CHASSIS, ELECTRICAL, AND SAFETY SYSTEM COMPONENTS OF THE AUTOMOBILE: AN ENGLISH–RUSSIAN TERMINOLOGY GUIDE FOR AUTOMOTIVE STUDENTS

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1. Introduction

While the engine and powertrain generate and transmit power, a modern automobile depends equally on its chassis, electrical system, and safety systems to operate reliably and protect its occupants. As with engine terminology, automotive students benefit greatly from learning these component names in both English, the international language of technical literature, and Russian, which remains widely used in regional textbooks, manuals, and workshop documentation throughout Uzbekistan and neighbouring countries. This article continues the bilingual terminology series by introducing the essential vocabulary of chassis, electrical, and safety systems, with each English term followed by its Russian equivalent in parentheses.

2. Chassis and Suspension Components

The chassis (шасси) is the structural skeleton of the vehicle, to which the body, engine, and running gear are all attached. Its design directly affects the comfort, handling, and safety of the automobile.

Frame (рама) — the rigid structural base of the vehicle, on which the body and mechanical components are mounted

Suspension system (система подвески) — connects the wheels to the frame and absorbs shocks from an uneven road surface

Shock absorber (амортизатор) — dampens the up-and-down oscillation produced by the suspension springs after a bump

Steering system (рулевое управление) — translates the rotation of the steering wheel into a change in the direction of the front wheels

Wheel (колесо) — the rotating component, fitted with a tyre, that supports the vehicle and provides traction with the road

3. Electrical System Components

The electrical system (электрооборудование) powers everything from engine ignition to interior lighting and modern driver-assistance features. Understanding its core components is essential for diagnosing faults and reading wiring diagrams.

Battery (аккумулятор) — stores electrical energy chemically and supplies the current needed to start the engine

Alternator (генератор) — generates electrical current while the engine is running and recharges the battery

Starter motor (стартер) — an electric motor that turns the engine over to begin the combustion cycle

Electronic control unit (ECU) (электронный блок управления (ЭБУ)) — a small onboard computer that monitors sensors and controls engine and system performance

Wiring harness (жгут проводов) — the organized bundle of wires and connectors that distributes electrical signals throughout the vehicle

4. Safety Systems

Modern automobiles include a range of dedicated safety systems (системы безопасности) designed to prevent accidents or reduce injury when a collision does occur.

Brake system (тормозная система) — generates friction to slow or stop the vehicle, most commonly using disc or drum brakes

Anti-lock braking system (ABS) (антиблокировочная система тормозов (АБС)) — prevents the wheels from locking during hard braking, helping the driver maintain steering control

Airbag (подушка безопасности) — a rapidly inflating cushion that protects occupants from impact during a collision

Seat belt (ремень безопасности) — restrains the occupant in place during sudden deceleration or a crash

5. Diagram: How the Systems Connect

Figure 1 illustrates, in simplified form, how the electronic control unit sits at the centre of the vehicle's electrical, chassis, and safety systems, coordinating information between them. Students should practise naming each surrounding component in both English and Russian while tracing its connection to the ECU.

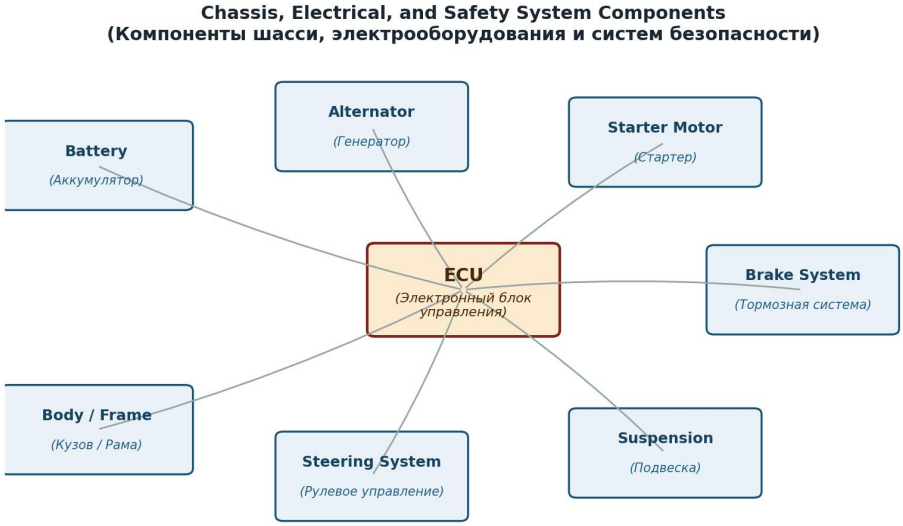


Figure 1. Chassis, electrical, and safety system components connected around the electronic control unit (ECU).

6. Vocabulary Review Table

The table below summarizes the key terms covered in this article. As with the previous article in this series, students may cover the Russian column and test their recall before checking the function column.

English Term	Russian Term	Function
Chassis	Шасси	The structural frame that supports all major components
Suspension	Подвеска	Absorbs road shocks and keeps wheels in contact with the road
Shock absorber	Амортизатор	Dampens the oscillation of the suspension springs
Steering system	Рулевое управление	Allows the driver to control the direction of the vehicle
Battery	Аккумулятор	Stores electrical energy and starts the engine
Alternator	Генератор	Charges the battery and powers the electrical

		system while running
Brake system	Тормозная система	Slows or stops the vehicle by friction
Airbag	Подушка безопасности	Inflates on impact to protect occupants

7. Practice Questions for Students

Answer the following in complete English sentences, then translate each answer orally into Russian.

1. What is the difference between the roles of the battery and the alternator in the electrical system?
2. Why does the suspension system need a shock absorber in addition to a spring?
3. Describe, in your own words, what the ECU does and why it is described as the 'centre' of the vehicle's systems.
4. Explain how the anti-lock braking system helps a driver maintain control during hard braking.
5. List three safety systems mentioned in this article and briefly state the function of each.

Conclusion

Together with the companion article on engine and powertrain components, this guide equips automotive students with a working bilingual vocabulary covering the chassis, electrical, and safety systems of the modern automobile. Mastery of these English and Russian terms allows students to move confidently between international technical literature and regional instructional materials, an essential skill for any future automotive engineer or technician.

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