

汽车专业英语

蔡安徽 崔永春 编



北京理工大学出版社

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内 容 简 介

本书内容为汽车专业英语,全书分为两部分。第一部分为汽车构造,共27节,讲述汽车各主要系统的构造和工作原理。第二部分为汽车维修保养,共14节,讲述汽车各主要系统常见故障的判断排除及维修保养方法。每节后附有词汇表,以及较为详细的语法注释和难句分析。书后附有参考译文。为便于查阅生词,书后附有总词汇表和内燃机常用英语缩略语表。该书可作为大学和中专汽车专业英语阅读材料,也可作为一般大、中学生课外阅读材料,以及专业技术人员的参考书。

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前 言

近年来,我国的汽车工业迅速发展,汽车保有量逐年增加,汽车不仅在各行各业发挥着极其重要的作用,而且已开始进入千家万户。可以说,汽车已成为我国的支柱产业。汽车行业与国外同行间的技术交流也日益频繁,有关汽车专业方面的大量英文技术资料有待翻译。为了适应形势的发展和广大读者的需要,我们编写了这本汽车专业英语。这本书可作为大专院校汽车专业的课外阅读材料,也可作为汽车行业工程技术人员继续教育和职工岗位培训教材,并且可供专业技术人员和汽车爱好者熟悉汽车专业词汇和学习汽车专业英语。

本书分为两部分。第一部分为汽车构造,分为 27 篇,讲述汽车各主要系统的构造和工作原理。第二部分为汽车维修保养,分为 14 篇,讲述汽车各主要系统常见故障的判断和维修保养方法。材料选自国外的专业书刊和大专院校教科书的部分章节,语言简明流畅,实用性较强。不仅可以学习专业英语,而且可使读者熟悉有关汽车的专业词汇。在编写本书的过程中,考虑到我国读者的英文水平,我们尽可能使每篇课文的长短适量,难易适中,每篇课文后均有注释和词汇表。课文中出现的难句和语法难点,均在课后的注释中加以解释,并译为中文。为便于查阅和学习,书后还附有参考译文、内燃机常用英语缩写和总词汇表。

另外,我们还向读者提些建议,也许会有所帮助。一般来说,即使是掌握了一定程度英语的同志在阅读专业英语时,也

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会有一定的困难。所以,在阅读本书时,应首先找出生词,标出词义。然后分析句子的结构,弄清全句的意思。阅读时,一定要记笔记,记下文中的要点,帮助理解和翻译。可试着把读过的文字翻译成中文,与书后的参考译文进行对照。为了便于读者学习,参考译文基本上是与原文对照逐句翻译的,仅供参考。

由于这是一本以学习专业英语为主的阅读材料,也就不可能把汽车专业方面的知识讲得很全面,很系统。我们的目的就是想让读者通过阅读这本书,能够熟悉汽车专业的英语词汇,掌握阅读专业英语的方法,为将来阅读有关汽车专业的英语书刊和资料打下一定的基础。

因水平有限,书中一定有许多不妥之处,敬请读者给予批评指正。

编 者

一九九八年三月

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1. Automobile Mechanics

1.1 Engine Classification and Overall Mechanics

The automobile engines can be classified according to:
1. number of cylinders; 2. arrangement of cylinders; 3. arrangement of valves; 4. type of cooling; 5. number of cycles (two or four); 6. type of fuel burned; 7. type of ignition.

The engine is the source of power that makes the wheels go around and the car move. ⁽¹⁾ The automobile engine is an internal-combustion engine because the fuel (gasoline) is burned inside it. ⁽²⁾ The burning of gasoline inside the engine produces high pressure in the engine combustion chamber. ⁽³⁾ This high pressure forces piston to move, the movement is carried by connecting rods to the engine crankshaft. The crankshaft is thus made to rotate; the rotary motion is carried through the power train to the car wheels so that they rotate and the car moves. ⁽⁴⁾

The engine requires a fuel system to supply it with a mixture of air and fuel. ⁽⁵⁾ The fuel system does this by pumping liquid gasoline from a tank into the carburetor, a mixing device that mixes the gasoline with air. ⁽⁶⁾ The

mixture is delivered to the engine where it is burned. ⁽⁷⁾

The engine also needs a cooling system, the combustion of the air-fuel mixture in the engine creates a very high temperature (as high as 2000 to 2700 °C). The cooling system takes heat away from the engine by circulating a liquid coolant (water mixed with antifreeze) between the engine and a radiator. The coolant gets hot as it goes through the engine. ⁽⁸⁾ It cools off as it goes through the radiator. Thus, the coolant continually takes heat away from the engine, where it could do damage, and delivers it to the radiator. ⁽⁹⁾ Air passing through the radiator takes heat away from the radiator. ⁽¹⁰⁾

The engine also includes a lubricating system. The purpose of the lubricating system is to supply all moving parts inside the engine with lubricating oil; the oil keeps moving parts from wearing excessively. ⁽¹¹⁾

The engine requires a fourth system, the ignition system. The ignition system provides high-voltage electric sparks that ignite, or set fire to, the charges of air-fuel mixture in the engine combustion chambers. ⁽¹²⁾

The fifth is starting system and its purpose is to change the electrical current into the mechanical energy to push the crank-shaft around. By means of this, the engine can be started.

These five systems are discussed briefly in following sections.

New Words

combustion	<i>n.</i> 燃烧
chamber	<i>n.</i> 室
rod	<i>n.</i> 杆, 连杆, 活塞杆
crankshaft	<i>n.</i> 机轴, 曲轴
rotate	<i>vi. vt.</i> 使旋转
rotary	<i>a.</i> (指运动的) 旋转的
circulate	<i>vt. vi.</i> 循环
coolant	<i>n.</i> 冷却剂(液态)
antifreeze	<i>a.</i> 防冻的
excessively	<i>ad.</i> 过度的, 极端的
voltage	<i>n.</i> 电压, 伏(特)数
ignition	<i>n.</i> 点燃
ignite	<i>v.</i> 点燃
briefly	<i>ad.</i> 简洁地, 简短地

Phrases and Expressions

power train	动力传动系统
supply...with	给提供
keep... from	阻止

Notes

1. The engine is the source of power that makes the wheels go around and the car move.

发动机是使车轮转动, 从而驱动汽车行驶的动力来源。

that makes the wheels go around and the car move 为定

语从句, 修饰 the source of power。

make sth. or sb. do sth. 迫使某人或某物做某事, 作宾语补语的不定式, 省略 to。

例如:

He made his son stay at home. 他要儿子待在家里。

The driver made the crankshaft rotate. 司机使曲轴转动。

但是当句子变为被动语态时, 不定式的 to 要加上。

例如:

His son was made to stay at home. 他的儿子被迫待在家里。

The crankshaft is thus made to rotate. 这样, 使得曲轴转动。

2. The automobile engine is an internal combustion engine because the fuel (gasoline) is burned inside it.

汽车发动机是一种内燃机, 因为它的燃油(汽油)是在发动机内燃烧的。

because 引导原因状语从句。

3. The burning of gasoline inside the engine produces high pressure ...

汽油的燃烧在发动机的燃烧室中产生高压

动名词短语 the burning of gasoline inside the engine 在句中作主语。

4. The rotary motion is carried through the power train to the car wheels so that they rotate and the car moves.

动力传动系统将发动机的旋转运动传给汽车车轮, 从而使车轮及整车转动起来。

through the power train 为状语。

so that 引导结果状语从句。

5. The engine requires a fuel system to supply it with a mixture of air and fuel.

发动机要求燃料供给系统为之供应气油混合燃料。

supply ...with 给 提供。

例如：

We supplied them with money and clothes. 我们向他们供应钱和衣服。

Many countries in the world supplied Africa with food.
世界上许多国家向非洲供应食品。

6. a mixture device that mixes the gasoline with air

将汽油空气进行混合的装置。

a mixture device 为 carburetor 的同位语, that 引导定语从句, 在从句中做主语。

7. The mixture is delivered to the engine where it is burned.

将可燃混合气输送到发动机, 并在那里进行燃烧。

where 关系副词, 引导定语从句, 在从句中做状语。

8. The coolant gets hot as it goes through the engine.

当冷却液流经发动机时, 冷却液就会变热。

as 当.....的时候, 引导时间状语从句, 下面的一句中 as it goes through the radiator 也是时间状语从句。

9. where it could do damage.

热量会在发动机中造成损害。

这是非限制性定语从句, 说明上文。

10. Air passing through the radiator takes heat away from the radiator.

空气经过散热器使温度降低。

passing through the radiator 为分词短语做定语, 修饰 air。

11. The purpose of the lubricating system is to supply all moving parts inside the engine with lubricating oil; the oil keeps moving parts from wearing excessively.

润滑系统的作用是向发动机内的各个运动零件提供润滑油, 从而使运动零件免于过度磨损。

keep...from 阻止。

例如:

What shall we do to keep the parts from getting rust?
我们怎样才能让这些零件不生锈?

12. The ignition system provides high-voltage electric sparks that ignite, or set fire to, the charges of air-fuel mixture in the engine combustion chambers.

点火装置产生高压电火花, 从而使发动机燃烧室中的可燃混合气燃烧。

that 引导定语从句, 修饰 sparks。

1.2 Four-stage-engine Operation

The actions taking place in the engine cylinder can be divided into four stages, or strokes. ⁽¹⁾ “Stroke” refers to piston movement; a stroke occurs when the piston moves from one limiting position to the other. ⁽²⁾ The upper limit of piston movement is called TDC (top dead center). The lower limit of piston movement is called BDC (bottom dead center). A stroke is piston movement from TDC to BDC or

from BDC to TDC. In other words ,the piston completes a stroke each time it changes its direction of motion. ⁽³⁾

Where the entire cycle of events in the cylinder requires four strokes (or two crankshaft revolutions), the engine is called a four-stroke-cycle engine, or a four-cycle engine. The four piston strokes are intake, compression, power, and exhaust.

Intake stroke. On the intake stroke, the intake valve has opened, the piston is moving downward, and a mixture of air and vaporized gasoline is entering the cylinder through the valve port. The mixture of air and vaporized gasoline is delivered to the cylinder by the fuel system and carburetor.

Compression stroke. After the piston reaches BDC, or the lower limit of its travel, it begins to move upward. As this happens, the intake valve closes. The exhaust valve is also closed, so that the cylinder is sealed. As the piston moves upward (pushed now by the revolving crankshaft and connecting rod), the air-fuel mixture is compressed. By the time the piston reaches TDC, the mixture has been compressed to as little as one-tenth of its original volume, or even less. ⁽⁴⁾ This compression of the air-fuel mixture increases the pressure in the cylinder. When the air-fuel mixture is compressed, not only does the pressure in the cylinder go up, but the temperature of the mixture also increases. ⁽⁵⁾

Power stroke. As the piston reaches TDC on the compression stroke, an electric spark is produced at the spark

plug. The ignition system delivers a high-voltage surge of electricity to the spark plug to produce the spark. The spark ignites, or sets fire to, the air-fuel mixture. It now begins to burn very rapidly, and the cylinder pressure increases to as much as 3-5 MPa or even more. ⁽⁶⁾ This terrific push against the piston forces it downward, and a power impulse is transmitted through the connecting rod to the crankpin on the crankshaft. The crankshaft is rotated as the piston is pushed down by the pressure above it.

Exhaust stroke. As the piston reaches BDC again, the exhaust valve opens. Now, as the piston moves up on the exhaust stroke, it forces the burned gases out of the cylinder through the exhaust-valve port. Then, when the piston reaches TDC, the exhaust valve closes and the intake valve opens. Now, a fresh charge of air-fuel mixture will be drawn into the cylinder as the piston moves down again toward BDC. The above four strokes are continuously repeated.

New Words

stroke	<i>n.</i> 行程, 冲程
limit	<i>n.</i> 极限, 界限
upper limit	上限
lower limit	下限
TDC (top dead center)	上止点
BDC (bottom dead center)	下止点
event	<i>n.</i> 事件, (发动机各行程的) 工作内容