

Automotive Technology 6th Edition

Chapter 117 – Front Suspension and Service

Lesson Plan



CHAPTER SUMMARY:

1. Front suspension types, short/long-arm suspensions, and strut suspensions
 2. Servicing the suspension system, road test diagnosis, dry park test, and visual inspection
 3. Ball joints, kingpin diagnosis and service, shock absorbers and struts, and Macpherson strut replacement
 4. Stabilizer bar links and bushings, strut rod bushings, and front coil springs
 5. Steering knuckles, torsion bars, and control arm bushings
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OBJECTIVES:

1. Describe different front suspension types.
 2. Diagnose short/long-arm (SLA) suspension systems and discuss strut suspension.
 3. Explain how to perform a road test, a dry park test, and a visual inspection.
 4. Discuss the diagnosis of ball joints and kingpins.
 5. Discuss the diagnosis of shock absorbers and struts.
 6. Describe how to replace MacPherson struts.
 7. Explain the diagnosis of stabilizer bar links and bushings.
 8. Discuss the diagnosis of strut rod bushings, front coil springs, steering knuckles, torsion bars, and control arm bushings.
 9. This chapter will help prepare for ASE Suspension and Steering (A4) certification content area “B” (Suspension 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:** Suspension Problem Diagnosis
 2. **Task Sheet ASE (A4-C-1) P-1, (A4-C-2) P-2:** Diagnose Suspension Concerns
 3. **Task Sheet ASE (A4-C-3) P-3, (A4-C-4) P-3, (A4-C-5) P-2, (A4-C-6) P-3, (A4-C-7) P-3:** Suspension Inspection/Component Replacement
 4. **Task Sheet ASE (A4-C-8) P-3:** Torsion Bar
 5. **Task Sheet ASE (A4-C-9) P-3:** Strut Rod and Stabilizer Bushings
 6. **Task Sheet ASE (A4-C-10) P-3:** MacPherson Strut Service
 7. **Task Sheet ASE (A4-D-1) P-1:** Front Shock Absorber Replacement
 8. **Task Sheet ASE (A4-C-10) P-3:** Shock Absorber/Strut Cartridge Replacement
 9. Chapter PowerPoint
 10. Chapter Crossword Puzzle and Word Search
 11. Animations: Ball Joint Remove and Replace, Bushings Remove and Replace, and Strut Suspension
 12. Animations: Short/Long Arm Suspension, Spring and Shock Absorber, and Suspension Components
 13. Animations: Upper Control Arm Remove and Replace
 14. Videos: See list at the end of the lesson plan.
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 DEMO

ACTIVITIES:

1. **Task Sheet ASE (A4-A-2) P-1:** Have students complete Suspension Problem Diagnosis Task Sheet.
 2. **Task Sheet ASE (A4-C-1) P-1, (A4-C-2) P-2:** Have students complete Diagnose Suspension Concerns Task Sheet.
 3. **Task Sheet ASE (A4-C-3) P-3, (A4-C-4) P-3, (A4-C-5) P-2, (A4-C-6) P-3, (A4-C-7) P-3:** Have students complete Suspension Inspection/Component Replacement Task Sheet.
 4. **Task Sheet ASE (A4-C-8) P-3:** Have students complete Torsion Bar Task Sheet.
 5. **Task Sheet ASE (A4-C-9) P-3:** Have students complete Strut Rod and Stabilizer Bushings Task Sheet.
 6. **Task Sheet ASE (A4-C-10) P-3:** Have students complete MacPherson Strut Service Task Sheet.
 7. **Task Sheet ASE (A4-D-1) P-1:** Have students complete Front Shock Absorber Replacement Task Sheet.
 8. **Task Sheet ASE (A4-C-10) P-3:** Have students complete Shock Absorber/Strut Cartridge 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>)

Front wheel drive steering and suspension (time 0:32)
Suspension Noises 101 (time 23:56)
Suspension Noise (time 0:15)
Front end noise (time 3:20)
Ball joint inspection (time 2:04)
Front strut replacement part 1 (time 10:00)
Front strut replacement part 2 (time 9:41)
Front strut replacement Honda (time 10:00)
Ball joint installation part 1 (time 9:11)
Ball joint installation part 2 (time 5:44)

Shock replacement (time 3:10)
Strut mounts (time 2:04)
Strut mounting (time 3:28)
Sway bar link replacement (time 10:16)
Stabilizer bar end link replacement (time 7:06)
Sway bar link (time 9:56)
Bad ball joint (time 0:29)
Sway bar (time 1:02)
Sway bar replacement (time 9:41)
Worn sway bar sound (time 0:23)

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

Lube a chassis (time 2:58)	How to tell if struts are bad (time 2:24)
Strut bearing replacement (time 8:35)	F 150 ball joint (time 12:54)
SLA vs Mc Pherson strut (time 3:13)	Strut rod bushing inspection (time 0:35)
Strut suspension (time 0:54)	Strut rod bushing replacement (time 14:05)
Lower control arm replacement (time 2:31)	Strut rod installation (time 5:01)
Strut replacement (time 2:49)	Shock squeak (time 1:02)
Suspension check (time 2:15)	Top Ten Signs of Worn Shocks and Struts (time 9:27)
Front end clunks (time 3:21)	Shocks and struts (time 6:04)
Stabilizer bar replacement (time 8:55)	Torsion bar replacement (time 20:14)
Lower ball joint (time 9:43)	How to check out your own car's suspension system (time 5:26)
Bump stop replacement (time 7:37)	How to Replace a Ball Joint (in depth, ultimate (time 16:11)
Strut disassembly and reassembly (time 9:35)	The Dangers of Replacing Coil Springs on Your Vehicle (time 19:55)
Strut spring failure (time 1:16)	How to Replace Shock Absorbers on your car FAST and Easy (time 6:26)