

# 交通运输专业英语

Professional English for Traffic and Transportation

李永芳 主编



清华大学出版社

# 交通运输专业英语

Professional English for Traffic and Transportation

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## 内 容 简 介

本书以道路交通运输工程理论为基础,主要内容有:(1)汽车构造,主要包括发动机及底盘各构件的基本结构及原理;(2)交通工程,主要包括交通流的特征,交通控制设备,交通系统管理和交通需求管理等;(3)运输管理;(4)道路交通安全。为了便于教学和自学,每节正文后均列出了本节中出现的专业词汇和练习题,书末附有词汇表。

本书为交通运输工程、汽车运用工程、汽车服务工程等相关专业的本科教材,也适合从事交通、汽车相关工作的人员阅读。

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# 前言

《交通运输专业英语》是为了满足高等院校汽车类及交通运输类专业英语课程教学的需要,根据高等院校培养目标的要求而编写的。

在教材体系和编写方面有如下特点。

(1) 资料来源上,参考了国内外大量汽车、交通方面的书刊、著作和相关的技术资料,在基本保持原文风格的基础上,做了相应的删减调节,可读性强,对提高读者的汽车、交通运输类英文文献阅读能力有很大帮助。

(2) 体系结构上,根据汽车、交通运输工程的课程体系安排内容,强化了各章节内容的连贯性和系统性。

(3) 编写内容上,涵盖了以下内容:汽车发动机及底盘各构件的基本结构及原理;交通流的特征、交通控制设备、交通系统管理和交通需求管理等交通工程的基本内容;运输管理的内容以及道路交通安全等内容。每节正文后均列出了本节中出现的专业词汇和练习题,有助于学生充分掌握和灵活运用汽车、交通运输工程专业词汇,达到中英文术语和专业内容的互通、互译。

本书可作为普通高等院校交通运输(汽车运用工程)专业、汽车服务工程专业及相关专业的专业英语教材,也可作为高职高专、成人教育等交通、汽车类及其相关专业的专业英语教材,并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。

本书共分4章,主要包括汽车的基本构造及原理、交通工程基础、交通运输管理以及交通安全工程等内容。具体编写分工如下:上海工程技术大学李永芳编写了第1章第1节和第9节、第2章、第3章第4节和第5节、第4章第3节和第4节;吴训成编写了第1章第4节~第8节;陈浩编写了第1章第2节和第3节;杨亚莉编写了第3章第1节~第3节;张若平编写了第4章第1节和第2节;李春琳负责校对每篇英文课文的语法、时态。全书由李永芳统稿。感谢上海工程技术大学的王孝兰、王婉秋、骆佼在本书编写过程中给予查找资料等方面的大力支持,同时感谢本书参考文献的作者。

由于编者水平有限,书中疏漏和不妥之处在所难免,殷切期望广大教师和读者不吝指正,以使本书不断优化、完善。

编 者

2014年10月

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# 第 1 章

## 交通运输车辆 Traffic Transportation Vehicles

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### 1.1 Categories of Vehicle

In the year 2000, there were 217,293,000 registered vehicles in the United States, which represent more than one vehicle per licensed driver. The characteristics of these vehicles vary as widely as those of the motorists who drive them.

In general, motor vehicles are classified by AASHTO (American Association of State Highway and Transportation Officials) into four main categories:

(1) Passenger cars—all passenger car, SUVs, minivans, vans, and pickup trucks.

(2) Buses—intercity motor coaches, transit buses, school buses, and articulated buses.

(3) Trucks—single-unit trucks, tractor-trailer, and tractor-semi-trailer combination vehicles.

(4) Recreational vehicles—motor homes, cars with various types of trailers. (boat, campers, motorcycles, etc.)

Highway and street facilities are needed for both motorcycles and bicycles, but are not isolated as a separate category, as their characteristics do not usually

limit or define design or control needs.



### 词汇与解析 (Words and expressions)

category n. 种类, 分类; [逻] 范畴

register vt. 记录; 登记; 注册; 提示

represent vt. 表现; 描绘; 声称; 象征

license n. 许可(证), 执照; vt. 许可;  
特许

van n. 有篷货车

intercity adj. 城市间的

coach n. 四轮大马车; 长途汽车

transit n. 经过, 通行; 搬运, 运输; 运

输线

articulated adj. 铰接(的), 枢接(的)

single-unit truck 单体货车

tractor-trailer 牵引挂车

tractor-semi-trailer 牵引半挂车

recreational vehicle n. 〈美〉(野营游  
乐用的)游艺车

camper n. 〈美〉露营车, 房车

motorcycle n. 摩托车; 机动车



### 练习 (Exercises)

#### Fill in the blanks with proper words or expressions.

1. The characteristics of these vehicles vary as widely as those of the \_\_\_\_\_ who drive them.
2. In general, motor vehicles are classified by AASHTO into four main categories: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

#### Translate English into Chinese.

1. In the year 2000, there were 217, 293, 000 registered vehicles in the United States, a number that represents more than one vehicle per licensed driver.
2. Motorcycles and bicycles also use highway and street facilities but are not isolated as a separate category, as their characteristics do not usually limit or define design or control needs.

## 1.2 Automobile Basic

The word automobile literally means self-moving. It is derived from the Greek word autos, which means self, and the French word mobile, which means moving. An automobile is a wheeled motor or vehicle used for transporting passengers and cargoes, and designed to run primarily on roads.

Along with the development of science and technology, many engineering improvements have been done. However, the basic principles have remained the

same since its advent in the 1870s. It has an internal combustion engine, four rubber wheels and a protective body. To provide the energy required to make the car move, the engine needs petrol or diesel oil, air and electric current. The engine temperature is usually kept relatively low by water or air. The major moving parts of the engine are the pistons, which move up and down very quickly inside cylinders. The clutch connects the engine to the gearbox by means of plates and the drive shafts are arranged to suit whether the car is front or rear wheel drive.

Automobile is fine pieces of precision engineering, technology and design, with 15,000 individual parts and working units each. These parts can be grouped into four major categories: engine, body, chassis, and electrical equipment (Fig. 1-1 and Fig. 1-2).

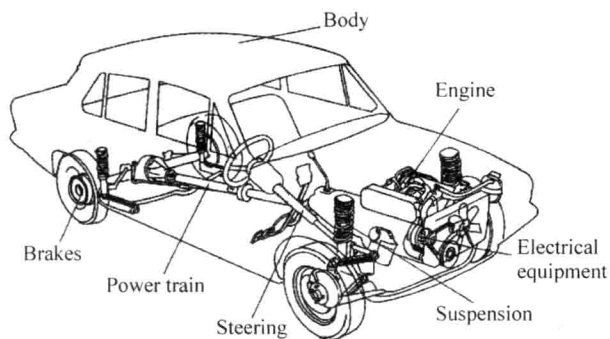


Fig. 1-1 Layout of a passenger car

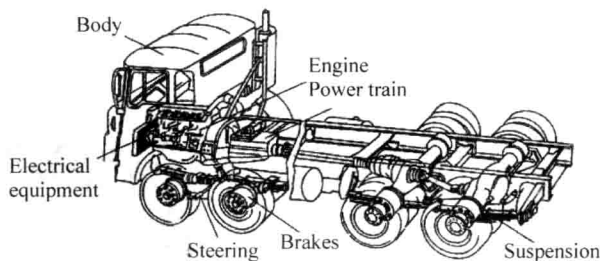


Fig. 1-2 Layout of a commercial vehicle



### 词汇与解析 (Words and expressions)

derive from v. 得自, 由来; 衍生于

passenger n. 乘客; 旅客

cargo n. (车、船等运输的) 货物

advent n. 出现, 到来

rubber n. 橡皮; 橡胶

petrol n. 〈英〉汽油(=〈美〉gasoline)

diesel oil 柴油

move up and down 上下运动

cylinder n. 圆筒; 汽缸

clutch v. 抓住, 攫住; n. 离合器

drive shaft 传动轴

front or rear wheel drive 前轮或后轮  
驱动

chassis n. 底盘

electrical equipment 电气设备



### 练习(Exercises)

#### Fill in the blanks with proper words or expressions.

1. An automobile is a wheeled motor or vehicle used for transporting \_\_\_\_\_ and \_\_\_\_\_.
2. The clutch connects the engine to the gearbox by means of plates and the \_\_\_\_\_ are arranged to suit whether the car is \_\_\_\_\_.
3. Today's average car contains four major categories: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

#### Translate English into Chinese.

1. The major moving parts of the engine are the pistons, which move up and down very quickly inside cylinders.
2. Automobile is fine pieces of precision engineering, technology and design, with 15,000 individual parts and working units each.

### 1.2.1 Engine

The engine acts as the power unit. The internal combustion engine is most common; this obtains its power by burning a liquid fuel inside the engine cylinder. See Fig. 1-3. There are two types of engine—gasoline engine (also called a spark-ignition engine) and diesel engine (also called a compression-ignition engine). Both engines are called heat engines; the burning fuel generates heat which causes the gas inside the cylinder to increase its pressure and supply power to rotate a shaft connected to the power train.

All engines have fuel, exhaust, cooling, and lubrication systems. Gasoline engines also have an ignition system. The ignition

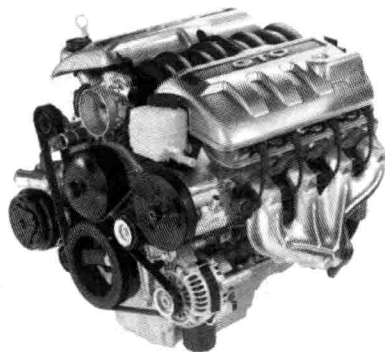


Fig. 1-3 Engine

system supplies the electric spark needed to ignite the air-fuel mixture in the cylinders.

The way engine cylinders are arranged is called the engine configuration. In-line engines have the cylinders in a line. This design creates a simply cast engine block. In vehicle applications, the number of cylinders is normally from 2 up to 6. Usually, the cylinders are vertical. As the number of the cylinders increases, the length of the block and crankshaft can become a problem. One way to avoid this is with a V configuration. This design makes the engine block and crankshaft shorter and more rigid.



### 词汇与解析 (Words and expressions)

internal combustion engine 内燃机

gasoline engine 汽油(发动)机

spark-ignition engine 火花点燃式发动机

diesel engine n. 柴油机

compression-ignition engine 压燃式发动机

power train 传动系

configuration n. 构造; 结构; 配置; 外形

in-line engine 直列发动机

cast n. 铸件, 铸造

rigid adj. 刚硬的; 刚性的; 严格的



### 练习 (Exercises)

#### Fill in the blanks with proper words or expressions.

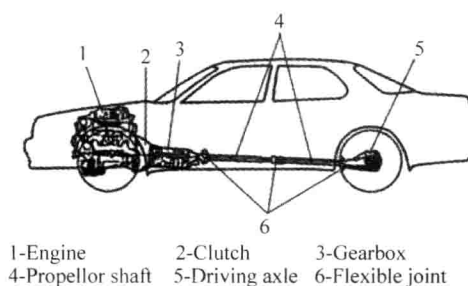
1. There are two types of engine—\_\_\_\_\_ (also called a \_\_\_\_\_) and \_\_\_\_\_ (also called a \_\_\_\_\_).
2. All engines have fuel, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ systems. Gasoline engines also have an \_\_\_\_\_.
3. \_\_\_\_\_ have the cylinders in a line.

#### Translate English into Chinese.

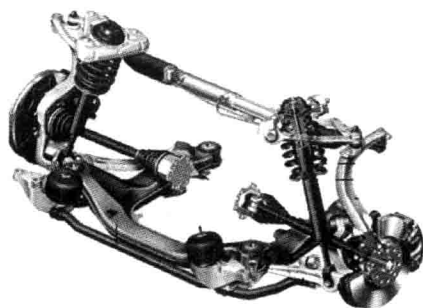
1. The engine acts as the power unit.
2. One way to avoid this is with a V configuration. This design makes the engine block and crankshaft shorter and more rigid.

### 1.2.2 Chassis

The chassis is an assembly of those systems that are the major operating parts of a vehicle. The chassis includes the power train, suspension, steering systems, and braking systems. See Fig. 1-4.



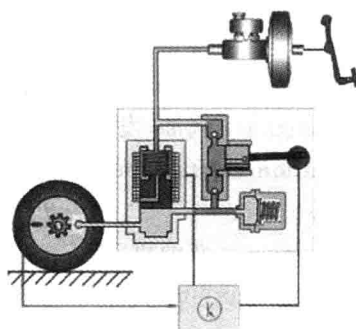
(a) The power train



(b) The suspension system



(c) The steering system



(d) The braking system

Fig. 1-4 Chassis

### 1) Power train

The power train system comprises clutch, gear box (transmission), propeller shaft, rear axle and differential, and the driving road wheels.

A vehicle with a manual transmission uses a clutch to engage and disengage the engine from the power train. This action may be manual or automatic. Engine torque is transmitted through the clutch to the transmission or transaxle.

The main purpose of the transmission or gearbox is to provide a selection of gear ratios between engine and driving wheels, so that the vehicle can operate satisfactorily under all driving conditions. Gear selection may be done manually by the driver or automatically by a hydraulic control system.

The function of the propeller shaft is to transmit the drive from the gearbox to the input shaft of the rear axle and differential assembly. Flexible joints allow the rear axle and wheels to move up and down without affecting operation.

The rear axle and differential unit transmit engine's rotational power through



90° from propeller shaft to axle shaft to road wheels. The second function is to allow each driving wheel to turn at a different speed, essentially when cornering because the outer wheel must turn further than the inside wheel. The third function is to introduce another gear ratio for torque multiplication. In a rear-wheel drive vehicle, the axles can be solid or contain joints to allow for movement of suspension. For a front-wheel drive vehicle, the drive shaft has universal joints to allow for suspension and steering movement.

## 2) Suspension system

The purpose of the complete suspension system is to isolate the vehicle body from road shocks and vibrations, which will otherwise be transferred to the passengers and load. It must also keep the tires in contact with the road regardless of road surface. A basic suspension system consists of springs, axles, shock absorbers, arms, rods, and ball joints.

The spring is the flexible component of the suspension. Basic types are leaf springs, coil springs, and torsion bars. Light coil spring is widely used in modern passenger vehicles.

Wheels must be strong enough to support the vehicle and withstand the forces caused by normal operation. At the same time, they must be as light as possible to help keep unsprung weight to a minimum.

The tire provides a cushion between the vehicle and the road to reduce the transmission of road shocks. It also provides friction to allow the vehicle to perform its normal operations.

## 3) Steering system

The directional motion of vehicle is controlled by a steering system. A basic steering system has three main parts, a steering box connected to the steering wheel, the linkage connecting the steering box to the wheel assembly at the front wheels, and front suspension parts to let the wheel assemble pivot.

The steering system, under the control of the driver at the steering wheel, provides the means by which the front wheels are directionally turned. The steering system may be power assisted to reduce the effort required to turn the steering wheel and make the vehicle easier to manoeuvre.

## 4) Braking system

The braking system on a vehicle has three main functions. It must be able to reduce the speed of the vehicle, when necessary; it must be able to stop the car in