**Automotive Technology 6th Edition**

**Chapter 66**

**Heating and Air-Conditioning System Diagnosis**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. HVAC diagnostic procedure and heater diagnosis

2. Checking A/C system performance

3. Temperature and pressure measurements

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**OBJECTIVES:**

1. List the steps to diagnose HVAC problems.

2. Explain how to diagnose a heating system problem.

3. Describe how to check the performance of the A/C system.

4. Explain the procedures to measure temperature and pressure in A/C systems.

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**RESOURCES:** (All resources may be found at <http://www.jameshalderman.com>) Internet access required to hyperlink.

**1.** **Task Sheet ASE** **(A7-A-2) P-1**: Air Conditioning Work Order

**2. Task Sheet ASE (A7-A-3) P-1**: Air-Conditioning System Performance Test

**3. Task Sheet ASE (A7-A-4) P-1**: Air Conditioning Noise Diagnosis

**4. Task Sheet ASE (A7-A-5) P-1**: Refrigerant Identification/Read Pressures

**5. Task Sheet ASE (A7-A-6) P-1**: Leak Test the Air Conditioning System

**6. Task Sheet ASE (A7-A-7) P-2, (A7-A-8) P-1**: Refrigerant Oil

**7. Task Sheet ASE (A7-B-5) P-3**: Determine Need for Refrigerant Filter

**8. Task Sheet ASE (A7-C-2) P-2, (A7-C-3) P-2:** Heating System Performance Check

**9. Task Sheet ASE (A7-C-1) P-1, (A7-C-2) P-2**: Cooling System Inspection

**10. Task Sheet ASE (A7-D-7) P-1:** Thermostat Replacement

**11. Task Sheet ASE (A1-D-8) P-1**: Cooling Fan and Related Inspections

**12. Task Sheet ASE (A7-C-4) P-2**: Heater System Service

**13. Task Sheet ASE (A7-D-1) P-1**: Blower Motor Diagnosis

**14. Task Sheet ASE (A7-B-2) P-2**: A/C Compressor Clutch Control Diagnosis

**15. Task Sheet ASE (A7-D-4) P-3, (A7-D-5) P-3**: Air Conditioning Control System Diagnosis

**16. Task Sheet ASE (A7-A-1) P-1, (A7-C-3) P-2, (A7-D-7) P-2:** Identify Heating and A/C Concerns

17. Chapter PowerPoint

18. Chapter Crossword Puzzle and Word Search

19. Videos: [(A7) Heating & Air Conditioning Videos](https://jameshalderman.com/a7_vid_lib_page/)

20. Animations: [(A7) Heating & Air Conditioning Animations](https://jameshalderman.com/a7_anim_lib_page/)

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**Lesson Plan**

**ACTIVITIES:**

**1. Task Sheet ASE** **(A7-A-2) P-1**: Have students complete Air Conditioning Work Order Task Sheet.

**2. Task Sheet ASE (A7-A-3) P-1**: Have students complete Air-Conditioning System Performance Test Task Sheet.

**3. Task Sheet ASE (A7-A-4) P-1**: Have students complete Air Conditioning Noise Diagnosis Task Sheet.

**4. Task Sheet ASE (A7-A-5) P-1**: Have students complete Refrigerant Identification/Read Pressures Task Sheet.

**5. Task Sheet ASE (A7-A-6) P-1**: Have students complete Leak Test the Air Conditioning System Task Sheet.

**6. Task Sheet ASE (A7-A-7) P-2, (A7-A-8) P-1**: Have students complete Refrigerant Oil Task Sheet.

**7. Task Sheet ASE (A7-B-5) P-3**: Have students complete Determine Need for Refrigerant Filter Task Sheet.

**8. Task Sheet ASE (A7-C-2) P-2, (A7-C-3) P-2:** Have students complete Heating System Performance Check Task Sheet.

**9. Task Sheet ASE (A7-C-1) P-1, (A7-C-2) P-2**: Have students complete Cooling System Inspection Task Sheet.

**10. Task Sheet ASE (A7-D-7) P-1:** Have students complete Thermostat Replacement Task Sheet.

**11. Task Sheet ASE (A1-D-8) P-1**: Have students complete Cooling Fan and Related Inspections Task Sheet.

**12. Task Sheet ASE (A7-C-4) P-2**: Have students complete Heater System Service Task Sheet.

**13. Task Sheet ASE (A7-D-1) P-1**: Have students complete Blower Motor Diagnosis Task Sheet.

**14. Task Sheet ASE (A7-B-2) P-2**: Have students complete A/C Compressor Clutch Control Diagnosis Task Sheet.

**15. Task Sheet ASE (A7-D-4) P-3, (A7-D-5) P-3**: Have students complete Air Conditioning Control System Diagnosis Task Sheet.

**16. Task Sheet ASE (A7-A-1) P-1, (A7-C-3) P-2, (A7-D-7) P-2:** Have students complete Identify Heating and A/C Concerns Task Sheet.

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**ASSIGNMENTS:**

1. Chapter crossword and word search puzzles.

2. Complete end of chapter 10 question quiz.

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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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