

Automotive Technology 6th Edition

Chapter 125 – Alignment Diagnosis and Service

Lesson Plan



CHAPTER SUMMARY:

1. Purpose of alignment, prealignment correction techniques, and prealignment checks
 2. Lead/pull, memory steer, torque steer, alignment specifications, and alignment setup procedures
 3. Measuring camber, caster, SAI, toe, and TOOT
 4. Specifications versus alignment readings and checking for bent struts, spindles, or control arms
 5. Checking frame alignment of front-wheel-drive vehicles and types of alignments
 6. Adjusting rear camber and guidelines for adjusting front camber/SAI and included angle
 7. Front camber/caster adjustment methods and adjusting front camber/caster
 8. Setting toe, centering the steering wheel, and tolerance adjustment procedure
 9. Aligning electronic suspension vehicles and aligning modified vehicles
 10. Hidden structural damage diagnosis and reset steering angle sensor (SAS)
-



OBJECTIVES:

1. List the various checks that should be performed before aligning a vehicle.
 2. Explain the diagnosis of lead, memory steer, and torque steer.
 3. Describe alignment specifications and setup procedures.
 4. Discuss how to measure camber, caster, SAI, toe, and TOOT.
 5. Describe how to perform a pre-alignment inspection.
 6. List the types of alignments.
 7. Explain how to adjust the rear camber, front camber, SAI, and included angle.
 8. Describe how to set the toe, center the steering wheel, and adjust tolerance.
 9. Explain the method of aligning electronic-suspension vehicles and modified vehicles.
 10. Describe how to diagnose hidden structural damage.
 11. Describe how to reset the steering angle sensor.
 12. This chapter will help prepare for ASE Suspension and Steering (A4) certification test content area “D” (Wheel Alignment Diagnosis, Adjustment, and Repair).
-



RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)

1. Task Sheet ASE (A4-E-2) P-1: Pre-Alignment Inspection
 2. Task Sheet ASE (A4-E-1) P-1: Diagnose Alignment-Related Faults
 3. Task Sheet ASE (A4-E-3) P-1: Alignment Angle Readings
 4. Task Sheet ASE (A4-E-4) P-2, (A4-E-5) P-2: TOOT and SAI
 5. Task Sheet ASE (A4-E-6) P-1, (A4-E-9) P-2: Four-Wheel Alignment
 6. Task Sheet ASE (A4-E-7) P-2, (A4-E-8) P-3: Diagnostic Alignment Angles
 7. Chapter PowerPoint
 8. Chapter Crossword Puzzle and Word Search
 9. Animations: Wheel Alignment, Align Steering Wheel 1 and Wheel Alignment, Align Steering Wheel 2
 10. Animations: Wheel Alignment - Adjust Toe and Wheel Alignment - Camber Adjust - SLA
 11. Animations: Wheel Alignment - Camber Adjust - Strut and Wheel Alignment - Caster Adjust - SLA
 12. Videos: See list at the end of the lesson plan.
-

Automotive Technology 6th Edition

Chapter 125 – Alignment Diagnosis and Service

Lesson Plan



DEMO

ACTIVITIES:

1. **Task Sheet ASE (A4-E-2) P-1:** Have students complete Pre-Alignment Inspection Task Sheet.
 2. **Task Sheet ASE (A4-E-1) P-1:** Have students complete Diagnose Alignment-Related Faults Task Sheet.
 3. **Task Sheet ASE (A4-E-3) P-1:** Have students complete Alignment Angle Readings Task Sheet.
 4. **Task Sheet ASE (A4-E-4) P-2, (A4-E-5) P-2:** Have students complete TOOT and SAI Task Sheet.
 5. **Task Sheet ASE (A4-E-6) P-1, (A4-E-9) P-2:** Have students complete Four-Wheel Alignment Task Sheet.
 6. **Task Sheet ASE (A4-E-7) P-2, (A4-E-8) P-3:** Have students complete Diagnostic Alignment Angles Task Sheet.
-



ASSIGNMENTS:

1. Chapter crossword and word search puzzles.
 2. Complete end of chapter 10 question quiz.
-



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.
-



NOTES AND EVALUATION:

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

Camber caster adjustment Ford truck (time 3:10)	Wheel alignment (time 2:41)
Caster camber adjustment (time 2:56)	Camber adjustment (time 5:16)
Toe in (time 5:00)	Alignment diagnosis (time 1:25)
Pre alignment check (time 9:15)	Ackerman Steering (time 3:44)
Measuring vehicle ride height (time 1:24)	Thrust Angle Check (time 8:40)
Subframe alignment check (time 0:31)	Subframe alignment check (time 0:31)
Steering angle sensor reset (time 2:22)	Steering angle sensor reset (time 2:22)
Alignment angles (time 2:56)	Why align cars (time 2:12)
Alignment (time 2:12)	Diagnosing steering shudder and vibration (time 14:55)
Steering angles part 1 (time 17:34)	Front end noise (time 3:20)
Steering angles part 2 (time 26:05)	