

Automotive Technology 6th Edition

Chapter 31 – Valve and Seat Service

Lesson Plan



CHAPTER SUMMARY:

1. Intake and exhaust valves, valve seats, and valve seat diagnosis
 2. Valve springs, valve keepers, and rotators
 3. Valve reconditioning procedure, valve face grinding, and valve seat reconditioning
 4. Valve guide pilots, valve seat grinding stones, and valve seat cutters
 5. Valve seat testing, valve seat replacement, valve stem height, and installed height
 6. Valve stem seals and Installing the valves
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OBJECTIVES:

1. Discuss intake and exhaust valves.
 2. Describe valve seats and the valve fault diagnosis procedure.
 3. Explain valve springs, keepers, and rotators.
 4. Discuss the procedure for valve reconditioning, valve face grinding, and valve seat reconditioning.
 5. Discuss valve guide pilots, valve seat grinding stones, and valve seat cutters.
 6. Explain valve seat testing and replacement.
 7. Discuss valve stem height and installed height.
 8. Explain valve stem seals and describe the procedure of installing valves.
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RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)

1. **Task Sheet ASE (A1-B-2) P-1:** Cylinder Head Inspection
 2. **Task Sheet ASE (A1-B-7) P-3:** Valve Spring Squareness and Free Height
 3. **Task Sheet ASE (A1-B-8) P-3:** Valve Stem Seal Replacement
 4. **Task Sheet ASE (A1-B-10) P-3:** Valve and Seat Inspection
 5. **Task Sheet ASE (A1-B-11) P-3:** Valve Spring Assembled Height
 6. Chapter PowerPoint
 7. Chapter Crossword Puzzle and Word Search
 8. Animations: Sodium Filled Valve and Valve Seals
 9. Animations: Valve Spring Installed Height and Valve Stem Height
 10. Videos: Removing valves (time 5:09) and Valve train teardown (time 2:36)
 11. Videos: Checking cylinder head warpage (time 1:39) and Valve leak test (time 5:34)
 12. Videos: Valve spring replacement (time 7:36) and Replacing valve seals (time 12:11)
 13. Videos: Cylinder head repair (time 2:41) and Cracked cylinder head (time 2:41)
 14. Videos: Checking cylinder head warpage (time 2:51) and Valve guide inspection (time 3:30)
 15. Videos: Valve spring height measurement (time 15:49)
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ACTIVITIES:

1. **Task Sheet ASE (A1-B-2) P-1:** Have students complete Cylinder Head Inspection Task Sheet.
 2. **Task Sheet ASE (A1-B-7) P-3:** Have students complete Valve Spring Squareness and Free Height Task Sheet.
 3. **Task Sheet ASE (A1-B-8) P-3:** Have students complete Valve Stem Seal Replacement Task Sheet.
 4. **Task Sheet ASE (A1-B-10) P-3:** Have students complete Valve and Seat Inspection Task Sheet.
 5. **Task Sheet ASE (A1-B-11) P-3:** Have students complete Valve Spring Assembled Height 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:
