**Automotive Engines Theory and Servicing 10th Edition**

**Chapter 34 – Engine Assembly and Dynamometer Testing**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Details, Details, Details, Short Block Preparation, Cylinder Head Preparation, and Trial Assembly

2. Final Short Block Assembly, Installing the Camshaft, Piston/Rod Installation, and Cylinder Head Installation

3. Torque-To-Yield Head Bolts, Valve Train Assembly, Final Assembly, and Dynamometer Testing

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**OBJECTIVES:**

1. Explain short block preparation and cylinder head preparation.

2. Discuss trial assembly and final short block assembly.

3. Describe camshaft installation and piston/rod installation.

4. Explain the cylinder head installation procedure.

5. Discuss torque-to-yield head bolts.

6. Explain valve train assembly and final assembly of an engine.

7. Explain dynamometer testing.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. Task Sheet: Remove and Replace Cylinder Head

2. Task Sheet: Bore to Piston Clearance

3. Task Sheet: Piston Ring Installation

4. Chapter PowerPoint

5. [Crossword Puzzle and Word Search (A1)](https://jameshalderman.com/a1_puzzles_lib_page/)

6. [Videos: (A1) Engine Repair](https://jameshalderman.com/video-library/)

7. [Animations: (A1) Engine Repair](https://jameshalderman.com/a1_anim_lib_page/)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ACTIVITIES:**

1. Task Sheet: Remove and Replace Cylinder Head

2. Task Sheet: Bore to Piston Clearance

3. Task Sheet: Piston Ring Installation

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_