**Advanced Engine Performance Diagnosis 7th Edition**

**Chapter 8 –** **Engine and Misfire Diagnosis**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Engine-Related Complaints, Engine Smoke Diagnosis, and Visual Checks

2. Engine Noise Diagnosis, Oil Pressure Testing, Misfire Diagnosis, and Engine-Related Misfire Diagnosis

3. Compression Test, Cylinder Leakage Test, Vacuum Tests, and Vacuum Waveforms

4. Exhaust Backpressure Testing and Diagnosing Head Gasket Failure

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**OBJECTIVES:**

1. List typical engine mechanical-related complaints.

2. Discuss how to diagnose engine operation problems using visual checks, engine noise, engine smoke, and oil pressure testing.

3. List the possible causes of an engine misfire.

4. Describe how to perform a cylinder power balance, cylinder contribution test, and cylinder pressure testing.

5. Describe how to perform dry, wet, and running compression tests.

6. Explain how to perform a cylinder leakage test.

7. Discuss vacuum testing to determine engine condition.

8. Describe how to test for excessive exhaust system backpressure.

9. Explain how to diagnose head gasket failure.

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**RESOURCES:** [(All resources may be found at jameshalderman.com)](https://jameshalderman.com/)

1. Task Sheet: Engine Problem Analysis

2. Task Sheet: Engine Noise Diagnosis

3. Task Sheet: Fluid Leakage Diagnosis

4. Task Sheet: Engine Noise and Vibration Diagnosis

5. Task Sheet: Engine Exhaust and Sound Diagnosis

6. Task Sheet: Vacuum Testing

7. Task Sheet: Cylinder Power Balance Tests

8. Task Sheet: Compression Testing

9. Task Sheet: Cylinder Leakage Test

10. Chapter PowerPoint

11. [Crossword and Word Search Puzzles (A1)](https://jameshalderman.com/a1_puzzles_lib_page/)

12. [Videos: (A1) Engine Repair](https://jameshalderman.com/a1_vid_lib_page/)

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

14. [Animations: (A1) Engine Repair](https://jameshalderman.com/a1_anim_lib_page/)

15. [Animations: (A8) Engine Performance](https://jameshalderman.com/a8_anim_lib_page/)

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**ACTIVITIES:**

1. Task Sheet: Engine Problem Analysis

2. Task Sheet: Engine Noise Diagnosis

3. Task Sheet: Fluid Leakage Diagnosis

4. Task Sheet: Engine Noise and Vibration Diagnosis

5. Task Sheet: Engine Exhaust and Sound Diagnosis

6. Task Sheet: Vacuum Testing

7. Task Sheet: Cylinder Power Balance Tests

8. Task Sheet: Compression Testing

9. Task Sheet: Cylinder Leakage Test

10. Chapter PowerPoint \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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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