

高等职业技术教育试用教材

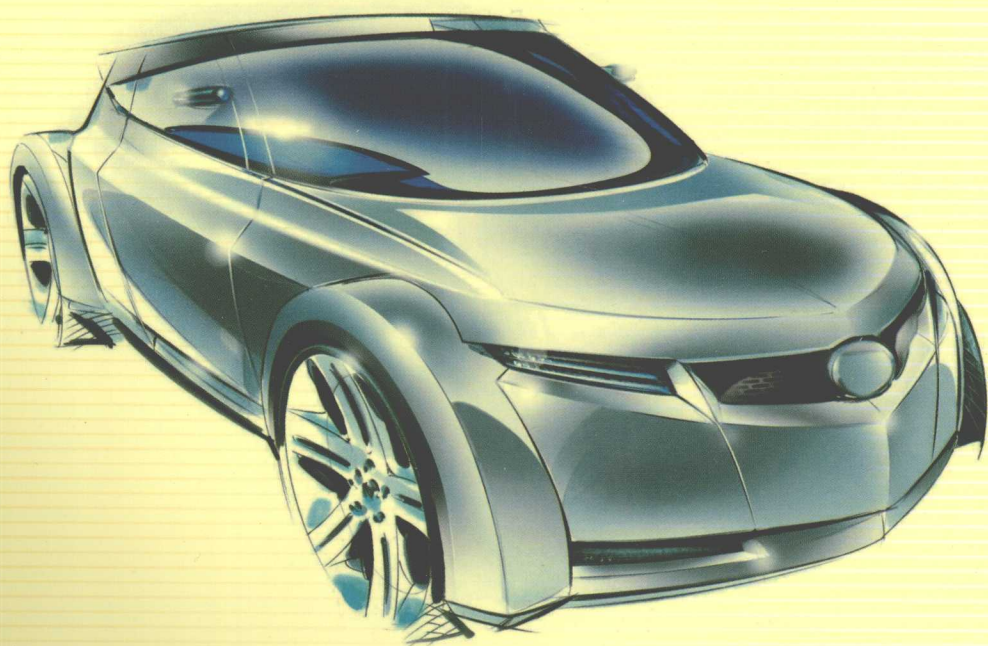
QICHE JISHU FUWU YU YINGXIAO

# 汽车专业英语

QICHE ZHUANYE YINGYU

第2版

宋红英 主编



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# 汽车专业英语

第2版

宋红英 主编



机械工业出版社

本书共八个单元。第一、二、三、四单元以汽车构造为主，介绍发动机、底盘及电气设备等内容；第五单元为汽车销售和售后服务用语，主要介绍客户接待、车款推介、价格商谈、维修接待等常用英语；第六单元为实用会话，模拟真实的职场情境；第七单元为常见汽车标识，主要介绍汽车标牌及 VIN 代码的含义；第八单元为 OBD-II 故障码的中英文对照。

本书内容安排合理、条理清晰，符合高职教育要求和岗位工作需要，适合高等职业技术学院汽车专业英语教学使用，也可作为相关行业岗位培训或自学用书，同时可供汽车维修人员学习参考。

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# 前 言

《汽车专业英语》最初于2003年出版,经过6年多的使用,得到了高职高专院校师生的广泛认可。但是,随着汽车技术、高职教育和岗位需求的变化,原版教材在内容选取、编写体例和教学目标等方面已经不能满足教学要求,因此,在机械工业出版社的大力支持下,教材编写组克服时间紧、任务重等难题,在原有基础上,积极探索、锐意创新,对原版教材做了大幅度的修订。

新版教材更新了绝大部分内容,使其更符合高职教育要求,更贴近岗位工作需要。本书的整体构思借鉴了国内外先进的职业教育理念,突出“学生主体,能力本位,任务载体”的工作过程导向课程开发原则。以学习者为中心,根据高职学生及其职业特点,设定课程学习目标,按照学习者获取职业英语技能的需求,用灵活多样的任务形式组织教学内容,便于教师实施各种高效的教学方法和手段,实现预期的教学目标。

本书内容的选取突出以“学习者为中心、语用为中心、技能为中心”的职场英语课程特征,符合能力本位的职业教育需求;以汽车职业交流用语、汽车技术应用用语、汽车职业实务用语为核心,采用与公共英语不同的能力鉴定理念和方法,创设仿真的语用环境,提高学习者的英语综合应用能力,巩固学习效果和效用。

本书共八个单元。第一、二、三、四单元是以汽车构造为主,涵盖了发动机、底盘及电气设备等内容,所有素材均选自英文原文,体例编排图文并茂,便于识读、理解、记忆和灵活运用;第五单元为汽车销售和售后服务用语,主要介绍客户接待、车款推介、价格商谈、维修接待等常用英语,旨在提高学习者的口语交流能力;第六单元为实用会话,是在第五单元的基础上,模拟真实的职场情境,力求提高学习者的职场英语实战能力;第七单元为常见汽车标识,主要介绍汽车标牌及VIN代码的含义;第八单元为OBD-II故障码的中英文对照。

每个单元都配有词汇表、课文注释、阅读材料和实用性很强的练习题,便于学生复习、巩固和提高。这些练习题不但对课文内容有很好的针对性,而且还提供了口语交流、资料翻译等工作岗位必需的技能训练题目,增强了内容的实用性,是本书的一大亮点。书后附有专业词汇表和常用缩略语表,便于学生自学和实际工作中查阅。

本书是高等职业技术学院汽车专业的教学用书,也可作为相关行业岗位培训或自学用书,同时可供汽车维修人员学习参考。

本书由邢台职业技术学院宋红英任主编,侯江丽、何宝文任副主编。其中,第一、二、八单元由侯江丽、宋红英、胡利平编写,第三单元由刘学明、宋红英编写,第四单元由何宝文编写,第五、七单元由胡慧敏、宋红英编写,第六单元由宋红英、刘学明编写,附录I、II由胡利平、侯江丽编写。

由于作者水平有限,疏漏和错误之处在所难免,敬请读者予以斧正。

编 者  
2009年4月

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# Unit One Brief Introduction of Automobile

## Text

The automobiles now running on streets are so various in style and design that you can hardly imagine what the automobiles looked like one hundred years ago. With the development of auto industry, automobiles have been changed greatly and remodeled from time to time. But different automobiles are basically the same in structure. In other words, any automobile is composed of the sections such as engine, chassis, body and electrical system. Shown in Fig. 1-1.

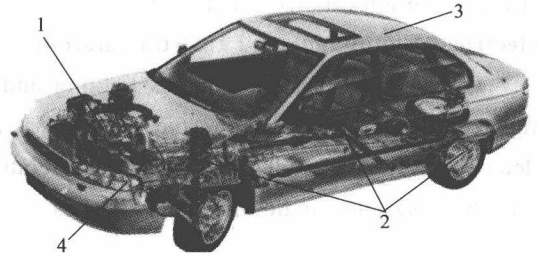


Fig. 1-1 Automobile structure  
1—engine 2—chassis  
3—body 4—electrical system

## Engine

An engine which is called the “heart” of a vehicle is used to supply power for an automobile. Generally, an automobile is operated by 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. There are two types of engine: gasoline (also called a spark-ignition engine) and diesel (also called a compression-ignition engine). Both engines are called heat engines.

## Chassis

A chassis comprises a total assembly beginning with power train, going on to steering, wheel suspension, brakes and even tires. These individual components interact with each other closely. Therefore, the chassis itself is divided into four systems like driving system, running gear, steering system and brake system.

The driving system connects the transmission with the driving axle. In effect, the driving system works by transmitting engine power to the driving wheels. The components include the clutch, gearbox, universal joint, propeller shaft, driving axle, etc.

The running gear is the backbone of the automobile. It includes the frame, front and rear axles, wheels and tires, suspension. The primary purpose of the suspension system is to increase strength and durability of components and to meet customers' requirements for riding comfort and driving safety. In automobile suspension, the major component is springs and shock absorbers.

Steering system is used to control the driving direction of an automobile. It is composed of the steering wheel, steering column, worm gear sector, steering drop arm and worm, etc. They enable the car to change the direction by means of turning and moving forth and back.

Brake system is a balanced set of mechanical and hydraulic devices used to retard the motion of the vehicle by means of friction. It consists of the drum or disc brake assembly, brake lever assembly, etc.

### Body

An automobile body which is taken as auto framework seated on the chassis. An auto body usually consists of a driving room, a passenger or loading room and possibly a trunk. The body is designed to keep passengers safe and comfortable. The body styling provides an attractive, colorful, modern appearance for the vehicle.

### Electrical Equipment and Instrumentation

The electrical system supplies lighting and driving power for the automobile. It supplies the high-voltage surges that ignite the compressed air-fuel mixture in the combustion chambers. The electrical system includes the battery, generator, starting system, ignition system, lighting system, horn system, radio and other devices.

### Vocabulary and Terminology

1. various [ 'veəriəs ] *adj.* 不同的, 各种各样的
2. remodel [ 'ri:mɒdl ] *vt.* 重新塑造, 改造, 改变
3. driving system 传动系
4. brake system 制动系
5. clutch [ klʌtʃ ] *n.* 离合器
6. transmit [ trænʒ'mit ] *vt.* 传输, 传送
7. universal joint 万向节
8. driving axle 驱动桥
9. suspension [ səs'penʃən ] *n.* 悬架
10. durability [ ,djuərə'biliti ] *n.* 经久, 耐久力
11. mechanical [ mi'kænikl ] *adj.* 机械的
12. hydraulic [ hai'drɔ:lik ] *adj.* 液压的, 水力的
13. shock absorbers 减振器
14. steering wheel 转向盘
15. steering column 转向柱, 转向盘柱
16. worm gear sector 蜗轮齿弧块, 扇形轮
17. steering drop arm 转向垂臂
18. worm [ wɔ:m ] *n.* 蜗杆, 螺纹
19. retard [ ri'tɑ:d ] *vt.* 延迟, 使减速, 阻碍
20. trunk [ trʌŋk ] *n.* (汽车车尾的) 行李箱
21. generator [ 'dʒenəreitə ] *n.* 发电机, 发生器

### Notes

1. But different automobiles are basically the same in structure.



但是不同类型的汽车在结构上却是基本相同的。

2. In other words, any automobile is composed of the sections such as engine, chassis, body and electrical system.

换句话说,任何一辆汽车都是由发动机、底盘、车身和电气设备组成的。

3. 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.

内燃机在气缸内燃烧燃料,然后把燃烧或者“爆炸”所产生的膨胀力变成旋转力,用以推动车辆前进。

4. Brake system is a balanced set of mechanical and hydraulic devices used to retard the motion of the vehicle by means of friction.

制动系统是一套平衡的机械和液压设备,它可通过摩擦来阻止车辆的运动。

5. An automobile body which is taken as auto framework seated on the chassis.

作为汽车框架的车身是固定在底盘上的。

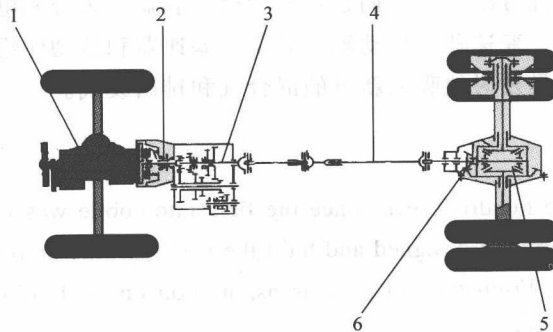
## Exercises

### A. Vocabulary

#### I. Translate the following expressions into Chinese.

1. chassis
2. driving system
3. internal combustion engine
4. steering system
5. braking system
6. clutch
7. gearbox
8. universal joint
9. propeller shaft
10. generator

#### II. Identify the English names of automobile assemblies according to the picture.



- 1 \_\_\_\_\_ ; 2 \_\_\_\_\_ ; 3 \_\_\_\_\_ ;  
4 \_\_\_\_\_ ; 5 \_\_\_\_\_ ; 6 \_\_\_\_\_ .

## B. Comprehension

### I. Discuss the following questions in groups and write your answers on the white paper.

1. How many main units does the automobile consist of? What are they?

---



---

2. We say the chassis is composed of four main systems, what are they?

---



---

3. What is the electrical system composed of?

---



---

### II. Read the following passage carefully and fill in the blanks with the proper form of the given words.

internal          cylinders          convert          perform          term  
propel          friction          transmission          motion          mechanical

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

## C. Translation

### I. Translate the following sentences into Chinese.

1. In effect, the driving system works by transmitting engine power to the driving wheels.
2. The electrical system supplies lighting and driving power for the automobile.
3. The body styling provides an attractive, colorful, modern appearance for the vehicle.

### II. Translate the following sentences into English.

1. 汽车主要由四个部分组成，它们是：发动机、底盘、车身和电气设备。
2. 传动系由离合器、变速器、传动轴、后桥、差速器和从动轮组成。
3. 气门机构的作用是及时地吸入新鲜的混合气和排出废气。

## Reading Material

It is already over one hundred years since the first automobile was invented in the world. In 1886, Karl Benz from Germany designed and built the first machine driven by an internal combustion engine at Mannheim. From then on, the transportation on land shifted from the age of coaches to the age of automobiles.

The world auto industry has experienced several stages of development. Initially, auto spare parts were made by hand. The manufacture of one automobile was not only costly, but also time-

consuming. Then, in the beginning of the 20th century, Henry Ford from America established Ford Motor Company, where he finalized auto design and standardized auto components. All these laid the foundations for Ford's fast and cost-effective way to manufacture cars on the assembly line. In the 1980s, the auto industry in Japan started to rise rapidly. Toyota and Nissan are the two largest auto manufacturers in Japan.

In 1956, the No. 1 Auto Plant was established in Changchun, and turned out the first batch of liberation automobiles for our country. Then, in the late 1980s and the late 1990s, the Shanghai Auto Industry Corporation established joint ventures with German Volkswagen and American General Motors, marking a new stage in the development of auto industry in China.

### **Questions**

1. Who built the first car in the world and when?
2. How were the automobiles made at that time?
3. How about the auto industry in China?

## Unit Two Engine System

### 2.1 Main Components of Engine

#### Text

Of all automobile components, an automobile engine is the most complicated assembly with dominant effects on the function of an automobile. There are actually various types of engines such as electric motors, steam engines, and internal combustion engines. The internal combustion engines seem to have almost complete dominance of the automotive field. The internal combustion engine, as its name indicates, burns fuel within the cylinders and converts the expanding force of the combustion into rotary force used to propel the vehicle.

Engine is the power source of the automobile. Power is produced by the linear motion of a piston in a cylinder. However, this linear motion must be changed into rotary motion to turn the wheels of cars or trucks. The piston is attached to the top of a connecting rod by a pin, called a piston pin or wrist pin. The bottom of the connecting rod is attached to the crankshaft. The connecting rod transmits the up and down motion of the piston to the crankshaft, which changes it into rotary motion. The connecting rod is mounted on the crankshaft with large bearings called rod bearings. Similar bearings, called main bearings, are used to mount the crankshaft in the block. Shown in Fig. 2-1.

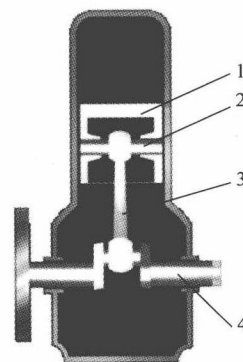


Fig. 2-1 Main components of engine

1—piston 2—piston pin  
3—connecting rod 4—crankshaft

Most automobiles are equipped with gasoline or diesel engines. All engines are designed to operate with several interconnected technical system that make an engine run correctly. Each engine has a few main working parts and auxiliary parts. But many parts are also attached by fastening devices to the average block. These items include the water pump, oil pan, timing gear, the flywheel, the ignition distributor, oil and fuel pump, and the cylinder head. For example, The water pump is a component of the cooling system. The crankshaft usually rotates this unit by means of a belt. When revolving, the water pump circulates coolant between the engine water jackets and the radiator. They are briefly defined here and will be addressed in more detail in later units. The most common engine comprises crankshaft and connecting rod mechanism, valve gear, cooling system, lubricating system, fuel system, starting system, ignition system (there is no ignition system in diesel engines), shown in Fig. 2-2.

The power mechanism of the engine is actually called the crankshaft and connecting rod mechanism. Its function is to convert heat energy into mechanical energy used to drive the vehicles. It consists of the engine crankcase and cylinder block, the piston and connecting rod, the crankshaft and flywheel, etc.

The valve gear provides timely admission of the fresh charge into the cylinders and exhaust of spent gases from them. For this purpose the valves at definite moments open and close the intake and exhaust ports in the cylinder head, through which the cylinders communicate with the intake and exhaust manifold.

The function of the cooling system is to maintain the highest and most efficient operating temperature within the engine and to remove excess heat from the engine. There are air-cooled and liquid-cooled cooling systems used in engines.

The lubrication system is designed to keep all the engine parts lubricated so that friction is reduced. Without lubrication inside the engine, the moving parts that are continuously rubbing against each other would heat up. If overheat, they may be damaged by the heat.

The fuel system works according to the requirements of the engine as it provides an air-fuel mixture which must be in proportion to the speed and load placed on the engine. The fuel system sends the air-fuel mixture to the cylinder for burning and simultaneously exhausts the effluent gas through the exhaust pipe.

The starting system provides the power to turn the internal combustion engine over until it can operate under its own power. To perform this task, the system is a type of electrical circuit that converts electrical energy into mechanical energy, which transmits through the drive mechanism to the engine's flywheel.

The ignition system is designed to ignite the air and fuel that have been mixed in the fuel system. In order to do this, a very high voltage is needed to produce a spark within the combustion chamber.

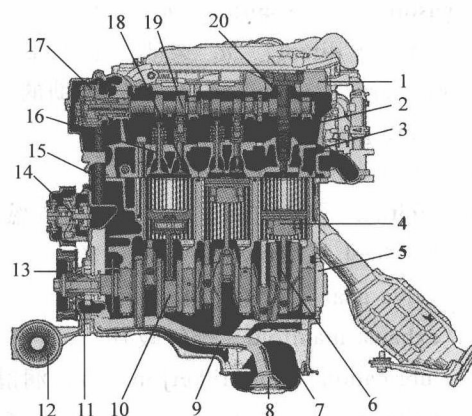


Fig. 2-2 The gasoline engine

- 1—cylinder head cover 2—valve spring 3—cylinder head  
4—piston 5—cylinder block 6—connecting rod 7—oil pan  
8—suction filter 9—oil pipe 10—crankshaft 11—oil pump  
12—oil filter 13—pulley 14—water pump 15—timing chain  
16—intake valve 17—timing sprocket 18—exhaust valve  
19—camshaft 20—spark plug

## Vocabulary and Terminology

1. complicated [ˈkɒmplikeɪtɪd] *adj.* 复杂的, 难解的
2. dominance [ˈdɒmɪnəns] *n.* 优势, 统治
3. indicate [ˈɪndikeɪt] *vt.* 显示, 象征
4. cylinder [ˈsɪlɪndə] *n.* 气缸
5. crankshaft [ˈkræŋkʃɑːft] *n.* 曲轴

6. gasoline ['gæsəli:n] *n.* 汽油
7. diesel ['di:zəl] *n.* 柴油, 柴油机
8. auxiliary [ɔ:g'ziljəri] *adj.* 辅助的, 补助的
9. timing gear 正时齿轮
10. water jacket 水套
11. ignition [ig'niʃən] *n.* 点火, 点燃
12. flywheel ['flaiwi:l] *n.* 飞轮
13. valve gear 配气机构
14. exhaust manifold 排气歧管
15. lubrication [lu:bri'keiʃən] *n.* 润滑油
16. voltage ['vəʊltidʒ] *n.* 电压, 伏特数
17. circuit ['sə:kit] *n.* 电路, 一圈, 周游, 巡回
18. simultaneously [siməl'teiniəsli] *adv.* 同时地

## Notes

1. The internal combustion engine, as its name indicates, burns fuel within the cylinders and converts the expanding force of the combustion into rotary force used to propel the vehicle.

内燃机, 顾名思义, 就是燃料在气缸内部燃烧, 并且把燃烧时的膨胀力转化为驱动车辆的旋转力。

2. The connecting rod transmits the up-and-down motion of the piston to the crankshaft, which changes it into rotary motion.

连杆将活塞的上下往复运动转换成旋转运动传递到曲轴。

3. The power mechanism of the engine is actually called the crankshaft and connecting rod mechanism.

发动机的动力机构实际上就是曲柄连杆机构。

4. The function of the cooling system is to maintain the highest and most efficient operating temperature within the engine and to remove excess heat from the engine.

发动机冷却系统的作用就是维持发动机在最高和最有效的温度工作, 并且将发动机中多余的热量带走。

5. To perform this task, the system is a type of electrical circuit that converts electrical energy into mechanical energy, which transmits through the drive mechanism to the engine's flywheel.

为了完成这项工作, 这个系统是一种将电能转换为机械能的电路系统, 它通过这套驱动机构来驱动发动机的飞轮。

## Exercises

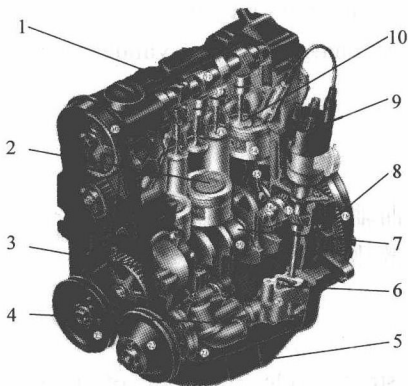
### A. Vocabulary

#### I. Translate the following expressions into Chinese.

1. diesel engines

- 2. water pump
- 3. the ignition distributor
- 4. oil pan
- 5. timing gear
- 6. crankshaft and connecting rod mechanism
- 7. valve gear
- 8. fuel system
- 9. exhaust pipe
- 10. exhaust manifold

**II . Identify the English names of engine according to the picture.**



- 1 \_\_\_\_\_;
- 2 \_\_\_\_\_;
- 3 \_\_\_\_\_;
- 4 \_\_\_\_\_;
- 5 \_\_\_\_\_;
- 6 \_\_\_\_\_;
- 7 \_\_\_\_\_;
- 8 \_\_\_\_\_;
- 9 \_\_\_\_\_;
- 10 \_\_\_\_\_.

**B. Comprehension**

**I . Discuss the following questions in groups and write your answers on the white paper.**

1. What's the internal combustion engine?

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2. The engine comprises two mechanisms and five systems, what are they?

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3. What's the function of the crankshaft and connecting rod mechanism?

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**II . Read the following passage carefully and fill in the blanks with the proper form of the given words.**

commonly    one-piece    link    control    extends  
 crankshaft    attached    rigidity    multi-cylinder    flywheel

The crankshaft represents the final (                    ) in the conversion of reciprocating motion at the piston to one of rotation at the flywheel. In the cast of the (                    ) engine, the crankshaft has to (                    ) the relative motions of the pistons, while receiving their own impulses. A

( ) construction is most ( ) used for the motor vehicle crankshaft, which ( ) the whole length of the engine and must therefore possess considerable ( ). The timing-drive for the engine valve mechanism is taken from the front end of the ( ) as is the pulley and belt drive for the engine auxiliaries, such as the cooling fan and the alternator for electrical system. ( ) to the rear end of the crankshaft is the engine ( ).

### C. Translation

#### I. Translate the following sentences into Chinese.

1. Engine is the power source of the automobile. Power is produced by the linear motion of a piston in a cylinder.
2. The fuel system works according to the requirements of the engine as it provides an air-fuel mixture which must be in proportion to the speed and load placed on the engine.
3. The valve gear provides timely admission of the fresh charge into the cylinders and exhaust of spent gases from them.

#### II. Translate the following sentences into English.

1. 发动机主要有两大机构、五大系统组成。
2. 曲柄连杆机构主要包括机体组、活塞连杆组和曲轴飞轮组。
3. 水泵工作时, 可以使冷却液在发动机水套中和散热器之间来回流动。

### Reading Material

Most internal combustion engines operate on the four stroke cycle. This type of engine is also known as Otto cycle, after the name of its inventor, Nikolaus Otto. Each cylinder of the four stroke cycle engine has a piston which reciprocates within the cylinder. The power production cycle consists of four strokes of the piston in a reciprocating engine. These four strokes are intake stroke, compression stroke, power stroke and exhaust stroke.

The intake stroke, as the piston moves downward to the Bottom Dead Center, a vacuum is created in the cylinder. The intake valve opens and air-fuel mixture enters the cylinder.

The compression stroke, the air-fuel mixture is compressed as the piston moves upward. The spark plug is fired to ignite the air-fuel mixture prior to the piston being at the Top Dead Center. Note that both valves are closed.

The power stroke, the air-fuel mixture explodes, which forces the piston downward. Note that both valves are closed.

The exhaust stroke, as the piston starts to move upward, the exhaust valve is opened. The piston moving up forces the exhaust gases out of the cylinder.

This four stroke cycle of piston within the cylinder is repeated time and again to push the vehicle forward.

### Questions

1. What are the four strokes of the internal combustion engine?
2. What are the strokes when both valves are closed?



3. How is the power produced?

## 2.2 Cylinder Block and Cylinder Head

### Text

The engine block is the main supporting structure to which all other parts are attached directly or indirectly. It has two main sections: the cylinder section and the crankcase section. In most cases, the crankcase houses the crankshaft and the camshaft. The cylinder block contains the pistons to move up and down during operation. The surfaces are machined to allow the pistons to move with minimum wear and friction. Cooling passageways are built within the block. These passageways, also known as water sockets, surround the cylinders. They allow coolant to circulate throughout the cylinder area to keep the engine cool. Many oil holes are drilled internally so that engine parts can be adequately lubricated. Other holes are drilled to allow other parts to be attached the cylinder block, shown in Fig. 2-3.

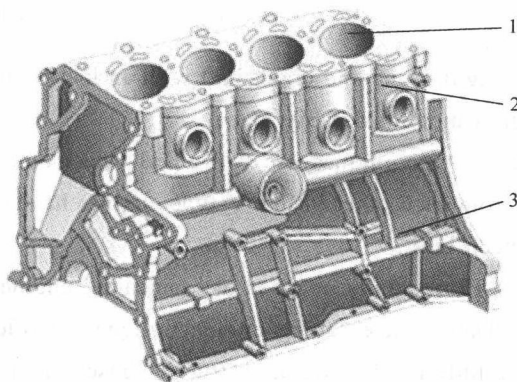


Fig. 2-3 Engine block  
1—cylinder 2—cylinder block  
3—crankcase area

Blocks can be made from either cast iron or aluminum. Cast iron improves strength and controls warp from heat. With the increased concern for providing higher output and lower fuel consumption, car manufactures are trying to make the vehicle lighter. One way is to reduce the weight in the block. Aluminum is used for this purpose. In order to make the aluminum stronger and less likely to warp, certain materials are added to the metal or a steel liner placed in the block.

Liners are inserted after the block has been machined. The purpose of using a liner is that, if the cylinder is damaged, the liner can be removed and replaced rather easily. There are two types of liners—wet and dry. The dry one is pressed into a hole in the block. It can be machined quite thin. The wet liner is also pressed into the block. The cooling water touches the center part of it. So it must be machined thicker than the dry one.

The engines usually have 4, 6, 8, or 12 cylinders. The cylinders of multi-cylinder automotive engines are arranged in one of three ways, shown in Fig. 2-4.

1) In-line engines use a single block of cylinder. This is the simplest and most common arrangement, with all cylinders arranged vertically in line. Most 4-cylinder and 6-cylinder engines are of this design. If an engine has more than eight cylinders, it becomes difficult to make a suffi-