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Product Sheet - Prodiags Automotive Online Training Module

EOBD/OBD-II Self-Diagnostics

If you want to develop your own diagnostic skills and perform diagnostics, you will need to know the structure and function of EOBD/OBD-II Self-Diagnostics. This training module is for you if you want to make the most effective use of OBD-standard diagnostics. You will learn a lot of new things even if manufacturer's OEM diagnostics is already familiar to you.



- Basics of self-diagnostics, component and functional diagnostics.
- Malfunction indicator lights and diagnostic trouble codes.
- Diagnostic functions of OBD and OEM diagnostics.
- Use of EOBD/OBD-II diagnostics.
- Operating modes and PID codes.
- Drive cycles and trips.
- Utilising component diagnostics.
- Partial tests requiring constant monitoring and their utilisation.
- Partial tests requiring periodic monitoring and their utilisation.

Language: English

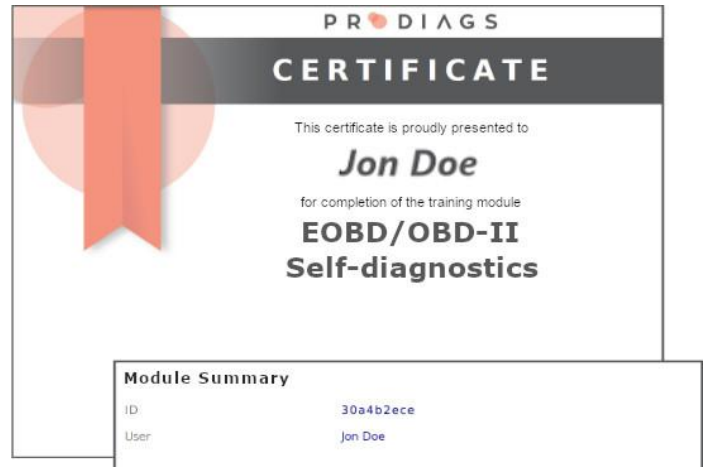
SKU: 070.0260.012.000.EN

LEARNING OUTCOMES

As your expertise improves, so too do your skills and abilities in performing fault diagnosis demanding logical reasoning and analysis of test results. You will be able to make effective use of all possible information stored in the engine control module's OBD memory about faults and system status.

Certificate

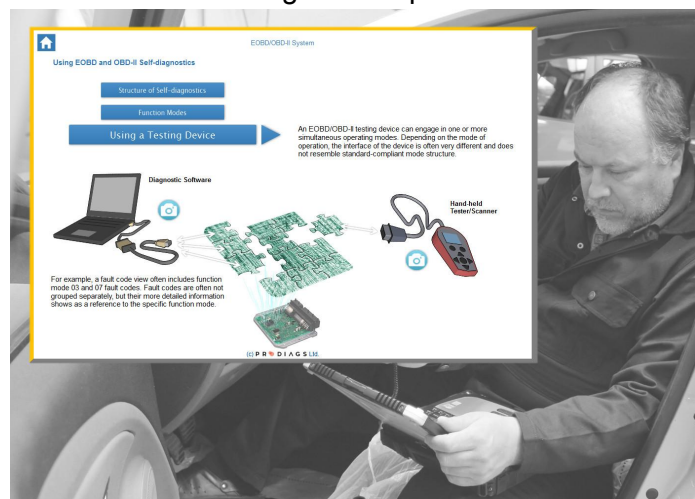
After completing your module of study and approved completion of the exercises, you will be allowed to take the final exam. After completing the final exam, you can print a Prodiags certificate from your attainments register as proof of your expertise.



INTRODUCTION

Why this module?

Mechanics who inspect and repair vehicles require skills that include knowledge and understanding of how to use OBD diagnostics, specifically for carrying out effective troubleshooting and verifying the vehicle's roadworthiness following completion of emissions related diagnostic repairs.



What will you learn?

Utilisation of OBD diagnostic functions requires understanding of how the testing device you use provides information about the operating modes defined in the standard. For example, data on fault codes, condition and freeze frame data, and code deletion are stored in a variety of functional modes. The testing device's view may be in the mode appropriate for the function, and so you have to visit multiple views to gather all the information, or alternatively the same information may be merged into a single view.

In diagnostics, the fault code becomes specified according to how the malfunction affects the data received from the signal, current or function. You can make use of the qualifier of this if you understand the structure of the circuitry and how it works. By utilising the basic skills of electrical engineering and your knowledge of the system, you begin to understand things like how the weakening of supply voltage in signal monitoring can affect its grounding from short circuiting.

OBD diagnostics' internal control systems, i.e. partial tests, have an impact on official inspection in connection with roadworthiness inspection, but these should also be made use of by mechanics in post-repair inspection. Learn about monitoring systems to take advantage of this self-diagnosis feature. At the same time, you get to understand why a post-repair test drive should be properly planned to include a variety of operating situations. Also, you will learn that simply resetting fault codes and monitoring system results is never a way to fix a fault.

Components' Self-diagnostics

ECM

+5V CPU
AD
U_{ntc}
NTC

- Signal conductor OK
- Short-circuit to ground
- Short-circuit to voltage

E0BD/OBD-II requirements stipulate that the self-diagnostic function should be able to identify component malfunctions. The requirements do not specify what test method should be used to monitor each component's functionality.

Required Components refers to sensors and actuators, i.e. those components which in practice have an effect on emissions.

Component Signal Circuits' operation, signal information and signal plausibility are monitored by the engine ECM. This can be accomplished by defining **operating limits** for signal circuits in respect of them operating within pre-defined ranges for signal voltage and current flow. The plausibility of the signal is compared with, for example, data from other sensors as well as the vehicle's driving conditions.

```

    graph TD
      U[UnTC] --> D1{ }
      D1 -- "If UnTC < 0.2V" --> P0117[DTC P0117]
      D1 --> D2{ }
      D2 -- "If UnTC > 4.8V" --> P0118[DTC P0118]
      D2 -- Else --> OK[ ]
  
```

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System Diagnostics

Continuously controlled partial tests

Continuous Monitors

Non-continuously controlled partial tests

Non-Continuous Monitors

- Heated Catalyst Test ✓
- Evaporative System Test ✓
- Oxygen Sensor Test ✓
- Oxygen Sensor Heater Test ✓
- EGR System Test ✓

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PREREQUISITES

To get the best learning outcomes we hope you have a basic knowledge of the structure and functioning of engine control systems and basics of electricity. For studying electricity we recommend the module: Electricity.

System Requirements

Internet connection and PC or laptop with browser.
Recommended screen resolution 1024 x 768 or higher.

Updates

We want to make sure that you always have the latest version of our product. Prodiags reserves the right to make real time updates and changes. This way you'll always have the best version, without extra fees.

Content Equivalence

This modules topics and objectives correspond in scope to a conventional 2 day training event. Once you have made your payment, you get immediate access to the content. You'll save time and money by not needing to travel.

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