

Automotive Technology 6th Edition

Chapter 90 – Scan Tools and Engine Performance Diagnosis

Lesson Plan



CHAPTER SUMMARY:

1. The eight-step diagnostic procedure and scan tools
 2. Retrieval of diagnostic information and troubleshooting using diagnostic trouble codes
 3. Retrieving codes prior to 1996, DLC locations, OBD-II diagnosis, and OBD-II active tests
 4. Service/flash programming, manufacture's diagnostic routines, and completing system repairs
 5. Procedures for resting the PCM and road test (drive cycle)
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OBJECTIVES:

1. List the steps of the diagnostic process.
 2. discuss the types of scan tools that are used to assess vehicle components.
 3. List the steps for retrieving diagnostic information from the PCM.
 4. Explain the troubleshooting procedures to follow if a diagnostic trouble code has been set.
 5. describe the methods for reprogramming (reflashing) a vehicle computer and performing a drive cycle.
 6. This chapter will help you prepare for the ASE computerized engine controls diagnosis (A8) certification test content area "E."
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RESOURCES: (All resources may be found at <http://www.jameshalderman.com>)

1. **Task Sheet ASE (A8-B-5) P-1, (A8-B-4) P-1, (A8-B-1) P-1:** Retrieve DTCs, Monitor Status & Freeze Frame
 2. **Task Sheet ASE (A8-B-2) P-1:** Access Service Information
 3. **Task Sheet ASE (A8-B-3) P-1:** Testing Using a Scan Tool
 4. **Task Sheet ASE (A8-B-6) P-1, (A8-D-1) P-2:** Drivability Concerns Without Stored DTCs
 5. **Task Sheet ASE (A8-B-3) P-1, (A8-B-6) P-1, (A8-A-8) P-1:** Engine Diagnosis
 6. Chapter PowerPoint
 7. Chapter Crossword Puzzle and Word Search
 8. Animations: Engine Diagnosis
 9. Videos: See list at the end of the lesson plan.
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ACTIVITIES:

1. **Task Sheet ASE (A8-B-5) P-1, (A8-B-4) P-1, (A8-B-1) P-1:** Have students complete Retrieve DTCs, Monitor Status & Freeze Frame Task Sheet.
 2. **Task Sheet ASE (A8-B-2) P-1:** Have students complete Access Service Information Task Sheet.
 3. **Task Sheet ASE (A8-B-3) P-1:** Have students complete Testing Using a Scan Tool Task Sheet.
 4. **Task Sheet ASE (A8-B-6) P-1, (A8-D-1) P-2:** Have students complete Drivability Concerns Without Stored DTCs Task Sheet.
 5. **Task Sheet ASE (A8-B-3) P-1, (A8-B-6) P-1, (A8-A-8) P-1:** Have students complete Engine Diagnosis 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:

Videos: (at <http://www.jameshalderman.com>)

OBD II scanner modes (time 2:42)	13 diagnostic steps Step 1 (time 1:55)
OBD II mode 6 (time 5:26)	13 diagnostic steps Step 2 (time 2:05)
OBD II PIDS (time 0:51)	13 diagnostic steps Step 3 (time 2:03)
OBD II Monitors (time 45:09)	13 diagnostic steps Step 4 (time 2:24)
No Code Diagnostics (time 4:25)	13 diagnostic steps Step 5 (time 2:50)
Scoping out driveability (time 12:05)	13 diagnostic steps Step 6 (time 3:00)
Injector Waveform analysis (time 6:53)	13 diagnostic steps Step 7 (time 2:46)
Detonation (time 8:48)	13 diagnostic steps Step 8 (time 2:54)
Fuels and driveability (time 28:27)	13 diagnostic steps Step 9 (time 4:03)
Engine Performance Issues Part 1 (time 18:08)	13 diagnostic steps Step 10 (time 3:59)
Engine Performance Issues Part 2 (time 16:26)	13 diagnostic steps Step 11 (time 2:13)
Flash a PCM (time 1:56)	13 diagnostic steps Step 12 (time 3:08)
Fuel trim (time 7:31)	13 diagnostic steps Step 13 (time 2:14)
OBD II PIDS (time 0:51)	13 diagnostic steps (time 3:05)
Scanning CAN protocol (time 2:04)	No start diagnostics (time 6:19)
K Line OBD protocol (time 2:01)	Fuel system diagnostic tips (time 9:36)
ECM diagnosis (time 2:22)	Ford electronic returnless fuel system diagnosis part 1 (time 22:35)
ECM power input (time 1:30)	Ford electronic returnless fuel system diagnosis part 2 (time 47:18)
ECM ground circuits (time 1:30)	