

Automotive Technology 6th Edition

Chapter 121 – Steering Linkage and Service

Lesson Plan



CHAPTER SUMMARY:

1. Steering linkage, rack-and pinion inner tie rod ends, and front steer versus rear steer
 2. Four-wheel steering systems, steering linkage lubrication, and dry park test
 3. Common wear items, under-vehicle inspection, and steering linkage replacement
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OBJECTIVES:

1. Identify steering linkage components.
 2. Describe rack-and-pinion inner tie rod ends.
 3. Describe four-wheel steering systems.
 4. Discuss steering linkage lubrication.
 5. Describe the purpose and procedure for performing a dry park test.
 6. List common wear items in steering systems.
 7. Describe the steps for under-vehicle inspection of steering systems.
 8. Explain how to replace steering linkage parts.
 9. This chapter will help prepare for Suspension and Steering (A4) ASE certification test content area “A” (Steering System Diagnosis and Repair).
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RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)

1. **Task Sheet ASE (A4-A-2) P-1:** Steering Problem Diagnosis
 2. **Task Sheet ASE (A4-B-8) P-1:** Inner Tie Rod Ends and Bellows Boots
 3. **Task Sheet ASE (A4-B-16) P-2, (A4-C-6) P-3:** Inspect and Replace Steering Components
 4. **Task Sheet ASE (A4-B-17) P-1:** Tie-Rod End Inspection and Replacement
 5. Chapter PowerPoint
 6. Chapter Crossword Puzzle and Word Search
 7. Animations: Electronic Power Steering, GM Steering Wheel Removal, and Steering Linkage Operation
 8. Animations: Steering Linkage Operation, Tie Rod End Replace, and Tie Rod End Remove and Replace
 9. Videos: See list at the end of the lesson plan.
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ACTIVITIES:

1. **Task Sheet ASE (A4-A-2) P-1:** Have students complete Steering Problem Diagnosis Task Sheet.
 2. **Task Sheet ASE (A4-B-8) P-1:** Have students complete Inner Tie Rod Ends and Bellows Boots Task Sheet.
 3. **Task Sheet ASE (A4-B-16) P-2, (A4-C-6) P-3:** Have students complete Inspect and Replace Steering Components Task Sheet.
 4. **Task Sheet ASE (A4-B-17) P-1:** Have students complete Tie-Rod End Inspection and Replacement 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:

Videos: (at <http://www.jameshalderman.com>)

- Loose outer tie rod end (time 0:17)
- Loose inner tie rod end (time 0:47)
- Inner tie rod end removal (time 4:18)
- Outer tie rod end replacement (time 4:57)
- Vehicle handling (time 20:17)
- Front end noise (time 3:20)
- Inner tie rod replacement (time 2:36)
- Inner tie rod end replacement (time 14:35)
- Pitman shaft seal (time 7:41)
- Intermediate shaft issues (time 2:02)
- Idler arm replacement (time 4:31)
- Front end inspection (time 1:55)
- FWD steering and suspension (time 0:32)
- Steering inspection (time 6:47)
- Steering knuckle (time 22:14)
- Tie rod end (time 11:22)
- How to Change Tie Rods (inner and outer tie rod ends) (time 13:55)
- How to do a simple front-end check (time 2:15)