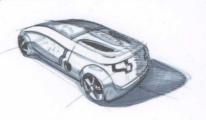


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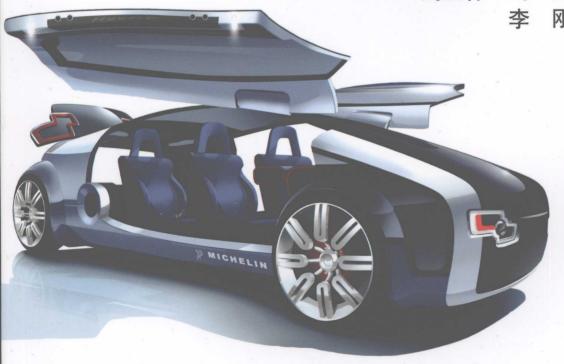






泛年与业英语

李玉柱 罗新闻 主 编 刘正怀 刘 涛 副主编 李 刚 主 审



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●高等职业教育"十一五"规划教材

高职高专汽车类教材系列

汽车专业英语

李玉柱 罗新闻 主 编 刘正怀 刘 涛 副主编 李 刚 主 审

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北京

内容简介

本书以汽车构造知识为基础,主要选编有关汽车构造与汽车维修等方面的内容,按发动机、汽车底盘、汽车整车分类进行编排。全书共分25个单元,每个单元包括课文、词汇、注释、中文翻译。

本书可作为高职高专、中专等汽车相关专业学生的专业英语教材,亦可供汽车维修、汽车销售行业的从业者参考。

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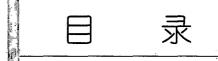
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随着我国经济的快速发展,汽车保有量逐年增加,相应地,汽车市场对专业人才的需求也在逐年增大。随着我国加入 WTO 以及对外改革开放的深入,社会需要更多的既懂汽车专业知识,又有一定英语基础的人才。为更好地满足高职高专英语教学的需求,我们特编写了本教材。

汽车专业英语的教学目的是使学生通过一定时间的学习,能强化英语基础,扩大专业词汇,掌握科技英语的阅读方法及技巧,提高科技英语应用能力,使学生毕业后能够利用英语这一工具,获得专业技术信息及进行专业技术交流。

本教材由无锡商业职业技术学院李玉柱、邢台职业技术学院罗新闻担任主编,金华职业技术学院刘正怀、河南交通职业技术学院刘涛担任副主编。 无锡商业职业技术学院李刚教授担任主审。参加编写工作的还有无锡交通技师学院李爱琴,无锡商业职业技术学院张帆、冯霞,黄河水利职业技术学院陈艳艳。

由于时间仓促、编写水平有限、书中定有不妥之处、请读者批评指正。



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Introduction to Automobile

Unit 1

Karl Benz from Germany built the first car driven by an internal combustion engine in 1886. Auto components were all made by hand. It is already one hundred years since the first automobile was invented in the world. The manufacturers have never stopped making research for new models. Henry Ford standardized auto components. This laid the foundations for manufacturing autos on an assembly line. General Motors, Toyota, Nissan and Ford are generally considered to be the four largest auto manufacturers in the world. The auto industry of China did not start until the 1950's. The Shanghai Auto Industry Corporation has established joint ventures with German Volkswagen and American General Motors. The joint ventures have marked a new stage in the development of the auto industry of China.

What is the first thing you do to start a car? You put your car key into the ignition lock and turn it. The car key opens a path so that electric current can flow from the car battery to the starter. The starter is just powerful enough to start the engine turning. Now the engine is running smoothly and you want to get moving. The gears in the gearbox go to work by connecting the moving parts of the engine to the wheels. There are at least three sets of gears in the gearbox. The first a set of gears has the hardest work of all, to start the car moving. When the next a set of gears are used, the car picks up speed. Finally, when the car is moving easily, the gears are shifted again. We say then that the car is in high gear.

Every car has a clutch, which takes the pressure off the gears so they can shift. In some

cars the driver has to step on a pedal to release the clutch, and then shift the gears with a lever. In other cars all the shifting is automatic.

The gears in the gearbox multiply the torque from the engine, and send it back to the rear axle by way of the drive shaft. The drive shaft has joints, just as your arms and leg shaft. The joints allow the shaft to move up and down as the wheels go over bumps. Where the drive shaft meets the rear axle (which is a rod connecting the back wheels), there is the group of gears called the differential. These gears turn the rear wheels. They let each wheel turn at its own speed when it is necessary. If the car is turning a corner, the outside wheel has to turn faster than the inside one, which acts as a sort of pivot.

Other gears connect the steering wheel to the front wheels which steer the car while the rear wheels push. The foot brake pedal and the hand brake are connected to the wheels too. When you press on the foot brake, friction bands push hard against the wheel drums and stop the wheels from turning. The hand brake is connected to the brake shoes on the rear wheels.

On the instrument panels there are several instruments which tell us what's going on under the hood. The gas gauge tells how much gasoline is in the tank. The oil gauge tells if the engine is getting enough oil (A thin film of oil has to keep flowing around all the moving parts of the engine to keep them working smoothly and safely). The ammeter tells if the generator is sending new electricity into the battery. This should be happening most of the time when the engine is running. The temperature gauge tells if the engine is being cooled enough. If there is not enough water in the radiator, or if the fan isn't blowing enough air back across the pipes, the engine gets too hot. The speedometer tells how fast the car is moving. It does this by measuring how fast the wheels are turning.

NEW WORDS

shift	[ˈʃiftˈ]	vt.	移动,变速
pedal	['pedl]	n.	踏板

lever	[ˈlevə]	n.	操纵杆, 杠杆
multiply	[ˈmʌltipli]	vt.	增加
torque	[to:k]	n.	扭矩
joint	[dʒɔint]	<i>n</i> .	连轴器,连接
bump	[bʌmp]	n.	凸缘
pivot	[ˈpivət]	n.	支点
gauge	[gedʒ]	<i>n</i> .	表, 计量器
film	[ˈfilm]	<i>n</i> .	(油)膜
ammeter	['æmitə]	n.	安培计
radiator	['reidieitə]	<i>n</i> .	散热器
speedometer	[etimcb'iqa]	n.	里程表

Phrases and Expressions

General Motors	通用
Toyoto	丰田
Nissan	日产
Ford	福特
ignition lock	点火锁
electric current	电流
rear axle	后车轴
steering wheel	方向盘
instrument panel	仪表板
friction band	摩擦片
wheel drum	车轮鼓
high gear	高速挡
go over	越过

brake shoe

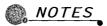
刹车蹄

gas gauge

燃油表

oil gauge

机油表



1. The Shanghai Auto Industry Corporation has established joint ventures with German Volkswagen and American General Motors.

上海汽车工业总公司已与德国大众和美国通用两大汽车公司建立了合资企业。

2. In some cars the driver has to step on a pedal to release the clutch, and then shift the gears with a lever.

在有些汽车中驾驶员必须踩踏板松开离合,然后用一个操纵杆换挡。

3. The joints allow the shaft to move up and down as the wheels go over bumps.

当车轮越过凸缘时,连轴器允许轴上下移动。

as 引导时间状语从句。

4. If the car is turning a corner, the outside wheel has to turn faster than the inside one, which acts as a sort of pivot.

如果汽车转弯,外面的车轮必须转动得比里面的快,此时差速器作为转轴中心。 which 指上一句的 differential 差速器,if 引导条件状语从句。

5. When you press on the foot brake, friction bands push hard against the wheel drums and stop the wheels from turning.

当你脚踩刹车时,摩擦片与车轮鼓产生摩擦并且阻止车轮转动。

friction bands 摩擦片, when 引导时间状语从句。

6. On the instrument panels are several instruments which tell what's going on under the hood.

在仪表板上,我们能看到几个显示发动机运转情况的仪表。





电机是否向蓄电池充电,在发动机运转时大部分时间 个简本产 元单一第

德国的卡尔•本茨于 1886 年制造出第一辆用内燃发动机驱动的汽车,那时汽车零部 件都由手工制造。世界上第一辆车发明至今已有百年,制造商们从来就没有停止过对新 车型的研究。亨利•福特使汽车零部件标准化,这就为流水线制造打下了基础。通用、 丰田、日产和福特被公认是世界上四家最大的汽车制造商。中国直到20世纪50年代才 开始发展汽车工业。现在上海汽车工业总公司已与德国大众和美国通用两大汽车公司建 立了合资企业,汽车工业与外国合资标志了中国汽车工业发展的一个新阶段。

起动汽车的第一步是什么? 就是把你的汽车钥匙放进点火锁并转动它。点火开关接 通了起动电路,起动机才有足够的动力来使发动机旋转。你可以在发动机怠速运转时起 步。变速器内的齿轮通过连接发动机的可动部件到车轮而进行工作。变速器内至少有3 套齿轮。在所有挡位中第1套齿轮的工作强度最大,用于汽车起步;当使用第二挡齿轮 时,汽车速度加快;最后,当汽车速度再加快时,齿轮再次变速,此时我们说汽车处于 高速挡。

每辆汽车都有使齿轮分离的离合器,因此它们能够变速。在某些汽车中驾驶者必须 先踩上离合器, 然后用一个操纵杆换挡, 而有些汽车的变速全部是自动的。

发动机扭矩通过变速器增扭后, 再通过传动轴把力矩送到后车轴。传动轴有联轴器, 正如你的手臂和腿连接一样。当车轮越过凸缘时,连轴器允许轴上下移动。传动轴跟后 车轴联接(是连结后面车轮的一根杆)的地方有一组齿轮称为差速器,这些齿轮使得后车 轮运转,必要时,它们让每个车轮以它自己的速度转动。如果汽车转弯,外面的车轮必 须转动得比里面的快,此时差速器作为转轴中心。

汽车前进时,通过转向器使方向盘控制前轮转向。脚刹车踏板和手制动器也连接着 车轮。当你脚踩刹车时,摩擦片与车轮鼓产生摩擦并且阻止车轮转动。手制动器连接在 后车轮的刹车蹄上。

在仪表板上,我们能看到几个显示发动机运转情况的仪表。燃油表告诉我们油箱里 有多少汽油; 机油表告诉我们发动机是否得到足够的润滑(在发动机的全部运动部件之 间必须有一层薄薄的机油膜,这样才能使他们顺利而安全地运转);安培计告诉我们发电机是否向蓄电池充电,在发动机运转时大部分时间应该可以充电;温度计量器告诉我们发动机是否被足够冷却,如果没有足够的水在散热器里,或者风扇没有把足够的风吹过管道,发动机就会变得太热;里程表告诉我们汽车正在以多快速度行驶,它是通过测量车轮转动速度而得出的。

Unit 2

When a gas is heated, it tries to expand — if this expansion is resisted, then a high pressure is built up, which in turn creates a large force. A mixture of petrol and air compressed, in a cylinder makes an explosive gas. When the gas is ignited, the pressure moves the piston towards the open end of the cylinder. Linking the piston by a connecting rod to a crankshaft causes the gas to rotate the shaft through half a turn. The power stroke "uses up" the gas, so means must be provided to expel the burnt gas and recharge the cylinder with a fresh petrol-air mixture: this control of gas movement is the duty of the valves; an inlet valve allows the new mixture to enter at the right time and an exhaust valve lets out the burnt gas after the gas has done its job.

1. Engine Terms

TDC(top dead center) — the position of the crank and piston when the piston is farther away from the crankshaft.

BDC (bottom dead center) — the position of the crank and piston when the piston is nearest to the crankshaft.

stroke — the distance between BDC and TDC; Stroke is controlled by the crankshaft.

bore — the internal diameter of the cylinder.

swept volume — the volume between TDC and BDC.

engine capacity — this is the swept volume of all the cylinders, e.g. a four-cylinder engine having a capacity of two liters (2000cm³) has a cylinder swept volume of 500cm³.

clearance volume — the volume of the space above the piston when it is at TDC.

compression ratio = (swept vol. + clearance vol.)/(clearance vol.)

two-stroke — a power stroke every revolution of the crank.

four-stroke — a power stroke every other revolution of the crank.

2. The Four-stroke Spark-ignition Engine Cycle

Invented by Dr N.A. Otto, it is often called the Otto cycle engine. The cycle of operations, or operating sequence, is spread over four piston strokes. To complete the full cycle, it takes two revolutions of the crankshaft. The operating strokes are:

Intake stroke This stroke introduces a mixture of atomized gasoline and air into the cylinder. The stroke starts when the piston moves downward from a position near the top of the cylinder. As the piston moves downward, a vacuum, or low-pressure area is created. During the intake stroke, one of the ports is opened by moving the inlet valve. The exhaust valve remains tightly closed.

Compression stroke As the piston moves upward to compress the fuel mixture trapped in the cylinder, the valves are closed tightly. This compression action heats the air/fuel mixture slightly and confines it within a small area called the combustion chamber.

Power stroke Just before the piston reaches the top of its compression stroke, an electrical spark is introduced from a spark plug screwed into the cylinder head. The spark ignites the compressed, heated mixture of fuel and air in the combustion chamber to cause rapid burning. The burning fuel produces intense heat that causes rapid expansion of the gases compressed within the cylinder. This pressure forces the piston downward. The downward stroke turns the crankshaft with great force.

Exhaust stroke Just before the bottom of the power stroke, the exhaust valve opens. This allows the piston, as it moves upward, to push the hot, burned gases out through the open exhaust valve. Then, just before the piston reaches its highest point, the exhaust valve closes and the inlet valve opens. As the piston reaches the highest point in the cylinder, known as TDC, it starts back down again. Thus, one cycle ends and another begins immediately.

3. Engine Overall Mechanics

The engine has hundreds of other parts. The major parts of engine are engine block, engine heads, pistons, connecting rods, crankshaft and valves. The other parts are joined to make systems. These systems are the fuel system, intake system, ignition system, cooling system, lubrication system, and exhaust system. Each of these systems has a definite function.



expansion	[iks'pænʃən]	n.	膨胀
compress	[kəm'pres]	vt.	压缩
piston	[ˈpistən]	n.	活塞
crankshaft	[ˈkræŋkʃɑːft]	n.	曲轴
expel	[-iks'pel]	vt.	排出
valve	[vælv]	n.	气阀
term	[tə:m]	n.	术语
bore	[bo:]	n.	缸径
revolution	[revəˈluːʃən]	n.	旋转,转速
cycle	[ˈsaikl]	n.	循环
sequence	[ˈsiːkwəns]	n.	顺序
atomize	[ætəmaiz]	vt.	使雾化, 使喷成雾状
vacuum	[ˈvækjuəm]	n.	真空
port	[po:t]	n.	阀门
trap	[træp]	vi.	使封闭
confine	[ˈkɔnfain]	vi.	密封,限制
screw	[skruː]	vt.	以螺丝拧紧
		n.	螺丝

Phrases and Expressions

上止点 **TDC BDC** 下止点 connecting rod 连杆 燃烧室 combustion chamber 做功冲程 power stroke inlet valve 进气阀 排气阀 exhaust valve 有效容积 swept volume engine capacity 发动机排量 余隙容积 clearance volume 压缩比 compression ratio 每隔一个 every other spread over 分布,遍及 进气冲程 intake stroke 火花塞 spark plug



1. Linking the piston by a connecting rod to a crankshaft causes the gas to rotate the shaft through half a turn.

活塞通过连杆连接到曲轴,使气体带动轴旋转半圈。

- 2. Four-stroke —— a power stroke every other revolution of the crank.
- 四冲程发动机——曲柄旋转两圈做功一次。
- every other 的意思是"每隔一个"。
- 3. As the piston moves downward, a vacuum, or low-pressure area, is created.