

Electric & Hybrid Electric Vehicles 1st Edition

Chapter 11 – EV and HEV Motors, Converters, and Inverters

Lesson Plan

CHAPTER SUMMARY:



1. Electromagnetism, Electromagnetic Induction, Electric Motors, and Brushless Motors
 2. Electric Motor Control, Capacitors in Converters, and Converters and Inverters
 3. Electronic System Cooling System and Motor-Converter-Inverter Diagnostics
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OBJECTIVES:



1. Describe the operation of DC and AC electric motors.
 2. Explain how a brushless DC motor works.
 3. Discuss the advantages and disadvantages of using electric motors in hybrid electric vehicles.
 4. Describe how a DC-to-DC converter works.
 5. Discuss how a DC-to-AC inverter works.
 6. Prepare for the ASE L3 certification text area “D” (Power Electronics).
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RESOURCES: ([All resources may be found at jameshalderman.com](http://www.jameshalderman.com))



1. Task Sheet: Hybrid Traction Motor Identification
 2. Task Sheet: Inverter and Electric Motor Scan Tool Diagnosis
 3. Chapter PowerPoint
 4. [Crossword Puzzle and Word Search \(L3\)](#)
 5. [Videos: \(L3\) Light Duty Hybrid Electric](#)
 6. [Animations: \(L3\) Light Duty Hybrid Electric](#)
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ACTIVITIES:



1. Task Sheet: Hybrid Traction Motor Identification
 2. Task Sheet: Inverter and Electric Motor Scan Tool Diagnosis
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ASSIGNMENTS:



1. Chapter crossword and word search puzzles from the website.
 2. Complete end of chapter quiz from the textbook.
 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:

