

Automotive Technology 6th Edition

Chapter 18 – Gasoline Engine Operation, Parts, and Specifications

Lesson Plan

CHAPTER SUMMARY:



1. Energy and Power, engine construction overview, engine parts and systems
 2. Four-stroke cycle operation and engine classification and construction
 3. Engine measurement and compression ratio
 4. Torque and horsepower
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OBJECTIVES:



1. Discuss engine construction, the engine's purpose and function, energy and power, and engine construction.
 2. Explain engine parts and systems.
 3. Explain four-stroke cycle operation.
 4. Discuss engine classification and construction.
 5. Explain engine measurement.
 6. Discuss compression ratio, torque, and horsepower.
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RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)



1. **Task Sheet ASE (A1-A-2) P-1:** Gasoline Engine Identification
 2. **Task Sheet ASE (A1-A-2) P-1:** General Engine Specification
 3. **Task Sheet ASE (A1-D-6) P-1 (MLR only):** Lubrication & Cooling System Components
 4. Chapter PowerPoint
 5. Chapter Crossword Puzzle and Word Search
 6. Animations: 4-Stroke Engine Cycle and Rotary Engine
 7. Videos: Timing belt (time 5:00) and Octane rating and 4 stroke engines (time 7:52)
 8. Videos: How to find TDC (time 1:14) and Exactly how a car engine works – 3D (time 5:02)
 9. Videos: Basic engine parts (time 32:26) and Piston animation (time 0:56)
 10. Videos: V-8 animation (time 1:21) and Rotary engine animation (time 3:25)
 11. Videos: Engine assembly animation (3:12) and Engine assembly (time 1:51)
 12. Videos: Ford EcoBoost Animation (time 2:41) and Ford EcoBoost Animation (time 1:32)
 13. Videos: 16-cylinder engine (time 0:44) and Rotary engine failures (time 2:42)
 14. Videos: Rotary engine (time 5:17) and Rotary engine construction (time 4:17)
 15. Videos: Rotary engine basics (time 3:07) and Transparent engine on a dynamometer (time 2:21)
 16. Videos: Hybrid Atkinson cycle operation (time 4:37) and Rotary engine combustion cycles (time 2:04)
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ACTIVITIES:



1. **Task Sheet ASE (A1-A-2) P-1:** Have students complete Gasoline Engine Identification Task Sheet
 2. **Task Sheet ASE (A1-A-2) P-1:** Have students complete General Engine Specification Task Sheet
 3. **Task Sheet ASE (A1-D-6) P-1 (MLR only):** Have students complete Lubrication & Cooling System Components 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:
