

Standard Draft Preview

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Title of occupation

Automotive vehicle service and maintenance technician - light vehicle

UOS reference number

ST0033

Core and options

No

Level of occupation

Level 3

Occupational maps data

Route: Engineering and manufacturing

Pathway: Maintenance, installation and repair

Cluster: Service, repair and/or overhaul operative or technician

Typical duration of apprenticeship

36 months

Resubmission

No

Would your proposed apprenticeship standard replace an existing framework?

No

Does professional recognition exist for the occupation?

No

Regulated occupation

Is this a statutory regulated occupation?

No

Occupational summary

An automotive vehicle service and maintenance technician services, diagnoses, and repairs light vehicles such as cars and vans and works either in dealerships which focus on a particular manufacturer, or in an independent garage which deals with many different makes of vehicles.

The automotive retail industry provides employment for over half a million employees who work for approximately 70,000 employers. It is a major contributor to the UK economy. In a large dealership the technician will typically report to the Workshop Controller, who in turn reports to the Aftersales Manager and liaises with the Service Reception. In smaller garages the technician will report directly to the owner or Garage Manager.

The qualified automotive service and maintenance technician must be able to work independently but also operate as an effective team member and have good communication skills. They will understand how their workshop and business function from a commercial perspective and identify ways in which they can work more efficiently. Technicians working in large dealerships work with other departments, for example carrying out work for the Sales Department and ordering parts from the Parts Department, whereas technicians in smaller independent garages may be called upon to carry out some of the functions of the other departments themselves, for example managing their own delivery of parts and discussing the vehicle issues directly with the customer.

The automotive service and maintenance technician will work on all the systems found within a wide range of new and older vehicles. The day-to-day work ranges from replacing simple parts through to solving complex faults with the use of diagnostic methods and test equipment. The tasks faced are constantly changing, driven by the introduction of ever more complex vehicle technologies, powertrain systems and diagnostic techniques.

The automotive service and maintenance technician will be able to work with a large range of tools and equipment to help support the completion of fault finding and repair tasks on customer cars. They will be able to access technical information through various ways depending on the type of business from manufacturer based online technical information systems to paper-based workshop manuals. The automotive service and maintenance technician will be able to read and interpret complex technical diagrams and understand wiring diagrams to be able to trace faults within increasingly complex electrical systems.

Today's technician will need to be able to work on a wide range of vehicle types from internal combustion driven engines to Hybrid and full Electric. The automotive service and maintenance technician will need to understand all the systems involved across these types of vehicles to be able to repair and diagnose faults.

The technician will have strong communication skills and use these with internal and external colleagues, identifying issues and presenting solutions and resolving low level customer complaints.

The automotive service and maintenance technician must comply with environmental and health and safety regulations and procedures. They must use the appropriate personal protective equipment. They take responsibility for their own work and the quality of workmanship. They must organise their work, meeting deadlines and scheduling tasks appropriately.

The growing complexity of today's vehicles, and the pressure to deliver a high-quality customer experience, requires the retail automotive sector to attract and train high calibre individuals and this is reflected in the elements of the Standard described below.

Typical job titles



Are there any statutory / regulatory or other typical entry requirements?

No

Occupation duties

Duty	KSBs
Duty 1 Communicate with internal customers and colleagues to establish vehicle problems and their requirements.	K1 K28 K29 K30 K31 K32 S20 S21 S22 S23 B1 B3 B4 B5 B6 B11
Duty 2 Conduct vehicle safety inspections on new and used vehicles and carry out routine servicing and maintenance.	K2 K5 K7 K8 K9 K10 K11 K12 K13 K14 K15 K16 K17 K18 K19 K21 K24 K25 S5 S8 S24
Duty 3 Work independently and as part of a team, contributing to business outcomes.	K1 K28 K29 K30 K31 K32 S8 S20 S21 S22 S23 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12
Duty 4 Inspect, diagnose, repair and replace systems and components on cars, car-derived vans and light goods vehicles.	K5 K7 K9 K10 K11 K12 K13 K14 K15 K16 K17 K18 K19 K20 K21 K24 K30 S6 S9 S10 S11 S12 S13 S14 S15 S16 S17 S18 S25
Duty 5 Identify and request vehicle replacement components in line with workplace and diagnostic procedures.	K5 K7 S11
Duty 6 Follow workplace, manufacturer or technical instructions and procedures for vehicle maintenance, diagnosis and repair.	K2 K6 K7 K8 K22 K23 K25 K27 S5 S6 S8 S9 S11 S12 S13 S14 S15 S16 S17 S18 S19 S24 S25
Duty 7 Maintain the workplace environment, follow good housekeeping practices in accordance with health and safety procedures.	K3 K4 K6 S1 S2 S3 S4 S7
Duty 8 Promote the safety of themselves, customers, colleagues, and the environment.	K3 K4 K22 K23 K26 K27 S1 S2 S3 S4 S7
Duty 9 Isolate high voltage vehicles to ensure safe working conditions are met.	K26

Duty	KSBs
	S19
Duty 10 Inspect, diagnose, repair and replace high-voltage vehicle systems and components on cars, car-derived vans and light goods vehicles.	K17 K26 S19

KSBs

Knowledge

K1: Understanding of the automotive industry and the role of the automotive service and maintenance technician. Limits of autonomy and reporting channels within the business and sector.

K2: Vehicle safety inspections and routine maintenance: manufacturer specifications or approved schedules. The use of vehicle specific data and the legal requirements for wear and serviceability.

K3: Awareness of general and sector specific health and safety regulations, standards, and guidance and impact on role. Safe working procedures, Control of Substances Hazardous to Health - COSHH. Fire safety. Good housekeeping. Hazards and risks. Health and Safety at Work Act. Manual handling. Personal Protective Equipment - PPE. Safety equipment: guards, fire extinguishers. Safety signage. Slips, trips, and falls. Lifting operations and lifting equipment regulations - LOLER, Provision and use of work equipment regulations - PUWER.

K4: Environment and sustainability awareness relevant to the occupation and technician's role and responsibilities. Recycling, reuse, and safe disposal of waste.

K5: Understanding of the wide range of tools and equipment used in the retail automotive industry. Purpose and operation.

K6: Maintenance and storage methods for tools and equipment, including calibration checks.

K7: Workplace instructions. Purpose and use for inspection, maintenance, diagnosis and replacement.

K8: Vehicle service records, owner's manuals, and warranties. Purpose, use and legal requirements in relation to repairs, vehicle safety, consumer and MOT.

K9: Tyres: legislation, replacement, repair, and technical information including EU tyre labelling, tyre pressure monitoring systems - TPMS, sidewall markings, homologated fitments relating to cars, car derived vans and light goods vehicles.

K10: Steering systems: purpose, function, and location of systems and components for inspection, removal, diagnosis and replacement. Mechanical, hydraulic and electric power assisted steering.

K11: Suspension systems: purpose, function, and location of systems and components for inspection, removal, diagnosis and replacement. Macpherson strut, double wishbone, ball joints, suspension arms, spring types, including leaf and coil, dampers and shock absorbers, air or hydraulic suspension, active electronically controlled and subframes.

K12: Braking systems: purpose, function, and location of systems and components for inspection, removal, diagnosis and replacement: brake discs, brake pads, brake shoes, brake drum, hydraulic components, anti-lock braking systems, electronic stability programmes, traction control systems, brake pedal simulator, mechanical and electrical parking brake systems, brake by wire systems, brake pipe and hoses, wheel bearings.

K13: Internal combustion engine systems: purpose, function, and location of all systems and components for inspection, removal, diagnosis and replacement including but not limited to: cylinder head, camshafts and valve train, pistons, connecting rods, turbo and super chargers, cylinder block types, crankshafts, balance shafts, intake systems, exhaust systems, seals and gaskets, engine drive systems: chain, dry belt, gear and wet belt.

K14: Vehicle transmission systems: purpose, function, and location of all systems and components for inspection, removal, diagnosis and replacement including but not limited to: manual transmission systems, automatic transmission systems, dual clutch transmission systems, CVT transmission systems, transfer gearboxes.

K15: Vehicle cooling systems: purpose, function, and location of all systems and components for inspection, removal, diagnosis and replacement including but not limited to: water pumps (mechanical and electrical), radiators, hoses, heat exchangers, oil coolers, charge coolers, thermostats - mechanical and electrical, sensors, actuators, drive belt systems and coolant types.

K16: Vehicle final drive systems: purpose, function, and location of all systems and components for inspection, removal, diagnosis and replacement including but not limited to: drive shafts, propeller shafts, open differentials, mechanical limited slip differentials, electronically controlled differentials, drive joint types.

K17: Vehicle electrical systems: purpose, function, and location of all systems and components for inspection, removal, diagnosis and replacement including but not limited to: system control units, wiring, connectors, sensors, networking systems: CAN, Ethernet, SerDes, Flex Ray, LIN, MOST, Wi-Fi, vehicle network connectivity systems, lighting, infotainment, electrical calculations, testing.

K18: Emission control systems: purpose, function, and location of systems and components for inspection, removal, diagnosis and replacement. Catalytic converters, evaporative control systems, EGR - exhaust gas recirculation, DPF - diesel particulate filter, PPF -petrol particulate filter, SCR - selective catalytic reduction.

K19: Vehicle heating, ventilation, and air conditioning systems - HVAC, found on ICE and battery electric vehicles: purpose, function and location of systems including climate control systems for inspection, maintenance, diagnosis and replacement: refrigerants, coolants, compressors, blower motors, valves, heat exchangers, pipes and hoses.

K20: Low voltage batteries: purpose, function and location of low voltage batteries, starting and charging systems: auxiliary battery, starter motor, alternator, e-machine, starter generator mild hybrid 48V systems.

K21: Maintenance, diagnosis and replacement of low voltage batteries, starting and charging systems.

K22: Knowledge of advanced driver-assistance systems - ADAS, and impact of repair work: static and dynamic calibration methods, calibration equipment understanding.

K23: Advanced driver-assistance systems - ADAS, levels of autonomy: passive and active advanced driver assistance systems.

K24: Four-wheel geometry principles including wheel alignment, Ackermann principle, alignment principles, toe, camber, caster, thrust angle, adjustment types and methods.

K25: Vehicle fluid and filtration systems: brake fluid, oil and oil filters, air filters, pollen cabin filters.

K26: Awareness of electrified vehicle technologies and principles of operation: condition monitoring of high voltage batteries and onboard chargers.

K27: Awareness of hydrogen powered vehicle technologies and principles of operation including ICE and fuel cell vehicles.

K28: Principles of customer care: pre and post vehicle customer service, identifying and reporting on customer and vehicle needs.

K29: Business operation considerations: efficiency, customer satisfaction, competitiveness, minimising risks to operation, and ethical issues.

K30: Verbal communication techniques. Giving and receiving information, matching style to audience.

K31: Written communication techniques for electronic and paper-based communication. Automotive industry terminology.

K32: Information and digital technology: email, collaboration packages, databases, equipment digital interfaces, management information systems, word processing, work sharing platforms, point of sale, GDPR, cyber security.

Skills

S1: Comply with health and safety procedures in the workplace in compliance with regulations, standards, and guidance.

S2: Prepare the vehicle and working area before the work activity. For example, remove or mitigate slip and trip hazards.

S3: Maintain and restore the work area during and on completion of the activity.

S4: Store, maintain, check calibration, and return tools and equipment to storage.

S5: Access vehicle technical data to inform inspections and make judgements on wear and serviceability.

S6: Obtain and interpret diagnostic and repair information to decide correct repair process.

S7: Comply with environmental and sustainability procedures, regulations, standards, and guidance. Segregate resources for reuse, recycling, and disposal.

S8: Carry out vehicle safety inspection and/or routine service maintenance procedures using vehicle specific data on car, car-derived vans or light goods vehicles.

S9: Select and use the correct tools and equipment, mechanical and electrical measuring tools, and diagnostic equipment for each task to diagnose and repair vehicle systems.

S10: Inspect and diagnose faults on cars, car-derived vans, or light goods vehicles.

S11: Follow recognised diagnostic procedures and logical diagnostic sequences, applying advanced diagnostic principles and problem-solving techniques to establish faults.

S12: Diagnose and repair vehicle transmission system faults, for example, clutch, transmission - manual and or auto, wheel bearing, final drive, flywheel, drive shaft faults.

- S13:** Diagnose and repair engine mechanical faults, for example, head gasket, compression loss and similar engine mechanical issues.
- S14:** Diagnose and repair engine electrical faults, for example, sensor, ignition, injector, emission control devices.
- S15:** Diagnose and repair auxiliary electrical faults, for example, electric windows, heated windows, heating and air-conditioning, lighting, body module faults.
- S16:** Diagnose and repair emission control system faults for example, catalytic convertor, diesel particulate filter, exhaust gas recirculation and selective catalytic reduction systems.
- S17:** Diagnose and repair vehicle chassis system faults, for example ABS, steering, suspension and stability related system faults.
- S18:** Diagnose and repair vehicle starting or charging system faults, for example, starter system, charging system, stop start system faults.
- S19:** Carry out state-of-health condition monitoring tests on high-voltage batteries for electrified vehicles using test equipment.
- S20:** Record vehicle service maintenance, parts replacement, or repair reports using appropriate methods, for example job card, job reports.
- S21:** Communicate with others verbally, for example customers, suppliers, and colleagues.
- S22:** Communicate in writing, for example with internal and external customers, colleagues, and managers.
- S23:** Use information and digital technology systems.
- S24:** Apply procedures to check and replace fluids, and filtration parts.
- S25:** Carry out four-wheel alignment checks and adjustments to bring vehicles into manufacturer specifications.

Behaviours

- B1:** Take responsibility when required and be honest and accountable when things don't go as planned.
- B2:** Operate as an effective team member.
- B3:** Behave in accordance with the values of the company and treat colleagues and customers with respect and courtesy supporting an inclusive workplace.
- B4:** Build effective relationships with colleagues and customers.
- B5:** Gain trust and pay attention to colleagues and customers concerns and needs.

B6: Communicate effectively on a range of topics and with a range of stakeholders.

B7: Deliver excellent results and achieve challenging goals.

B8: Contribute to problem solving discussions and enjoy finding solutions to own and other people's problems.

B9: Suggest ways to make the business more efficient and contribute to its commercial growth.

B10: Constantly learn in order to improve own performance and that of the business.

B11: Share knowledge and skills to develop others.

B12: Demonstrate a passion for automotive engineering.

Qualifications

English and maths

English and maths qualifications must be completed in line with the [apprenticeship funding rules](#).

Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications?

Yes

Other mandatory qualifications

Level 3 qualification for F-Gas handler for air-conditioning in motor vehicles in accordance with (EU) 517/2014 regulations (or an equivalent qualification that a European Union (EU) member state recognises)

Level 3 Award in Electric/Hybrid Vehicle System Repair & Replacement

Subject sector area

4.3 Transportation operations and maintenance