

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) Why should a spark tester be used to check for spark rather than a standard spark plug?

2) How does a waste-spark ignition system work?

3) How can 12 volts from a battery be changed to 40,000 volts for ignition?

4) How does an ignition coil create up to 40,000 volts?

5) What does the heat range of a spark plug refer to?

Answer Key

Testname: INTRO_SHORT30

1) A spark tester is designed to only produce an arc if the spark has over 25,000 volts. A standard spark plug will create an arc if only 2,000 volts is applied to the spark plug which is not enough to fire inside an engine under compression. This is why a spark tester is needed to be insured that the ignition system is capable of supplying the needed voltage.

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2) A waste spark –type ignition system works by connecting each end of the secondary winding of the ignition coil to a different spark plug. Then when the spark occurs, a spark occurs at each spark plug—one in a cylinder that is under compression and the other in a cylinder that is on the exhaust stroke. Because the cylinder that is on the exhaust stroke does not need the spark, it is called the wasted spark.

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3) 12 volts is applied to the primary winding of the ignition coil where it builds a strong magnetic field. When a sensor determines that it is time to fire the spark plug, the primary current is stopped. The collapsing magnetic field creates high voltage in the secondary winding which is then transferred to the spark plugs.

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4) An ignition coil creates a high voltage pulse by first having 12 volts flowing through the primary winding of the coil to create a strong magnetic field. Then the primary current is stopped and this causes the magnetic field to collapse which creates a high voltage pulse in the secondary winding of the coil. This high voltage pulse is then sent to the spark plug where it creates an arc between the center and side electrode.

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5) The heat range of the spark plug refers to how rapidly the heat created at the tip is transferred to the cylinder head. A plug with a long ceramic insulator path runs hotter at the tip than a spark plug that has a shorter path because the heat must travel farther.

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