

# Automotive Technology 6<sup>th</sup> Edition

## Chapter 51 – Battery Testing and Service

### Lesson Plan



#### **CHAPTER SUMMARY:**

1. Battery service safety considerations and symptoms of a weak or defective battery
  2. Battery maintenance, battery voltage test, and hydrometer testing
  3. Battery load testing, electronic conductive testing, battery charging, and battery charge time
  4. Jump starting, battery electrical drain test, and maintaining electronic memory functions
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#### **OBJECTIVES:**

1. List the precautions for working with batteries.
  2. List the symptoms of a weak or defective battery.
  3. Describe how to inspect and clean terminals and hold-downs.
  4. Discuss how to test batteries for open circuit voltage and specific gravity.
  5. Describe how to perform a battery load test and a conductance test.
  6. Explain how to safely charge or jump start a battery.
  7. Discuss how to perform a battery drain test.
  8. Describe how to prevent loss of memory functions and reinitialize memory functions.
  9. This chapter will help you prepare for the ASE Electrical/Electronic Systems (A6) certification test content area “B” (Battery Diagnosis and Service).
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#### **RESOURCES:** (All resources may be found at <http://www.jameshalderman.com>)

1. Task Sheet ASE (A6-A-8) P-1: Key Off Battery Drain
  2. Task Sheet ASE (A6-B-1) P-1, (A6-B-2) P-1: Battery and Capacity Tests
  3. Task Sheet ASE (A6-B-3) P-1: Electronic Memory Saver Usage
  4. Task Sheet ASE (A6-B-4) P-1: Service and Replace the Battery
  5. Task Sheet ASE (A6-B-5) P-1: Battery Charging
  6. Task Sheet ASE (A6-B-6) P-1: Jump Starting
  7. Task Sheet ASE (A6-B-8) P-1: Reinitialization
  8. Task Sheet ASE (A6-B-9) P-3: Hybrid Auxiliary Battery
  9. Chapter PowerPoint
  10. Chapter Crossword Puzzle and Word Search
  11. Animations: Jump Box Usage, Jump Starting Hybrids, and Jump-Starting Hybrids
  12. Animations: Measure Battery Voltage Drop and Meter Usage Battery Volt Check
  13. Videos: See list at the end of the lesson plan.
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#### **ACTIVITIES:**

1. Task Sheet ASE (A6-A-8) P-1: Have students complete Key Off Battery Drain Task Sheet.
  2. Task Sheet ASE (A6-B-1) P-1, (A6-B-2) P-1: Have students complete Battery and Capacity Tests Task Sheet.
  3. Task Sheet ASE (A6-B-3) P-1: Have students complete Electronic Memory Saver Usage Task Sheet.
  4. Task Sheet ASE (A6-B-4) P-1: Have students complete Service and Replace the Battery Task Sheet.
  5. Task Sheet ASE (A6-B-5) P-1: Have students complete Battery Charging Task Sheet.
  6. Task Sheet ASE (A6-B-6) P-1: Have students complete Jump-Starting Task Sheet.
  7. Task Sheet ASE (A6-B-8) P-1: Have students complete Reinitialization Task Sheet.
  8. Task Sheet ASE (A6-B-9) P-3: Have students complete Hybrid Auxiliary Battery Task Sheet.
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#### **ASSIGNMENTS:**

1. Chapter crossword and word search puzzles.
  2. Complete end of chapter 10 question quiz.
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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:**

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**Videos:** (at <http://www.jameshalderman.com>)

Testing batteries, relays and fuses (time 17:04)

Battery voltage testing (time 4:06)

Battery drain diagnosis (time 1:31)

Memory saver (time 8:44)

Load testing a battery (time 6:36)

Dead battery (time 2:50)

Hybrid battery replacement (time 24:11)

Jump Starting (time 7:21)

How to charge a battery (time 1:23)

Battery and alternator testing (time 21:08)

Batteries (time 1:09)

Batteries lead sulfate (time 1:35)

Battery replacement (time 5:17)

Battery Maintenance (time 5:15)

How to Replace a Car Battery (time 6:01)

How to repair a battery terminal (time 0:53)

How to Test and Find a Parasitic Battery Drain (Key Off) (time 14:56)