

Automotive Engines Theory and Servicing 10th Edition

Chapter 10 – Diesel Engine Operation and Diagnosis

Lesson Plan



CHAPTER SUMMARY:

1. Diesel Engines, Three Phases of Combustion, Fuel Tank and Lift Pump, and Injection Pump
2. Engine-Driven Vacuum Pump, HEUI System, Diesel Injector Nozzles, and Glow Plugs
3. Diesel Fuel Heaters, Accelerator Pedal Position Sensor, and Diesel Engine Turbochargers
4. Exhaust Gas Recirculation, Diesel Particulate Matter, and Diesel Oxidation Catalyst
5. Diesel Exhaust Particulate Filter and Selective Catalytic Reduction
6. Diesel Performance Diagnosis, Compression Testing, and Glow Plug Resistance Balance Test
7. Injector Pop Testing and Diesel Emission Testing

OBJECTIVES:



1. State the characteristics of diesel engines.
2. Describe the fuel tank, lift pump, injection pump, and engine-driven vacuum pump.
3. Explain the HEUI system.
4. Discuss the purpose of glow plugs, diesel fuel heaters, diesel injector nozzles, and accelerator pedal position sensors.
5. Explain the purpose of diesel engine turbochargers.
6. Discuss the purpose of the exhaust gas recirculation system, selective catalytic reduction, and diesel oxidation catalysts.
7. Explain diesel particulate matter, and discuss the function of diesel exhaust particulate filters and selective catalytic reduction.
8. Discuss diesel exhaust smoke diagnosis and performance diagnosis.
9. Discuss compression testing, glow plug resistance balance test, injector pop testing, and diesel emission testing.

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



1. Task Sheet: Diesel Engine Service Information
2. Task Sheet: Diesel Exhaust Fluid Service
3. Chapter PowerPoint
4. [Crossword Puzzle and Word Search \(A9\)](#)
5. [Videos: \(A9\) Light Diesel](#)
6. [Animations: \(A9\) Light Diesel](#)

ACTIVITIES:



1. Task Sheet: Diesel Engine Service Information
2. Task Sheet: Diesel Exhaust Fluid Service

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:
