

汽车 专业英语

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汽车专业英语

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内 容 提 要

本书选取与汽车维修行业实际工作岗位能力需求紧密相关的内容, 共分为4部分30个教学单元, 涉及发动机、底盘、汽车车身、电气系统、电子控制系统的构造、工作原理以及汽车检修知识。语言精练, 专业知识覆盖面广, 图文并茂。

本书可作为高等院校汽车专业及其相关专业的教材, 也可供相关工程技术人员和汽车服务业、维修业人员阅读参考。

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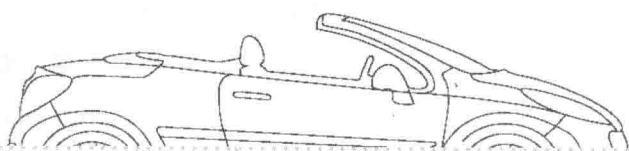
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前言

P R E F A C E

近年来,随着汽车产业的迅速发展,国外各大汽车厂商争先抢占中国市场,致使品牌种类繁多。车型年年换,随之而来的使用说明书、维修手册、电脑诊断仪等材料和设备大多为英文版,而没能及时地被翻译成汉语。尤其是随着现代通信技术迅猛发展,从网络接触的先进汽车技术信息的 95% 也都用英文来表达。因此,对汽车相关英语知识的缺乏,将会对学生今后从事汽车相关岗位的工作产生非常不利的影响。事实上,汽车英语逐渐成为汽车相关企业选择人才的一项重要标准。我们编写本书的目的是为了提高汽车专业学生和汽车从业人员的英语水平,为其能够更好地做好本职工作提供方便。

本书选材突出以学习者为中心,以技能为中心,复合能力本位的教育需求,更注重学生专业英语与专业知识相结合的实际应用能力。

本书是一本以直观性和通俗性为特点,语言精练,专业知识覆盖面广,图文并茂,详细介绍发动机、底盘、电器、车身等方面知识的英语教材。全书包括 4 部分,共 30 个单元,每个单元都采用图文并茂的形式,把教学内容直观地展现出来,知识点全面覆盖发动机、底盘、电器等专业课程的内容。同时,每篇文章都配有词汇表、专业术语、课后习题及答案详解等辅助教学内容,这些习题不但对课文内容有很好的针对性,而且还提供了与岗位需求相关的技能训练题目,增强了内容的实用性。本书的另一大特点是实用性强、实效性强,教材内容不但包括汽车构造方面的专业英语知识,还广泛涉及汽车电控方面的汽车新技术,以便为学生今后的就业打下良好的基础。

本书可作为高等院校汽车专业及其相关专业的教材,也可供相关工程技术人员和汽车服务业、维修业人员阅读参考。

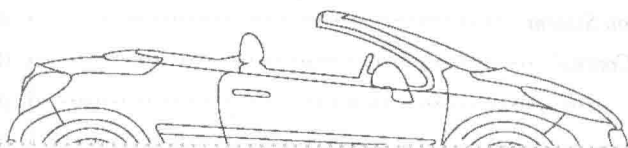
本书由金艳秋、田春霞和焦安源任主编,由李晗、丁晶晶、姚杰任副主编。参与本书编写的人员还有:张丽丽、耿炎、张义、卢忠德、修玲玲等。本书在编写过程中,参考、引用

了大量的参考文献，在此，对所引用文献的原作者表示诚挚的谢意。

由于编者水平有限、编写经验不足，本书中的缺点、错误在所难免，恳请广大师生和读者批评指正。

编者

2014年6月



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Chapter One

Basic Composition

Modern Automobiles are essential forms of transportation. They are complex machines made up of many parts. These parts can be grouped into a number of systems. An understanding of how the systems work will help you understand how the automobile works.

1.1 Classification of Automobiles

The different types of automobiles found on roads are presented in Chart 1.1 in a comprehensive manner.

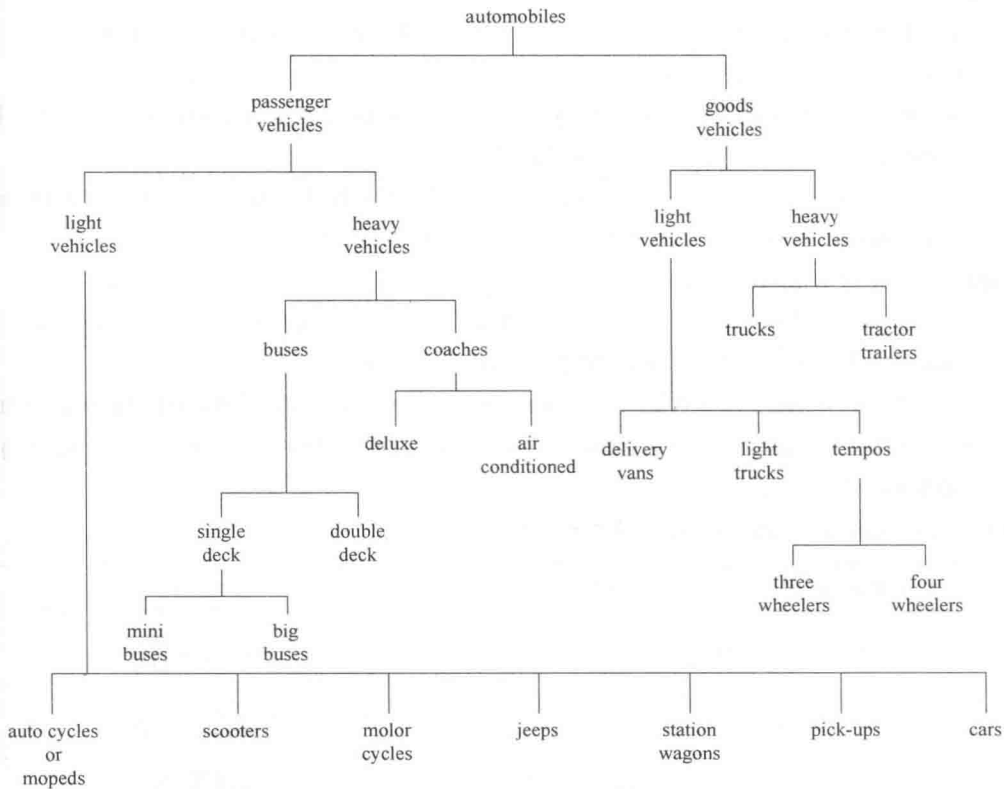


Chart 1.1 Automobiles

Automobiles can be classified into several types based on several criteria. A brief classification of automobiles is listed below:

1. Based on purposes:

- ✓ Passenger vehicles—These automobiles carry passengers, e.g. buses, passenger trains, cars, etc.
- ✓ Goods vehicles—These vehicles are used for transportation of goods from one place to another, e.g. goods lorries, goods carriers, etc.

2. Based on capacities:

- ✓ Heavy motor vehicles (HMV)—Large and bulky motor vehicles, e.g. large trucks, buses, etc.
- ✓ Light motor vehicles (LMV)—Small motor vehicles, e.g. cars, jeeps, etc.
- ✓ Medium vehicles—Relatively medium sized vehicles, e.g. small trucks, mini buses, etc.

3. Based on fuel sources:

- ✓ Petrol engine vehicles—Automobiles powered by petrol engine, e.g. scooters, cars, mopeds, motorcycles, etc.
- ✓ Diesel engine vehicles—Automotives powered by diesel engine, e.g. trucks, buses, etc.
- ✓ Gas vehicles—Vehicles that use gas turbine as power source, e.g. turbine powered cars, etc.
- ✓ Solar vehicles—Vehicles significantly powered by solar power, e.g. solar powered cars, etc.
- ✓ Hydrogen vehicles—Vehicles that have hydrogen as a power source, e.g. honda FCX clarity, etc.
- ✓ Electric vehicles—Automobiles that use electricity as a power source, e.g. electric cars, electric buses, etc.
- ✓ Steam engine vehicles—Automotives powered by steam engine, e.g. steamboats, steam locomotives, steam wagons, etc.
- ✓ Hybrid vehicles—Vehicles that use two or more distinct power sources, e.g. hybrid buses, hybrid cars like Toyota Prius, Honda Insight, etc.
- ✓ Hybrid electric vehicles (HEV)—Automobiles that use both internal combustion engine and electric power source to propel itself, e.g. Jaguar C-X75, etc.

4. Based on type of transmission:

- ✓ Automatic transmission vehicles—Automobiles that are capable of changing gear ratios automatically as they move, e.g. automatic transmission cars, etc.
- ✓ Conventional transmission vehicles—Automotives whose gear ratios have to be changed manually.
- ✓ Semi-automatic transmission vehicles—Vehicles that facilitate manual gears changing with clutch pedals.

5. Based on engine arrangements and driving types:

engine arrangements and driving types	diagrams
front engine, front-wheel drive	
front engine, rear-wheel drive	
rear engine, rear-wheel drive	

6. Based on numbers of wheels:

- √ Two wheelers—Automobiles having two wheels, e.g scooters, motorcycles, etc.
- √ Three wheelers—Automotives having three wheels, e.g tricycles, auto rikshaws, tempos, etc.
- √ Four wheelers—Vehicles having four wheels, e.g cars, jeeps, etc.
- √ Six wheelers—Automobiles having six wheels used for heavy transportation, e.g large trucks, large buses, etc.

7. Based on the sides of drive:

- √ Left hand drive automobiles—Vehicles in which the steering wheel is fitted on the left hand side, e.g automobiles found in USA, Russia, etc.
- √ Right hand drive automobile—Vehicles in which the steering wheel is fitted on the right hand side, e.g automobiles found in India, Australia, etc.

Words

lorry ['lɒrɪ]

transportation [træns'pɔ:t'eɪʃ(ə)n]

moped ['məʊpəd]

petrol ['petr(ə)l]

hydrogen ['haɪdrədʒən]

electric [ɪ'lektrɪk]

steamboat ['sti:mbəʊt]

combustion [kəm'bʌstʃən]

significantly [sig'nɪfəkəntli]

capable ['keɪpəb(ə)l]

conventional [kən'venʃ(ə)n(ə)l]

ratio ['reɪʃiəʊ]

clutch [klʌtʃ]

scooter ['sku:tə]

transmission [træns'mɪʃən]

arrangement [ə'reɪn(d)ʒm(ə)nt]

fit [fɪt]

diagram ['daɪəgræm]

n. (英) 卡车, [车辆] 货车; 运料车

n. 运输; 运输系统; 运输工具; 流放

n. 助动车; 机动脚踏两用车

n. 汽油

n. 氢

adj. 电的; 电动的; 发电的; 导电的; 令人震惊的

n. 汽船, 轮船

n. 燃烧, 氧化; 骚动

adv. 意味深长地; 值得注目地

adj. 能干的, 能胜任的; 有才华的

adj. 符合习俗的, 传统的; 常见的; 惯例的

n. 比率, 比例

n. 离合器; 控制; 紧抓; 紧急关头

n. 小轮摩托车; 单脚滑行车; 小孩滑板车

n. 变速器; 传递; 传送; 播送

n. 布置; 整理; 准备

vt. 安装; 使……适应; 使……合身; 与……相符

n. 图表; 图解

Phrases and Expressions

automobile

passenger vehicle

goods vehicle

heavy motor vehicle (HMV)

汽车

乘用车

载货车

重型车

light motor vehicle (LMV)	轻型车
medium vehicle	中型车
petrol engine vehicle	汽油发动机汽车
diesel engine vehicle	柴油发动机汽车
gas vehicle	天然气车
solar vehicle	太阳能汽车
hydrogen vehicle	氢气车
electric vehicle	电动车辆
steam engine vehicle	蒸汽发动机汽车
hybrid vehicle	混合动力车
hybrid electric vehicle (HEV)	混合动力电动汽车
automatic transmission vehicle	自动变速器汽车
conventional transmission vehicle	手动变速器汽车
semi-automatic transmission vehicle	半自动变速器汽车
front engine front-wheel drive (FF)	发动机前置前驱
front engine rear-wheel drive (FR)	发动机前置后驱
rear engine rear-wheel drive (RR)	发动机后置后驱

1.2 Automobile Basic Structure

An automobile is generally composed of four sections, such as engine, chassis, body and electrical system (Figure 1.1).

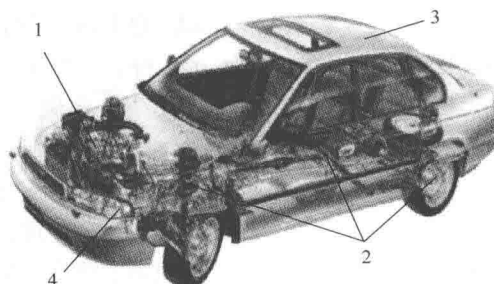


Figure 1.1 Automobile Basic Parts

1. engine 2. chassis 3. body 4. electrical system

1.2.1 Engine

An engine or motor is a machine designed to convert energy into useful mechanical motion. Heat engines, including internal combustion engines and external combustion engines (such as steam engines) burn a fuel to create heat, which then creates motion.

The engine which is called the “heart” of a vehicle is used to supply power for an automobile.

It includes the fuel, lubricating, cooling, ignition and starting systems. Generally, an automobile is operated by an internal combustion engine. The internal combustion engine burns fuel within the cylinders and converts the expanding force of the combustion or “explosion” into rotary force used to propel the vehicle (Figure 1.2).



Figure 1.2 Engine

1.2.2 Chassis

The chassis (Figure 1.3) is an assembly of those systems that are the major operating part of a vehicle. The chassis includes power train or transmission system, suspension system, steering system, and brake system.

- ✓ Transmission system—conveys the drive to the wheels. The main components are clutch, gearbox, driveshaft, final drive, and differential.
- ✓ Suspension system—absorbs the road shocks.
- ✓ Steering system—controls the direction of the movement.
- ✓ Brake system—slows down the vehicle.

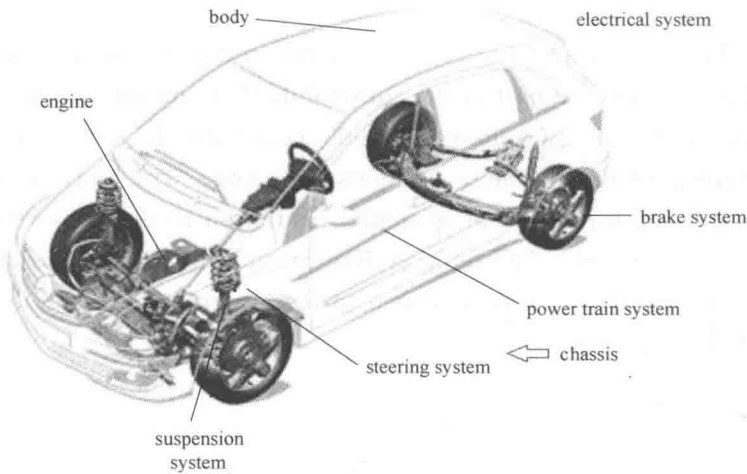


Figure 1.3 Chassis

1.2.3 Electrical System

The electrical system (Chart 1.2) supplies electricity for the ignition, horn, lights, heater, and starter. The electricity level is maintained by a charging circuit. This circuit consists of the battery, alternator (or generator). The battery stores electricity. The alternator changes the engine's mechanical energy into electrical energy and recharges the battery. The electric system includes the battery, generator, starting system, ignition system, lighting system, horn system, radio and other devices.

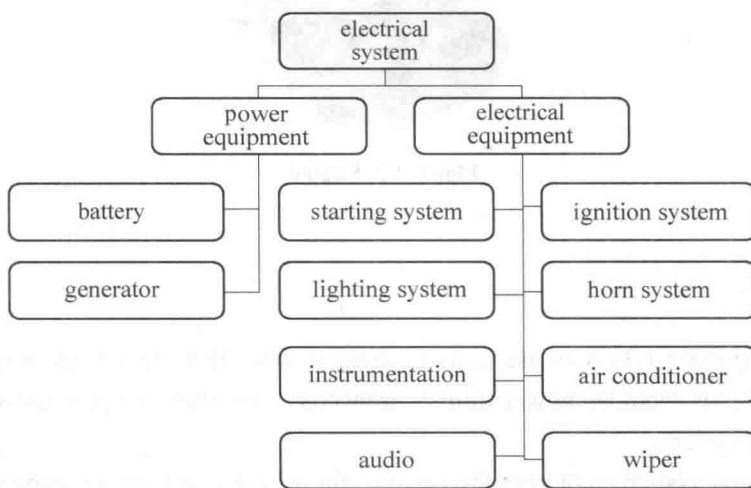


Chart 1.2 Electrical System

1.2.4 Body

The body (Figure 1.4 and Figure 1.5) is the enclosure that houses the engine, passengers, and cargo. It is the part of the automobile that you see. An automobile body is a sheet metal shell with windows, doors, a hood, and a trunk deck built into it. It provides a protective covering for the engine, passengers, and cargo. The body is designed to keep passengers safe and comfortable. For example, insulation in the body reduces noise and protects against heat and cold. The body styling provides an attractive, colorful, modern appearance for the vehicle. It is streamlined to lessen wind resistance and keep the car from swaying at driving speeds.

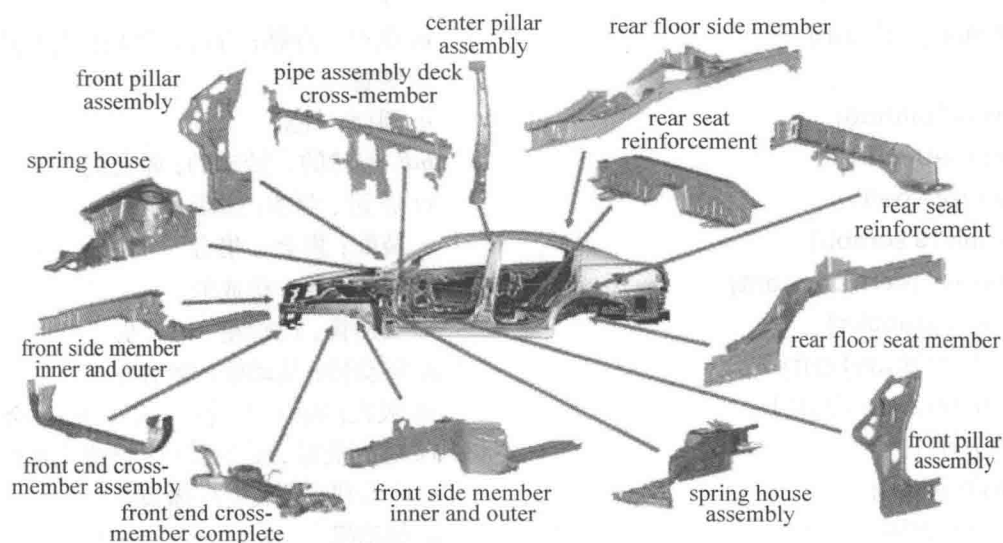


Figure 1.4 Body-1

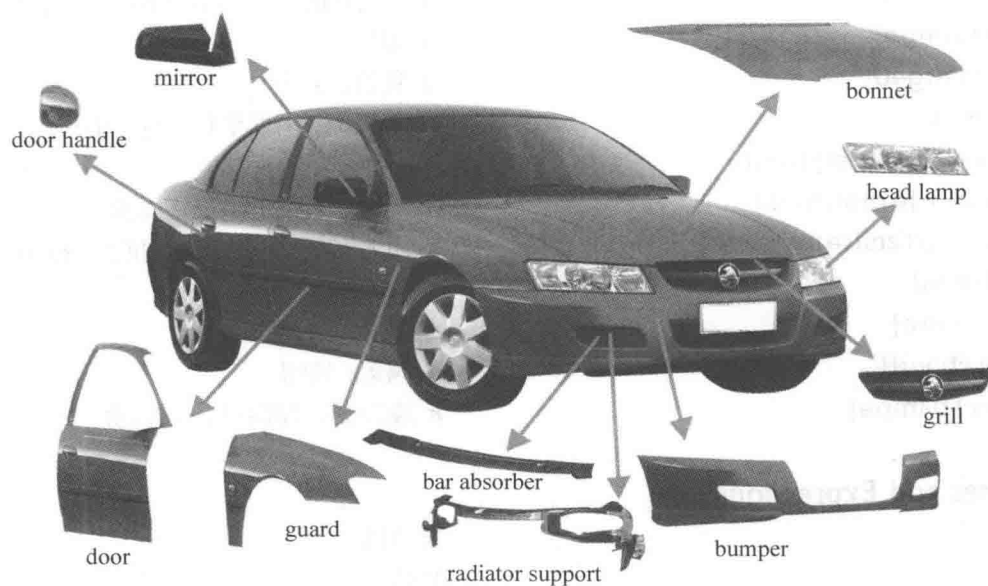


Figure 1.5 Body-2

Words

basic ['beɪsɪk]

structure ['strʌktʃə]

chassis ['ʃæsi; -i:]

convert [kən'veɜ:t]

lubricate ['lu:bɹɪkət]

n. 基础; 要素

n. 结构

n. 底盘, 底架

vt. 使转变; 转换……; 使……改变信仰

vi. 润滑; 涂油; 起润滑剂作用

ignition [ɪg'niʃ(ə)n]

cylinder ['sɪlɪndə]

rotary ['rəʊt(ə)rɪ]

propel [prə'pel]

assembly [ə'sembli]

component [kəm'pəʊnənt]

gearbox ['gɪəbɒks]

driveshaft ['draɪvʃɑ:ft]

absorb [əb'zɔ:b; -'sɔ:b]

shock [ʃæk]

radio ['reɪdɪəʊ]

starter ['stɑ:tə]

horn [hɔ:n]

instrumentation [ˌɪnstrə'men'teɪʃ(ə)n]

audio ['ɔ:diəʊ]

wiper ['waɪpə]

cargo ['kɑ:gəʊ]

trunk deck

insulation [ɪnsju'leɪʃ(ə)n]

appearance [ə'piər(ə)ns]

resistance [rɪ'zɪst(ə)ns]

sway [sweɪ]

mirror ['mɪrə]

bonnet ['bɒnɪt]

bumper ['bʌmpə]

n. 点火, 点燃; 着火, 燃烧; 点火开关, 点火装置

n. 圆筒; 气缸

adj. 旋转的, 转动的; 轮流

vt. 推进; 驱使; 激励; 驱策

n. 装配; 集会, 集合

adj. 组成的, 构成的

n. 变速箱; 齿轮箱

n. 传动轴; 从动辊; 驱动杆

vt. 吸收; 吸引; 承受; 理解; 使……全神贯注

vi. 感到震惊; 受到震动; 堆成禾束堆

n. 收音机; 无线电广播设备

n. 起动机

n. 喇叭, 号角; 角

n. 使用仪器; 乐器法; 仪表化

adj. 声音的; [声]音频的, [声]声频的

n. 雨刷

n. 货物, 船货

凸起甲板; 围堰甲板; 箱舱甲板

n. 绝缘; 隔离, 孤立

n. 外貌, 外观; 出现, 露面

n. 阻力; 电阻; 抵抗; 反抗; 抵抗力

vi. 影响; 摇摆

vt. 反射; 反映

n. 阀盖; 软帽

n. 缓冲器, 保险杆, 减震物

Phrases and Expressions

engine

chassis

body

electrical system

internal combustion engine

external combustion engine

fuel system

lubricating system

cooling system

ignition system

starting system

发动机

底盘

车身

电器设备

内燃机

外燃机

燃油供给系统

润滑系统

冷却系统

点火系统

启动系统

final drive
differential
transmission system
suspension system
steering system
brake system
battery
generator
lighting system
horn system
center pillar

主减速器
差速器
传动系统
悬架系统
转向系统
制动系统
蓄电池
发电机
照明系统
喇叭系统
中柱

Exercises

1. Answer the following questions.

- How many main parts does the automobile consist of?
- Which is called the “heart” of automobile?
- What is the chassis composed of?
- What is the electrical system composed of?

2. Translate the following sentences into Chinese.

- In other words, any automobile is composed of the sections, such as engine, chassis, body and electric system.
- The internal combustion engine burns fuel within the cylinders and converts the expanding force of the combustion or “explosion” into rotary force used to propel the vehicle.
- In 1956, the No.1 Auto Plant was established in Changchun, and turned out the first batch of Liberation automobiles for our country.
- Suspension system’s function is to increase the strength and durability of components and to meet customers’ requirements for riding comfort and driving safety.
- Steering system is used to control the driving direction of an automobile.
- Brake system is used to retard the motion of the vehicle.
- The electric system supplies lighting and driving power for the automobile.
- The body styling provides an attractive, colorful, modern appearance for the vehicle.

3. Translate the following passage into Chinese.

The motor vehicle engine is basically a device for converting the internal energy stored in its fuel into mechanical energy. It is classified as an internal combustion engine by virtue of this energy conversion taking place within the engine cylinders. Since the term “energy” implies the capacity to perform work, the engine is thus able to propel the vehicle along the road and, within limits, overcome unwanted opposition to its motion arising from rolling friction and air drag. To facilitate this process the engine is combined with a transmission system.

Chapter Two

Automotive Assembly

2.1 Engine Assembly

2.1.1 The Overall Structure of the Engine

The engine needs different systems to perform some functions. They are crank-connecting rod mechanism, valve timing mechanism, fuel system, ignition system, starting system, cooling system and lubricating system in a gasoline engine; yet there is no ignition system in a diesel engine because the diesel is burned by compression-ignition (Figure 2.1).

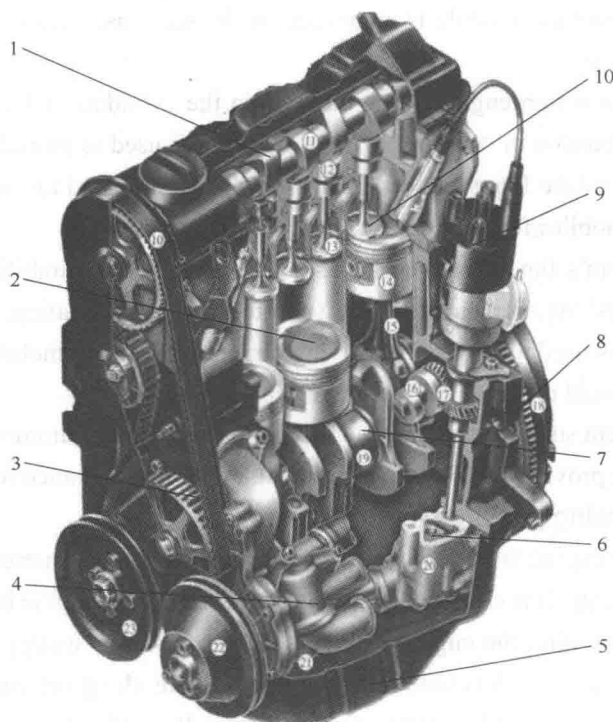


Figure 2.1 Engine Overall Structure

- 1.cylinder head cover 2.piston 3.timing toothed belt 4.water pump 5.oil pan
6.oil pump 7.crankshaft 8.flywheel 9.distributor 10.valve