

Advanced Engine Performance Diagnosis 7th Edition

Chapter 14 – Ignition System Operation and Diagnosis

Lesson Plan



CHAPTER SUMMARY:

1. Ignition System, Ignition Switching and Triggering, and Distributor Ignition (DI)
 2. Waste-Spark Ignition System, Coil-On-Plug Ignition, and Knock Sensors
 3. Ignition System Diagnosis, Current Ramping Ignition Coils, and Spark Plug Wire Inspection
 4. Spark Plugs, Ignition Timing, Ignition Scope Testing, and Scope-Testing a Waste-Spark System
 5. Scope-Testing a COP System and Ignition System Symptom Guide
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OBJECTIVES:

1. Describe the purpose and function of the ignition system.
 2. Discuss ignition switching and triggering.
 3. Explain the purpose and function of distributor ignition systems.
 4. Discuss waste-spark ignition systems and coil-on-plug ignition systems.
 5. Discuss the purpose and function of knock sensors.
 6. Explain ignition system diagnosis.
 7. List the steps to perform a current ramp test of the ignition coils.
 8. Explain spark plug construction, service, and how to conduct a spark plug wire inspection.
 9. Explain ignition timing and scope testing and discuss the symptoms of a faulty ignition system.
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RESOURCES: ([All resources may be found at jameshalderman.com](http://www.jameshalderman.com))

1. Task Sheet: Ignition System Identification
 2. Task Sheet: Spark Plug Specifications
 3. Task Sheet: Ignition Timing
 4. Task Sheet: Electronic Ignition Diagnosis
 5. Task Sheet: Scan Tool Testing of the Ignition System
 6. Task Sheet: Ignition Scope Analysis
 7. Task Sheet: Ignition Inspection and Testing
 8. Task Sheet: Spark Plug Inspection
 9. Task Sheet: Ignition Coil Testing
 10. Chapter PowerPoint
 11. [Crossword and Word Search Puzzles \(A8\)](#)
 12. [Videos: \(A8\) Engine Performance](#)
 13. [Animations: \(A8\) Engine Performance](#)
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ACTIVITIES:

1. Task Sheet: Ignition System Identification
 2. Task Sheet: Spark Plug Specifications
 3. Task Sheet: Ignition Timing
 4. Task Sheet: Electronic Ignition Diagnosis
 5. Task Sheet: Scan Tool Testing of the Ignition System
 6. Task Sheet: Ignition Scope Analysis
 7. Task Sheet: Ignition Inspection and Testing
 8. Task Sheet: Spark Plug Inspection
 9. Task Sheet: Ignition Coil Testing
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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: