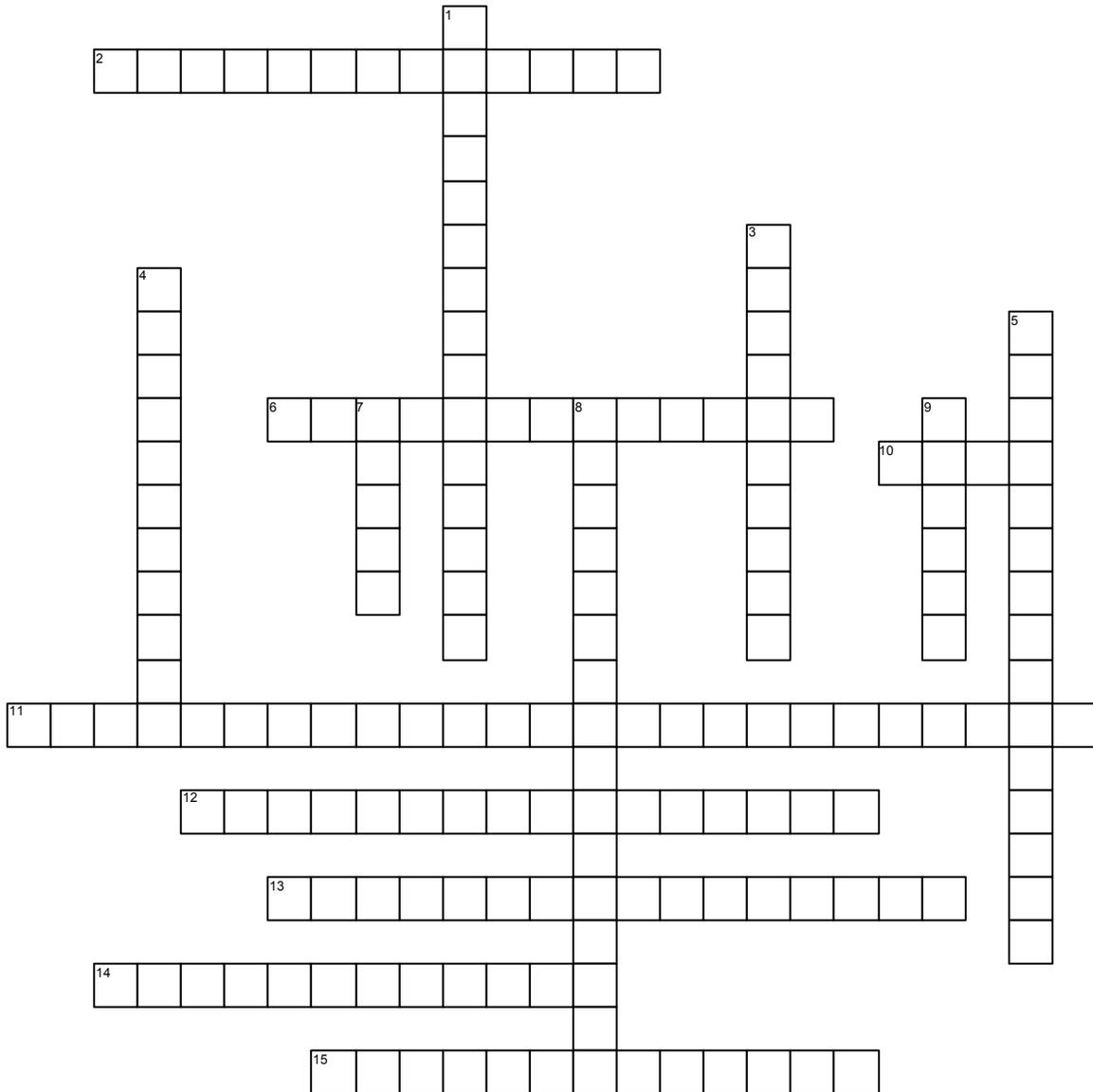


# Hybrid Engine Systems

## Chapter 3



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### ACROSS

- 2 \_\_\_\_\_ refer to the energy required to overcome the restriction in the intake system to fill the cylinders with air during the intake stroke.
- 6 When the piston gets to the top of the cylinder, called \_\_\_\_\_, the spark at the spark plug ignites the air-fuel mixture, which forces the piston downward.
- 10 \_\_\_\_\_ is defined as actually accomplishing movement when torque or a force is applied to an object.
- 11 The \_\_\_\_\_ used in hybrid vehicles differ from those used in conventional vehicles.
- 12 \_\_\_\_\_ is the ratio of the volume in the cylinder above the piston when the piston is at the bottom of the stroke to the volume in the cylinder above the piston when the piston is at the top of the stroke.
- 13 To reduce side loads, some vehicle manufacturers offset the crankshaft from center, this is called an \_\_\_\_\_.
- 14 \_\_\_\_\_ is the cubic inch or cubic centimeter volume displaced or swept by all of the pistons.
- 15 The \_\_\_\_\_ engine was produced in limited numbers until 1890 when sales dropped and the company that manufactured the engines finally went out of business in 1893.

### DOWN

- 1 Most automotive engines use the \_\_\_\_\_.

- \_\_\_\_\_ of events, begun by the starter motor, which rotates the engine.
- 3 One \_\_\_\_\_ is the power required to move 550 pounds one foot in one second, or 33,000 pounds one foot in one minute.
- 4 At this time, no hybrid engine uses a supercharger or the \_\_\_\_\_.
- 5 The horsepower derived from a dynamometer is called \_\_\_\_\_.
- 7 The term \_\_\_\_\_ means the rate of doing work.
- 8 The \_\_\_\_\_ in a spark ignition engine is limited by the octane rating of the fuel used, while a high expansion delivers a longer power stroke and reduces the heat wasted in the exhaust.
- 9 \_\_\_\_\_ is the term used to describe the rotating force that may or may not result in motion.