

Automotive Electrical and Engine Performance - 9th edition

Ch26: Engine Condition Diagnosis

Lesson Plan



CHAPTER SUMMARY:

1. Typical Engine-Related Complaints, Engine Smoke Diagnosis, and The Driver is Your Best Resource
 2. Visual Checks, Engine Noise Diagnosis, Oil Pressure Testing, and Cylinder Contribution Test
 3. Relative Compression Test, Compression Test, and Wet Compression Test
 4. Running (Dynamic) Compression Test, Cylinder Leakage Test, and Cylinder Power Balance Test
 5. Vacuum Tests, Exhaust Restriction Test and Diagnosing Head Gasket Failure
 6. Dash Warning Lights
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OBJECTIVES:

1. Discuss typical engine-related complaints.
 2. Discuss engine smoke diagnosis.
 3. Discuss the importance of the driver's description.
 4. Discuss visual checks.
 5. Discuss engine noise diagnosis.
 6. Explain oil pressure testing and the purpose of oil pressure warning lamps.
 7. Describe the cylinder contribution test.
 8. Describe the relative compression test.
 9. Describe compression testing.
 10. Describe wet compression tests.
 11. Describe running compression tests.
 12. Describe the cylinder leakage test.
 13. Describe the cylinder power balance test.
 14. Explain vacuum tests.
 15. Explain how to test back pressure with a vacuum gauge and a pressure gauge.
 16. Explain how to diagnose head gasket failure.
 17. Discuss the operation of dash warning lights.
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RESOURCES: (All resources may be found at jameshalderman.com)

1. Task Sheet: Engine Noise and Vibration Diagnosis
 2. Task Sheet: Engine Problem Analysis
 3. Task Sheet: Exhaust System Smoke Test
 4. Task Sheet: Cylinder Power Balance Tests
 5. Task Sheet: Compression Testing
 6. Task Sheet: Cylinder Leakage Test
 7. Task Sheet: Fluid Leakage Detection
 8. Crossword Puzzle and Word Search
 9. Videos: (A8) Engine Performance Videos
 10. Animations: (A8) Engine Performance Animations
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ACTIVITIES:

1. Task Sheet: Engine Noise and Vibration Diagnosis
 2. Task Sheet: Engine Problem Analysis
 3. Task Sheet: Exhaust System Smoke Test
 4. Task Sheet: Cylinder Power Balance Tests
 5. Task Sheet: Compression Testing
 6. Task Sheet: Cylinder Leakage Test
 7. Task Sheet: Fluid Leakage Detection
 8. Crossword Puzzle and Word Search
 9. Chapter PowerPoint
 10. Crossword Puzzle and Word Search
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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. Ten (10) question end of Chapter Quiz.
 3. Five (5) end of chapter Review Question for class discussion.
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NOTES AND EVALUATION: