# Advanced Engine Performance Diagnosis 6/E

## Chapter 12 Immobilizer Systems

## Opening Your Class

| KEY ELEMENT | EXAMPLES |
|---|---|
| **Introduce Content** | This course or class provides complete coverage of the components, operation, design, and troubleshooting. It correlates material to task lists specified by ASE and NATEF and emphasizes a problem-solving approach. Chapter features include Tech Tips, Frequently Asked Questions, Real World Fixes, Videos, Animations, and NATEF Task Sheet references. |
| **Motivate Learners** | Explain how the knowledge of how something works translates into the ability to use that knowledge to figure why the engine does not work correctly and how this saves diagnosis time, which translates into more money. |
| **State the learning objectives for the chapter or course you are about to cover and explain this is what they should be able to do as a result of attending this session or class.** | Explain the chapter learning objectives to the students.<br>1. Prepare for ASE Engine Performance (A8) certification test content area "A" (General Diagnosis).<br>2. Describe the purpose and function of a security system.<br>3. Explain how an immobilizer system works.<br>4. List the engine-related faults that can be caused by the immobilizer system when it malfunctions.<br>5. Identify the major components that could be involved with an immobilizer system.<br>6. Explain how to diagnosis a fault with an immobilizer system. |
| **Establish the Mood or Climate** | Provide a *WELCOME,* Avoid put downs and bad jokes. |
| **Complete Essentials** | Restrooms, breaks, registration, tests, etc. |
| **Clarify and Establish Knowledge Base** | Do a round robin of the class by going around the room and having each student give their backgrounds, years of experience, family, hobbies, career goals, or anything they want to share. |

**NOTE: This lesson plan is based on Advanced Engine Performance Diagnosis 6/E Chapter Images found on Jim's web site @ www.jameshalderman.com**

**LINK CHP 12: Chapter Images**

| ICONS | Ch11 Global OBD II & Mode $06 |
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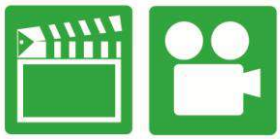
|  | **1. SLIDE 1 CH11 Global OBD II & Mode $06** |
|  | **Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/**<br>**WEB SITE REGULARLY UPDATED** |
|  | **At the beginning of this class, you can download the crossword puzzle & Word Search from the links below to familiarize your class with the terms in this chapter & then discuss them** |
|  | **Crossword Puzzle (Microsoft Word) (PDF)**<br>**Word Search Puzzle (Microsoft Word) (PDF)** |
|  | **2. SLIDE 2 EXPLAIN Figure 12.1** A shock sensor used in alarm and antitheft systems. |
| | **3. SLIDE 3 EXPLAIN Figure 12.2** The security system symbol used on Ford. |
|  | **DISCUSS FREQUENTLY ASKED QUESTIONS**<br>**PAGE 166** |
|  | **4. SLIDE 4 EXPLAIN Figure 12.3** A typical key with the cover removed showing the battery used to power the door lock and the antenna used for the immobilizer system. |
| | **5. SLIDE 5 EXPLAIN Figure 12.4** The remote keyless entry is used to unlock the doors as well as create the signals to the powertrain control module (PCM) used to control the starter motor and/ or the fuel system and the warning lamp on the instrument panel cluster (IPC). |
| | **6. SLIDE 6 EXPLAIN Figure 12.5** A typical immobilizer circuit showing the communication between the key and the transceiver. |
|  | **DISCUSS FREQUENTLY ASKED QUESTIONS**<br>**PAGE 168** |
|  | **7. SLIDE 7 EXPLAIN Figure 12.6** (a) If the passive key is within about 15 feet (5 meters) of the vehicle when the door handle is touched, the door will unlock allowing |

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| | access to the interior (b) The engine will start if the smart key is detected being inside the vehicle.<br>**8. SLIDE 8 EXPLAIN Figure 12.7** (a) Avoid using a key where the key ring is over the top of the key, which can interfere with the operation of the immobilizer system. (b) Do not angle another key upward from the key being used to help prevent interference with the magnetic field used to energize the key. (c) Do not have the keys from another vehicle near the key being used.<br>**EXPLAIN TECH TIP ON PAGE 169** |
|  <br> | **9. SLIDE 9 EXPLAIN Figure 12.8** Check service information for the exact wiring diagram (schematic) for the vehicle being tested.<br>**10. SLIDE 10 EXPLAIN Figure 12.9** A special tool is needed to diagnose a General Motors VATS security system and special keys that contain a resistor pellet.<br>**11. SLIDE 11 EXPLAIN Figure 12.10** The Passlock series of GM security systems uses a conventional key. |
|  | **12. SLIDE 12 EXPLAIN Figure 12.11** Scan tools, such as this factory tool being used on a BMW, are capable of many diagnostic functions that can help the technician zero in on the root cause of a problem.<br>**13. SLIDE 13 EXPLAIN Figure 12.12** After checking for stored diagnostic trouble codes (DTCs), the wise technician checks service information for any technical service bulletins (TSBs) that may relate to the vehicle being serviced.<br>**EXPLAIN TECH TIP ON PAGE 172 & 173** |
|  <br>  | **14. SLIDE 14 EXPLAIN Figure 12.13** Immobilizer coil detectors can be found on line by searching for immobilizer transponder coil detector. |