

Advanced Engine Performance Diagnosis 8th Edition

Chapter 13 – Ignition System Operation, Diagnosis, and Service

Lesson Plan



CHAPTER SUMMARY:

1. Ignition System, Ignition Switching and Triggering, Distributor Ignition, and Waste-Spark Ignition Systems
 2. Coil-On-Plug Ignition, Knock Sensors, Ignition System Diagnosis, and Current Ramping Ignition Coils
 3. Spark Plug Wire Inspection, Spark Plugs, Ignition Timing, and Ignition Scope Testing
 4. Scope-Testing a Waste-Spark System and Scope-Testing A COP System
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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. Describe the advantages of coil-on-plug ignition systems.
 6. Discuss the purpose and function of knock sensors.
 7. Explain ignition system diagnosis.
 8. List the steps to perform a current ramp test of the ignition coils.
 9. Explain spark plug construction, service, and how to conduct a spark plug wire inspection.
 10. Describe the different types of spark plugs.
 11. Explain ignition timing
 12. Explain how to test an ignition system using a scope.
 13. Explain how to scope test a waste-spark ignition system.
 14. Explain how to scope test a coil-on-plug ignition system.
 15. Describe the possible causes and solutions for ignition system problems.
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RESOURCES: (All resources may be found at 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
 12. Videos: (A8) Computerized Engine Controls Diagnosis and Repair
 13. Animations: (A8) Computerized Engine Controls Diagnosis and Repair
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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: