**Advanced Engine Performance Diagnosis 7th Edition**

**Chapter 22 –** **Fuel-Injection Components and Operation**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Electronic Fuel0Injection Operation and Speed-Density Fuel-Injection Systems

2. Mass Airflow Fuel-Injection Systems, Port-Fuel Injection, and Fuel-Pressure Regulator

3. Vacuum-Biased Fuel-Pressure Regulator and Electronic Returnless Fuel System

4. Mechanical Returnless Fuel System and Demand Delivery System (DDS)

5. Central Port Injection, Fuel-Injection Modes of Operation, and Idle Control

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**OBJECTIVES:**

1. List the types of fuel-injection systems and explain their modes of operation.

2. Describe how throttle-body injection and port fuel-injection systems work.

3. Discuss the function of the fuel-pressure regulator and describe a vacuum-biased fuel-pressure regulator.

4. Describe the different types of returnless fuel systems and how they function.

5. Describe the purpose and function of a demand delivery system.

6. Discuss fuel injectors and fuel-injection modes of operation.

7. Explain the operation of the idle control system.

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**RESOURCES:** [(All resources may be found at jameshalderman.com)](https://jameshalderman.com/)

1. Task Sheet: Modes of Fuel Injection Operation

2. Task Sheet: Idle Air Control

3. Task Sheet: Air Intake Inspection

4. Chapter PowerPoint

5. [Crossword and Word Search Puzzles (A8)](https://jameshalderman.com/a8_puzzles_lib_page/)

6. [Videos: (A8) Engine Performance](https://jameshalderman.com/a8_vid_lib_page/)

7. [Animations: (A8) Engine Performance](https://jameshalderman.com/a8_anim_lib_page/) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ACTIVITIES:**

1. Task Sheet: Modes of Fuel Injection Operation

2. Task Sheet: Idle Air Control

3. Task Sheet: Air Intake Inspection

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**ASSIGNMENTS:**

1. Chapter crossword and word search puzzles from the website.

2. Complete end of chapter quiz from the textbook.

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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