

Министерство науки и высшего образования РФ  
Федеральное государственное бюджетное образовательное учреждение  
высшего образования  
«Кузбасский государственный технический университет  
имени Т. Ф. Горбачёва»

Кафедра иностранных языков

Составители  
**П. А. Стрельников**  
**М. М. Горбачева-Стрельникова**

## **ИНОСТРАННЫЙ ЯЗЫК В ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ**

**Методические материалы**

Рекомендовано учебно-методической комиссией специальности  
23.05.01 Наземные транспортно-технологические средства  
в качестве электронного издания  
для использования в учебном процессе

Кемерово 2024

Рецензенты:

Долгова Н. И. – старший преподаватель кафедры иностранных языков

Кудреватых А. В. – председатель учебно-методической комиссии специальности 23.05.01 Наземные транспортно-технологические средства

**Стрельников Павел Алексеевич**

**Горбачева-Стрельникова Марина Михайловна**

**Иностранный язык в профессиональной деятельности:** методические материалы для обучающихся специальности 23.05.01 Наземные транспортно-технологические средства очной формы обучения / Кузбасский государственный технический университет им. Т. Ф. Горбачева ; Кафедра иностранных языков ; составители П. А. Стрельников, М. М. Горбачева-Стрельникова;. – Кемерово : КузГТУ, 2024. – 1 файл (647 Кб). – Текст : электронный.

Методические материалы включают в себя задания и упражнения, направленные на приобретение обучающимися специальности 23.05.01 компетенций, предусмотренных рабочей программой дисциплины «Иностранный язык в профессиональной деятельности». Методические материалы состоят из 8 разделов, в каждом из которых отражено общее содержание практических занятий и самостоятельной работы по дисциплине. В издании представлен лексико-грамматический материал специального содержания, а также комплект коммуникативных заданий, в том числе интерактивного характера.

© Кузбасский государственный  
технический университет  
им. Т. Ф. Горбачева, 2024  
© Стрельников П. А.,  
Горбачева-Стрельникова М. М.,  
составление, 2024

## Unit I

### 1. Read and memorize the following words and word combinations.

engine	двигатель
chassis	шасси
body	кузов
power train	силовая передача
running gear	ходовая часть
steering system	рулевое управление
brakes	тормоза
clutch	сцепление
gearbox	коробка передач
propeller shaft	карданный вал
final drive	главная передача
differential	дифференциал
rear axle	задний мост
axle shafts	полуоси
frame with axles	рама с осями
wheels and springs	колеса с рессорами
hood	капот
fenders	крылья
heater	отопитель
windshield wiper	стеклоочиститель
include	включать в себя
consist of	состоять из
as well	также
in turn	в свою очередь
source of power	источник энергии
fuel	топливо
cooling	смазка

**2. Read and guess the meaning of the following words:** automobile, chassis, electric, system, control, differential, ventilator, cylinder.

### 3. Read and translate the text.

The automobile is made up of three basic parts: the power plant, or the engine, the chassis and the body.

The engine is the source of power that makes the wheels rotate and the car move. It includes fuel, cooling, lubricating and electric systems. Most automobile engines have six or eight cylinders

The chassis includes a power train (power transmission), a running gear, steering and braking systems as well.

The power train carries the power from the engine to the car wheels.

The power transmission, in turn, contains the clutch, gearbox, propeller or cardan shaft, final drive, differential, rear axle and axle shafts. The running gear consists of a frame with axles, wheels and springs.

The body has a hood, fenders and accessories: the heater, stereo tape recorder, windshield wipers, conditioner, speedometer and so on.

**4. Answer the following questions according to the text above:** 1. What main parts is the automobile made up of? 2. What is the function of the engine? 3. What systems does the engine include? 4. What does the chassis consist of? 5. What units does the power transmission comprise? 6. What assemblies does the running gear consist of? 7. What has the body?

**5. Complete the sentences choosing the correct variant.**

1. The automobile is made up of...	1. a power transmission, running gear, steering and braking systems.
2. The engine is ...	2. the clutch, gearbox, propeller shaft, final drive, differential and axle shafts.
3. The engine includes ...	3. a hood, fenders and accessories.
4. The chassis consists of ...	4. the engine, the chassis and the body.
5. The power transmission comprises ...	5. a frame with axles, wheels and springs.
6. The running gear consists of...	6. the source of power.
7. The body has ...	7. fuel, cooling, electric and lubricating systems.

**6. Translate the sentences using the terms from the text above:**

1. Автомобиль состоит из трех основных частей: двигателя, шасси и кузова.  
2. Двигатель – это источник энергии. 3. Двигатель включает в себя топливную, охлаждающую, смазывающую и электрическую системы. 4. Шасси включает в себя силовую передачу, ходовую часть, рулевую и тормозную системы.  
5. Силовая передача (трансмиссия), в свою очередь, состоит из сцепления, коробки передач, карданного вала, главной передачи, дифференциала, заднего моста и полуосей. 6. Ходовая часть включает в себя раму с осями, колеса и рессоры. 7. Кузов включает в себя капот, крылья и вспомогательные аксессуары: отопитель, стеклоочистители, магнитола, кондиционер и т. п.

**7. Read and translate the dialogue.**

**A.:** Do you know what parts the automobile is made up of?

**B.:** Certainly. It is made up of the engine, the chassis and the body,

**A.:** What is the source of power?

**B.:** The source of power is the engine. It includes fuel, cooling, lubricating and electric systems.

**A.:** And what does the chassis consist of?

**B.:** It consists of a power transmission, running gear, steering and braking systems. By the way, the power transmission, in turn, comprises the clutch, gearbox, propeller shaft, final drive, differential, rear axle and axle shafts.

**A.:** And what has the body?

**B.:** The body has a hood, fenders and accessories, such as: the heater, stereo tape recorder, windshield wipers, conditioner and so on.

**A.:** Thank you very much for your information.

**B.:** Don't mention it. I am glad to help you.

**9. Translate the following words and word combinations using the terms from the dialogue above:** сделан из; шасси; кузов; включать в себя; топливная, охлаждающая, смазывающая и электрическая системы; трансмиссия; ходовая часть; рулевая и тормозная системы; карданный вал; главная передача; дифференциал; задний мост; полуоси; капот; крылья; вспомогательные устройства; стеклоочистители.

**10. Answer the following questions:** 1. What main parts is the automobile made up of? 2. What is the function of the engine? 3. What systems does the engine include? 4. What does the chassis consist of? 5. What units does the power transmission comprise? 6. What assemblies does the running gear consist of? 7. What has the body?

## Unit II

### 1. Read and memorize the following words and word combinations.

bottom dead center	нижняя мертвая точка
charge of fuel	заряд топлива
combustion	сгорание
combustion chamber	камера сгорания
compression stroke	такт сжатия (смеси)
connecting rod	шатун
crankshaft	коленчатый вал
cylinder	цилиндр
diesel engine	дизельный двигатель
engine	двигатель
exhaust stroke	такт выпуска
four-stroke cycle	четырехтактный цикл
fuel injection	впрыск топлива
ignite	воспламенять
ignition	воспламенение

intake (inlet) stroke	такт впуска
mixture	смесь
operating cycle	рабочий цикл
petrol engine	бензиновый двигатель
piston	поршень
power stroke	рабочий ход
pressure	давление
rotary movement	вращательное движение
spark plug	свеча зажигания
stroke	ход (поршня);
top dead center	верхняя мертвая точка
valve	клапан

**2. Translate the following words:** to combust — combustion; to operate — operation; to ignite — ignition; to reciprocate — reciprocation; to connect — connection; to compress — compression; to describe — description.

**3. Read and guess the meaning of the following words:** principle, cycle, piston, center, cylinder, atmosphere.

**4. Translate the sentences using the terms from the exercise 1:** During the inlet (intake) stroke the inlet valve opens and a charge of fuel (mixture) flows into the cylinder. During the compression stroke the inlet valve is closed and the fuel is compressed by the rising piston. During the power stroke both valves are closed, pressure rises in the combustion chamber, and the spark ignites the mixture. During the exhaust stroke the exhaust valve is opened, pressure is released and the residual gases flow into the atmosphere through the exhaust valve.

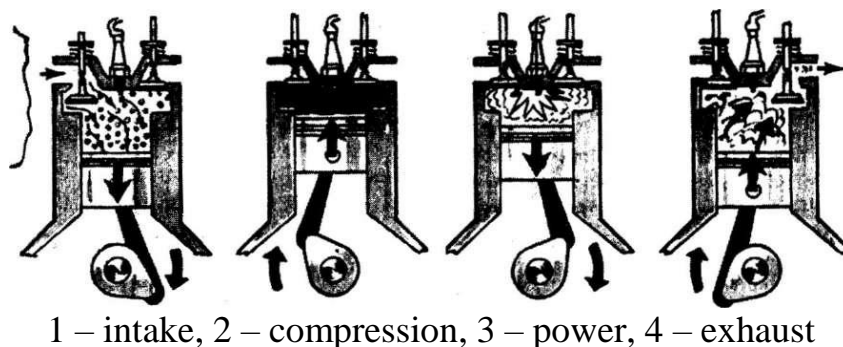
**5. Read and translate the text.**

The internal combustion engine is called so because fuel is burned directly inside the engine itself. Most automobile engines work on a 4-stroke cycle. A cycle is one complete sequence of 4 strokes of the piston in the cylinder. The operating cycle of the four-stroke petrol engine includes: inlet stroke (intake valve opens), compression stroke (both valves closed), power stroke (both valves closed), exhaust stroke (exhaust valve is opened).

To describe the complete cycle, let's assume that the piston is at the top of the stroke (top dead center) and the inlet and the exhaust valves are closed. When the piston moves down the inlet valve opens to intake a charge of fuel into the cylinder. This is called the inlet (intake) stroke. On reaching the lowest position (bottom dead center) the piston begins to move upward into the closed upper part on the cylinder, (the inlet valve is closed and the mixture is compressed by the rising piston. This is called the compression stroke. As the piston again reaches the top dead center the spark plugs ignite the mixture, both valves being closed during its combustion. As a

result of burning mixtures the both valves being closed during its combustion. As a result of burning mixtures the gases expand and great pressure makes the piston move back down the cylinder. This stroke is called the power stroke. When the piston reaches the bottom of its stroke, the exhaust valve is opened, pressure is released, and the piston again rises. It lets the burnt gas flow through the exhaust valve into the atmosphere. This is called the exhaust stroke which completes the cycle. So the piston moves in the cylinder down (intake stroke), up (compression stroke), down (power stroke), up (exhaust stroke).

The heat released by the fuel is transformed into work so that the reciprocating movement of the pistons is converted into rotary movement of a crankshaft by means of connecting rods.



***Рис. 1. Principle of Operation of the Four-Stroke Petrol Engine***

1. intake – такт впуска
2. compression – такт сжатия
3. power – рабочий такт
4. exhaust – такт выхлопа

**5. Answer the following questions according to the text above:** 1. Why is the engine called the internal combustion engine? 2. What stroke is called the inlet one? 3. What is a compression stroke? 4. What takes place in the cylinder on power stroke? 5. What takes place on the exhaust stroke? 6. By means of what is the reciprocating movement of the pistons converted into rotary movement of a crankshaft?

#### **6. Read and translate the dialogue.**

**Nick:** Peter, I know you are a good driver. I would like you to have a look at my car.

**Peter:** What's wrong with your car?

**N.:** I don't know.

**P.:** Let me have a look. When did you have your plugs checked?

**N.:** Three days ago. I thought I had run out of fuel but the tank is half full.

**P.:** The carburetor is in order but the engine is misfiring. I guess the battery has run down. It needs recharging.

**N.:** Too bad.

**P.:** Don't get upset about it. It won't take you long to have your battery recharged.

**N.:** Do you really think so?

**P.:** I am sure of it. I advise you to have the engine greased.

**N.:** I'll follow your advice. Thank you, Peter.

**P.:** Don't mention it, Nick. I'm very sorry I couldn't help you.

**N.:** Well, you helped me to find the fault. Thanks a lot. Good-bye.

**P.:** See you later.

## **7. Read and translate the dialogues.**

- Не знаю, что случилось с моей машиной.

- Let me trace the fault.

- Пожалуйста. Ты опытный водитель?

- Yes, I am. I have been driving a car for fifteen years now. May be you have run out of fuel?

- Бак почти полный.

- When did you have your plugs checked?

- Вчера. Карбюратор тоже в порядке.

- В таком случае давай поедem до ближайшей ремонтной станции.

- Good idea. They will have the car fixed.

- Когда тебе починили машину?

- Last month. The engine is in good condition now. It was well greased.

- Хорошо. Мне тоже надо чинить машину. Ослабли тормоза (The brakes are slack.) Аккумулятор разрядился (The battery has run down.)

- It can be easily done.

- Я рад это слышать.

- Какую машину ты хочешь купить?

- I want a second-hand car. Could you help me?

- С большим удовольствием.

- I hear there are good cars on sale 42nd Street.

- Я знаю этот магазин. Давай поедem туда.

- Good idea. If I choose a car there, I won't have to bother any more.

- Совершенно верно.



## Unit III

### 1. Read and memorize the following words and word combinations.

unit	узел, блок, агрегат
gear	шестерня
power transmission	силовая передача
gearbox	коробка передач
tractive effort	тяговое усилие
running gear	ходовая часть
driving wheels	ведущие колеса
steering system	система рулевого управления
shaft	вал
car springs	рессоры автомобиля
flywheel	маховик
rear axle	задний мост
clutch	сцепление
final drive	главная передача
friction device	фрикционное устройство
axle shafts	полуоси
crankshaft	коленчатый вал
brakes	тормоза

**2. Translate the following words:** to transmit – **transmission**; to connect — **connection**; to found — **foundation**; to move — **movement**.

**3. Read and guess the meaning of the following words:** Transmission, system, mechanism, radiator, friction, automobile, cardan, portion, final, accelerator, pedal, position.

### 4. Translate the sentences using the terms from the exercise 1:

1. The chassis includes the running gear, the power transmission and the steering mechanism. 2. The power transmission consists of the clutch, gearbox, cardan shaft, rear axle, final drive, differential and axle shafts. 3. The clutch connects the engine with the driving wheels. 4. The gearbox changes the speed of the car movement. 5. The steering mechanism changes the direction of the car.

### 5. Read and translate the text.

The main units of the chassis are: the power transmission, the running gear and the steering mechanism. The power transmission includes the whole mechanism between the engine and the rear wheels. This entire mechanism consists of the clutch, gearbox, propeller (cardan) shaft, rear axle, final drive, differential and axle shafts.

At the front end of the car is the engine. On the back of it is the flywheel. Behind the flywheel is the clutch. The clutch is a friction device connecting the engine with the gears of the gearbox. The main function of the gearbox is to change the speed of the car.

The power is always transmitted by the cardan shaft to the live back axle. The final drive reduces the high speed of the engine to the low speed of the driving wheels. The differential enables the driving wheels to turn at different speeds which is necessary when turning the car. The foundation of the automobile is the frame to which different chassis units are attached.

The rear axle is capable of moving up and down about the frame. The rear axle is an important part of the transmission. It carries the greater portion of the weight of the car.

The steering mechanism is designed for changing the direction of the car.

The brakes are used for stopping the car, for decreasing its speed and for holding the car position.

**6. Answer the following questions according to the text above:** 1. What main units does the chassis consist of? 2. Where is the engine located? 3. Where is the flywheel fixed? 4. Where is the clutch placed? 5. What is the gearbox designed for? 6. By what shaft is the power transmitted to the back axle? 7. What does the rear axle do? 8. What is the function of the differential? 9. What purpose is the steering system designed for? 10. What is the function of the brakes?

**7. Translate the sentences paying attention to Complex Subject:** 1. Transmission, running gear and steering mechanism **are known** to be the main units of the chassis. 2. The clutch **is known** to connect the engine with the driving wheels of the car. 3. The gearbox is **known** to change the speed of the car. 4. The steering mechanism is **known** to change the direction of the car. 5. Brakes **are considered** to be one of the most important mechanisms of the car.

**8. Translate the sentences using the terms from the text above:** 1. Основными узлами шасси являются: трансмиссия, ходовая часть и рулевой механизм. 2. Радиатор расположен в передней части автомобиля. 3. Маховик крепится на задней части двигателя. 4. Сцепление соединяет двигатель с коробкой передач. 5. Коробка передач предназначена для изменения скорости движения автомобиля. 6. Усилие передается карданным валом. 7. Главная передача снижает высокие обороты двигателя до невысоких оборотов ведущих колес. 8. Дифференциал позволяет ведущим колесам вращаться с разной скоростью при повороте автомобиля. 9. Рулевой механизм предназначен для изменения направления движения автомобиля. 10. Тормоза используются для остановки или снижения скорости автомобиля

## 9. Read and translate the dialogue.

Teacher: Let's speak about the transmission mechanism. What main units does the transmission include?

**Student:** The transmission is the entire mechanism between the engine and the rear wheels. It includes the clutch, gearbox, cardan shaft, rear axle, final drive and differential.

**T.:** What does the clutch connect?

**S.:** The clutch connects the engine with the gearbox.

**T.:** And what does the gearbox do?

**S.:** The gearbox changes the speed of the car.

**T.:** What does the differential enable?

**S.:** The differential enables the driving wheels to move at different speeds when turning the car.

**T.:** For what purpose is the steering system used?

**S.:** The steering system is used for changing the direction of the car movement.

**T.:** And what is the function of the brakes?

**S.:** Brakes are used to slow or stop the car.

**T.:** That's right. You know the subject very well.

## Unit IV

### 1. Read and memorize the following words and word combinations.

frame	рама
twist	кручение
support	опора
suspension	подвеска
body	кузов
channel section	полая секция
longitudinal members	лонжероны
weld	сваривать
cross members	поперечины
rivet	заклепывать
reinforce	усиливать
insulate	изолировать
rigid	жесткий
rubber pad	резиновая прокладка
mining	прочный
withstand strains	выдерживать

**2. Read and guess the meaning of the following words:** Chassis, structure, system, integral, construction, steel, vibration, passenger, metal, contact.

**3. Translate the following words:** to found — **foundation**; frame — **frameless**; to construct — **construction**; structure — **structural** — **structurally**; to attach — **attachment**; to vibrate — **vibration**; to insulate — **insulation**; usual — **usually**.

**4. Read and translate the text.**

The foundation of the automobile chassis is the frame which provides support for the engine, body and power-train members. Cross members reinforce the frame. The frame is rigid and strong so that it can withstand the shocks, vibrations, twists and other strains to which it is put on the road.

The frame provides a firm structure for the body, as well as a good point for the suspension system. There are two types of frames, namely: conventional frames and integral (unibody) frames (frameless constructions).

Conventional frames are usually made of heavy steel channel sections welded or riveted together. All other parts of the car are attached to the frame.

In order to prevent noise and vibrations from passing to the frame and from there to the passengers of the car, the frame is insulated from these parts by rubber pads.

It is also important to insulate the frame in order to prevent metal- to-metal contacts.

Frameless (unibody) constructions are called so because they are made integral with the body. The body parts are used to structurally strengthen the entire car. Some unibody frames have partial front and rear frames for attaching the engine and suspension members.

**5. Translate the following terms:** Лонжероны, поперечины, жесткий, прочный, выдерживать нагрузки, подвеска, обычная (общепринятая) рама, безрамная конструкция, полые секции, сваренные или заклепанные, прикреплять к раме, резиновые прокладки, укреплять.

**6. Answer the following questions according to the text above:** 1. What does the frame provide? 2. Why is the frame rigid and strong? 3. What types of frames are there? 4. What is the conventional frame made of? 5. By what is the frame insulated from the other car parts? For what purpose? 6. What do you know about unibody frames?

**7. Complete the sentences choosing the correct variant.**

1. The frame provides support for....	a. channel sections welded together.
2. Conventional frames are made of....	b. prevent noise and vibrations from passing to the passengers.
3. Tameless constructions are made....	c. cross members.

4. The frame is insulated from other parts in order to ....	d.. the engine, body and power train members.
5. The frame is reinforced by....	e. integral with the body.

**8. Translate the sentences paying attention to Complex Object.** 1. We know the frame to be the structural centre of any car. 2. Car specialists consider the conventional frame to be extremely rigid and strong. 3. We know the frame to be insulated from the other parts by rubber pads to prevent metal-to-metal contacts. 4. Many specialists consider the body parts to be used to structurally strengthen the entire car. 5. The manufacturers believe the unibody constructions to be called so because they are made integral with the body.

**9. Translate the sentences using the terms from the text above:** 1. Рама обеспечивает опору для кузова, двигателя и узлов силовой передачи. 2. Она состоит из лонжеронов и поперечин, которые усиливают раму. 3. Рама должна выдерживать вибрацию, кручения и другие нагрузки (напряжения). 4. Рамы бывают двух типов: обычные (стандартные) и выполненные воедино с кузовом. 5. Стандартные рамы изготовлены из стальных полых секций, сваренных или заклепанных вместе. 6. Безрамные конструкции выполнены воедино с кузовом. 7. Рама изолируется от кузова резиновыми прокладками, чтобы шумы и вибрации не проходили к пассажирам автомобиля.

### 10. Read and translate the dialogue.

**Stas:** Hi! Seen you for ages! How are you?

**Vlad:** Hi! I'm perfectly well! I am working at a repairing shop. Very interesting I can tell you.

**S.:** What are you doing there?

**V.:** Now, we are testing the frame. You see, the driver has got into trouble. Something is wrong with his car. He thinks it is the frame.

**S.:** Has the car a conventional frame or a unibody frame?

**V.:** Unibody frame.

**S.:** I think you have to do a lot of work as body parts strengthen the entire car.

**V.:** Sure. We are testing all parts in order to find out the damage.

**S.:** I think you will cope with the problem.

## Unit V

### 1. Read and memorize the following words and word combinations.

friction device	фрикционное устройство
pressure disc	нажимной диск
connect	соединять
gearbox	коробка передач

frictional force	сила трения
start the car	завести автомобиль
clutch pedal	педадь сцепления
release the engine	отсоединить
at rest	двигатель в покое
is engaged	включено (подсоединено)
fix	крепить (устанавливать)
flywheel	маховик
s disengaged	отключено
friction disc (plate)	фрикционный
run idly	работать вхолостую диск

**2. Translate the following words:** connect — **disconnect** — connection — **disconnection**; operate — **operation**; friction — **frictional**; engage — **engagement** — **disengagement**.

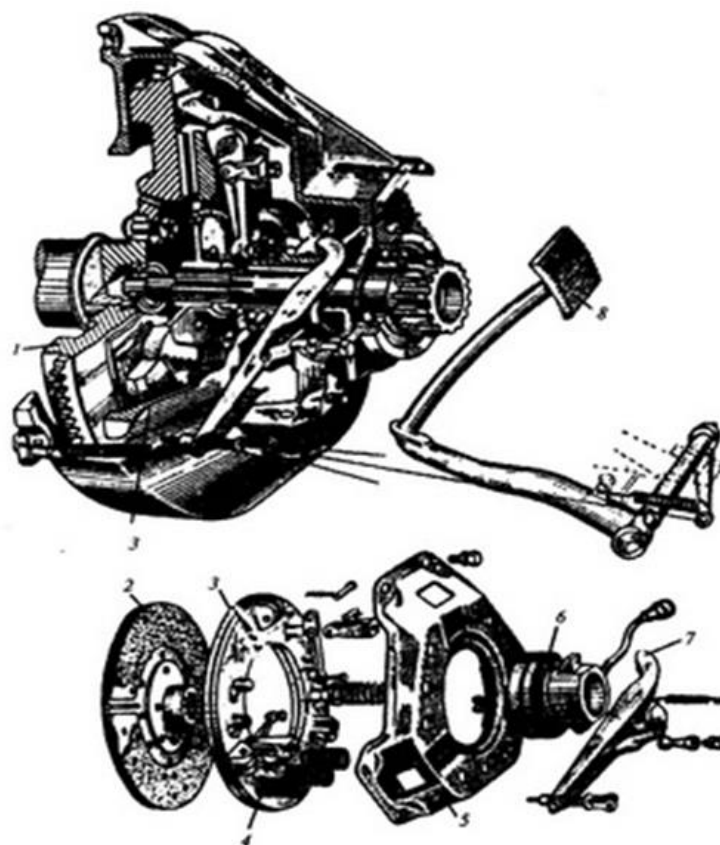
**3. Read and guess the meaning of the following words:** start, disc, friction, frictional, material, base, principal, control, pedal.

**4. Read and translate the text.**

The clutch is a friction device. It connects the engine to the gears in the gearbox. It is used for disconnecting the engine from the gearbox, for starting the car and for releasing the engine from the car wheels.

The clutch is fixed between the flywheel of the engine and the **gearbox** und consists of two plates (discs): the friction disc and the pressure disc. The friction disc is situated between the flywheel and the pressure plate and has a hard-wearing material on each side.

The basic principal operation of the clutch is a frictional force acting between two discs. The clutch is controlled by the clutch pedal. When the pedal is at rest the clutch is engaged and the running engine is connected to the gearbox. When the pedal is pressed down the clutch is disengaged and the engine runs idly.



***Рис. 2. Clutch***

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| 1. flywheel – маховик               | 5. cover – крышка                     |
| 2. friction disc – фрикционный диск | 6. thrust bearing – упорный подшипник |
| 3. pressure disc – нажимной диск    | 7. lever – рычаг                      |
| 4. spring – пружина                 | 8. pedal – педаль                     |

**5. Translate the following words and word combinations using the terms from the dialogue above:** friction device, clutch, gearbox, to free, to start, to release, flywheel, pressure plate, basic principle of operation, to fix, hard-wearing material, to consist of, to be controlled by, running engine, to run idly, to engage, to disengage, to press down, to be at rest.

**6. Answer the following questions according to the text above:** 1. What device is the clutch? 2. What units does it connect? 3. What is the clutch used for? 4. Where is the clutch placed? 5. What plates does the clutch consist of? 6. What is the basic principal operation of the clutch? 7. What is the clutch controlled by? 8. What takes place when the clutch pedal is at rest? 9. When does the engine run idly?

**7. Read and translate the dialogue.**

**A.:** What is the function of the clutch?

**B.:** You see, it serves three functions. It is used for freeing the engine from the gearbox, for starting the car and for freeing the engine from car wheels.

**A.:** Is it a friction device?

**B.:** Yes, of course. It is fixed between the flywheel of the engine and the gearbox and usually consists of two discs.

**A.:** What discs?

**B.:** The friction disc (driven disc) and the pressure disc.

**A.:** I suppose the principle of operation of clutches is a frictional force between discs. Am I right?

**B.:** Yes, you are. When the clutch is fully engaged the frictional force makes discs rotate at the same speed.

**A.:** And by what is the clutch controlled?

**B.:** By the clutch pedal. When it is at rest the clutch is engaged and when it is pressed down the clutch is disengaged and the engine is disconnected from the car wheels.

**A.:** Thank you. And what types of clutches do you know?

**B.:** Positive clutches and gradual engagement clutches.

**A.:** Thank you very much for your information.

**B.:** Not at all. Glad to help you.

## 8. Find the correct translation.

1.	a friction device	a.	завести автомобиль
2.	gearbox	b.	фрикционный диск
3.	to start the car	c.	маховик
4.	to release the engine	d.	износостойкий материал
5.	is fixed	e.	работать вхолостую
6.	flywheel	f.	соединяться
7.	the friction disc	g.	сила трения
8.	the pressure disc	h.	разъединяться
9.	hard-wearing material	i.	фрикционное устройство
10.	frictional force	j.	находиться в покое
11.	the clutch pedal	k.	закреплен
12.	to be engaged	l.	педаль сцепления
13.	to be at rest	m.	нажать на педаль
14.	to be disengaged	n.	отсоединить двигатель
15.	to press down on the pedal	o.	нажимной диск
16.	to run idly	p.	коробка передач

**9. Translate the following sentences:** 1. Сцепление – это фрикционное устройство. 2. Сцепление соединяет двигатель и коробку передач. 3. Сцепление расположено между маховиком двигателя и коробкой передач. 4. Как правило, сцепление состоит из двух дисков: ведомого и нажимного. 5. Сцепление управляется педалью сцепления. 6. Когда педаль сцепления находится в покое, диски сцепления соединены и работающий двигатель соединен с коробкой



передат и колесами. 7. Когда водитель нажимает на педаль сцепления, диски отходят, сцепление отсоединяется и двигатель работает вхолостую.

## Unit VI

### 1. Read and memorize the following words and word combinations.

gearbox	коробка передач
gearing	зубчатое соединение
road conditions	дорожные условия
forward speed	передняя скорость
reverse drive	обратный (задний) ход
low gear	первая передача
top gear	четвертая (прямая) передача
sliding-mesh gearbox	коробка передач со скользящими шестернями
constant-mesh gearbox	коробка передач с постоянным зацеплением шестерен
epicyclic gearbox	эпициклическая коробка передач
ordinary gearing	стандартное зубчатое соединение
characteristic feature	характерная особенность
fixed axes	зафиксированные (неподвижные) оси
rotate bodily	вращаться корпусом
axis	ось
axle	вал
secure	обеспечить
shifting	переключение
in direct line	важно

**2. Read and guess the meaning of the following words:** principal, function, construction, constructional, class, classify, type, planet, planetary, history, historical.

**3. Translate the following words:** move — **movement**, construct — **construction** — **constructional**, arrange — **arrangement**, history — **historical** — **historically**, wide — **widely**, vary — **various**, simple — **simply**, body — **bodily**.

#### 4. Read and translate the text.

The gearbox is placed between the clutch and the propeller shaft. The principal function of the gearbox is to vary the speed of the car movement to meet the road conditions. The gearbox provides four forward speeds and one reverse, as follows:

1. First or low gear;
2. Second gear;
3. Third gear;
4. Fourth or top gear;
5. Reverse gear.

There are many constructional arrangements of gearboxes, which can be classified as follows:

1. Sliding-mesh type;
2. Constant-mesh type;
3. Epicyclic (planetary) type.

The sliding-mesh type is the simplest one and is the oldest historically. The constant-mesh type is the most widely used type. They are termed "ordinary" gearing, the characteristic feature of which is that axes of the various gears are fixed axes. The gears simply rotate about their own axes.

The characteristic feature of epicyclic (planetary) gearing is that one gear rotates about its own axis and also rotates bodily about some other axis.

To secure the several speeds of the car the clutch shaft is mounted in direct line with the gearbox shaft. The gearbox shaft carries on it the sliding gears which are used for shifting to secure the forward speeds and the reverse drive.

**5. Answer the following questions according to the text above:** 1. Where is the gearbox situated? 2. What is the function of the gearbox? 3. What speeds does the gearbox provide? 4. What types of gearboxes do you know? 5. Why is the clutch shaft mounted in direct line with the gearbox shaft?

**6. Translate the sentences using the terms from the text above:** 1. Коробка передач предназначена для изменения скорости движения автомобиля. 2. Коробка передач обеспечивает четыре передние скорости и задний ход. 3. Коробки передач могут быть: со скользящими шестернями, с постоянным зацеплением шестерен и планетарного типа. 4. Самыми простыми являются коробки передач со скользящими шестернями. 5. Коробки передач с постоянным зацеплением шестерен используются наиболее часто. 6. Скользящие шестерни на валу коробки передач используются для обеспечения передних скоростей и обратного хода.

#### 7. Read and translate the dialogue.

**Mike:** Peter, do you remember what our teacher told us last time? What do you know about gearboxes?

**Peter:** I know that the gearbox is used to change the speed of the car.

**M.:** And how many speeds does the gearbox provide?

**P.:** It can provide four forward speeds and one reverse.

**M.:** Into what types are the gearboxes divided according to their arrangements?

**P.:** They are divided into sliding-mesh type, constant-mesh type and epicyclic type.

**M.:** What type is the simplest?

**P.:** The sliding-mesh one.

**M.:** Thank you very much for your help.

**P.:** You are welcome. Glad to help you.

## Unit VII

### 1. Read and memorize the following words and word combinations.

brakes	тормоза
force the fluid	подавать жидкость
performance	работа
under pressure	под давлением
safety	безопасность
brakes are applied	тормоза срабатывают
depend	зависет
slow	замедлять
braking effort	тормозное усилие
divide	разделять
namely	именно
drum brakes	барабанные тормоза
band brake	ленточный тормоз
disk brakes	дисковые тормоза
shoe brake	колодочный тормоз
brake shoes	колодки тормоза
brake fluid	тормозная жидкость
brake pedal	тормозная педаль
master cylinder	главный цилиндр

**2. Read and guess the meaning of the following words:** mechanism, passenger, type, hydraulic, cylinder, vacuum, function, classify, classification, mechanical, electric, electromagnet.

**3. Translate the following words:** safe — safety; to improve — improvement; to move — movement; to drive — driver; to apply — application; to attach — attachment; to arrange — arrangement; to perform — performance; name — namely; to operate — operation; to equip — equipment.

#### 4. Read and translate the text.

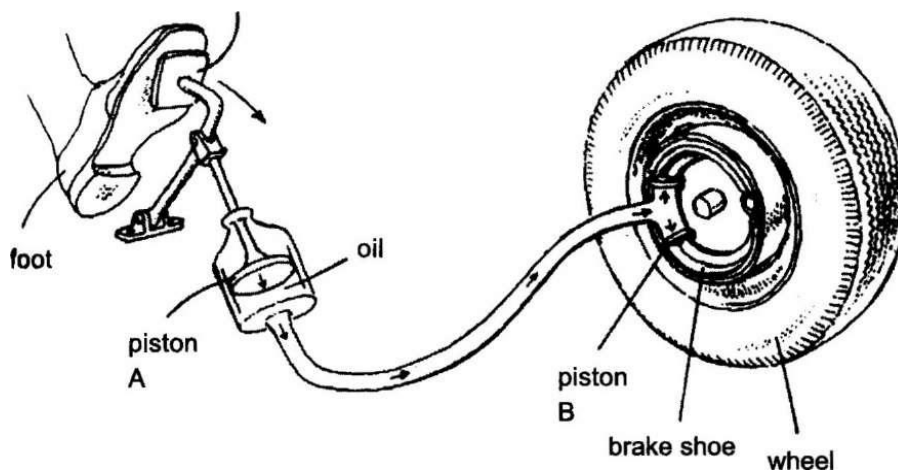
Brakes are used to slow or stop the car where it is necessary. It is one of the most important mechanisms of the car as upon its proper performance the safety of passengers depends. Car brakes can be divided into two types, namely: drum brakes and disc brakes. The drum type may be either a band brake or a shoe brake. Depending on their functions, the automobile has foot brakes and hand brakes (parking brakes). According to their mode of operation, the brakes are classified as: mechanical brakes, hydraulic brakes, airbrakes, electric brakes. Brakes are controlled by the brake pedal.

Most braking systems in use today are hydraulic. This system consists of a master cylinder mounted on the car frame and wheel cylinders. When the driver pushes down on the brake pedal, it forces the piston to move in the master cylinder and brake fluid is delivered from it to the wheel cylinders. The piston movement causes brake shoes to move and the brakes are applied (the brake shoes are pressed against the brake drums).

The air brake uses compressed air to apply the braking force to the brake shoes.

Electric brakes use electromagnets to provide the braking effort against the brake shoes.

Formerly brakes were applied only to the two rear wheels, but now all cars are equipped with all-wheels brakes. Today many improvements are being made in brakes.



**5. Translate the following terms using the information from the text above:** тормоза, безопасность пассажиров зависит от правильной работы тормозов, барабанные тормоза, дисковые тормоза, тормоза с усилителем, гидравлический привод тормозов, жидкость под давлением, тормоза срабатывают, тормозное усилие, нажать на тормозную педаль.

**6. Answer the following questions according to the text above:** 1. What is the function of the brakes? 2. What types are brakes divided into? 3. What brakes do you know according to their mode of operation? 4. What braking systems are used today? 5. By what are brakes controlled? 6. When are brakes applied?

## 7. Find the correct translation.

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| 1. performance                       | a. зависеть от                       |
| 2. the safety of passengers          | b. барабанные тормоза                |
| 3. to depend upon                    | c. тормоза срабатывают               |
| 4. namely                            | d. тормоза с гидравлическим приводом |
| 5. drum brakes                       | e. работа (действие)                 |
| 6. disc brakes                       | f. именно                            |
| 7. brakes are applied                | g. тормоза с усилителем              |
| 8. hydraulic assisted brakes         | h. под давлением                     |
| 9. power assisted brakes             | i. нажать на тормозную педаль        |
| 10. to press down on the brake pedal | j. дисковые тормоза                  |
| 11. under pressure                   | k. безопасность пассажиров           |

**8. Translate the sentences using the terms from the text above:** 1. Тормоза являются наиболее важным механизмом автомобиля. 2. Они используются для замедления движения или остановки автомобиля. 3. Тормоза можно разделить на два типа, а именно: барабанные тормоза и дисковые тормоза. 4. На большинстве автомобилей используется гидравлический привод или пневматический привод. 5. Тормоза срабатывают, когда водитель нажимает на тормозную педаль.

## 9. Read and translate the dialogue.

**Alex:** Why are brakes used?

**Boris:** They are used to stop or to slow the car.

**A.:** Well, it is one of the most important mechanisms of the car, isn't it?

**B.:** Of course, the safety of the passengers depends upon their proper performance.

**A.:** What types of brakes are used today?

**B.:** Drum brakes, disk brakes and others.

**A.:** And in what way are they applied?

**B.:** They are applied by the brake pedal. When the driver pushes down on the pedal they are applied.

**A.:** Thank you. It was very nice of you to tell me this information.

**B.:** Don't mention it. I was glad to serve you.

**10. Translate the following sentences:** 1. Тормоза используются для замедления движения или остановки автомобиля. 2. В зависимости от привода тормоза классифицируют на механические, гидравлические, пневматические и электрические. 3. Тормоза управляются тормозной педалью. 4. Тормоза срабатывают, когда водитель нажимает на тормозную педаль (тормозные колодки прижимаются к тормозным барабанам). 5. В пневматических тормозах

для создания тормозного усилия используется сжатый воздух. 6. В электрических тормозах для создания тормозного усилия используется электромагнит. 7. В современных автомобилях используются тормоза с приводом на все колеса

## Unit VIII

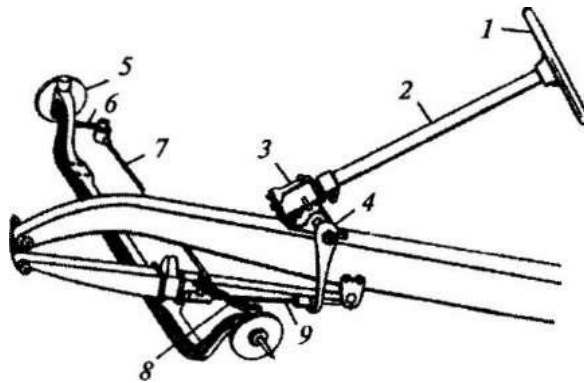
### 1. Read and memorize the following words and word combinations.

guide the car	управлять автомобилем
means of turning	средство поворота
front wheels	передние колеса
steering wheel	рулевое колесо
steering column	рулевая колонка
for this purpose	для этой цели
pivot	шарнир
swing	поворачиваться
steering knuckle arm	рычаг поворотного кулака
tie-rod	поперечная тяга
in turn	в свою очередь
pitman arm	рулевая сошка
ball joint	шаровой шарнир
leverage	рычажный механизм
hose	шланг, рукав
steering gear assembly	рулевой механизм
rack and pinion type	реечно-шестеренчатый тип
recirculating ball steering	рулевой механизм с шариковой гайкой
worm and sector	червяк и сектор
injury	повреждение
steering box	картер рулевого механизма

2. **Read and guess the meaning of the following words:** column, spindle, system, hydraulic, pump, reservoir, popular, type, effective, effectiveness, effectively, energy, function, to deform, deformation.

3. **Translate the following words:** rotate — **rotation**, apply — **application**, move — **movement**, develop — **development**, drive — **driver**, form — **reform** — **deform** — **deformation**, guide — **guidance**.

#### 4. Read and translate the text.



To guide the car, it is necessary to have some means of turning the front wheels so that the car can be pointed in the direction the driver wants to go. The steering wheel in front of the driver is linked by gears and levers to the front wheels for this purpose. The front wheels are on pivots so they can be swung to the left or right. They are attached by steering knuckle arms to the rods. The tie-rods are, in turn, attached to the pitman arm.

When the steering wheel is turned, gearing in the steering gear assembly causes the pitman arm to turn to the left or right. This movement is carried by the tie-rods to the steering knuckle arms, and wheels, causing them to turn to the left or right.

The steering system incorporates: the steering wheel and column, steering gear, pitman arm, steering knuckle arm, front axle, steering knuckle pivot, tie-rods.

There are several different manual steering gears in current use, such as the rack and pinion type and the recirculating ball type. The rack and pinion steering gear is widely used. Another manual steering gear which is popular in imported cars is the worm and sector type.

The steering wheel and column are the source of injury to the driver, air bags and other devices being developed now to save the life of a driver.

Energy-absorbing columns must stop the steering wheel and column from being pushed to the rear as the front of the car is crushed in an impact.

Energy-absorbing columns must also provide the driver with a tolerable impact as he moves forward and strikes the wheel with his chest.

**5. Answer the following questions according to the text above:** 1. What mechanism is necessary to guide the car? 2. How is the steering wheel connected to the front wheels? 3. Why can the front wheels be swung to the left or to the right? 4. What does the manual steering system incorporate? 5. What types of manual steering gears in use do you know?

**6. Translate the sentences paying attention to Gerund.** 1. To guide the car it is necessary to have some means of turning the front wheels. 2. The steering wheel in front of the driver is linked by gears and levers to the front wheels for turning the car in the direction the driver wants to go. 3. Without using the steering system the car moves only in the direct position. 4. Manufacturers can use rack and pinion type

steering gear without choosing another type because "rack and pinion" type steering is very dependable. 5. Energy-absorbing columns must stop the steering wheel from being pushed to the rear when the front of the car is damaged in an impact.

**7. Translate the following sentences:** 1. Для управления автомобилем необходима система рулевого управления. 2. Рулевое управление включает в себя: рулевое колесо и рулевую колонку, зубчатое соединение, рулевую сошку, рычаги поворотного кулака и шарнирные соединения, рычаги и поперечные тяги. 3. Существуют различные типы рулевых механизмов, а именно: реечно-шестеренчатый тип, механизм с шаровой гайкой, механизм с червяком и сектором. 4. Когда водитель поворачивает руль влево или вправо, то рулевой механизм заставляет рулевую сошку поворачиваться влево или вправо. Это движение передается поперечными тягами к рычагам поворотных кулаков и к колесам, заставляя их поворачиваться влево или вправо.

### **8. Read and translate the dialogue.**

**S.:** Look here. I have some troubles with the steering system.

**V.:** What troubles?

**S.:** The first is excessive free play of the steering wheel.

**V.:** You should check free play of the steering wheel and steering gear performance.

**S.:** The second problem is oil leakage from the steering gear case.

**V.:** Check the steering gear case for oil leakage visually. Anything else?

**S.:** Sure. It is disadjustment of the steering gear. And I don't know what to do.

**V.:** You see, in this case it is better for you to go to a repairing shop. Good specialists should do this job.

**S.:** Thank you very much.

**V.:** Not at all.