**Manual Drivetrains and Axles 9th Edition**

**Chapter 15 –** **Four-Wheel and All-Wheel Drive**

**CHAPTER SUMMARY:**

1. Four-Wheel Drive, Terminology, Transfer Cases, and Part-Time Four-Wheel Drive

2. Full-Time Four-Wheel Drive, Central Differential, Transfer Cases, and Electronic Transfer Cases

3. Power Transfer Unit, Couplers and Torque Bias Devices, and Front Drive Axles

4. Drive Axle/Wheel Disconnect Systems

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**OBJECTIVES:**

1. Explain the characteristics of four-wheel-drive (4WD) vehicles.

2. Differentiate between part-time and full-time four-wheel-drive vehicles.

3. Explain the purpose and function of the central differential and transfer case in a four-wheel-drive vehicle.

4. Explain the purpose and function of electronic transfer cases and the power transfer unit of a four-wheel- drive vehicle.

5. Explain the purpose and function of couplers and torque bias devices.

6. Discuss the operation of front drive axles and drive axle/wheel disconnect systems.

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

1. Task Sheet: Four-Wheel Drive Identification

2. Task Sheet: Tire Circumference & Final Drive Ratio Variations

3. Chapter PowerPoint

4. Crossword Puzzle and Word Search

5. Videos: [(A3) Manual Drive Train Axles Videos](https://jameshalderman.com/a3_vid_lib_page/)

6. Animations: [(A3) Manual Drive Train Axles Animations](https://jameshalderman.com/a3_anim_lib_page/)

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**ACTIVITIES:**

1. Task Sheet: Four-Wheel Drive Identification

2. Task Sheet: Tire Circumference & Final Drive Ratio Variations

3. Crossword Puzzle and Word Search

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**ASSIGNMENTS:**

1. Chapter crossword and word search puzzles.

2. Complete end of chapter 10 question quiz.

3. Complete multiple choice and short answer quizzes downloaded from the website.

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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:**

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