

<<汽车专业英语>>

图书基本信息

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前言

随着我国汽车产业的蓬勃发展,汽车新车型、新技术不断涌现,进口车辆不断增加,英文原版汽车使用手册、维修资料、检测设备随处可见,汽车仪表、熔丝、继电器、传感器等零部件也大多采用英文来标记。

汽车维修行业的变化对人员提出了新的挑战 and 更高的要求。

本书的编写目的就是为了提高汽车专业学生和维修人员的英文阅读水平,适应行业发展需要。

本书以汽车专业知识和公共英语知识为基础,以训练汽车英文文献的阅读、翻译能力为目标,内容涉及汽车发动机、传动系统、行驶系统、转向系统、制动系统、车架与车身、车身控制系统及车辆维护,侧重新技术、新结构的介绍。

文章内容丰富、图文并茂、专业性强。

全书分为14个单元,每个单元包括Text A、Test B、Exercises三部分。

Text A为该单元的主要讲解部分;Test B类似于阅读材料,属于扩展、延伸部分。

这两部分内容均以现代汽车的典型结构和原理讲解为主,文章后有单词、词组和难句注释。

Exercises包括课堂小问题、词组互译和短文翻译,内容与本单元相关联,短文翻译参考英文原版汽车使用说明书和维修手册,涉及拆装、维修、检测、故障诊断等方面的知识,以帮助读者进一步提高专业英语运用能力。

内容概要

本书以汽车专业知识和公共英语知识为基础，着重培养和提高读者阅读、翻译汽车英文书籍和文献的能力，以适应行业发展的需要。

全书共分为14个单元，内容涉及汽车发动机、传动系统、行驶系统、转向系统、制动系统、车架与车身、车身控制系统及车辆维护，侧重新技术、新结构的介绍。

遴选的文章内容丰富、图文并茂、专业性强。

本书可作为高等职业院校汽车相关专业教学用书，亦可作为其他汽车技术学校、汽车修理技术培训的参考书。

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章节摘录

The output shaft connects the driving components in the transmission with the drive shaft. This shaft runs in the same centerline as the input shaft. Its front end almost touches the input shaft.

Planetary Gears A planetary gearset consists of a sun gear, several planet gears, a planet gear carrier, and a ring gear. A simple planetary gearset is shown in Fig. 8-4. The name planetary gearset is easy to remember because it refers to our solar system. Just as our planets (Earth, Jupiter, Mars) circle the sun, the planet gears revolve around the sun gear [4] As you can see, a planetary gearset is always in mesh. It is very strong and compact. An automatic transmission will commonly use two or more planetary gearsets. By holding or releasing the components of a planetary gearset, it is possible to: Reduce output speed and increase torque (gear reduction) . Increase output speed while lowering torque (overdrive) . Reverse output direction (reverse gear) . Serve as a solid unit to transfer power (one to one ratio) . Freewheel to stop power flow (park or neutral) .

Hydraulic System The hydraulic system for an automatic transmission typically consists of a pump, pressure regulator, manual valve, vacuum modulator valve, governor valve, shift valves, servos, pistons, and valve body. These parts work together to form the brain (sensing) and muscles (control) of an automatic transmission. The hydraulic system also forces oil to high friction points in the transmission. This prevents wear and overheating by lubricating the moving parts.

Ignition Coil The ignition coil is nothing more than an electrical transformer. It contains both primary and secondary winding circuits. The coil primary winding contains 100 to 150 turns of heavy copper wire. This wire must be insulated so that the voltage does not jump from loop to loop, shorting it out. If this happened, it could not create the primary magnetic field that is required. The primary circuit wire goes into the coil through the positive terminal, loops around the primary windings, then exits through the negative terminal. The coil secondary winding circuit contains 15,000 to 30,000 turns of fine copper wire, which also must be insulated from each other. The secondary windings sit inside the loops of the primary windings. To further increase the coil's magnetic field the windings are wrapped around a soft iron core. To withstand the heat of the current flow, the coil is filled with oil which helps keep it cool. The ignition coil is the heart of the ignition system. As current flows through the coil a strong magnetic field is built up. When the current is shut off, the collapse of this magnetic field to the secondary windings induces a high voltage which is released through the large center terminal [3] . This voltage is then directed to the spark plugs through the distributor.

Ignition Timing The timing is set by loosening a hold-down screw and rotating the body of the distributor. Since the spark is triggered at the exact instant that the points begin to open, rotating the distributor body (which the points are mounted on) will change the relationship between the position of the points and the position of the distributor cam, which is on the shaft that is geared to the engine rotation [43] . While setting the initial or base timing is important, for an engine to run properly, the timing needs to change depending on the speed of the engine and the load that it is under. If we can move the plate that the points are mounted on, or we could change the position of the distributor cam in relation to the gear that drives it, we can alter the timing dynamically to suit the needs of the engine. There are two mechanisms that allow the timing to change: centrifugal advance and vacuum advance. Centrifugal advance changes the timing in relation to the speed (r/min) of the engine. It uses a pair of weights that are connected to the spinning distributor shaft. These weights are hinged, on one side to the lower part of the shaft and connected by a linkage to the upper shaft where the distributor cam is. The weights are held close to the shaft by a pair of springs. As the shaft spins faster, the weights are pulled out by centrifugal force against the spring pressure. The faster the shaft spins, the more they are pulled out. When the weights move out, it changes the alignment between the lower and upper shaft, causing the timing to advance.

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