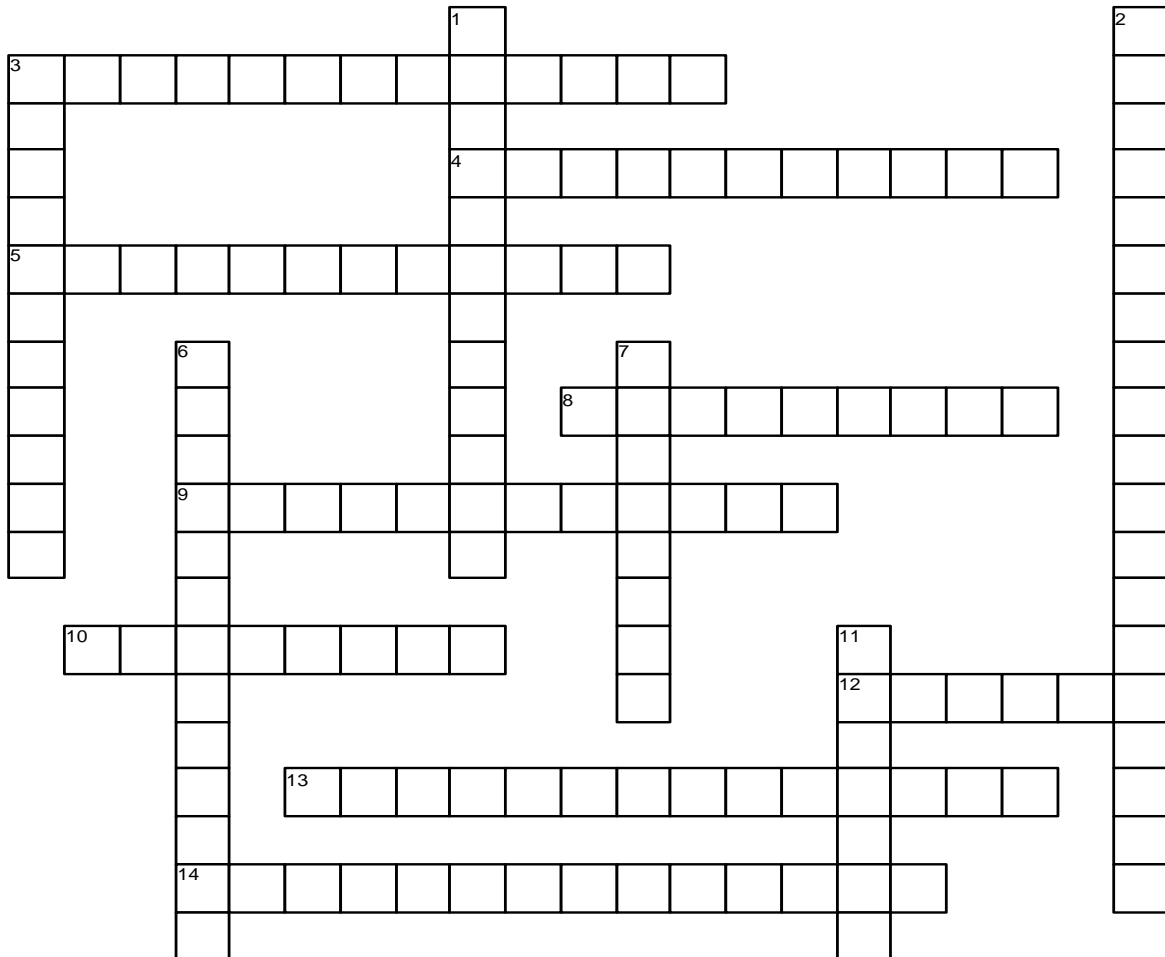


# Cylinder Heads and Valve Trains

## Chapter 3



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### ACROSS

- 3 \_\_\_\_\_ is the number of degrees by which the crankshaft rotates when the valve is off the valve seat.
- 4 \_\_\_\_\_ is a hole or insert in the cylinder head in which supports the valve as it moves up and down.
- 5 \_\_\_\_\_ are of a poppet valve design. the term poppet refers to the shape of the valve and their operation in automotive engines.
- 8 \_\_\_\_\_ is the clearance between the tip of the valve and the rocker arm or camshaft which allows for expansion of the valve during engine operation.
- 9 the valve face closes against a valve seat to seal the combustion chamber. If the seat is formed as part of the cast-iron head, it is called an \_\_\_\_\_.
- 10 \_\_\_\_\_ is an alloy of nickel, chromium, and tungsten, and is nonmagnetic.
- 12 arma \_\_\_\_\_ reverses the upward movement of the pushrod to produce a downward movement on the tip of the valve.
- 13 Many diesel engines use hollow stem exhaust valves that are partially filled with \_\_\_\_\_.
- 14 Oil return passages.

### DOWN

- 1 \_\_\_\_\_ or tappets follow the contour or shape of the camshaft lobe.
- 2 \_\_\_\_\_ is the clearance between the tip of the valve and the rocker arm or camshaft which allows for expansion of the valve during engine operation.
- 3 a \_\_\_\_\_ holds the valve against the seat when the valve is not open.
- 6 \_\_\_\_\_ support the valves and valve train, and contain passages for the flow of intake air, exhaust gases, cool-ant, and sometimes engine oil. In an overhead camshaft design engine, the cylinder head also supports all of the valve train components, including the camshaft, rocker arms, or followers, as well as the intake and exhaust valves and valve guides.
- 7 The purpose and function of a \_\_\_\_\_ is to open the valves, while the valve springs close the valves.
- 11 \_\_\_\_\_, also called crossheads, bridges are similar to rocker arms and are used in many diesel engines to span two valves from one pushrod.