

OCCUPATIONAL QUALIFICATION STANDARD

Vehicle Technician, EstQF Level 4

An occupational qualification standard is a document which describes the set of skills, knowledge and attitudes, i.e. competence requirements, needed to successfully accomplish duties. Occupational qualification standards are used for compiling curricula and awarding qualifications.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Vehicle Technician, EstQF Level 4	4

Possible specialisation and titles on occupational certificate	
Specialisation	Title on occupational qualification certificate
Automotive engineering	Car Technician, EstQF Level 4
Truck and bus technical engineering	Truck and Bus Technician, EstQF Level 4
Mobile machinery engineering	Self-propelled Machine Technician, EstQF Level 4
Light machinery, engine and bicycle technical engineering	Light Machinery, Engine and Bicycle Technician, EstQF Level 4

Possible partial professional qualifications and titles on occupational qualification certificate	
Title of partial professional qualification	Level of Estonian Qualifications Framework (EstQF)
Vehicle Climate Control Device Technician, EstQF Level 4	4

Part A DESCRIPTION OF WORK

A.1 Description of work
<p>The profession of vehicle technician comprises the following occupations: Vehicle Technician, Level 3; Vehicle Technician, Level 4; and Vehicle Technician, Level 5.</p> <p>Vehicle Technician, Level 4 maintains, repairs, carries out diagnostics on and identifies and eliminates malfunctions in vehicles, self-propelled machines, construction machinery, heavy machinery, light machinery, motorcycles, technological machinery, motorised manual machinery, bicycles, trailers and their accessories (hereafter referred to as vehicles and machinery).</p> <p>Vehicle Technician, Level 4 works independently using repair manuals, relevant databases, spare parts and accessories catalogues, maintenance manuals, manufacturers' technical requirements and other relevant resources.</p> <p>Vehicle Technician, Level 4 is a customer service representative responsible for the quality of the work done, including work health and safety, environmental safety and customer service.</p> <p>Vehicle Technician, Level 4 works independently using repair manuals, catalogues and instructions as necessary. They are responsible for work safety as well as any dangerous traffic situations occurring as a result of maintenance and/or repair work. Due to the constant evolution of technology, continuous self-development is necessary.</p> <p>Vehicle Technician, Level 4 works independently and in a team, their work requiring communication with co-workers and clients.</p>
A.2 Tasks
<p>A.2.1 General diagnostics, maintenance and repair of vehicles</p> <p>A.2.2 General diagnostics, maintenance and repair of vehicle bodies, interiors and superstructures</p> <p>A.2.3 General diagnostics, maintenance and repair of engines</p> <p>A.2.4 General diagnostics, maintenance and repair of transmission systems</p> <p>A.2.5 General diagnostics, maintenance and repair of electrical systems and passenger comfort systems</p>

<p>A.2.6 General diagnostics, maintenance and repair of steering systems and chassis</p> <p>Vehicle Technician, Level 4 includes the partial professional qualification Vehicle Climate Control Technician, Level 4</p> <p>A.2.7 General diagnostics, maintenance and repair of climate control systems (passenger compartment heating, ventilation and cooling systems)</p> <p>A.2.8 Climate control system work</p>
<p>Specialised areas of work</p> <p>Specialisation depends on the category/type and function of the vehicle: car technician, truck and bus technician (commercial vehicle), self-propelled machine technician and light machinery, motorcycle and bicycle technician. All areas of work are related to the specialisation.</p> <p>Truck and bus technical engineering</p> <p>A.2.9 General diagnostics, maintenance and repair of trucks and buses</p> <p>Mobile machinery engineering</p> <p>A.2.10 Evaluation of the condition and maintenance of mobile machinery superstructures and accessories</p> <p>Light machinery, engine and bicycle technical engineering</p> <p>A.2.11 Maintenance, general diagnostics and repair of motorcycles and powersports vehicles</p> <p>A.2.12 Maintenance, general diagnostics and repair of bicycles</p>
<p>A.3 Work environment and specific nature of work</p> <p>Vehicle technicians work mostly during the day and shift work is common. Work consists of various tasks that are usually done indoors. Dangerous work situations and outdoor work may occur.</p> <p>Vehicle Technician, Level 4 works mostly standing, but often also in ergonomically difficult conditions. They may come into contact with substances posing a health risk (engine fuels, lubricants and technical liquids, acids, exhaust fumes, etc.). The work environment may be noisy, dusty and/or damp and there may be vibrations. The work of Vehicle Technician, Level 4 involves sources of risk (mobile machinery, forklifts, fluorinated gas containers and work involving an open flame), so the job requires diligence and accuracy and an adequate health status. Personal protection gear should be used according to the work risk analysis. Work gear fasteners (zips, buttons, rivets, etc.) must be concealed.</p>
<p>A.4 Tools</p> <p>Vehicle Technician, Level 4 uses handheld, electrical, hydraulic and pneumatic tools and workshop, repair and maintenance tools. They also use various diagnostics devices, computer programmes and repair manuals that are mostly in English.</p>
<p>A.5 Personal qualities required for work: abilities and characteristics</p> <p>The expected traits of Vehicle Technician, Level 4 are precision, a sense of responsibility, the ability to cooperate, stress tolerance and analytical and decision-making skills.</p>
<p>A.6 Professional preparation</p> <p>Vehicle Technician, Level 4 has vocational education or vocational skills learnt on the job and through vocational training.</p>
<p>A.7 Most common occupational titles</p> <p>Common occupational titles for vehicle technicians include car technician, car mechanic, car fitter, vehicle maintenance fitter, light machinery technician, motorcycle technician, bicycle technician, construction machinery technician, commercial machinery technician, technical maintainer, technical maintenance specialist, technical condition inspector and warranty technician.</p>
<p>A.8 Regulations governing profession</p> <p>According to regulation no. 16 of the Ministry of the Environment of 11 March 2005, European Parliament and Council regulation 842/2006 and European Commission regulations 303/2008 and 307/2008 and directive 2006/40/EC, a partial professional qualification is necessary for working as a vehicle climate control system technician.</p>

In order to transport vehicles, they must have the necessary driver's licence (Traffic Act).

Part B COMPETENCY REQUIREMENTS

B.1 Structure of occupation

When applying for the qualification of vehicle technician, competences must be certified according to the chosen specialisation.

Mandatory competences B.2.1-B.2.8 and B.2.13 must be certified in order to apply for the qualification of Car Technician, Level 4.

Mandatory competences B.2.1-B.2.9 and B.2.13 must be certified in order to apply for the qualification of Truck and Bus Technician, Level 4.

Mandatory competences B.2.1-B.2.8, B.2.10-B.2.11 and B.2.13 must be certified in order to apply for the qualification of Mobile Machinery Technician, Level 4.

Mandatory competences B.2.1-B.2.8 and B.2.12-B.2.13 must be certified in order to apply for the qualification of Light Machinery, Motorcycle and Bicycle Technician, Level 4.

Mandatory competences B.2.7 and B.2.8 must be certified in order to apply for the partial qualification of Vehicle Climate Control System Technician, Level 4.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 General diagnostics, maintenance and repair of vehicles	EstQF Level 4
Performance indicators: 1. Evaluates the technical condition of vehicles, machinery and their accessories for compliance with standards. 2. Provides technical maintenance and/or repair services for vehicles and machinery according to the requirements set by the manufacturer.	
B.2.2 General diagnostics, maintenance and repair of vehicle bodies, interiors and superstructures	EstQF Level 4
Performance indicators: 1. Chooses the repair manual relevant to the vehicle, machinery or accessory and to the task. 2. Dismantles, eliminates defects in and assembles elements of bodies, interiors and superstructures (e.g. threaded joints, dowels, locking rings and connectors). 3. Labels and stores the dismantled parts.	
B.2.3 General diagnostics, maintenance and repair of engines	EstQF Level 4
Performance indicators: 1. Assesses the technical condition of internal combustion engines, carries out the necessary measurements and compares the measured parameters against technical information. 2. Carries out the maintenance of internal combustion engines following maintenance instructions. 3. Measures geometrical parameters, noise, vibration, pressure and electrical signals. 4. Repairs internal combustion engines following repair instructions. 5. Dismantles, eliminates defects in and assembles engines.	
Knowledge: 1) principles of internal combustion engines; 2) hybrid and electric motor principles, safety labels, maintenance and repair differences compared to internal combustion engines, speciality tools; 3) principles of alternative fuel engines.	
B.2.4 General diagnostics, maintenance and repair of transmission systems	EstQF Level 4
Performance indicators:	

<ol style="list-style-type: none"> 1. Knows the construction and operating principles of transmissions. 2. Carries out transmission maintenance work according to maintenance instructions. 3. Assesses the technical condition of transmissions. 4. Determines the source of a malfunction and chooses how to fix it. 5. Repairs transmissions following repair manuals. 6. Dismantles, eliminates defects in and assembles transmission components. 	
B.2.5 General diagnostics, maintenance and repair of electrical systems and passenger comfort systems	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Replaces accumulators and low and high voltage elements and installs accessories in vehicles and machines. 2. Maintains, carries out diagnostics on and replaces electrical systems, passenger comfort systems and their components. 3. Reads electrical schemes and measures and records electrical signals. 4. Reads and records error codes. 5. Records sensor and actuator parameters. 6. Activates sensors and actuators. 	
B.2.6 General diagnostics, maintenance and repair of steering systems and chassis	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Does maintenance work and repairs and configures steering systems and chassis. 2. Carries out diagnostics on and configures steering systems and undercarriages based on the manual. 3. Uses the appropriate devices, stands and tools when carrying out diagnostics on steering systems and chassis and analyses stand reports. 4. Assembles and balances wheels and evaluates the condition of tyres and rims. 	
<p>Knowledge:</p> <ol style="list-style-type: none"> 1) basics of chassis and undercarriage configuration; 2) tyre classification and marking. 	
B.2.7 General diagnostics, maintenance and repair of climate control systems (passenger compartment heating, ventilation and cooling systems)	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Inspects and maintains climate control systems and replaces their components in compliance with environmental and handling laws regarding work with gases. 2. Reads and records error codes. 3. Records sensor and actuator parameters. 4. Activates sensors and actuators. 5. Measures pressure and records electrical signals. 6. Dismantles, eliminates defects in and assembles heating, ventilation and air conditioning systems. 7. Evaluates the compliance of the technical condition of vehicle climate control systems with current technical requirements. 	
<p>Knowledge:</p> <ol style="list-style-type: none"> 1) the construction and work principles of vehicle climate control systems; 2) the principles of use and properties of the gases and working fluids used in motor vehicle air conditioners as refrigerants; 3) the principles of thermodynamics; 4) legal acts related to the environmental impact and handling of refrigerants; 5) climate control system inspection and checking for leaks; 6) Environmentally friendly work methods in system installation, maintenance and servicing and the collection of refrigerants. 	
B.2.8 Climate control system work	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Knows legal acts related to the environmental impact of and work with refrigerants. 2. Knows the requirements of environmentally safe use and safety techniques of refrigerants. 	

3. Knows environmentally friendly work methods for system installation, maintenance and servicing and the collection of refrigerants.

Knowledge:

- 1) How to decrease or replace the use of f-gases (refrigerants) and their safe handling;
- 2) the principles of climate control systems.
- 3) the principles of thermodynamics;
- 4) the environmental effects of refrigerants (ODP and GWP indicators).

COMPETENCES RELATED TO SPECIALISATION

Truck and bus technical engineering

B.2.9 General diagnostics, maintenance and repair of trucks and buses

EstQF Level 4

Performance indicators:

1. Evaluates the compliance of trucks, buses and their accessories with current standards.
2. Carries out maintenance work on trucks, buses and their accessories.
3. Carries out diagnostics on trucks, buses and their accessories.
4. Repairs trucks, buses and their accessories.
5. Evaluates and measures mechanisms and systems, analyses the results and compares them against technical requirements.

Knowledge:

- 1) the principles of the construction and operation of commercial vehicles.

Mobile machinery engineering

B.2.10 Evaluation of the condition and maintenance of mobile machinery superstructures and accessories

EstQF Level 4

Performance indicators:

1. Evaluates the condition of mobile machinery superstructures and accessories.
2. Carries out maintenance and repair work on mobile machinery and their accessories using suitable technologies.
3. Washes, cleans and maintains exterior and interior surfaces of mobile machinery superstructures and accessories and their components in an economical manner.
4. Uses welding, gluing, riveting and soldering methods to fulfil work tasks.
5. Dismantles and assembles mobile machinery superstructures and their accessories using suitable technologies.
6. Labels and stores the dismantled parts of mobile machinery superstructures.
7. Stores and preserves mobile machinery and their accessories in an economical and environmentally friendly way as instructed.
8. Reads, records and deactivates error codes.
9. Measures computer network signals.
10. Configures machine and remote control systems.

Knowledge:

- 1) the principles of the construction and operation of commercial vehicles. 1) requirements of washing, cleaning, dismantling, eliminating defects in, marking, assembling and storing mobile machinery superstructures and their accessories;
- 2) materials used in the construction and repair of mobile machinery and their accessories as well as their properties and the general theoretical principles and technologies of material processing;
- 3) requirements of the storage and preservation of mobile machinery and their accessories;
- 4) quality evaluation of welding, gluing, riveting and soldering;
- 5) usage and safety requirements of open-flame work methods and devices;
- 6) principles of remote control systems;
- 7) principles of reducing pollutants.

Light machinery, engine and bicycle technical engineering

B.2.11 Maintenance, general diagnostics and repair of motorcycles and powersports vehicles	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Carries out motorcycle and powersports vehicle maintenance work according to maintenance manuals. 2. Evaluates the technical condition of motorcycles and powersports vehicles, identifies defects and chooses a repair method. 3. Dismantles and assembles motorcycles and powersports vehicles using suitable technology. 4. Repairs motorcycles and powersports vehicles according to the repair manuals. 	
<p>Knowledge:</p> <ol style="list-style-type: none"> 1) normative acts related to motorcycles and powersports vehicles (ATVs, scooters, snowmobiles, etc.); 2) the construction, engines, transmission and work principles of motorcycles and powersports vehicles; 3) motorcycle and powersports vehicle driving techniques and positions and their relation to vehicle control; 4) motorcycle and powersports vehicle maintenance and repair safety requirements. 	
B.2.12 Maintenance, general diagnostics and repair of bicycles	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Carries out the maintenance of bicycles following maintenance instructions 2. Evaluates the technical condition of bicycles, identifies defects and chooses a repair method. 3. Disassembles and assembles bicycles using suitable technologies. 4. Repairs bicycles following repair instructions. 	
<p>Knowledge:</p> <ol style="list-style-type: none"> 1) legal acts related to bicycles; 2) the principles of the construction and operation of bicycles; 3) bicycle maintenance and repair safety requirements. 	

RECURRING COMPETENCES

B.2.13 Recurring competences of Vehicle Technician, Level 4	EstQF Level 4
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Works with appropriate tools and devices in compliance with maintenance and repair technology, work safety requirements and the procedures established in the enterprise. 2. Checks client complaints and gauges their validity, using simulation tests if necessary. 3. Prepares the work space according to the established work norms, keeps it organised and returns used tools and devices to their correct places after completing a task. 4. Plans the time it takes to complete tasks according to the manual, accounts for the amount of materials needed and fills in the necessary documentation for completed work. 5. Records and restores client settings (stereo memory, seat and wheel position, climate control settings, etc.). 6. Inspects and evaluates the quality compliance of the tasks agreed upon with the client against the repair manual, eliminating any deviations if necessary. 7. Presents the customer with job descriptions and documentation (e.g. costs, maintenance log, act of transfer and receipt and a copy of the diagnostics results if necessary or requested by the client). 8. Uses energy-saving and environmentally friendly and safe work methods. 9. Does test drives if necessary, adhering to the Traffic Act and test drive instructions. 10. Communicates with co-workers and clients in a friendly and appropriate manner, resolving conflict calmly and offering solutions. 11. Describes the repair work to the client in an understandable way and giving professional explanations if necessary. 12. Does fitting work (e.g. dismantling aggregates and mechanisms, eliminating defects and assembling; drilling, threading and various types of cutting, pressure and thermal processing operations). 13. Opens, closes and fixes electrical connections (if necessary using quick-connect fitting, soldering and insulating). 14. Uses technical drawings and schemes and repair databases, catalogues and manuals. 15. Uses a computer for information processing, communication, content creation and safety at the Basic user level (see Annex 1). 	

16. Has the following Estonian skills: comprehension at the B2 level and speaking and writing at the B1 level (see Annex 2).
17. Has the following skills in at least one foreign language (preferably English): comprehension at the B1 level and speaking and writing at the A2 level (see Annex 2).
Knowledge: 1) construction principles and motion dynamics of motor vehicles/machines and their accessories; 2) material studies; 3) basics of technical measuring; 4) basics of machine elements and mechanics; 5) basics of electrical engineering; 6) basics of pneumatics and hydraulics; 7) occupational and environmental safety requirements; 8) occupational health requirements; 9) fire safety requirements; 10) waste disposal requirements; 11) chemical safety requirements; 12) outdoor work safety requirements;
Assessment method(s): Recurring competences are evaluated as part of the assessment of the other competences listed in the occupational qualification standard.

Part C
GENERAL INFORMATION AND ANNEXES

C.1 Information concerning compilation and certification of occupational qualification standard and reference to classification of occupations	
1. ID of occupational qualification standard in register of occupational qualifications	12-09122019-02/10k
2. Occupational qualification standard compiled by:	Vladimir Krasnoštšjokov, Toyota Baltic AS Valter Kokkota, MTÜ Autokutseõppe Liit Peeter Johannson, Tallinna Linnatransport AS Tarmo Talismaa, Volvo Estonia OÜ Piret Lilover, SA Innove Ülo Ramp, MTÜ Autokutseõppe Liit Janek Pukka, Rakvere Ametikool Andrus Simberg, MTÜ Autokutseõppe Liit Sven Andresen, Tallinna Tehnikakõrgkool Ene Pukk, Tallinna Lasnamäe Mehaanikakool Ülo Kannelmäe, Kehna Majandus- ja Tehnoloogiakool Kaupo Veegen, Honda Motor Europe Ltd, Estonian Branch
3. Occupational qualification standard approved by:	Transport and Logistics
4. No. of decision of Sectoral Council	13
5. Date of decision of Sectoral Council	09.12.2019
6. Occupational qualification standard valid until	19.10.2021
7. Occupational qualification standard version no.	10
8. Reference to International Standard Classification of Occupations (ISCO 08)	7231 Motor Vehicle Mechanics and Repairers
9. Reference to European Qualifications Framework (EQF)	4
C.2 Occupational title in foreign language	

English:	Vehicle Technician, EstQF Level 4
Finnish:	mootoriajoneuvon asentaja
Russian:	техник по автомобилям
C.3 Annexes	
Lisa 1 Scale of self-assessment in digital competence	
Lisa 2 Language skills level descriptions	