

# Chapter 20 *Electrical Tools and Test Equipment*



Name \_\_\_\_\_

Date \_\_\_\_\_

Instructor \_\_\_\_\_

Score \_\_\_\_\_

**Objective:** After studying this chapter, you will be able to identify tools that are commonly used during electrical repairs and summarize the use of test equipment for various vehicle systems.

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## Electrical Repair Tools

1. Define *soldering*.

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2. Name three soldering tools.

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3. \_\_\_\_\_ chemically cleans the metal surfaces so the molten solder flows out and bonds with the base metals properly.

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For questions 4–7, match the following terms and identifying phrases.

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|-------|---|----------------------|
| _____ | 4. A spring-loaded, clamp-on aluminum device that helps prevent overheating of electronic components while soldering. | (A) Soldering picks  |
| _____ | 5. Soaked in water and used to clean the tip of the soldering gun or iron.  | (B) Heat sink        |
| _____ | 6. Used to scrape corrosion from components before solder is applied.   | (C) Desoldering bulb |
| _____ | 7. Tool for removing molten solder during electrical repairs.   | (D) Soldering sponge |

8. \_\_\_\_\_ provide an easy way of joining wires or installing a terminal on a wire.

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9. What would you use to crush the metal part of the connector around the wire conductor?

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## Electrical Test Equipment

10. Name three things a scan tool checks.

\_\_\_\_\_

\_\_\_\_\_

11. Scan tools connect to a vehicle's \_\_\_\_\_ to exchange data with all of the on-board computers and sensors.

12. Test lights are frequently used to check a circuit for power or \_\_\_\_\_.

13. A circuit-powered test light is energized by the circuit \_\_\_\_\_.

14. Test lights should always be (high, low) \_\_\_\_\_ impedance.

15. \_\_\_\_\_ are used to check for power in the wiring harness going to electronic fuel injectors.

For questions 16–18, match the following terms and identifying phrases.

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|---|-------------------------------|
| _____ 16. Uses a needle or pointer to show electrical readings.                                   | (A) Digital multimeter        |
| _____ 17. Uses a liquid crystal display to show a digital readout.                                | (B) Analog multimeter         |
| _____ 18. Has both an alphanumeric display and a bar graph to show fluctuating electrical values. | (C) Digital-analog multimeter |

19. A multimeter with a(n) \_\_\_\_\_ does not have to touch the metal components in a circuit.

20. A(n) \_\_\_\_\_ can be used to find internal breaks in wires and disconnected wires or terminals.

21. An oscilloscope is a diagnostic tool that displays a line pattern, or trace, representing \_\_\_\_\_ in relation to \_\_\_\_\_.

22. By comparing the test scope to a(n) \_\_\_\_\_, the technician can determine whether something is wrong in the vehicle's circuit.

23. A handheld scope usually consists of a(n) \_\_\_\_\_ and a(n) \_\_\_\_\_ combined in one housing.

24. A(n) \_\_\_\_\_ is used to test the condition of batteries and conventional charging and starting systems.

25. A(n) \_\_\_\_\_ quickly measures charging system voltage to determine alternator operation.

26. If the doors of a vehicle do not unlock when the sending unit on the key chain is pressed, the technician can use a(n) \_\_\_\_\_ to detect a laser output and determine if the unit is working properly.

Name \_\_\_\_\_

27. A(n) \_\_\_\_\_ helps troubleshoot the output from a laser \_\_\_\_\_ at the rear of the vehicle in a park assist system.

28. A technician must follow a specific set of factory instructions when using a(n) \_\_\_\_\_ to adjust and test a vehicle's tire pressure sensors.

29. How can a glow plug analyzer detect a dead diesel engine cylinder?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

30. A (low-voltage, high-voltage) \_\_\_\_\_ test meter should \_\_\_\_\_ be used to take electrical measurements on hybrid vehicles.