PRODIAGS

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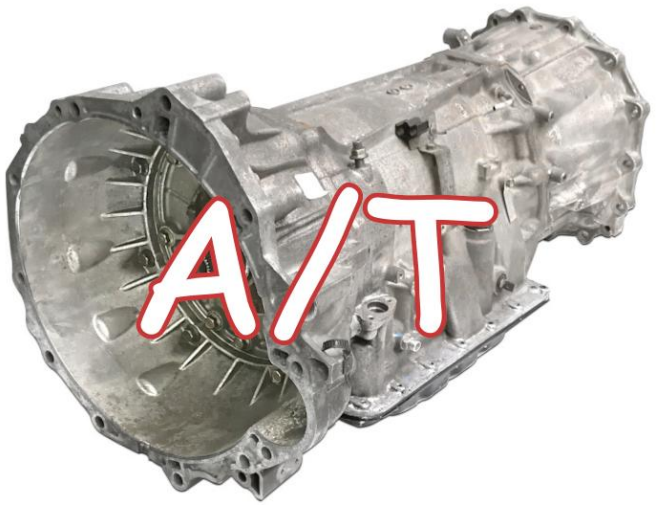
Product Sheet - Prodiags Automotive Online Training Module

Automatic Transmissions

As automatic transmissions have developed, they have decreased in size and their structures are more compact. At the same time the gear count has risen to even as high as 9 gears, and their efficiency has caught up with other transmission types. Due to this, the technicians need to update their knowledge on “traditional” automatic transmissions.



- Presentation of different transmissions
- Structure and gear ratios of an automatic transmission
- Torque converter, operation and hydraulic control
- Planetary gear sets and operation
- Planetary gear sets’ clutches and brakes
- Hydraulic pressure regulation levels and shifting pressure control
- Other components of the hydraulic control system
- The transmission’s control unit and shifting programme
- Electrohydraulic control
- Speed, temperature and pressure
- Driver’s functions and transmission control

Language: English

SKU: 070.0290.111.000.EN

LEARNING OUTCOMES

After studying you will have a strong knowledge of the automatic transmission's operation. You will be ready to develop your troubleshooting skills in practice and adopt the differences across different manufacturers solutions, as well as utilising instruction and training effectively. This training gives you the opportunity to even specialise in becoming an automatic transmission expert.

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.

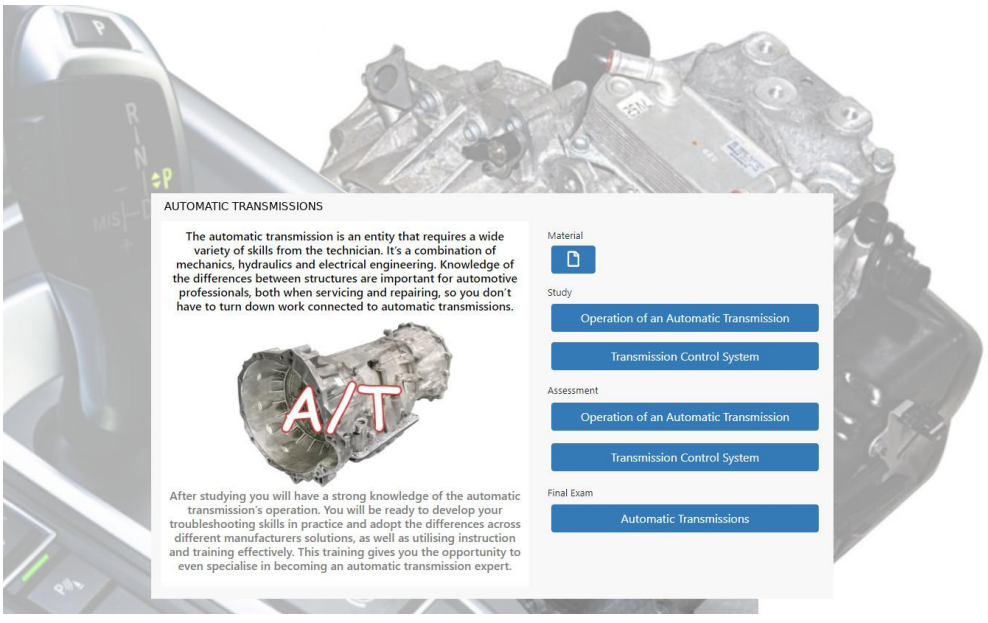
INTRODUCTION

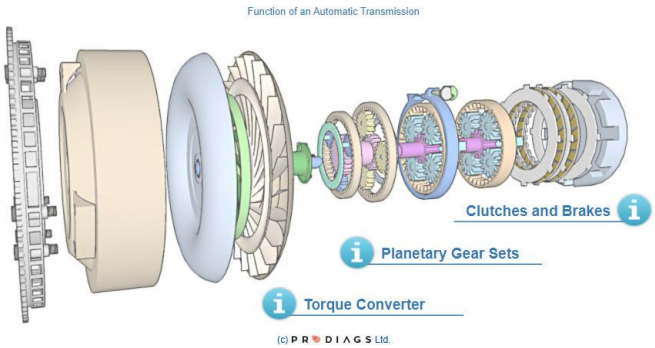
Why this module?

The automatic transmission is an entity that requires a wide variety of skills from the technician. It's a combination of mechanics, hydraulics and electrical engineering. Knowledge of the differences between structures are important for automotive professionals, both when servicing and repairing, so you don't have to turn down work connected to automatic transmissions.
The transmission is a central part of the powertrain, so inspecting its functionality when troubleshooting cannot be avoided. Therefore it's a crucial part of the skills of a troubleshooting technician.

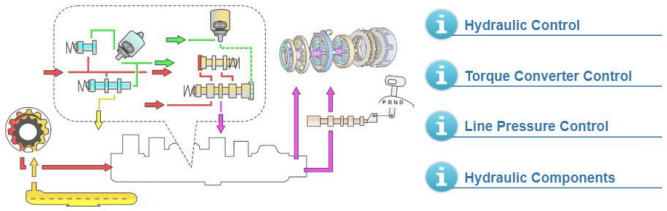
What will you learn?

In the first study section, after presenting the different transmission types, we go through the automatic tranmission's structure, for example the torque converter, hydraulic system and transmission mechanics in-depth. In this section you will learn what happens inside the transmission when you see the modes P, R, N, D, D1, etc. on the instrument cluster display.
In the section "Components", you will study the torque converter's operation, which is made easy by the module's visual animations.





The planetary gear sets and the clutches and brakes used to control them make up their own entity. In the planetary gear set operation you familiarise yourself with gear sets that have made the development of the transmission possible, for example Compound Planetary Gear Sets (Ravigneaux ja Simpson Gear Set) and Nested Planetary Gear Sets.

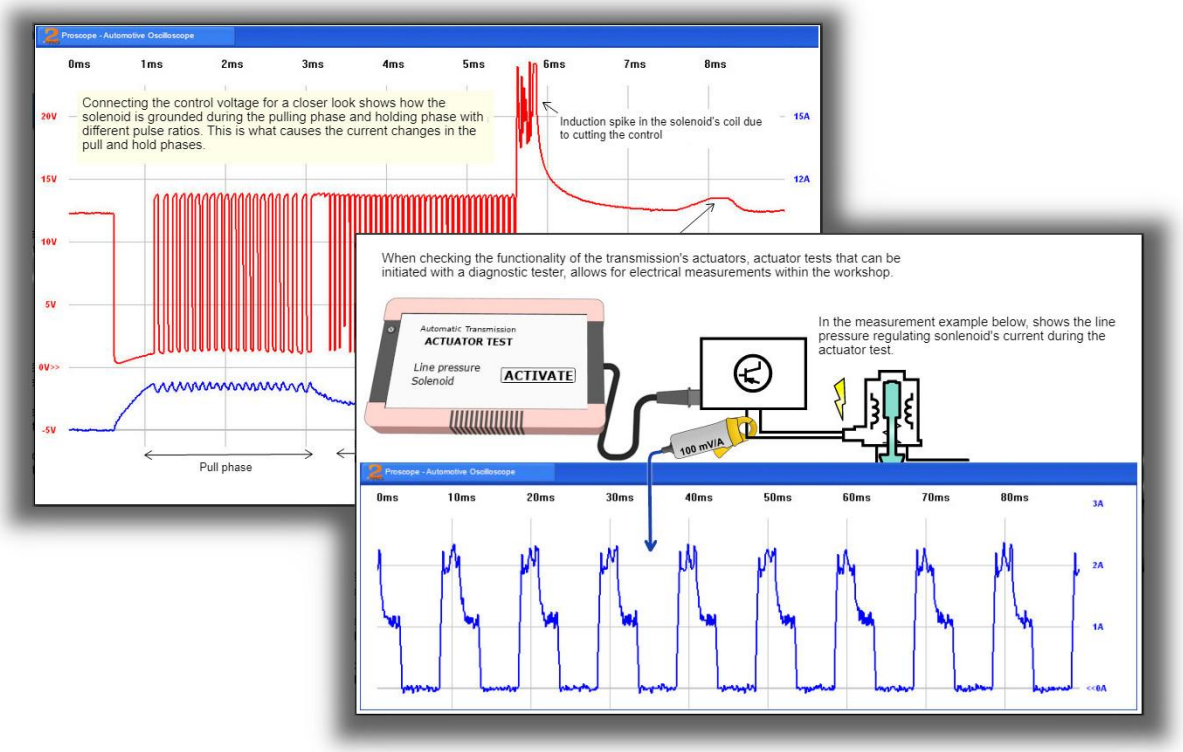


In the module on hydraulics you learn what kind of different hydraulic pressures are regulated in the transmission, how different torque converters are controlled and what the shifting pressure, that makes shifting smooth, is.

In the second study section, the center is the control system of the mechanics and hydraulics, and its electrical structure. With this module you learn how to utilise the electrical and structure schematics provided by the manufacturer, and use them to make an assumption of what operational checks can be performed with electrical measurements.

The hydraulics control uses different pressure levels, such as; line pressure, shifting pressure, control pressure and torque converter pressure, with which the pressure is kept stable and solenoids' mechanical movement is quicker even though the control currents are lower.
In addition to the regulating and switching solenoids used in the control, the manual valve (gear selector valve) is a central part of the operation, even though it might be fully electrically operated.

In addition to their compact construction, automatic transmissions are special due to the fact that transmissions contain very different amounts of sensors, which we are used to use as aid when troubleshooting. Many programme and calculation measures decrease the need for sensors. That is why it is crucial to understand the function of the sensors in the transmission, since a fault in these might interrupt driving at once.



At the end of the study section, we get to know the driver's functions, control devices and driving modes' differences in the shifting maps. The electrification of the gear selector used by the driver has also brought many versions of its connection to the transmission itself. Electronic use also has a crucial effect on the release of the Park Lock mechanism in a fault situation.

PREREQUISITES

To reach the best learning outcomes you will benefit from having a basic knowledge in electricity and measuring technology as well as the basics of common solutions in sensor and actuator technology.
To study Electricity, we recommend the Training Modules: Electricity, Electronics and Automotive Electrical Troubleshooting Basics.

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 module's topics and objectives correspond in scope to a conventional 3 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.