

# Manual Drivetrains and Axles 9<sup>th</sup> Edition

## Chapter 14 – Drivetrain Electricity and Electronics



### **CHAPTER SUMMARY:**

1. Electricity, How Electrons Move Through a Conductor, Units of Electricity, and Electrical Circuits
  2. Electrical Schematics, Types of Circuit Faults, Fused Jumper Wire, Test Light, and Digital Meters
  3. Terminals and Connectors, Wire Repair, Relays, Switches, and Speed Sensors
  4. Throttle Position (TP) Sensor, Network Classifications, and Control Area Network
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### **OBJECTIVES:**

1. Explain the characteristics of electricity.
  2. Differentiate between conductors, insulators, and semiconductors.
  3. Explain the units of electrical measurement.
  4. List the parts of a complete circuit.
  5. Discuss the types of electrical circuit faults.
  6. Explain how to detect and measure electrical voltage, current, and resistance.
  7. Discuss the purpose of terminals, connectors, relays, and switches.
  8. Explain the operation of speed sensors and throttle position (TP) sensors.
  - 9 State the need for networks and discuss network classifications.
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### **RESOURCES:** (All resources may be found at <http://www.jameshalderman.com>)

1. Task Sheet: Test Light Usage
  2. Task Sheet: Measure Voltage Using a Voltmeter
  3. Task Sheet: Measuring Current Using an Ammeter
  4. Task Sheet: Check Electrical Circuits Using an Ohmmeter
  5. Task Sheet: Circuit Testing Using a Fused Jumper Wire
  6. Task Sheet: Inspect Wiring and Connectors
  7. Task Sheet: Wire Harness and Connector Repair
  8. Task Sheet: Connectors and Terminals
  9. Task Sheet: Solder Wire Repair
  10. Task Sheet: Use Wiring Diagrams to Diagnose a Circuit
  11. Task Sheet: Module Communication
  12. Chapter PowerPoint
  13. Crossword Puzzle and Word Search
  14. Videos: [\(A3\) Manual Drive Train Axles Videos](#)
  15. Videos: [\(A6\) Electrical/Electronic Systems Videos](#)
  15. Animations: [\(A3\) Manual Drive Train Axles Animations](#)
  16. Animations: [\(A6\) Electrical/Electronic Systems Animations](#)
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### DEMO

#### **ACTIVITIES:**

1. Task Sheet: Test Light Usage
2. Task Sheet: Measure Voltage Using a Voltmeter
3. Task Sheet: Measuring Current Using an Ammeter
4. Task Sheet: Check Electrical Circuits Using an Ohmmeter
5. Task Sheet: Circuit Testing Using a Fused Jumper Wire
6. Task Sheet: Inspect Wiring and Connectors
7. Task Sheet: Wire Harness and Connector Repair
8. Task Sheet: Connectors and Terminals
9. Task Sheet: Solder Wire Repair
10. Task Sheet: Use Wiring Diagrams to Diagnose a Circuit
11. Task Sheet: Module Communication
12. Crossword Puzzle and Word Search

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#### **ASSIGNMENTS:**

1. Chapter crossword and word search puzzles.
2. Complete end of chapter 10 question quiz.
3. Complete multiple choice and short answer quizzes downloaded from the website.

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#### **CLASS DISCUSSION:**

1. Review and group discussion chapter [Frequently Asked Questions](#) and [Tech Tips](#) sections.
2. Review and group discussion of the five (5) chapter [Review Questions](#).

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#### **NOTES AND EVALUATION:**