

Advanced Engine Performance Diagnosis 7th Edition

Chapter 17 – Manifold Absolute Pressure and Mass Airflow Sensors

Lesson Plan



CHAPTER SUMMARY:

1. Manifold Absolute Pressure/Barometric Pressure Sensors and Air Pressure – High and Low
2. Principles of Pressure Sensors, Construction of MAP Sensors, and PCM Uses of the MAP Sensor
3. Barometric Pressure Sensor, Testing the MAP Sensor, and MAP/BARO Diagnostic Codes
4. Mass Airflow Sensors, Karmen Vortex Sensors, and PCM Uses for Airflow Sensors
5. Testing Mass Airflow Sensors, MAF Sensor Contamination, and MAF-Related Diagnostic Trouble Codes

OBJECTIVES:



1. Discuss the purpose and function of manifold absolute pressure (MAP) sensors.
2. Explain the principles of air pressure and pressure sensors.
3. Describe the construction of MAP sensors.
4. Explain the PCM uses of a MAP sensor.
5. Explain the purpose and function of barometric pressure (BARO) sensors.
6. List the methods that can be used to test MAP sensors.
7. Describe the purpose and function of mass airflow (MAF) sensors and Karman vortex sensors.
8. Explain the PCM uses of airflow sensors.
9. List the methods that can be used to test MAF sensors.
10. Discuss the symptoms of a failed MAF sensor.

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



1. Task Sheet: MAP Sensor Visual Inspection
2. Task Sheet: MAP Sensor DMM Testing
3. Task Sheet: MAP Sensor Waveform Test
4. Task Sheet: MAP Sensor Diagnosis
5. Task Sheet: MAP Sensor Output Chart
6. Task Sheet: MAF Sensor Visual Inspection
7. Task Sheet: MAF Sensor Waveform Testing
8. Task Sheet: MAF Sensor Diagnosis
9. Task Sheet: MAF Sensor Scope
10. Chapter PowerPoint
11. [Crossword and Word Search Puzzles \(A8\)](#)
12. [Videos: \(A8\) Engine Performance](#)
13. [Animations: \(A8\) Engine Performance](#)

ACTIVITIES:



1. Task Sheet: MAP Sensor Visual Inspection
2. Task Sheet: MAP Sensor DMM Testing
3. Task Sheet: MAP Sensor Waveform Test
4. Task Sheet: MAP Sensor Diagnosis
5. Task Sheet: MAP Sensor Output Chart
6. Task Sheet: MAF Sensor Visual Inspection
7. Task Sheet: MAF Sensor Waveform Testing
8. Task Sheet: MAF Sensor Diagnosis
9. Task Sheet: MAF Sensor Scope

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Chapter 15 – Temperature Sensors
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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: