power from the motor to the engine flywheel.
- 5 _____-end housing: The part of the starter motor that holds the brushes in contact with the commutator.
- 7 _____ solenoid: An electromagnetic switch that controls the flow of electrical current to the starter motor.
- 10 _____ engaged (PE) starter: A starter design where the pinion gear remains engaged with the flywheel, even when not in use.
- 13 _____-end housing: The section of the starter motor that holds the commutator and supports the brushes.
- 14 _____ segments: Conductive segments on the commutator that allow the armature to rotate while maintaining electrical contact with the brushes.
- 16 _____ (Counter Electromotive Force): A voltage generated within the motor that opposes the applied voltage and limits current flow as the motor speed increases.
- 19 _____ shoes: Metal pieces that focus the magnetic field within the starter motor.
- 20 _____ spring: A spring used in the starter motor to ensure firm contact between the brushes and the commutator.
- 22 _____ engagement (AE) starter: A type of starter motor where the pinion gear engages the engine flywheel before the motor begins to spin, improving starting efficiency.
- 24 _____ brushes: Brushes isolated from the motor housing to prevent unintended grounding.
- 25 Components that conduct current between stationary wires and the rotating armature through contact with the commutator.
- 26 _____ housing: The main structural component of the starter motor that holds the field coils and other internal parts.

DOWN

- 1 _____ safety switch: A safety switch that prevents the engine from starting unless the gear selector is in park or neutral.
- 2 _____-end housing: The part of the starter motor that contains the pinion gear and transmits power to the engine flywheel.
- 3 _____: A system that allows the engine to be started remotely using a key fob or mobile app.
- 6 The rotating part of the starter motor that carries current and interacts with the magnetic field to produce rotation.
- 8 _____ solenoid (TS) starter: A starter motor with two solenoids for enhanced control over the engagement and disengagement process.
- 9 _____-start: A system designed to improve fuel economy by automatically stopping and restarting the engine when the vehicle is stationary.
- 11 _____ clutch: A mechanism that allows the starter pinion to spin freely once the engine starts, preventing damage to the starter.
- 12 _____-in winding: A winding in the starter solenoid that maintains the solenoid's engagement during cranking.
- 15 _____ bolts: Bolts that hold the components of the starter motor together.
- 17 _____ coils: Coils of wire within the starter motor that create a magnetic field when current flows through them.
- 18 _____ brushes: Brushes that provide an electrical connection between the armature and the motor housing for grounding.
- 19 Field _____: Magnetic poles within the starter motor formed by the field coils or permanent magnets.
- 21 _____ spring: A spring in the starter motor that ensures smooth engagement of the pinion gear with the flywheel.
- 23 _____-in winding: A winding in the starter solenoid that pulls the solenoid plunger to engage the pinion gear with the flywheel.