全国高职高专汽车专业教学通用教材

# 汽车专业英语

赵修强 纪克玲 庞淑娟 主编



内容提要

# 汽车专业英语

可以他死,安全气候等。

市课文、同汇、互语和句子往、练习和

①主编 赵修强 纪克玲 庞淑娟

○主 审 孟凡营 张振东 柳冬花



山东科学技术出版社

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# 内容提要

本教材课文内容以汽车构造为主线,主要讲述汽车各个系统的构造及工作原理,并选编了现代汽车方面的有关内容,如电子喷射、制动防抱死、安全气囊等。全书共17个单元,前14个单元由课文、词汇、短语和句子注释、练习和阅读材料组成,后3个单元由课文、词汇、短语和句子注释、练习组成;有的课文和阅读材料还配有附图,针对课文和阅读材料的重点难点都加注了语法分析和翻译,在书后还附有汽车专业英语常用词汇。

# 《汽车专业英语》

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# PREFACE

近几年来,我国的汽车工业发展迅速,汽车在国民经济的各个领域和社会生活中发挥着越来越重要的作用。汽车维修业也随之繁荣,为了培养具有专业知识和技能的维修人员,使之能够系统地学习汽车专业英语知识,熟练掌握2000个左右的专业词汇,能够查阅和翻译专业英语技术资料,为此,我们组织编写了这本《汽车专业英语》一书。

本教材课文内容以汽车构造为主线,主要讲述汽车各个系统的构造及工作原理,并选编了现代汽车技术方面的有关内容,如电子喷射、制动防抱死、安全气囊等。全书共17个单元,前14个单元由课文、词汇、短语和句子注释、练习和阅读材料组成,后3个单元由课文、词汇、短语和句子注释、练习组成;有的课文和阅读材料还配有附图,针对课文和阅读材料的重点难点都加注了语法分析和翻译,在书后还附有汽车专业英语常用词汇。

由于编者水平有限,书中不妥及疏漏之处在所难免,敬请广大读者批评指正。

汽车专业英语

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Reading Material Layout of an Automobile
Unit Two Engine Operating Principles (121)
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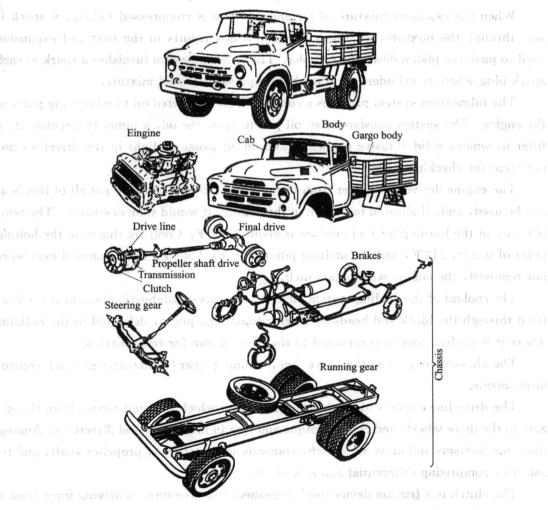
# Unit One

# Basic Components of an Automobile

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An automobile probably has about 7,000 different parts in it. Some of them make it more comfortable or better looking, but most of them are to make it run.

The three basic components of the automobile are the engine, chassis and body. (see Fig. 1)



dependence it is user bloom by Fig. 1 Basic components of the automobile sense it is reducing the real



The engine converts the fuel energy into mechanical power. An internal combustion engine powers our modern automobile. The engine burns its fuel within the engine proper, as compared to a steam engine where the fuel is burned externally. The gasoline and air mixture of the internal combustion engine is compressed by a piston inside an airtight cylinder and ignited by a spark. The trapped air-fuel mixture burns fiercely, causing tremendous heat which expands the trapped gases and pushes the piston down. This is the motive power of the automobile. The automobile engine is essentially a heat engine. It requires fuel to burn, a spark to ignite, lubrication to minimize friction, and a cooling system to dissipate unwanted heat.

The fuel system takes a correctly proportioned mixture of gasoline and air to burn and develops the power needed to push the piston down the cylinder. To store, mix, and deliver this air-fuel mixture is the duty of the fuel system.

When the explosive mixture of air and gasoline is compressed tightly, a spark is sent through the mixture, setting it on fire, which results in the heat and expansion used to push the piston down the cylinder. The ignition system furnishes a spark to each spark plug when its cylinder is full of the compressed air-fuel mixture.

The lubrication system provides a constant flow of filtered oil to all moving parts of the engine. The system consists of an oil pan to store the oil, a pump to circulate it, a filter to remove solid abrasive particles, and an oil gauge or light in the driver's compartment for checking purposes.

The engine derives its power from burning fuel. Unfortunately, not all of this heat can be used, and, if allowed to remain in the engine, it would soon destroy it. The temperature of the burning air-fuel mixture is about 4 500°F. Compare this with the boiling point of water, 212°F, and the melting point of iron, 2 500°F. If this unused heat were not removed, the engine would soon melt.

The coolant of the cooling system picks up the excess combustion heat as it is circulated through the block and heads by a centrifugal-type pump, delivered to the radiator where it is cooled, and then returned to the water pump for recirculation.

The chassis comprises the drive line, running gear (undercarriage) and control mechanisms.

The drive line consists of mechanisms and units which transmit torque from the engine to the drive wheels and change torque and rpm in magnitude and directions. Among these mechanisms and units are clutch, transmission(gearbox), propeller shaft, and final drive comprising differential and axle shaft.

The clutch is a friction device used to connect and disconnect a driving force from a driven member. It is used in conjunction with an engine flywheel to provide smooth en-

gagement and disengagement of the engine and manual transmission. Since an internal combustion engine develops little power or torque at low rpm, it must gain speed before it moves the vehicle. However, if a rapidly rotating engine is suddenly connected to the drive line of a stationary vehicle, a violent shock will result.

A transmission is a speed and power changing device installed at some point between the engine and driving wheels of the vehicle. It provides a means for changing the ratio between engine rpm and driving wheel rpm to best meet each particular driving situation. It converts torque in magnitude and the direction, allows the automobile to move forth and back and the engine to be disconnected from the drive line for a longer period of time.

The propeller shaft is used to transmit torque from the transmission to the final drive at varying angles. The universal joints serve to compensate for changes in the line of drive by transmiting power from a driving shaft through an angle to a driven shaft. Most cars use two or three universal joints in the drive line between the transmission and differential.

The final drive changes torque and transmits it from the propeller shaft through the differential to the axle shafts at a constant angle.

The differential is a gear system that transfers power from the drive shaft to the driving axles. It also permits one driving wheel to turn faster than the other to prevent skidding and scuffing of tires on turns.

The running gear is the backbone of the automobile; it includes the frame, front and rear axles, springs, shock absorbers, wheels and tires.

The control mechanism consists of the steering system for changing the direction of movement and the brakes for decelerating and stopping the automobile.

The body of the truck comprises a cargo body and a driver's cab. The fenders, radiator grille, hood, and mudguards also belong to the body.

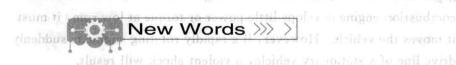
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28. compensate "kampenseri" w 計憶、時偿(tord) -

31. skidding ['sliding] adij. 打滑,俗答屈动,年轮滑动

32. scotling [iskain] ar (葡萄边部的机筑变形。塑件变形





- 1. comfortable ['kʌmfətəbl] adj. 舒适的,惬意的
  - 2. chassis ['ʃæsi] (pl. chassis ['ʃæsiz]) n. 底盘,底架
  - 3. externally [eks'tə:nli] adv. 在外部,在外面
    - 4, airtight ['sətait] adj. 不漏(透)气的,气密的
  - 5. ignite [ig'nait] vt. 点火(燃),使燃烧
    - 6. spark [spa:k] n. 火花,火星
  - 4. fiercely ['fiəsli] adj. 剧(强)烈的,突然的 实然的
  - 8. expand [iks'pænd] vt. 膨胀,扩张
  - 9/ minimize ['minimaiz] vt. 使减到最少,使缩到最小。
  - 10. dissipate ['disipeit] vt. 驱散,消散,扩散
    - 11. explosive [iks'plousiv] adj. 爆炸(性)的,爆发性的
  - 12. cylinder ['silində] n. 气缸,液压缸, 液压缸, paramora and some land and
    - 13. furnish ['fəːniʃ] vt. 供应,提供 par light engage and a lange and the
  - 14. circulate ['sə:kjuleit] vt. 循环,(使)环行(流)
  - 1gov 15. destroy [dis'troi] vt. 破(毁)坏,摧毁 with and silinging uses it sales univide
    - 16. unused ['An'ju:zd] adj. 不用的,未(利,使)用的anily to anily as bus gainblus
  - mon 17. melt [melt] vt. 熔化,使熔化(熔解) another advances a minor ad I
    - 18. coolant ['ku:lent] n. ni冷却剂,散热剂 nodrosda skoods aspalage asalas rest has
  - logo 19. radiator ['reidieitə] n. lo 水箱,冷却器,散热器 noomegand on house of T
    - 20. recirculation [ri'sə:kjuleifən] n. 上再循环,重复循环 and solve base the memory of
  - 21. comprise [kəm'praiz] vi. 包含,包括,由……组成 day of lawbod ad l
    - 22. clutch [klntʃ] vt. 抓住(牢),离合器 duels shrsughum has about soling rule
    - 23. disconnect [diskə nekt] vt. 拆(分,脱,断)开
    - 24. engagement [in geid3mənt] n. 啮(接)合,联接,约束
    - 25. stationary ['steifənəri] adj. 不动的,静止的,固定的
    - 26. install [in'sto:l] vt. 安装,设置,装配,安置
    - 27. varying ['vɛəriin] adj. 变化的,改变的,各不相同
    - 28. compensate ['kəmpenseit] vi. 补偿,赔偿(for)
    - 29. constant ['konstənt] adj.; n. 恒(稳,固)定的;常数
    - 30. transfer [træns'fə:] vt. 传递,传输,传送,转换
    - 31. skidding ['skiding] adj. 打滑,滑移运动,车轮滑动
    - 32. scuffing ['skʌfiŋ] n. (带卷边部的)折皱变形,塑性变形

- 33. brake [breik] n. 制动器,刹车,制动装置 alidomours or he aleased out ...
- 34. decelerate [di:'seləreit] vt. 使减速,降低……的速度,减速行驶
- 35. fender ['fendə] n. 挡泥板,翼子板,栏杆 dmoo-lampoo ot izaition iii ii



# Phrases and Expressions >>> > Valgara 28

2. an internal combustion engine mass ni 内燃机 not anivish who would all a

4. air-fuel mixture moitibages unitringo mai空气-燃油混合气 and reserved.

5. motive power w动功率,推进力 witomans 11

6. spark plug millo 火花塞 sain annua dijiw abryusq 流

7. oil pan lead 油底壳garage 28 or 08 avorage 31.

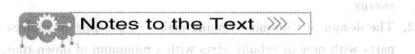
9. derive...from... legimener didomotus 从······中得到 antrongus adv. 81

10. drive line being preselled as a more or als 动力传动系统(路线) and some a .01

11. in conjunction with... 和·····一起,连同·····一起

12. to move forth and backesenid out is en 前后移动(开,行)动 entre state and in the state and in

how 13, universal joint review of best which are 万向节, 万向接头 learning of [1]



1. Some of them make it more comfortable or better looking, but most of them are to make it run. 有些零件使汽车更舒适或更美观,但其中大多数零件是使汽车能行驶。

them 指零件,it 指汽车。"be+动词不定式"表示预先安排将来做的事情,"are to make it run"意为"用于使汽车能行驶"。hworq of your map in said be at bas store

2. And, if allowed to remain in the engine, it would soon destroy it. 如果让其(热量)保留在发动机中,发动机会很快被烧损。 如果证明 designed and be a moderated by the standard of the second standard of the second

# ture and frost ( Exercises O Exercises O A person was wants to aperate, repair or otherwise service diesel engines must

# I. Translate the following expressions into Chinese: 1 sampoon of slds ad

- 1. consist of five basic mechanisms
- 2. carry the power from the engine to the car wheels
- 3. car-body accessories

# 汽车专业英语。。。。。

- 4. the chassis of an automobile 置葉度剛 辛原器世間 wisherd solard 688
- 5. the source of power that makes the car move. I would be all the source of power that makes the car move.
- 6. in contrast to external-combustion engines MAN as about a solution of the contrast to external combustion engines.
- 7. play a vital part in the power-producing process
- 8. supply the gasoline to the engine cylinders
- 9. convert thermal energy into mechanical energy
- 10. transmit the torque developed by the engine to the driving wheels
- 11. change the driving torque both in magnitude and directions
- 12. due to temperature variations
- 13. meet the requirements of different operating condition south in land tile at
- 14. automotive-engine cooling systems
- 15. provide with some means of cooling
- 16. remove 30 to 35 percent of the heat
- 17. employ friction forces to transmit power
- 18. the supporting structure of the automobile transmission
- 19. a mechanism allowing the wheels to rotate at different speeds

# II. Translate the following sentences into Chinese:

- The internal combustion engine is a device used to convert the chemical energy of the fuel into heat energy and then convert this heat energy into usable mechanical energy.
- 2. The design of Cummins Engine makes it possible to replace worn or damaged parts with new or rebuilt parts with a minimum of down time.
- 3. The fuel system is designed to store liquid gasoline and to deliver it to the engine
- 4. The engine oil pump must provide a continuous supply of oil at sufficient pressure and in sufficient quantity to provide adequate lubrication at all times to the
  - 5. Some of the heat absorbed by the cooling system is used to heat the operator and passenger compartments in cold weather and to keep windows clear from moisture and frost.
  - 6. A person who wants to operate, repair, or otherwise service diesel engines must be able to recognize the different parts by sight and know what their particular functions are.

## III. Translate the following passage into Chinese:

Corrosive wear is attributed to the action of corrosive media (acids, alkalis, oxygen) on the part surface.

Fatigue wear is caused by multiple alternating loads. Most automobile parts are subject to several types of wear simultaneously.

The mating parts have definite clearances established during the design and manufacture of mechanisms and units. As the parts wear, the clearances increase, the parts reach the limit of size at which they continue to operate normally and then additional loads imposed by excessive wear disrupt normal functioning. The clearance grows progressively which may finally lead to breakage of the parts and ruining of the entire unit or mechanism. Besides, excessive wear of parts of the steering system, brakes, power line may cause traffic accidents.

Deviation of the technical condition of an automobile (trailer) or its units from the established norms is called defect.

Disabling of an automobile resulting in the interrupted haulage is called failure.

# Reading Material Layout of an Automobile

Translate the following passage into Chineses

The layout of different types of vehicles is different. A private car which is to carry up to eight persons has generally four sectors.

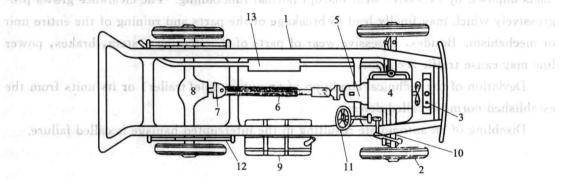


Fig. 2 Layout of a car

1. Frame 2. Wheels 3. Radiator 4. Engine 5. Clutch and gearbox 6. Propellershaft 7. Universal joint 8. Differential, Rear Axle 9. Fuel tank 10. Front 11. Steering 12. Road springs 13. Exhaust/silencer

The layout of a car is shown in Fig. 2. It shows the position of the main parts of an automobile. It consists of engine located at the front of the vehicle and followed by a clutch, gear box, propeller shaft, universal joint, differential, back axle etc. The radiator is located in front of the engine. Other various parts of the vehicle shown in the layout are dynamo, horn, steering box, fan, timing gear, carburetor, air filter, gear control, steering wheel, cylinder, petrol tank, rear axle and back axle. The drive from the gear box is conveyed through a short shaft to the front universal joint of the propeller shaft. From the propeller shaft it is conveyed to the rear universal joint through a sliding splined type of joint. The bevel gear of the short shaft is driven by the rear universal joint. This bevel gear meshes with a larger bevel gear which drives the two rear axle shafts through a differential gear.

The layout also consists of independent front-wheel springing with quarter-elliptic leaf springs, steering column bevel-gear control and hydraulic braking system.

The wheels which are four in number are fitted below the car chassis to support the load of the vehicle and passengers as well as to run the car. They are fitted with hollow rubber tyres filled with air in rubber tubes under sufficient pressure necessary for carrying the load. The shocks caused by road irregularities are absorbed by them. By fitting springs between the wheels and the vehicle allowing the vertical movement of wheels in relation to vehicle, greater part of unevenness of road surfaces is taken care of.

Front axle is used for steering front wheels carried on stub axles swiveling upon king pins at the axle extremities.

Steering arms and a track rod link the two stub axles together for swivelling them by a steering wheel about the king pins. The steering wheel linked to one of the stub axles by a shaft, a gear box and a suitable linkage is operated by the driver's hand wheel. Previously the axless a one-piece beam was used to support the vehicle through springs. An arrangement known as independent front suspension has replaced the axle and spring arrangement. Under the control of springs, the wheels are free to rise and fall vertically independently of each other.

For fixing rear wheels, a tube like shaft enclosing driving shafts with suitable bearings for rotating the wheels is used. It is enlarged at the center for enclosing the final-drive gears used for providing main speed reduction between the engine and the driving wheels. The change of direction of the drive from the fore and aft line of the propeller shaft to the transverse line of the axle shafts is also provided by this tube known as rear axle.

When going round a curve, the inner wheel has to travel a smaller distance in comparison to the outer wheel. But both the rear wheels would rotate at the same speed if they are connected by a shaft. This rotation of both the wheels would result in slipping of one or both of them on the road surface causing excessive tyre wear as well as severe twisting loads on the shaft. Moreover, the two wheels of the exactly similar diameter (which is not usually so) can only turn at the same speed without slip on the straight road. Tyres fitted on the opposite sides may be of different states of wear and even tyre of same nominal diameter made by different or same manufacturer may differ in actual dimensions or may not be exactly similar. Due to change of rolling radius (the distance from the wheel center to the ground), the effective size of the tyre may be altered by different inflation pressure also.

Each wheel is provided with its own separate halfshaft connected by a differential gear and meeting at about the center of the axle. The wheels are free to rotate at different speeds although they are provided with equal drive by the differential gear.

For preventing the transmission of shock from uneven road surfaces to the vehicle, springs are used to support the vehicle on the axle.

In order to allow for the vertical movements of the wheels relative to the frame as