**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)](https://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)](https://jameshalderman.com/a8_puzzles_lib_page/)

12. [Videos: (A8) Engine Performance](https://jameshalderman.com/a8_vid_lib_page/)

13. [Animations: (A8) Engine Performance](https://jameshalderman.com/a8_anim_lib_page/) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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:**

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