

Automotive Technology 6th Edition

Chapter 114 – Tire-Pressure Monitoring Systems

Lesson Plan



CHAPTER SUMMARY:

1. Need for tire pressure monitoring, tread act, indirect TPMS, and direct TPMS
 2. TPMS pressure sensors, TPMS sensor operation, TPMS receiver, and TPMS diagnosis
 3. TPMS sensor activations, TPMS diagnostic tools, and sensor replacement options
 4. TPMS sensor relearn and TPMS sensor service tools
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OBJECTIVES:

1. Explain why a tire-pressure monitoring system (TPMS) is used.
 2. Discuss the TREAD Act.
 3. Explain indirect and direct TPMS.
 4. List the two types of TPMS pressure sensors.
 5. Discuss TPMS sensor operation and the TPMS receiver.
 6. Explain direct TPMS diagnosis and TPMS diagnostic tools.
 7. List replacement options for TPMS sensors.
 8. Describe how to relearn TPMS sensors and the tools needed to service a TPMS.
 9. This chapter will help prepare for ASE Suspension and Steering (A4) certification content area “E” (Wheel and Tire Diagnosis and Repair).
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RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)

1. **Task Sheet ASE (A4-F-1) P-1, (A4-F-8) P-1:** Tire Inspection and Air Loss
 2. **Task Sheet ASE (A4-F-2) P-2, (A4-F-5) P-1:** Tire Vibration and Pull Diagnosis
 3. **Task Sheet ASE (A4-F-3) P-1:** Tire Rotation
 4. **Task Sheet ASE (A4-F-4) P-2:** Tire, Wheel, Axle, and Hub Runout
 5. **Task Sheet ASE (A4-F-6) P-1:** Tire Replacement
 6. **Task Sheet ASE (A4-F-9) P-1:** Tire Repair
 7. Chapter PowerPoint
 8. Chapter Crossword Puzzle and Word Search
 9. Animations: Remove and Replace Tire & Wheel, Replace Wheel Stud, and Tighten Lug Nuts
 10. Animations: Tighten Lug Nuts, Tire Rotation, FWD Vehicle, and Measure Tire Radial Runout
 11. Videos: See list at the end of the lesson plan.
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ACTIVITIES:

1. **Task Sheet ASE (A4-F-1) P-1, (A4-F-8) P-1:** Have students complete Tire Inspection and Air Loss Task Sheet.
 2. **Task Sheet ASE (A4-F-2) P-2, (A4-F-5) P-1:** Have students complete Tire Vibration and Pull Diagnosis Task Sheet.
 3. **Task Sheet ASE (A4-F-3) P-1:** Have students complete Tire Rotation Task Sheet.
 4. **Task Sheet ASE (A4-F-4) P-2:** Have students complete Tire, Wheel, Axle, and Hub Runout Task Sheet.
 5. **Task Sheet ASE (A4-F-6) P-1:** Have students complete Tire Replacement Task Sheet.
 6. **Task Sheet ASE (A4-F-9) P-1:** Have students complete Tire Repair 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>)

- Remove Rusted Wheel Hub (time 3:56)
- Replace Wheel Stud (time 2:09)
- Tire balance (time 3:39)
- Tire balancer (time 1:45)
- Tire inspection and service (time 9:56)
- How to plug a tire (time 6:23)
- Torque lug nuts (time 2:42)
- Vibration diagnosis (time 19:07)
- Manual tire changer (time 4:52)
- Tire balancing (time 10:51)
- Tire balance (time 4:39)
- Tire rotation (time 5:29)
- Wheel, tire, hub runout (time 9:43)
- Tire dismount and mount (time 6:20)
- Tire patch (time 16:30)
- TPMS sensor replacement (time 1:21)
- How to repair a flat tire with sidewall damage (time 01:06:50)
- TPMS Sensor Replacement (time 3:15)