HM Government

T-LEVELS

T Level Technical Qualification in Maintenance, Installation and Repair for Engineering and Manufacturing (8712-35)

Occupational Specialism in Light and Electric Vehicles (315)

Guide Standard Exemplification Material Distinction

City & Guilds | eal

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1.2 March 2026	Minor amendment to opening paragraph	Introduction

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Introduction

The Guide Standard Exemplification Material within this document refer to the T Level Technical Qualification in Maintenance, Installation and Repair for Engineering and Manufacturing Occupational Specialism in Light and Electric Vehicles sample assignment. The aim of these materials is to provide centres with examples of knowledge, skills and understanding that attest as examples of a distinction grade. In this document all exemplar evidence attests as examples of performance at the distinction grade boundary. The examples provided do not reflect all evidence from the sample assignment as the focus of this material is the quality and standards that need to be achieved rather than the volume of exemplar evidence provided. However, the examples provided are representative of all tasks in the sample assignment. The evidence presented here has been developed to reflect a distinction grade within each task but is not necessarily intended to reflect the work of a single candidate. It is important to note that in live assessments a candidate's performance is very likely to exhibit a spikey profile and standard of performance will vary across tasks. A distinction grade will be based on a synoptic mark across all tasks.

The materials in this Guide Standard Exemplification Material (GSEM) are separated into the sections as described below. Materials are presented against a number of tasks from the assignment.

Task

This section details the tasks that the candidate has been asked to carry out, what needs to be submitted for marking and any additional evidence required including any photographic evidence. Also referenced in this section are the assessment themes the candidates will be marked against when completing the tasks within it. In addition, candidate evidence that has been included or not been included in this GSEM has been identified within this section.
In this GSEM there is candidate evidence from:

- Task 1
- Task 2
- Task 3
- Task 4

Candidate evidence

This section includes exemplars of candidate work, photographs of the work in production (or completed) and practical observation records of the assessment completed by centre assessors. This will be exemplar evidence that was captured as part of the assessment and then internally marked by the centre assessor.

Commentary

This section includes detailed comments to demonstrate how the candidate evidence attests to the standard of minimal threshold competence by directly correlating to the grade descriptors for this occupational area. Centres can compare the evidence against the performance indicators in the marking grid descriptors within the assessor packs, to provide guidance on the standard of knowledge, skills and understanding that need to be met for minimal threshold competence.

It is important to note that the commentary section is not part of the evidence or assessment but are evaluative statements on how and why that piece of evidence meets a particular standard.

Grade descriptors

To achieve a distinction, a candidate will typically be able to:

Competently and thoroughly interpret technical information, applying technical skills to plan, assess risk and follow safe working methods to practical tasks and procedures to an exemplary standard in response to the requirements of the brief, working systematically, logically and efficiently, producing an excellent quality of work that meets regulations and standards.

Thoroughly prepare working areas, mitigating potential risks prior to commencing tasks and consistently apply exemplary housekeeping techniques during tasks that allow safe and efficient working.

Demonstrates comprehensive technical skills for diagnosing components, assemblies and sub-assemblies to complete maintenance, service and repair activities, in line with the requirements of the brief, working systematically, logically and efficiently.

Demonstrate exemplary technical skills using tools and equipment for light and electric vehicle maintenance, service and repair, ensuring safe isolation, removal and replacement of components, working systematically, logically and efficiently.

Demonstrate comprehensive knowledge and understanding of the principles and processes required for disassembly, repair, configuration and re-assembly of light and electric vehicle systems, ensuring that all tolerances, calibrations and tightening torques are in-line with specification.

Work safely and make well founded and informed decisions on the selection and appropriate use of tools, materials and equipment within the working environments for maintenance, service and repair activities.

Consistently and accurately use industry and technical terminology across different communication methods with full consideration of technical and non-technical audiences.

Task 1 – Plan the service, maintenance and repair activities

(Assessment themes: Health and safety, Planning and preparation, Systems and components)

For task 1 candidates need to produce the following pieces of evidence:

a) list of requirements and resources, including justification for the selection of resources and fault diagnosis methods to be used
b) completed risk assessment, covering both vehicles and the welding activity
c) job card for each vehicle and the welding activity.

Candidate evidence

1a. List of requirements and resources, including justifications for the selections.

Resources
The following resources will be required to undertake the required maintenance activities.

Physical resources (tools/equipment)
The following will be needed to undertake the maintenance activities.

	Quantity	Purpose and justification
Spanner set	1	For nuts/bolts fixings/fastenings.
Driver set	1	Different types of drivers for different fixtures and fixings.
Screw drivers	various	To remove and refit screws / bolts with heads that match the screwdriver.
Pilers	3	To hold items or help with removal.
Torque wrench	1	To torque fixtures.
Socket set	3	To use on the torque wrench or other appropriate components/fixings/fastenings.
Multimeter	1	Conduct various electrical tests.
Diagnostic code reader	1	To complete servicing tasks like electronic handbrake servicing. To interrogate the system for diagnostics.
Laptop	1	Required to control and diagnose the systems. Required to get access to the technical information autodata.
Service kits for the vehicles	As required.	Filters, oil, coolant, brake fluid, powered steering fluid, gear box oil.
DTI gauge, tyre tread depth gauge, refractometer, brake pad gauge, micrometer, vernier gauge.	1 of each	DTI gauge for brakes, tyre tread depth gauge for the tyres, refractometer to check the coolant strength, brake pad gauge to check the pad wear, micrometer for the discs, vernier gauge for the brake discs/drum.
Air tools	As required	Tyre inflator and air line to pressurise the tyres to the correct pressure, air gun to remove tight bolts/nuts.
Exhaust extraction	Per vehicle	Required to meet the health and safety standards of running a vehicle up in a workshop – remove fumes safely.
Wheel and Tyre machines with balance weight	As required	To remove, refit and balance a wheel/tyre/s if needed.
Welding kit	1	To weld the exhaust pipe required.
Insulated tools for working on and electric/hybrid vehicle	Whole set/toolbox	To prevent accidental arc and work on parts near high voltage.

Spare parts	As required	I may need nuts, bolts, screws, cable ties to replace or repair the vehicles during the service, maintenance, and repair activities.
Materials and consumables *The following will be needed to undertake the maintenance activities.*		
Fuel	As required	To run the vehicles.
Cleaning fluids	As required	To clean brakes or small spillages.
Rags	As required	To wipe down spillages and prevent any overspill of fluids.
Lubricants	As required	For lubricating moving parts as per service schedule.
Protective equipment *The following PPE are required to support safety during the maintenance activities, and to meet requirements of the Health and Safety at Work Act (HASAWA).*		
Gloves – disposable, heat proof and PU coated.	As required	To reduce chances of injury/contamination to hands, also to provide extra grip. Worn throughout the whole process.
Overalls	1	Basic PPE requirements meeting HASAWA. To protect clothes from dirt, water and other contaminants that may result from the process. Protection of the body from hot objects.
Safety shoes/boots	1	Basic PPE requirements meeting HASAWA. Limit injuries from instruments, tools and equipment causing damage to feet.
Safety eye wear	1	To use when using spray lubricants and at other times when there may be a risk of eye injury present. Used to prevent ingress or eye damage.
Hybrid/electric vehicle gloves and apron	1 pair	To prevent accidental electrocution.
Welding mask and gloves	1	PPE requirement when welding preventing arc eye, hand damage, face, neck and hand burns, infrared heat and light, and sparks.
Warning signs and notices		For welding activities. To indicate that welding is being carried out, informing others in the area.
Vehicle protective equipment *The following VPE is required to protect vehicles from damage or deterioration of the paint work whilst maintenance and servicing is carried out, and to meet requirements of the Health and Safety at Work Act (HASAWA).*		
Wing cover	2 per vehicle	To protect the wings from damage or contamination.
Steering wheel cover and floormat	1 per vehicle	To protect the steering wheel and floor from damage or contamination.
Seat cover	1 per vehicle	To protect the seats from damage or contamination.
Electric/Hybrid vehicle signage	1 set per vehicle	Adhering to E and HVs vehicles regulations. To notify everyone in the workshop of high voltage potential, silent running vehicles potential for running away and crush injury.
Technical Information *The following technical information and documentation will be required to refer to during the maintenance activities to support accurate application of equipment, and to ensure the brief requirements are met.*		
Requirement	**Purpose and Justification**	
Manuals	For quick refence for wheels, tyres and alignment. ICME repair times.	

Autodata	To access all the correct information when working on a vehicle, to support fault diagnosis and guide the most appropriate resolution methods.
Risk assessment	To complete before beginning the task. The risk assessment will ensure that all hazards have been identified and control measures are implemented to mitigate any risks.
Job cards	To aid with understanding the service and maintenance processes for each task and to refer to during to ensure brief requirements are being accurately met.
Assignment brief and specifications	To aid with understanding the engineering process and to refer to during to ensure brief requirements are being accurately met.

Other key requirements

The following additional requirements are areas that I need to consider in detail in order to support the safe, efficient and effective deployment of the maintenance activities

Requirement	Purpose and Justification
Waste disposal	To comply with the HSE requirements of safe disposal of different types of waste from completing maintenance activities. Oils / fluids, coolant - each fluid placed in the appropriate waste drum. Tyres - to be collected by an appropriate tyre disposal company. Metal - to be placed in the appropriate waste bin. General - to be placed in the appropriate waste bin.
Time needed	**Vehicle 1** Prepare work area 15 mins Decommission and inspect system 30 mins Fault finding and diagnose 30 mins Repair 1 hour Calibrate 30 mins Recommission 30 mins Recording 30 mins Re-instate work area 15 mins **Vehicle 2** Prepare work area 30 mins Decommission and inspect system 1 hour Fault finding and diagnose 1 hour Repair 1 hours Calibrate 30 mins Recommission 15 mins Recording 30 mins Re-instate work area 15 mins **Welding activity** Prepare work area 15 mins Welding 75 mins Re-instate the work area 15 mins Paperwork 15 mins
Access requirements	None
Fault finding/diagnostic techniques and methods	

Sensory checks	Using my senses to detect noise, vibration or unusual sounds/scents. Visually inspect the system to identify any obvious issues, such as a fault being displayed on the dash, a bulb out or a leaking fuel/brake pipe. Listen to the vehicle for any unusual noises that may indicate an issue, such as rattling.
Test run the vehicles	Running the vehicles to check the engine and exhaust is running as it should, this can lead to further fault finding. Check brake operation on a rolling road, check the exhaust gases and analyse results.
Interrogate vehicles	Connect a code reader to read error codes in full, compare to system manual / autodata to confirm, which should indicate fault location and supports diagnosis.
Half split technique	Splitting the fault location down to a specific location (half split). Checking offside and nearside operations versus front / rear, breaking the systems down to chassis, electrical/electronic, engine, gearbox, drivelines, fuel etc.

Commentary

The candidate has interpreted the requirements of the brief well, creating a comprehensive list of resources that demonstrate an excellent knowledge and understanding for the system, maintenance process and task requirements. The structure and presentation of the resources list is clearly broken down into specific areas reflective of the task to be undertaken.

The justifications provided for each requirement and resource listed are clear and demonstrate logical thinking and understanding of the maintenance process. For example, conducting the half split technique will ensure the vehicles can be broken down and checked section by section, narrowing down where there are any faults and the causes of them.

The candidate has identified system components, resources, tools, and equipment correctly, including accurate identification of the quantities of each that would be required to successfully undertake the task. The justifications provided are detailed, allowing the candidate's knowledge and understanding of the process in response to the brief to be showcased. For example, the candidate has considered different spare parts such as nuts, bolts and cable ties that may not be an obvious issue but may require replacing as they carry out the maintenance and service activities, showing they have pre-empted potential issues.

The candidate has recognised the need to refer to a comprehensive range of supporting technical documentation in order to complete the task, listing the relevant documentation justifying the application and their relevance to the task. They have interpreted the technical information and identified effective fault-finding methods to be used to complete the task and investigate the system to correctly diagnose faults and inform the appropriate resolution methods. For example, interrogation of the system using diagnostic code readers to identify fault codes and using autodata to confirm.

The candidate has accurately listed all appropriate elements of PPE and VPE required, demonstrating exemplary understanding of safe working practices and of the Health and Safety at Work Act, which have been used to inform the planning for the tasks to be undertaken.

1b. Risk assessment

Preparation				
Hazard	Risk	Control	Likelihood	Severity
Working area when undertaking pre-preparation checks and when moving vehicles into the work area	Slips, trips and falls, personal injury, moving vehicles, arc eye.	Analyse working area before entering. Ensure area is clean and tidy throughout preparation, maintenance and upon completion. Ensure no equipment or tools are on the floor. Always wear the correct PPE. Moving vehicles must sound horn or verbal indication to those in the workshop. Use extraction on when running vehicles and welding.	2	1
Manual handling of tools, equipment and machinery needed to carry out maintenance of the vehicles	Personal injury.	When obtaining equipment and tools ensure awareness of maximum lifting weight. Ensure correct training has been provided.	2	1
Preparation of hand tools and small equipment needed for the maintenance activity on each vehicle	Cuts, abrasions, general hand injury.	Take care when selecting and organising tools and equipment. Check the condition and calibration of tools before using them. Ensure correct PPE is obtained, checked for damage and worn appropriately, such as gloves when working with hot components and eye protection when welding. Follow PUWER regulations.	2	1
Preparation of pneumatic tools and equipment needed for maintenance activities	Ingress, noise, hand injury.	Appropriate training of pneumatic tools before use. Check maintenance log of the pneumatic air line and connectors to ensure up to date.	3	4

Maintenance				
Hazard	Risk	Control	Likelihood	Severity
Stored energy (temperature) when undertaking maintenance activities on vehicles that have been running	Burns, scalding, injury.	Wear heat resistant gloves (correct PPE) when handling components subject to high temperatures. Do not handle components whilst still hot. Ensure system has cooled down before removing and replacing parts, observing appropriate cool down periods	3	2
Use of hand and power tools and equipment when undertaking maintenance on vehicles	Cuts, abrasions, general hand injury.	Ensure correct selection and use of tools for the activity. Check the condition and calibration of tools before using them. Ensure sufficiently trained in the use of hand tools and electrical test equipment. Ensure correct PPE is obtained, checked for damage and worn appropriately, such as gloves when working with hot components and eye protection when welding. Follow PUWER regulations.	2	1
Use of pneumatic tools for maintenance, such as the pneumatic air line	Ingress, noise, hand injury.	Appropriate training of pneumatic tools before use. Check maintenance log of the pneumatic air line and connectors to ensure up to date.	3	4
Spilt liquid that may occur or vehicle leakages as part of maintenance, such as brake fluid	Slipping.	Check for spillages whilst working on the vehicles. If a spillage is to occur, ensure correct procedures are followed to clean up, using cloths and rags. MSDS sheets.	2	1
Undertaking maintenance with live electricity	Electrocution.	Ensure safe isolation is carried out, including the use of LOTO procedures. Use voltage tester and proving unit to ensure system is dead. Follow requirements of Electricity at Work Regulations (1989) and IET regulations.	3	4
Welding arc	Eye arc.	Work in a safe environment. Wear an anti-reflective welding mask and check for damage before starting work. Ensure correct extraction of fumes throughout.	5	2
Silent running vehicles/HV battery	Crush, electrocution, trip, fall, moving vehicles.	Use appropriate signage, notify others when moving the vehicle and safely isolate vehicle when working on HVB system.	3	3

Fault finding				
Hazard	Risk	Control	Likelihood	Severity
Equipment malfunction/faulty components whilst investigating	System heating up when working on it.	Isolate/power off the system when removing and replacing components and equipment.	3	2
Use of hand tools and equipment as part of fault finding and remedial activities	Cuts, abrasions, general hand injury.	Ensure correct selection and use of tools for the activity. Check the condition and calibration of tools before using them. Ensure sufficiently trained in the use of hand tools and electrical test equipment. Ensure correct PPE is obtained, checked for damage and worn appropriately, such as gloves when working with hot components and eye protection when welding. Follow PUWER regulations.	2	1
Use of pneumatic tools	Ingress, noise, hand injury.	Appropriate training of pneumatic tools before use. Ensure maintenance of the pneumatic air line and connectors.	3	4
Undertaking fault finding activities using stored energy (temperature)	Burns, scalding, injury.	Wear heat resistant gloves when handling items subject to high temperatures. Ensure system has cooled down before removing and replacing parts, observing appropriate cool down periods.	3	2
Spilt liquid that may occur when fault finding and checking the vehicle, such as vehicle leakages	Slipping.	Maintain vigilance when undertaking maintenance activities and identify any vehicle leaks or spillages. If a spillage is to occur ensure correct procedures are followed to clean up, using cloths and rags. MSDS sheets.	2	1
Undertaking fault finding activities using live electricity	Electrocution.	Ensure safe isolation is carried out, including the use of LOTO procedures. Use voltage tester and proving unit to ensure system is dead. Follow requirements of Electricity at Work Regulations (1989) and IET regulations.	3	4
Welding arc	Eye arc.	Work in a safe environment. Wear an anti-reflective welding mask and check for damage before starting work. Ensure correct extraction of fumes throughout.	5	2
Silent running vehicles/HV battery	Crush, electrocution, trip, fall, moving vehicles.	Use appropriate signage, notify others when moving the vehicle and safely isolate vehicle when working on HVB system.	3	3

Likelihood		Severity	
1	Very unlikely to happen	1	Minor injury
2	Unlikely to happen	2	Major injury
3	Possible to happen	3	Loss of limb
4	Likely to happen	4	Death of an individual
5	Very likely to happen	5	Multiple death

Commentary

The candidate has structured the risk assessment logically by considering each of the key maintenance activities individually. In doing so they have shown understanding of the different hazards that can occur at each stage of the maintenance process.

Hazards and risks are identified appropriately for each activity. In doing so, the candidate has demonstrated their awareness of the different types of hazards and risks, and the need to consider these throughout the entire maintenance process. The candidate has accurately labelled the likelihood and severity of each risk and hazard. For example, correctly understanding the potential severity of hazards related to electricity, including when using measurement and test equipment.

Control measures are detailed, and the candidate has considered a wide variety of scenarios and situations that may arise, demonstrating thorough knowledge and understanding for the process and the activities to be completed. The candidate displays comprehensive knowledge for risk mitigation techniques. For example, checking the condition of welding mask prior to use. This demonstrates understanding of the hierarchy of control.

1c. Job card for each vehicle and the welding activity.

Prepared job card for Vehicle 1

Candidate's name: Candidate A Date: 10/01/2022	Vehicle Make: Vauxhall Model: Astra Registration No: DP68XEK	**Details of Work activity:** 1. Full service 2. Customer complaint of judder when braking 3. EML light on

Job details: Check PPE for damage and then put on, fit the VPE to the vehicle. Vehicle onto the rolling road to test the judder. Check EML on dash with diagnostic code reader to confirm location and type of fault. Remove all of the wheel nuts. Safely store the wheels away from any trip hazards, fully raise the vehicle and remove the sump plug to drain the oil and catch the old oil in an upright oil drainer. Check all of the underside of the vehicle for any faults, damage etc. Half lower the vehicle to inspect the wheels, tyres, brakes and suspension, using DTI gauge to measure brake discs to check they are still within manufacturer's specification. If new pads and discs are required, notify the workshop technician. Replace where required and refit wheels to vehicle.	Health/Safety, relationship & times	
	Selected and used correct PPE	
	Communicated effectively	
	Maintained positive working relationships	
	Identified hazards	
	Maintain environmental/sustainability	
	Tools used/care of/checks: Torque wrench, tread depth gauge, brake pad gauge, vernier gauge, DTI gauge, refractometer, multimeter, diagnostic code reader, oil drain socket, standard tools used for everything else, pressure bleeder tool.	

The customer's complaint includes a juddering when the brake pedal is pressed, this would lead me to believe the fault is to do with the brakes. Either warped discs or faulty calliper, these will require measurements to be taken and compared to the technical data. A visual inspection will indicate if the calliper is a fault – looking for blueing on the disc etc will aid diagnosis. Fully raise the vehicle again to continue the service, to remove and renew the oil filter, refit sump plug and check transmission oil level. Fully lower vehicle and torque up the wheel nuts (140Nm), lubricate all of the hinges and latches with grease. Open bonnet and check oil level, filling the oil to the correct level if required and double check by starting the vehicle and topping up. Check all under bonnet fluids. With the vehicle still fully lowered, remove brake fluid reservoir bowl and clean up around the area, taking care of painted surfaces. Remove and renew the air filter and pollen filter (pollen filter inside vehicle). Use diagnostic tool and run the vehicle with extraction to conduct live data testing to check EML indicated fault. Check diagnostic results online to diagnose fault and take appropriate steps to resolve. Then run diagnostic readings again to ensure fault has been fully rectified. Safely dispose of all waste products following appropriate waste disposal regulations.	Technical data/equipment/readings

Candidate's Signature Date:	I confirm the work carried out on the evidence provided is my own work		
Assessor's Name:	Assessor's Signature	Date	

Prepared job card for welding activity

Candidate's name: Candidate A Date: 10/01/2022	Vehicle Make: Vauxhall Model: Astra Registration No: DP68XEK	**Details of Work activity** • Weld an extension into exhaust back box

Job details:		
Wear appropriate PPE, check workstation for Health and Safety aligning with HASAWA. Gather a MIG welder and check: • power supply - turn on • feed speed for weld • gas bottle for level and supply. Set up the exhaust in the welding bay and clean up both areas to be welded using a wire brush. Clamp both parts together – place in a jig to prevent movement whilst welding. Turn on extraction and move the extraction hood over the work area. Turn on gas supply from bottle and check feed speed. Spot weld join and check for operation before welding a full welding run. Rotate piece, clean weld before moving onto the next run, making sure to overlap to create a sealed join. Switch off the gas, power supply and extraction. Using dustpan and brush, sweep up workstation and throw away debris. Replace any tools and equipment used.	Health/Safety, relationship & times	
	Selected and used correct PPE Boots, gloves, overalls, welding helmet, extraction	
	Communicated effectively	
	Maintained positive working relationships	
	Identified hazards	
	Maintain environmental/sustainability	
	Tools used/care of/checks MIG welding equipment, Oxy Acetylene, spark lighter tool, chipping hammer, wire brush, dustpan and brush, bin.	
	Technical data/equipment/readings Extension measurements to meet vehicle/manufacturer's specification.	

Candidate's Signature	Date:	I confirm the work carried out on the evidence provided is my own work
Witness' Signature	Date:	I confirm in signing this, the work carried out is that of the candidate and meets the required standards
Assessor's Name:		Assessor's Signature Date

Prepared job card for Vehicle 2

Candidate's name: Candidate A Date: 10/01/2022	Vehicle Make: Lexus Model: CT200H Registration No: BJ68UNX	**Details of Work activity:** 1. Customer complaint of judder between 50-60mph 2. High voltage battery and MIL lights on

Job details: Wear appropriate PPE and fit VPE to vehicle, place safety signage for EV/Hybrid vehicle. Check oil and water level then safely start the vehicle and place on the rolling road to test the judder (verbally notifying those in the workshop by shouting out). Then safely move vehicle onto a two-post ramp, locating the jack arms on the safe jacking points according to autodata. This judder would lead me to think of either wheel bearings or wheels/tyres out of balance, it could be drive shaft or brakes. Check lamps illuminated on dash – HVB and MIL lights both illuminated. Use the diagnostic code reader to discover fault code to inform resolution methods.	Health/Safety, relationship & times	
	Selected and used correct PPE	
	Communicated effectively	
	Maintained positive working relationships	
	Identified hazards	
	Maintain environmental/sustainability	
	Tools used/care of/checks: Torque wrench – checked calibration date, tread depth gauge, brake pad gauge, vernier gauge, multimeter, diagnostic code reader, standard tools used for everything else.	

Switch vehicle off and ensure to leave key away from vehicle. Loosen and remove locking wheel nuts on the floor. Half raise the vehicle and check wheel bearings and then remove wheels. Inspect wheels and tyres for damage, condition, and tread. Place wheels on wheel balancer to aid diagnostics, adjust as required. Then fully raise vehicle: Check the underside of the vehicle for general condition with a torch. Then inspect the brakes, comparing to manufacturer's specification and then bringing into spec where required. If brakes are found to be faulty repair as required. Half lower the vehicle: Refit the wheels tightening the wheel nuts up by hand only. Lower the vehicle (still on ramp but with weight on the wheels): Torque all wheel nuts up in a diagonal way so the wheels are secure. Put locking wheel nut key back. Fully lower vehicle and remove ramp arms: Wipe down any spillages, remove wing covers, double check for tools before lowering the bonnet. Move on to illuminated HVB and MIL lights. Check the fuses for condition by removing the appropriate ones and test using the multimeter, replacing where appropriate. At the rear of the vehicle, remove the covers to gain access to the HV battery. The whole system will require de-energising before any further access due to the high risk of electrocution. Gain the information from autodata and follow the instructions. Wearing the appropriate protective PPE, remove the service switch and complete a visual inspection of the prong making contact. This is a common issue for these switches and is likely the cause of this fault. Replace the switch if necessary, then re-energise the system before trying to start. Start the vehicle to see if the HVB and MIL lights are still illuminated. Plug in the code reader and check for codes. Clear the code reader if this is still showing and check for EV operation. Follow the instructions on the code reader for safe removal. An alternative common fault is the battery cooling motor, if this is the case then with the system deenergised and isolation switch removed, remove the battery casing to reveal the cooling fan – check the filter is free from debris and clean. Safely remove the cooling fan, fit a new one if required, refit previously removed casing etc. Refit the isolation switch, reenergise the system and test vehicle for light and operation.	**Technical data/equipment/readings:** **Recommend**:

Due to not being old enough to drive the vehicle I will ask for the technician to test drive the car and I go as passenger, or to check this on a rolling road. If no vibration is felt at speed and the central display shows that the HV system is operating as expected, I can return to the workshop knowing the fault is resolved. Complete a final check for codes using the diagnostic code reader. Refit all of the boot and coverings, remove the VPE, clean the vehicle down before returning the key to the technician. Safely dispose of all waste products following appropriate waste disposal regulations (WEEE), waste metal, waste fluids etc. Tidy up my working area to include sweeping the floor and the area around the wheel balancing machine. Double check for tools in/on vehicle and wipe down my tools and return any specialist equipment before handing over my findings.	

Candidate's Signature Date:	I confirm the work carried out on the evidence provided is my own work			
Assessor's Name:	Assessor's Signature	Date		

Commentary

The candidate has demonstrated a consistent level of performance in developing job cards for the two vehicles and for the welding task. Within each of the job cards, the candidate has demonstrated logical thinking and planning to complete all service and maintenance activities as required in the brief. The way the job cards are set out provides a comprehensive guide for the candidate to follow to complete the maintenance activities. Steps are detailed without stages assumed and would allow the process to be easily followed correctly by a third party. For example, the detail provided relating to the specific steps needed to inspect the isolator switch on vehicle 2.

The candidate has considered and referred to a range of regulatory requirements showing their knowledge and understanding of compliance with workplace practices, such as checking the condition of tools, equipment and PPE before beginning the task, and the need to comply with the isolation requirements. The candidate has used relevant and accurate technical terminology throughout their job cards. They have demonstrated understanding of the different elements of the system, processes and regulations that impact the work undertaken.

The candidate has provided detailed justifications for their proposed actions which shows thorough planning and preparation skills for the maintenance activities to meet the requirements of the brief. For example, where the candidate mentions the customer complaints on vehicle 1, followed by the expected faults to be found and diagnosis procedure to follow.

Task 2a – Perform a full service and maintenance on vehicle 1

(Assessment themes: Health and safety, Planning and preparation, Systems and components, Working with faults, Reviewing and reporting)

For task 2a candidates need to produce the following pieces of evidence from completing the maintenance activities:

- completed job card for vehicle 1
- completed manufacturer's service sheet
- internet search history for fault diagnostics and fault codes.

For task 2a, assessors will need to produce the following pieces of supporting evidence from the maintenance activities:

- assessor observations of:
    - work area preparation
    - the service and maintenance on vehicle 1.

Photographic evidence required:

- Photographic evidence showing the prepared work area for vehicle 1 service and maintenance - Illustrated in Task 2a photographic evidence section below (photograph 1)

- Photographic evidence showing the prepared and fitted VPE – Illustrated in Task 2a photographic evidence section below (photographs 2 and 3)

- Photographic evidence showing the set up and position of DTI to take brake run out readings – Illustrated in Task 2a photographic evidence section below (photograph 4)

- Photographic evidence showing the re-instated work area – Illustrated in Task 2a photographic evidence section below (photograph 5)

Candidate evidence

2a. Completed job card for Vehicle 1

Candidate's name: Candidate A Date: 02/04/2022	Vehicle Make: Vauxhall Model: Astra Registration No: DP68XEK	**Details of Work activity:** 1. Full service 2. Customer complaint of judder when braking 3. MIL light on

Job details: I started by wearing the appropriate PPE and fitted the VPE to the vehicle. Prior to starting work, I carefully checked the bodywork and recorded this. I checked the fuel, oil and coolant was at the right levels before commencing any work. I took the vehicle onto the rolling road to test the judder and the judder is clearly felt when braking and I believe there is an imbalance. The MIL on dash was the next thing I looked at, I located the diagnostic socket and connected a code reader. The code displayed was P0156 and P0157, this indicates a fault with the lambda sensor. The vehicle was now placed on a two-post ramp, safely locating the jacking points then taking the load of the vehicle before loosening all of the locking wheel nuts with the key, by hand. I then half raised the vehicle and removed all of the wheel nuts (shaking the wheel beforehand to check for end float in the wheel bearings – none found that is a concern). After safely storing	Health/Safety, relationship & times	✓
	Selected and used correct PPE	✓
	Communicated effectively	✓
	Maintained positive working relationships	✓
	Identified hazards	✓
	Maintain environmental/sustainability	✓
	Tools used/care of/checks: Torque wrench – checked calibration date, tread depth gauge, brake pad gauge, vernier gauge, DTI gauge, refractometer, multimeter, diagnostic code reader, oil drain socket, lambda sensor socket, standard tools used for everything else.	

the wheels away from any trip hazards, I fully raised the vehicle and removed the sump plug to drain the oil (as part of the service) and caught the old oil in an upright oil drainer. I checked all of the underside of the vehicle for any faults, damage etc. I found the NSR damper to be misted and this indicates further work to be done in the future and requires notification to the customer. I noticed rusty exhaust hangers, and this would require the customer to be notified as this could be something that may deteriorate further and cause the exhaust to fall down. I carefully half lowered the vehicle to inspect the wheels, tyres, brakes and suspension. Upon inspection I found the NSF brake disc to be warped. I used a DTI gauge to measure this, and it was out of tolerance (0.04mm is acceptable). I gained a reading of 0.8mm - this is not acceptable. I notified the workshop technician and asked for new pads and discs. I dismantled the calliper removing the pads (4mm thick), then removed the calliper carrier. Next, I removed the retaining screw with an impact driver with a hex bit. I removed both front discs, cleaned up the face of the hub, lubricated with a thin layer of copper grease. I wiped off the mech oil on the discs and double checked the part (comparing old with new) for fitment and then fitted the brake discs. I refitted the retaining screw followed by the calliper carrier, torquing up the bolts to the correct setting (150 Nm), followed by the calliper. The piston was required to be pushed back into the calliper. I raised the vehicle, refitted the sump plug and removed the oil drainer. I fully lowered the vehicle and opened the bonnet. I removed the brake fluid cap and surrounded it with rag. At this point I removed the oil filler cap and dipstick too. I fully raised the vehicle and using a piston wind back tool – pushed the piston back into the calliper. I was now able to fit the pads (using grease on the contact points). I refitted the calliper to the carrier (28Nm) tightening to the correct torque. I now checked the wheels and tyres, all was fine, the tyres required a little pressure and were pumped up to the correct value of 32psi all-round using an air tool. Wheels were refitted to vehicle (nuts tightened but not torqued). I fully raised the vehicle to continue the service, I removed the oil filter and sump plug to remove any remaining oil. I replaced the oil filter, taking care to lubricate the sealing rings, followed by the sump plug (with washer) tightened to 25Nm. I checked the transmission oil level, which was fine and found the auxiliary belt to be perished – another item to notify the customer about. Fully lowered vehicle and torqued up the wheel nuts (140Nm), lubricated all of the hinges and latches with grease. Opened the bonnet and filled the oil to the correct level and double checked by starting the vehicle and topping up.	Technical data/equipment/readings Autodata specifications attached, Diagnostic code reader. Upright oil drainer, pressure bleeder tool. Engine oil grade: SAE 0W-20 Synthetic 4liters with filter. Sump drain bolt torque: 25Nm Wheel nut torque: 140Nm 12v battery test = 11.34v and 14.5v when charging **Recommend**: NSR damper replacement Exhaust hangers rusty – monitor Auxiliary belt requires replacement Coolant leak around thermostat housing requires further investigation. **Notify customer to drive with care due to replaced brakes, which require time to 'bed in'**.

Checked all under bonnet fluids, topping up the powered steering fluid, fitted a brake fluid reservoir fluid bowl to help me when bleeding the brakes. Raised the vehicle and using a pressure bleeder air tool, I sucked out the old brake fluid – starting with the furthest away from the reservoir. I was able to access the bleed nipples without removing the wheels. I cleaned up the sump plug area and the callipers with brake cleaning fluid. Fully lowered vehicle, carefully removed brake fluid reservoir bowl and cleaned up around the area, taking care of painted surfaces. I replaced the air filter and pollen filter (pollen filter inside vehicle). I checked the windscreen wiper blades (including the rear) by carefully lifting and visually checking for perishing or kinks. Next, I plugged in the diagnostic tool and ran the vehicle with extraction and conducted live data testing on the lambda sensor. I could see from my data that lambda sensor 2 (post cat) had become open circuit. I switched off the engine and raised the vehicle, using a lambda sensor socket I unplugged the sensor and removed it, taking care as it was hot. I asked for a new one and fitted this, using the socket and checking that the part matched the old one. I plugged it back into the loom, checking that the wires were secure. I lowered the vehicle and started it again, double checking the extraction. I ran a live data test again and this time it was working correctly. I reset the service light whilst I was at this point. I checked all lamps and interior components for function and operation, all seems to be good. Once finished I started up the vehicle (with extraction) to check for leaks and pumped the brake pedal. I was happy with the work completed, so switched off the engine. I cleaned down the vehicle for finger marks, removing VPE and cleaning the area – double checking for any tools left behind and returning these to the toolbox/workshop cupboard. I made sure to dispose of all waste safely.	

Candidate's Signature *Candidate A* Date: 03/04/2022	I confirm the work carried out on the evidence provided is my own work		
Assessor's Name:	Assessor's Signature	Date	

Commentary

The candidate completed a detailed and comprehensive job card based on the work that they had planned. The job card demonstrates that the candidate followed a logical and determined process to complete all required maintenance and service activities. The level of detail captured is comprehensive, and clearly articulates the key findings, decisions and outcomes of each step of the activity.

The candidate has demonstrated their ability to fully meet the requirements of the task. The process taken shows their ability to undertake a full service on the vehicle, with care and attention paid to the specific areas highlighted by the customer. This enabled them to locate specific faults, as well as ensure the overall functioning of the vehicle.

The candidate identified key areas of work, making distinctions between the work that needed to be carried out immediately, and that which was acceptable, but needed to be recorded for future maintenance to improve the service life of the vehicle. For example, a perished auxiliary belt was discovered and recommended for future attention – recognising that this is not necessary part of the scheduled maintenance activity. This demonstrates a high level of technical understanding of vehicle maintenance requirements, applied to a specific situation.

2a. Completed manufacturer's service sheet for Vehicle 1

Powered by Autodata

Date: 10/01/2021

Job number :

Vehicle details:
DP68XEK, Opel/Vauxhall Astra-K (B16)
Engine code: LE2/D14XFT , **Vehicle mileage:** 41333

Service schedule

Service schedule according to manufacturer's recommendation and specification.

Service type	Opel/Vauxhall Astra-K (B16)
Service interval	40000 miles 24 months
Additional service	Every 24 months regardless of miles/km

Total time - 1.10 hrs

VEHICLE ON FLOOR

Outstanding campaigns and recalls		Check ☑
Parking brake travel	3	Check/adjust ☑

More information

Parking brake travel

Parking brake travel	No. of notches 3

Important

Parking brake travel - No. of notches

- Figure does not apply to electric parking brake (EPB).

Seatbelts/mountings	Good	Check/report ☑
Instruments/warning lamps	working	Check/report ☑
Airbags/system	NO faults. Good	Visual check ☑
Switches/controls	Good	Check/report ☑
Park/neutral position (PNP) switch	N/A	Check/report ☑ N/A
Ignition lock		Check/report ☑
Heater/air conditioning operation	Good	Check/report ☑
Horn	working	Check/report ☑
Interior lamps	working	Check/report ☑
Wash/wipe systems	Good	Check/report ☑
Instrument illumination	Good	Check/report ☑
Direction indicators/hazards	Good	Check/report ☑
Lighting system	Good.	Check/report ☑
Headlight levelling system	working	Check ☑
Headlights		Check/report ☑
Body work/paint !	nearside damage.	Check condition ☑

https://workshop.autodata-group.com/w1/service-schedules/OPL43250?vrm=DP68XEK 1/8

! Important
May need to be carried out by an authorised repairer/dealer, refer to bodywork/paint warranty terms and conditions. Additional charge may apply

VEHICLE FULLY RAISED

Engine oil leaks	None.	Check/report ☑
Engine oil !	4ltrs 0W20	Drain/refill ☑

! Important
If engine oil change indicator illuminated or every 20 000 miles/30 000 km or 12 months. If indicator not illuminated check oil quality in instrument panel. If quality is above 50% consult the customer and advise that if the engine oil and filter are not renewed they may need to be renewed before the next scheduled service

More information

Engine oil

Ambient temperature range		All temperatures
Engine oil grade	SAE	0W-20 Synthetic
Engine oil classification	OEM	0V0401547
Engine with filter(s)	litres	4,0
Sump drain bolt		25 Nm

Engine oil filter !		Renew ☑

! Important
If engine oil change indicator illuminated or every 20 000 miles/30 000 km or 12 months. If indicator not illuminated check oil quality in instrument panel. If quality is above 50% consult the customer and advise that if the engine oil and filter are not renewed they may need to be renewed before the next scheduled service

Clutch hydraulic system	Good.	Check/report ☑
Manual transmission oil leaks	None.	Check/report ☑
Automatic transmission fluid (ATF) leaks	N/A	Check/report ☐
Steering joints	Dry.	Check/report ☑
Steering rack/box	Ok	Check/report ☑
Steering column couplings	Ok	Check/report ☑
Suspension joints/seals/gaiters	Ok	Check/report ☑
Drive shaft joints/seals/gaiters	Good	Check/report ☑
Road springs	Surface rust.	Check/report ☑
Shock absorbers/mountings	NSR Shock	Check/report ☑
Exhaust system/mountings	Rusty.	Check/report ☑
Brake pipe corrosion	none	Check/report ☑
Fuel system leakage !	none	Check/report ☑

! Important
Including underbonnet fuel rail and hoses

Underbody condition/sealant !		Check/report ☐

! Important
May need to be carried out by an authorised repairer/dealer, refer to bodywork/paint warranty terms and conditions. Additional charge may apply

VEHICLE HALF RAISED

Road wheels — Remove/refit ☐

More information

Road wheels

Road wheels	140 Nm

Important

Road wheels

- Lightly coat mating surfaces between wheel centre hole and hub (use grease). Do not lubricate studs, nuts or other mating surfaces.

Front brake pads — — Replaced. 4mm both — Check/report ☑

More information

Front brake pads

Road wheels	140 Nm

Important

Road wheels

- Lightly coat mating surfaces between wheel centre hole and hub (use grease). Do not lubricate studs, nuts or other mating surfaces.

Minimum pad thickness	Front 1,5 mm

Front brake discs — — Both Replaced 0.8 warp. — Check/report ☑

More information

Front brake discs

Brake caliper to carrier	Front 28 Nm —
Brake caliper/carrier to hub	Front 150 Nm+53°±7°

Important

- Use new bolts.

Road wheels	140 Nm —

Important

Road wheels

- Lightly coat mating surfaces between wheel centre hole and hub (use grease). Do not lubricate studs, nuts or other mating surfaces.

Minimum disc thickness for replacement - ventilated	Front 23 mm ✓
Disc thickness variation	Front 0,006 mm
Disc runout	Front 0,04 mm —

Rear brake pads — 3mm. — Check/report ☑

More information

Rear brake pads

Road wheels	140 Nm

Important

Road wheels

- Lightly coat mating surfaces between wheel centre hole and hub (use grease). Do not lubricate studs, nuts or other mating surfaces.

Minimum pad thickness	Rear 1,5 mm

Rear brake discs — 12mm both. — Check/report ☑

More information

Rear brake discs

Brake caliper to carrier	Rear 36 Nm
Brake caliper/carrier to hub	Rear 100 Nm+68°±7°

Important

Brake caliper/carrier to hub

- Use new bolts.
- With electric parking brake (EPB) = 100 Nm + 23±7°

Road wheels	140 Nm

Important

Road wheels

- Lightly coat mating surfaces between wheel centre hole and hub (use grease). Do not lubricate studs, nuts or other mating surfaces.

Minimum disc thickness for replacement	Rear

Important

Minimum disc thickness

- RPO J60 (16" brakes) = 10 mm
- RPO J67/J79 (15" brakes) = 8 mm

Disc thickness variation	Rear 0,006 mm
Disc runout	Rear 0,04 mm

Parking brake cables/linkages — Check/report ☑

Brake hydraulic system — Check/report ☑

Brake flexible hoses — Check/report ☑

Brake fluid — Bled. — Renew ☑

More information

Brake fluid

Brake fluid	Type DOT 4+

Tyre condition — Check/report ☑

Tyre pressures — 32 psi — Check/adjust ☑

Tyre pressure monitoring system — N/A — Check ☐

ENGINE BAY OPERATIONS

Battery terminals — Clean/tighten/re-grease ☑

Washer bottle(s)

Check/top-up ☑

Brake fluid reservoir — OK — Check/top-up ☑

More information

Brake fluid reservoir

Brake fluid	Type DOT 4+

Clutch fluid — Renew ☑

More information

Clutch fluid

Clutch fluid	Type DOT 4+

Cooling system leakage — thermostat housing. slight leaks — Check/report ☑

Engine coolant/anti-freeze — -30°C — Check/top-up ☑

More information

Engine coolant/anti-freeze

Coolant	Type Longlife
Coolant	Colour Red
Cooling system - total capacity	litres 5,1

Auxiliary drive belt(s) ! — Recommend new - perished - Check/adjust ☑

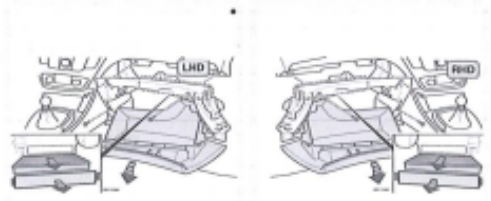
! Important

Check only

FINAL ITEMS CHECK

Cabin filter (if fitted) — Renew ☑

More information



Cabin filter — Cabin filter

Engine oil change indicator ! — Reset ☑

! Important

Only if oil is changed

Central locking system — Working. — Check/report ☑

Central locking/alarm remote control batteries ! — N/A — Renew ☐

! Important
At customer's request, at additional charge

Vehicle locks/hinges	Check/lubricate ☑
Road wheel nuts/bolts	Check tightness ☑

More information

Road wheel nuts/bolts

Road wheels	140 Nm

Important

Road wheels

- Lightly coat mating surfaces between wheel centre hole and hub (use grease). Do not lubricate studs, nuts or other mating surfaces.

Bonnet latch and lock !	Check/report ☑

! Important
Includes lubricating ✓

Removable towing eye, if applicable	N/A	Check/report ☐
First aid kit and expiry date, if applicable (__/__/20__)	N/A	Check/report ☐
High visibility vest, if applicable	N/A	Check/report ☐
Warning triangle, if applicable	N/A	Check/report ☐
Tyre repair canister expiry date (__/__/20__)	N/A	Check/report ☐
Fuel tank additive !	N/A.	Add ☐

! Important
Add 240 ml of approved additive to full fuel tank. Inform customer that fuel tank level must be run down to 1/4 or less before adding more fuel

Brake efficiency test !	New pads + Discs fitted.	Carry out ☐

! Important
Recommended if test equipment available

ROAD TEST VEHICLE

Steering free-play	ok	Check/report ☑
Clutch operation	Ok	Check/report ☑
Vehicle suspension operation	OK	Check/report ☑
Engine performance	OK	Check/report ☑
Transmission	ok	Check/report ☑
Brakes	OK	Check/report ☑
ABS function	OK	Check/report ☑
Instruments		Check/report ☑

Total time - 1.10 hrs

Parts

Parts

- ✓ Engine oil - Drain/refill !

  If engine oil change indicator illuminated or every 20 000 miles/30 000 km or 12 months. If indicator not illuminated check oil quality in instrument panel. If quality is above 50% consult the customer and advise that if the engine oil and filter are not renewed they may need to be renewed before the next scheduled service

- ✓ Engine oil filter - Renew !

  If engine oil change indicator illuminated or every 20 000 miles/30 000 km or 12 months. If indicator not illuminated check oil quality in instrument panel. If quality is above 50% consult the customer and advise that if the engine oil and filter are not renewed they may need to be renewed before the next scheduled service

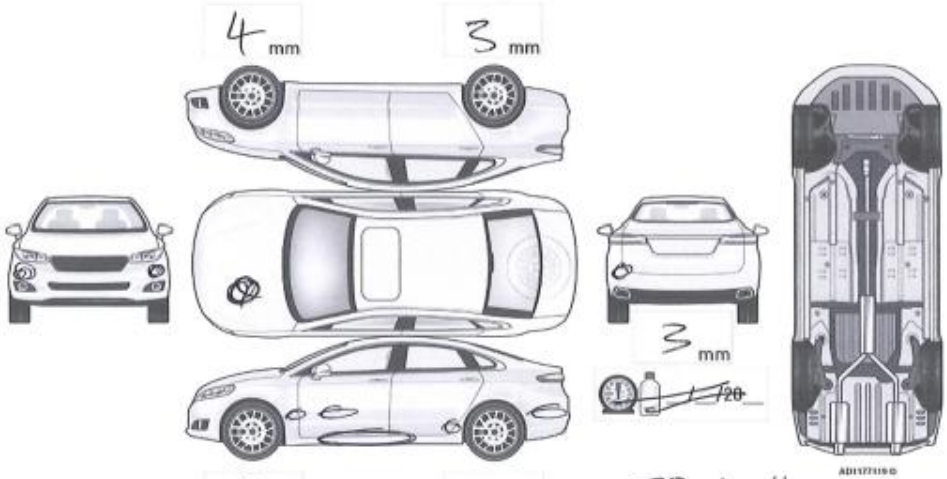
- ✓ Sundries lubricant - Clean/tighten/re-grease
- ✓ Screen wash - Check/top-up
- ✓ Brake fluid - Check/top-up
- ✓ Engine coolant/antifreeze - Check/top-up
- ✓ Cabin filter - Renew
- ✗ Central locking/alarm remote control batteries - Renew !

  At customer's request, at additional charge

- ✓ Sundries lubricant - Check/lubricate
- ✗ Fuel tank additive - Add !

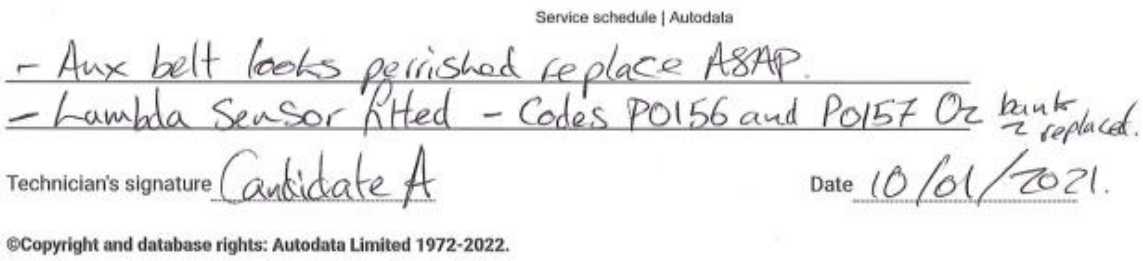
  Add 240 ml of approved additive to full fuel tank. Inform customer that fuel tank level must be run down to 1/4 or less before adding more fuel

- ✓ Brake fluid - Renew
- ✓ Clutch fluid - Renew



Notes/Comments:

*Changed front disc's and pads - drive with care to bed in. Recommend NSR Shock (damper)


Service schedule | Autodata

- Aux belt looks perished replace ASAP.
- Lambda Sensor fitted - Codes P0156 and P0157 O2 bank 2 replaced.

Technician's signature Candidate A Date 10/01/2021.

Commentary

The candidate has completed the service schedule accurately, adding annotations to areas for further detail and where faults were found outside of the planned routine maintenance, and the testing data results that confirmed these. The candidate was also able to interpret and apply manufacturer's parameters and tolerance through their fault finding, service and maintenance. For example, the technical data states disc runout to be 0.04mm and the reading gained was 0.8mm.

The candidate demonstrates comprehensive technical reporting and evaluation of the maintenance completed, techniques and methods used, using fully accurate industry standard technical terms. For example, annotations next to the relevant component/system with technical language and data found, which then follow through to recommendations at the end of the working document.

2a. Internet search history for fault diagnosis and fault codes for Vehicle 1

[redacted] Autodata

Diagnostic trouble codes

Opel/Vauxhall Astra-K
LE2/D14XFT/1.4 (B16)

EOBD Diagnostic trouble codes	Fault location
P0156	Heated oxygen sensor (HO2S) 2, bank 2 - circuit malfunction

Probable causes

- Heating inoperative
- wiring
- HO2S
- ECM

EOBD Diagnostic trouble codes	Fault location
P0156	Oxygen sensor (O2S) 2, bank 2 - circuit malfunction

Probable causes

- Wiring
- O2S
- ECM

[redacted] Autodata

Diagnostic trouble codes

Opel/Vauxhall Astra-K
LE2/D14XFT/1.4 (B16)

EOBD Diagnostic trouble codes	Fault location
P0157	Heated oxygen sensor (HO2S) 2, bank 2 - low voltage

Probable causes

- Exhaust leak
- wiring short to earth
- HO2S
- ECM

EOBD Diagnostic trouble codes	Fault location
P0157	Oxygen sensor (O2S) 2, bank 2 - low voltage

Probable causes

- Exhaust leak
- wiring short to earth
- O2S
- ECM

Heated oxygen sensor (HO2S)

Opel/Vauxhall Astra-K
LE2/D14XFT/1.4 (B16)

Note: General component image for illustration only

Trouble codes

Trouble code	Fault location	Probable cause
P103B	Heated oxygen sensor (HO2S), heater control - circuit malfunction	Wiring, HO2S, ECM
P103C	Heated oxygen sensor (HO2S), heater control - circuit malfunction	Wiring, HO2S, ECM
P1133	Heated oxygen sensor (HO2S) 1 - slow response	Wiring, heated oxygen sensor (HO2S)
P1138	Heated oxygen sensor (HO2S) 2 - voltage too high during deceleration/fuel cut-off	Wiring, heated oxygen sensor (HO2S), ECM
P11B3	Heated oxygen sensor (HO2S) 2 - implausible signal during deceleration/fuel cut-off	Wiring, heated oxygen sensor (HO2S), ECM

Commentary

The candidate has obtained fault codes from the diagnostic readers and used those in autodata to give them detailed and accurate technical information to diagnose the faults present in the vehicles and how to resolve them. This demonstrates thorough and accurate gathering of technical data to diagnose faults found and apply this information to ensure maintenance is carried out accurately.

2a. Practical observation form – work area preparation (vehicle 1)

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate A	CG12345
Centre name	**Assessment theme**
City & Guilds	Health and safety Planning and preparation

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Work area preparation	The candidate gathered the vehicle service parts, tools and equipment listed in their resource list and checked each piece for condition and calibration. These were placed in their working area within reach and methodical order of use. Two post ramp needed for the service was checked for operation, and ensuring it was free to use before a vehicle could be moved into the area. Technical information, clean cloths, cleaning fluid, and waste bins were placed within the working area with consideration of slips, trips, falls hazards. Visual inspection of working area and PPE, moving an obstruction out of the walkway. VPE applied correctly to the vehicle before work commences. The candidate verbalised when vehicles were moving and when lifting or lowering the vehicle on the ramp, adhering to industry standard.

Assessor signature	Date
Assessor.1	02/04/2022

Commentary

The candidate prepared the working area with all listed resources from Task 1, and all tools and equipment checked for condition and correct calibration dates. This demonstrates a comprehensive understanding of the importance of preparatory checks, ensuring efficient and accurate maintenance can be carried out, mitigating issues arising if an incorrectly calibrated DTI gauge was used for example.

Resources were placed in the working area with consideration of the prepared job card, demonstrating exemplary understanding of work area preparation and how this can ensure safe and efficient working throughout.

2a. Practical observation form – service and maintenance activities (vehicle 1)

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate A	CG12345
Centre name	**Assessment theme**
City & Guilds	Health and safety Systems and components Working with faults Reviewing and reporting

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Decommissioning, disassembly and inspection	The vehicle was visually examined for any bodywork damage or obvious signs of wear and tear and recorded this on the service schedule. The candidate completed a test run of the vehicle on the rolling road checking brake efficiency, feeling vibration under foot. The candidate placed the vehicle on the ramp, loosened the locking wheel nuts on the floor before loosening the rest, to remove the wheels and removed the components in a logical order. Entire vehicle inspection carried out at appropriate heights, following the manufacturer's service schedule. When disassembled, the candidate observed good health and safety techniques relating to storage of removed components. The candidate made sure the location where these were placed was not an obstruction to them or others surrounding them. The candidate inspected the vehicle, finding a misted rear damper
Fault detection and diagnosis	The candidate approached the fault finding logically, checking overall functionality to begin with. The candidate completed sensory checks and half split techniques to locate faults. DTI gauge was used to accurately identify brake disc run out, and the candidate compared readings to technical data. Diagnostic code reader was used to complete live data testing, confirming lambda sensor function compared to manufacturer's specification. During maintenance activities, the candidate identified excessive wear and tear on service parts.
Reassembly and recommissioning	The candidate reassembled removed components logically, referring to technical information as they went, tightening the wheel nuts in the correct sequence. They used a torque wrench to tighten these to the correct torque value. Lambda sensor socket was used appropriately by moving the loom whilst tightening the sensor. Caliper carrier tightened to the wheel

Task	Notes – *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Working area	hub in correct sequence, tightened up the bolts to the correct torque followed by the caliper, also tightened to the correct torque. All of this was done in the correct sequence to reassemble the brakes using the appropriate lubrication. Oil sump bolt tightened to correct torque using a new washer, oil refilled followed by engine being started for a short while before topping up. Prior to starting work, the candidate checked the condition of the vehicle – including the bodywork and recorded this. Fuel, oil and coolant was checked to be at adequate levels before beginning any diagnosis. The candidate worked safely and neatly throughout all activities, following all workshop and health and safety requirements. Disassembled components were placed into organised containers and magnetic trays which mitigated any trip hazards, kept them tidy and prepared for appropriate waste disposal. All tools and equipment were cleaned and returned to correct storage. Waste was disposed of in correct separate bins and the working area around the two-post ramp was left safe, clean, and tidy. For example, the oil rag that was used, was disposed of appropriately in the correct bin. The candidate clearly checked the level of oil in the catch tank of the upright oil drainer both before and after use, mitigating spillage through overfill. VPE was removed and the vehicle thoroughly wiped down.

Assessor signature	Date
Assessor.1	02/04/2022

Commentary

The candidate demonstrated that they are able to interpret requirements and perform maintenance and fault-finding tasks in line with the requirements of the brief in a logical and methodical way. For example, first completing a test run of the vehicle on a rolling road to check if there is any further diagnostic information to gather before starting work.

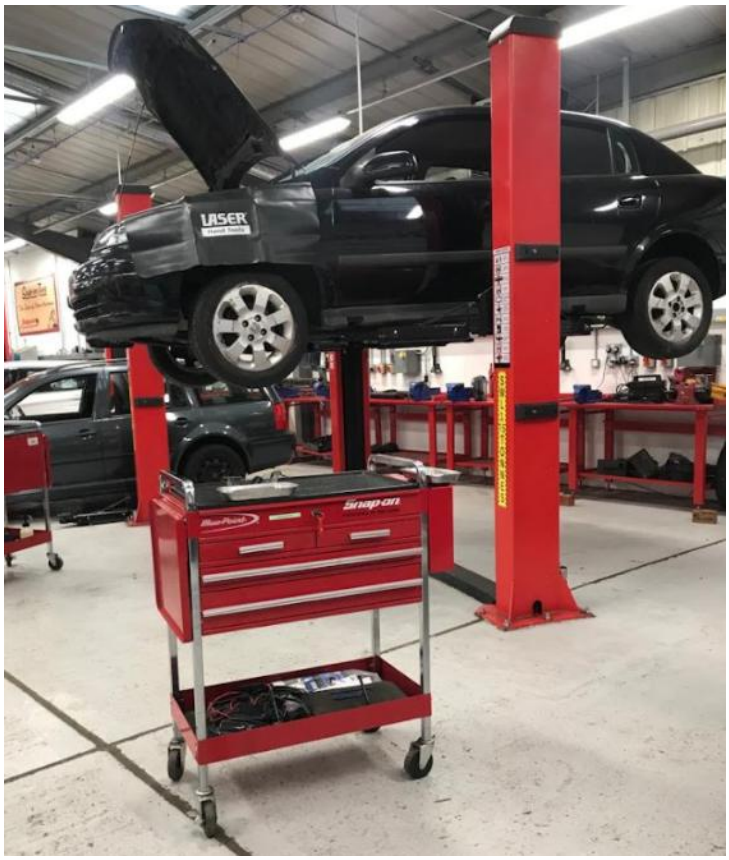
The candidate demonstrated correct and accurate fault-finding techniques during the maintenance activity, showing excellent hand skills and correct use of tools and equipment, ensuring the maintenance was completed to a high standard. For example, using the DTI gauge correctly and comparing these results to the manufacturer's specification to interpret fault diagnosis information.

The activities were undertaken with demonstration of efficient use and application of test equipment, which ensured the torque tightening was completed correctly. Through doing so, the candidate demonstrated their ability to interpret correctly the calibration requirements and those of documentation, resulting in system accuracy and road worthiness. For example, checking calibration date of the torque wrench before use, using it correctly when

tightening bolts and winding it off once finished with. Another example was when the candidate used the diagnostic tool, they compared live data against technical data for the vehicle to accurately diagnose the fault.

The candidate worked in a safe manner throughout the activity. Consideration was given to their safety and those around them when undertaking the task. For example, ensuring that the work area was clear of obstructions. The candidate ensured all waste procedures were correctly followed at the end of the service, to include the floorspace of the two-post ramp used.

2a. Photographic evidence.



Photograph 1: Photographic evidence shows the tools, equipment and all relevant technical documentation placed in the working area, within reach and methodical order of use.

Photographs 2 and 3: Photographic evidence shows the prepared and accurately fitted VPE on Vehicle 1.

Photograph 4: Photographic evidence shows the set up and accurately positioned DTI gauge to take brake run out readings, arm connected to the suspension correctly and gauge fitted to take accurate readings.

Photograph 5: Photographic evidence shows the re-instated working area thoroughly cleaned and tidy.

Task 2b – Perform the joining activity

(Assessment themes: Health and safety, Planning and preparation, Systems and components, Working with faults)

For task 2b candidates need to produce the following pieces of evidence from completing the maintenance activities:

- completed job card of the welding activity with description of work carried out.

For task 2b, assessors will need to produce the following pieces of supporting evidence from the maintenance activities:

- assessor observations of:
    - work area preparation for welding
    - the welding activity.

Photographic evidence required:

- Photographic evidence showing the prepared work area for the welding activity - Illustrated in Task 2b photographic evidence section below (photograph 1)

- Photographic evidence showing the welded joint between the exhaust pipe and extender Illustrated in Task 2b photographic evidence section below (photograph 2)

- Photographic evidence showing the re-instated work area – Illustrated in Task 2b photographic evidence section below (photograph 3)

Candidate evidence

2b. Completed job card for welding activity

Candidate's name: Candidate A Date: 10/01/2022	Vehicle Make: Vauxhall Model: Astra Registration No: DP68XEK	**Details of Work activity** • Weld an extension into exhaust back box

Job details:		
Wearing appropriate PPE, I checked the workstation for Health and Safety aligning with HASAWA. I was wearing boots, overalls, heat protective welding gauntlets, welding apron, a bandana and a welding helmet. I used the welding bay which has UV protective environment with tinted curtains and fume extraction. I had identified the closest fire extinguisher and made sure that it was within reach. I gathered a MIG welder and checked: • power supply - turn on • feed speed for weld • gas bottle for level and supply • Extraction – move hood to over welding component and switch on. I cleaned up the surface of the exhaust using a wire brush and cleaning fluid to get to good metal (no rust or soot deposits), with shiny metals ready for welding. I set the extension tube and the exhaust in a jig to prevent movement. I double checked the set up and access before starting to weld. I turned on the gas supply from bottle and checked feed speed. I tack welded a joint and checked for operation of the MIG welder and alignment before welding a full run. I rotated the piece, cleaned the weld before moving onto the next run, making sure to overlap to create a sealed joint. To weld the exhaust which is approximately 1.6mm mild steel, I used a MIG welding set-up. I set the power to 40Amps per 1mm, the electrode wire is 0.6 mm, the flow rate of the argon /CO2 (mixed shielding gas) was set to 12Litres per minute. These calculations were obtained by general feed rate verses the expected metal tolerances that have previously been taught to me.	Health/Safety, relationship & times	✓
	Selected and used correct PPE Boots, gloves, overalls, welding helmet, extraction	✓
	Communicated effectively	✓
	Maintained positive working relationships	✓
	Identified hazards	✓
	Maintain environmental/sustainability	✓
	Tools used/care of/checks MIG welding equipment, Oxy Acetylene, spark lighter tool, vice grips, clamps, chipping hammer, wire brush, dustpan and brush, bin	
	Technical data/equipment/readings Extension measurements to meet vehicle/manufacturer's specification Risk assessment MIG welders operating manual	

I used the MIG welding torch to carefully weld the pipe, stopping to check my weld and when access was no longer available also allowing the metal to cool (to prevent blowing a hole in the metal). I tapped off the slag, wire brushed the surfaces up ready for the next weld and rotated the pipe, setting it back up in the jig. Once the welding was done, I switched off the gas, power supply and extraction. Using a dustpan and brush, I swept up the workstation and threw away debris into the appropriate bin, being sure to check for hot ashes. I replace the tools and equipment used. If it had been possible, I would have checked my weld (to professional level) using a smoke machine and filling the exhaust tube (covering the exhaust holes) to see if any smoke creeps out of my welding joint – I did not do this as I was happy with my weld. I would do this if this was for turbo pipes as this would cause performance problems, this is a tail pipe and is not going to impact the engine performance.	

Candidate's Signature: Candidate A. Date: 10/01/2022	I confirm the work carried out on the evidence provided is my own work	
Assessor's Name:	Assessor's Signature	Date

Commentary

The candidate completed a detailed and comprehensive welding job card based on the welding activity that they had planned. The job card demonstrates that the candidate followed a logical and determined process to complete an accurate weld. For example, undertaking a spot weld before carrying out a full run to confirm the accuracy of the weld.

The level of detail captured in the job card is comprehensive, and clearly articulates the key findings, decisions and outcomes of each step of the activity. The candidate has demonstrated their understanding and knowledge of welding processes, including providing clear justifications of the process they followed. For example, their reasoning for not using a smoke machine to test the final weld.

2b. Practical observation form – work area preparation (welding activity)

Assessment ID	**Qualification number**
8712-315	8712-35
Candidate name	**Candidate number**
Candidate A	CG12345
Centre name	**Assessment theme**
City & Guilds	Health & Safety Planning and Preparation

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Work area preparation - Welding	The candidate gathered the tools and equipment listed in their resource list and checked each piece for condition and calibration. They were placed in their working area within reach and methodical order of use. The candidate checked that the welding bay was accessible and free for use. The candidate checked that there was a fire extinguisher in reach of the welding bay and checked the last tested date. The candidate placed the required technical information into the working area at a safe distance from where they would be working, before undertaking a visual inspection of the working area. The visual inspection showed consideration of slips, trips, falls and fire hazards, with the candidate moving an obstruction out of the walkway.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
	The candidate thoroughly checked welding PPE for damage and correct welding gauntlets were selected. The extraction was checked for operation and confirmed to be in an ideal location. The welding machine and gas bottles were visually checked before use.

Assessor signature	Date
Assessor.1	11/01/2022

Commentary

The candidate prepared and checked the work area prior to starting work, ensuring that all listed resources from Task 1 and all required tools and equipment were checked for condition and calibration dates. The candidate confirmed the area was safe to work, including a range of visual checks and that risk mitigation had been considered through ensuring close placement of a functional fire extinguisher. This demonstrates a comprehensive understanding of the importance of preparatory checks, ensuring efficient, accurate and safe maintenance can be carried out, and mitigating any issues, for example if an out-of-date fire extinguisher was used.

Resources were placed in the working area with consideration of the prepared job card and health and safety considerations when completing welding activities, demonstrating exemplary understanding of work area preparation and how this can ensure safe and efficient working throughout. For example, ensuring technical information is on hand but placed at a safe distance.

2b. Practical observation form – welding activity

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate A	CG12345
Centre name	**Assessment theme**
City & Guilds	Health and safety Systems and components Working with faults

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Working with faults – Resolution	The candidate correctly followed all steps of safe isolation procedures LOTO before starting work on the system and obtained permission to start work. They prepared the joint correctly and carefully, checking their job card and technical information as appropriate. The candidate's joining techniques (which could be observed) were proficiently completed and the welded surfaces cleanliness was exceptional throughout the whole welding process. Use of all tools and equipment was appropriate throughout the welding activity, with full consideration for accuracy and efficiency. The MIG welder was set up to the appropriate values according to the tolerances of the metal, with the extraction hood placed appropriately. Through the weld, the candidate paid particular attention to detail, ensuring that the MIG welder was adjusted to ensure the best quality of finish. This meant that the candidate's final welded exhaust was tidy, clean and demonstrated exceptional signs of penetration.
Working area	The candidate worked safely and neatly throughout all activities, following all workshop and health and safety requirements. The candidate selected and used long-sleeved welding gauntlets when welding and wore correct face and eye protection when cleaning the weld. Working areas were fully re-instated following all procedures, including waste managed appropriately and disposed of with full consideration of requirements. All tools and equipment were cleaned and returned to correct storage, waste disposed of in correct separate bins noting that they could be hot and working area left safe, clean and tidy. The candidate correctly followed all steps of isolation procedures after work LOTO to leave it in a safe state.

Assessor signature	Date
Assessor.1	11/01/2022

Commentary

The candidate undertook the welding activity with a high degree of accuracy and precision. The weld was completed through a process that demonstrated excellent hand skills, use of equipment and attention to detail, which ensured that the weld was finished to a high-quality standard. For example, through setting up the MIG welder correctly, the candidate was able to produce well penetrated joints. By making fine adjustments to the MIG welder the candidate demonstrated underpinning knowledge of welding techniques to produce a quality finish.

The candidate demonstrated a high regard for working safely with consideration shown for safety through the different stages of the weld process. This included the selection and wearing of long-sleeved welding gauntlets in order to ensure full protection of the hands and arms. In addition, the candidate demonstrated recognition of using different face protection for different activities – wearing full-face protection when welding and eye protection when cleaning the weld.

2b. Photographic evidence.

Photograph 1: Photographic evidence shows the correct tools and equipment placed in their working area within reach, but at a safe distance, and within a methodical order of use.

Photograph 2: Photographic evidence shows the clean welded joint between the exhaust pipe and extender.

Photograph 3: Photographic evidence shows the re-instated working area thoroughly cleaned and tidied.

Task 2c – Perform a full service and maintenance on vehicle 2

(Assessment themes: Health and safety, Planning and preparation, Systems and components, Working with faults, Reviewing and reporting)

For task 2c candidates need to produce the following pieces of evidence from completing the maintenance activities:

- completed job card for vehicle 2 and any control documents
- record of measurements and tests completed
- internet search history for fault diagnostics and fault codes.

For task 2c, assessors will need to produce the following pieces of supporting evidence from the maintenance activities:

- assessor observations of:
    - work area preparation
    - the maintenance and repair activities to vehicle 2.

Photographic/video evidence required:

- Photographic evidence showing the prepared work area to complete maintenance and repair to vehicle 2 - Illustrated in Task 2c photographic evidence section below (photograph 1)

- Photographic evidence showing the prepared and fitted VPE – Illustrated in Task 2c photographic evidence section below (photograph 2)

- Photographic evidence showing the working area after disassembly of the appropriate vehicle system/s – Illustrated in Task 2c photographic evidence section below (photograph 3)

- Photographic evidence showing the re-instated work area – Illustrated in Task 2c photographic evidence section below (photograph 4)

Candidate evidence

2c. Completed job card for Vehicle 2

Candidate's name: Candidate A Date: 11/01/2022	Vehicle Make: Lexus Model: CT200H Registration No: BJ68UNX	**Details of Work activity:** 1. Customer complaint of judder between 50-60mph 2. HVB and MIL lights on

Job details: Prior to starting work, I carefully checked the bodywork and recorded this. I checked the fuel, oil and coolant was at the right levels before commencing any work. Wearing the appropriate PPE, I fitted VPE to the vehicle, applied safety signage for EV/Hybrid vehicle (hang note from rear view mirror), safely started the vehicle (checking oil and water level before hand) and placed on the rolling road to test the judder (verbally notifying those in the workshop by shouting out). It's clear that there is no sign of braking judder, leading me to think that the issue identified by the customer may be caused by the wheels and tyres. The vehicle was safely manoeuvred onto a two-post ramp, locating the jack arms on the safe jacking points according to autodata. I placed safety signage for EV/Hybrid vehicle (free standing floor EV warning sign and plastic chain-link barrier). I checked the dash for illuminated lights – HVB and MIL light were present. I plugged in the code reader to discover fault code: P0A0A. No operation in EV mode - which indicates a fault with the HV system. I switched the vehicle off (making sure it was off – no lights on dash) – leaving the key away from the vehicle on my tool box. I loosened and removed the locking wheel nuts on the floor. I half raised the vehicle and checked the wheel bearings – no noise or excessive end float movement was felt or heard. I removed the wheel nuts, followed by the wheels.	Health/Safety, relationship & times	✓
	Selected and used correct PPE	✓
	Communicated effectively	✓
	Maintained positive working relationships	✓
	Identified hazards	✓
	Maintain environmental/sustainability	✓
	Tools used/care of/checks: Torque wrench – checked calibration date, tread depth gauge, brake pad gauge, vernier gauge, multimeter, diagnostic code reader, standard tools used for everything else.	

I fully raised the vehicle: I checked the underside of the vehicle for general condition (using a torch) – all seemed to be in good working order, with some surface rust on the rear suspension components. I now inspected the brakes and found these to all be within the acceptable values. This led me to look closer at the wheels and tyres due to the complaint. The tyre condition was fair – no unusual bulges or wear. The tyres were low in pressure (28 psi front 30psi rear) and I pumped these up to the required values (32psi all round). I took the wheels over to the wheel balancer, both rear wheels required 5 grams of weight to be added (this is an acceptable value and would not cause the vibration mentioned) and the NSF wheel required 15 grams of weight to be added and OSF required 25 grams. This confirms the vibration at speed fault to be the front wheels out of balance. All wheels were checked using the wheel balancing machine and by inputting the required dimensions data onto the machine. Once a value was found to be unacceptable, all weights were removed, the surface cleaned, and new weights stuck on. The wheels are alloy and required stick on weights. I rebalanced both front wheels as the rear are an acceptable value. I spun up the wheels to check and was happy to see 0 grams required. I asked for the workshop technician to witness this result on the machine and sign my job card. I half lowered the vehicle: I refitted the wheels, tightening the wheel nuts up by hand only. I lowered the vehicle (still on ramp but with weight on the wheels). All wheel nuts were torqued up (103Nm) in a diagonal way so the wheels are secure. I put the locking wheel nut key back. I fully lowered the vehicle and removed the ramp arms. Next, I needed to consider the MIL light, the code earlier indicated HV system. I checked the fuses for condition by removing the appropriate ones and testing using the multimeter – all seemed to be okay (none were broken). I now checked the rear of the vehicle and removed the covers to gain access to the HV battery. The boot was found to have water laying in it and the covers were wet. **It was noted that the whole system was required to be de-energised before any further access due to the high risk of electrocution. I gained the information from autodata and followed the instructions.** Wearing the appropriate protective gloves, I removed the service switch and upon visual inspection I could see the switch prongs had eroded. These are covered in orange plastic and are non-serviceable. I asked for the replacement part, refitting this with a small amount of contact grease on the switch and checking the battery side to confirm it was in a fit for purpose state. Out of curiosity I then re-energised the system before trying to start. The vehicle started and the MIL light disabled. I plugged in the code reader and checked for codes. The code was still there. I cleared	**Technical data/equipment/readings:** Wheel balancing machine P0A0A High voltage system - interlock circuit malfunction OSF – Pads 6mm Disc 23.5 mm vented NSF – Pads 6mm Disc 23.5 mm vented OSR – Pads 4mm Disc 9 mm solid NSR - Pads 4mm Disc 9 mm solid Minimum front disc thickness for replacement – ventilated 22mm Minimum rear disc thickness for replacement – 7.5mm Minimum pad thickness 1mm **Tyres:** OSF – 5mm NSF – 5mm OSR – 4mm NSR – 3mm Minimum tread depth is 1.6mm throughout a continuous band comprising the central three-quarters of breadth of the tread and around its entire outer circumference Wheel nut torque 103Nm MSDS and Autodata used for reference **Recommend**: Investigate and repair water ingress in boot the cause of the deteriorated switch

this and checked for EV operation – which showed it to be working. I cleared the code and restarted the vehicle; the code had now gone. I followed the instructions on the code reader for safe removal. Due to not being old enough to drive the vehicle, I asked for the technician to test drive the car and I went as a passenger. Firstly, we got up to speed and no vibration was found. I checked the central display to see that the HV system was operating as expected, regenerating charge on braking and finally switching back to EV mode before entering the garage. I now finally checked for codes using the diagnostic code reader, nothing was found stored or current on the system. I removed the VPE, cleaned the vehicle down and refitted all of the boot coverings before returning the key to the technician. I tidied up my working area to include sweeping the floor and the area around the wheel balancing machine. I double checked and wiped down my tools and returned any specialist equipment before handing over my findings. I returned all the EV safety notification and barrier to the workshop cupboard. I have attached the technical data that I followed.	Brake fluid change due to condition NSF headlight hazy requiring a polish – will not pass MOT Rear suspension has rust present – monitor

Candidate's Signature *Candidate A*
Date: 11/01/2022 I confirm the work carried out on the evidence provided is my own work

Assessor's Name:
Assessor's Signature Date

Commentary

The candidate completed a detailed and comprehensive job card based on the work that they had planned. The job card demonstrates that the candidate followed a logical and determined process to complete all required maintenance and service activities. The candidate followed a meticulous approach to ensure faults were diagnosed, as demonstrated through their approach to confirm the fault with the MIL light. The level of detail captured is comprehensive, and clearly articulates the key findings, decisions and outcomes of each step of the activity.

The candidate has demonstrated their ability to fully meet the requirements of the task. The process taken shows their ability to investigate the faults identified with care and attention paid to the specific areas highlighted by the customer. This enabled them to locate specific faults, as well as ensure the overall functioning of the vehicle. The candidate demonstrated their understanding of the system in order to diagnose faults. For example, investigating the judder and finding no faults with the breaks, the candidate logically suspected that the issue may be being caused by the wheels and tyres.

The candidate identified key areas of work, making distinctions between the work that needed to be carried out immediately to fix the faults identified and ensure the safe operation of the vehicle, as well as areas of maintenance that need to be flagged for future resolution. For example, highlighting that the NSF headlight requires a polish is recommended for future attention – recognising that this is not necessary part of the scheduled maintenance activity but would not meet the MOT standards. This demonstrates a high level of technical understanding of vehicle maintenance requirements, applied to a specific situation.

2c. Internet search history for fault diagnosis and fault codes for vehicle 2

[redacted]

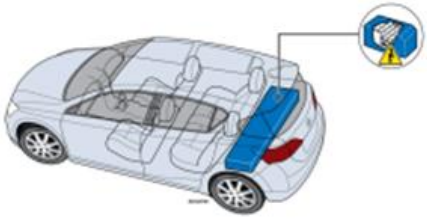
Battery disconnection and reconnection | Autodata

Powered by Autodata

Battery disconnection and reconnection

Lexus CT
2ZR-FXE/1.8

Battery location



Location

Vehicle servicing

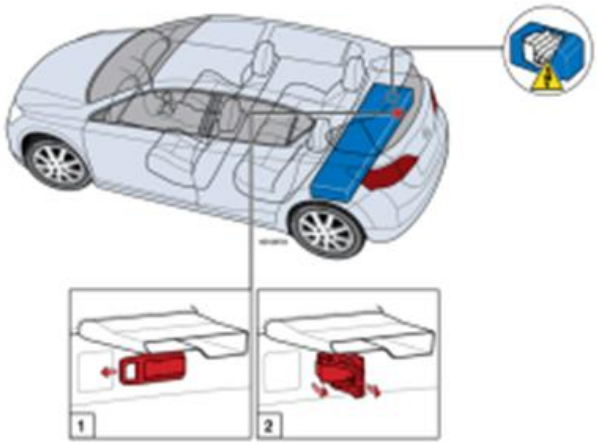
- Hybrid battery pack disconnection NOT required before carrying out the following procedure(s):
  - Regular service and maintenance operations.
  - Main vehicle battery disconnection.

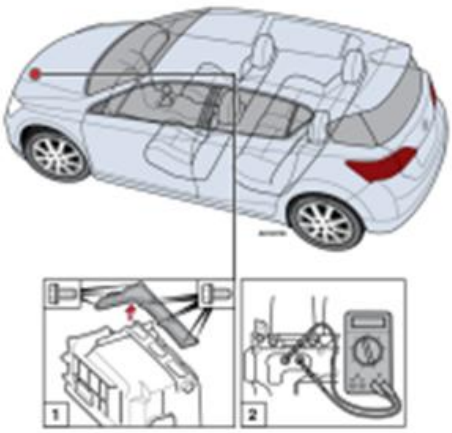
Safety precautions

WARNING: Hybrid battery pack contains HIGH VOLTAGE fig2.

When working on high voltage circuits and components ensure the following safety related guidelines are adhered to:

- Ensure all personnel working on high voltage hybrid drive systems are suitably trained to carry out the necessary operations.
- Place high voltage warning signs to ensure the safety of personnel in the work area.
- Ensure all high voltage circuits and components are not left accessible to untrained personnel.
- Always wear insulated gloves conforming to relevant local safety standards.





- Ensure all electrical equipment switched OFF.
- Ensure ignition switched OFF and vehicle keys removed from vehicle interior.
- Fit inverter terminal cover fig4.1.
- Fit hybrid battery pack isolator fig3.2.
- Lock hybrid battery pack isolator in place fig3.1.
- Connect main vehicle battery. Refer to relevant procedure for main vehicle battery.
- Fit luggage compartment floor covers.

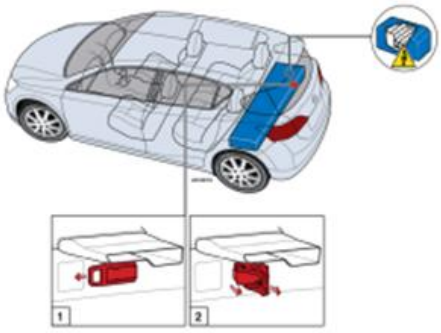
- Isolate high voltage hybrid battery pack.
- Ensure the recommended waiting time after high voltage hybrid battery pack isolation has elapsed, before working on the hybrid drive system.
- Check any residual circuit voltage is below the recommended safety level.
- Ensure all test equipment and tools are suitable for use with high voltage.

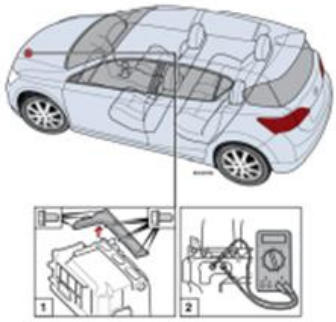
Note: Hybrid drive system high voltage wiring harness covered with orange insulation.

Special tools

Manufacturer's or equivalent diagnostic equipment.

Hybrid battery pack disconnection/isolation





- Switch ignition ON.
- Check for trouble codes. Repair faults before proceeding.
- Ensure all electrical equipment switched OFF.
- Ensure ignition switched OFF and vehicle keys removed from vehicle interior.
- Remove luggage compartment floor covers.
- Disconnect main vehicle battery. Refer to relevant procedure for main vehicle battery.
- Unlock hybrid battery pack isolator fig3.1.
- Remove hybrid battery pack isolator fig3.2.
- Wait 10 minutes.
- Remove inverter terminal cover fig4.1.
- Check voltage at inverter terminals to ensure no residual circuit voltage (0 V) remaining before commencing work fig4.2.

Note: DO NOT switch hybrid drive system to "READY" mode with hybrid battery pack isolator removed.

Hybrid battery pack connection

[redacted]

Diagnostic trouble codes

Lexus CT
2ZR-FXE/1.8

EOBD Diagnostic trouble codes	Fault location
P0A0A	High voltage system - interlock circuit malfunction

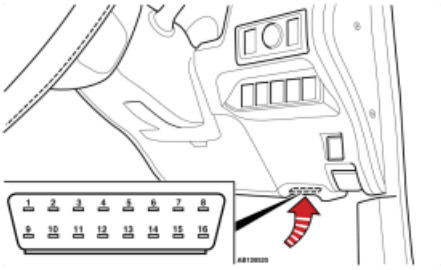
Probable causes

-

GENERAL INFORMATION

EOBD_2(P0)

Data link connector (DLC) location



Master DLC - RHD

The following list contains standard ISO/SAE specific diagnostic trouble codes (DTCs) that are used by many vehicle manufacturers.

Warning: Some vehicle manufacturers may use the ISO/SAE code format but assign different fault locations to those shown below.

https://workshop.autodata-group.com/w1/diagnostic-trouble-codes/LEX25534?vrm=BJ68UNX 1/3

Commentary

The candidate has obtained fault codes from the diagnostic readers and used those in autodata to give them detailed and accurate technical information to support thorough fault diagnosis of the vehicle and how to resolve the faults found. Using the autodata system has enabled the candidate to source all details of the HVB disconnection and reconnection procedures, ensuring their safety and the safety of others in the area. This demonstrates thorough and accurate gathering of technical data to diagnose faults found and apply this information to ensure maintenance is carried out accurately.

2c. Practical observation form – work area preparation (vehicle 2)

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate A	CG12345
Centre name	**Assessment theme**
City & Guilds	Health and safety Planning and preparation

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Work area preparation – Vehicle 2	The candidate gathered the tools and equipment listed in their resource list and checked each piece for condition and calibration date. They were placed in their working area within reach and methodical order of use. Two post ramp and wheel balancer needed for the service was checked for operation, and ensuring it was free to use before a vehicle/wheels could be moved into the area. The candidate placed technical data relating to this vehicle, clean cloths, cleaning fluid, and waste bins within the working area with consideration of slips, trips and fall hazards. The candidate undertook a visual inspection of the working area and put on PPE, identifying and moving an obstruction out of the walkway. VPE was applied correctly. EV and HV mandatory signage and appropriate barriers were put out. The candidate verbalised when vehicles were moving and when lifting or lowering the vehicle on the ramp, adhering to industry standard.

Assessor signature	Date
Assessor.1	04/04/2022

Commentary

The candidate prepared the working area with all listed resources from Task 1, and all tools and equipment checked for condition and calibration. This demonstrates a comprehensive understanding of the importance of preparatory checks; to ensure efficient and accurate maintenance can be carried out, mitigating issues arising if an incorrectly calibrated or out of date torque wrench was used for example.

Resources were placed in the working area with consideration of the prepared job card, demonstrating exemplary understanding of work area preparation and how this can ensure safe and efficient working throughout.

2c. Practical observation form – maintenance activities (vehicle 2)

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate A	CG12345
Centre name	**Assessment theme**
City & Guilds	Health & safety Systems and components Working with faults Reviewing and reporting

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Decommissioning, disassembly and inspection	The vehicle was visually examined for any bodywork damage or obvious signs of wear and tear and recorded this on the service schedule. The candidate completed a test run of the vehicle on the rolling road checking brake efficiency, eliminating this as a possible fault location demonstrating the half split process. The candidate placed the vehicle on the two-post ramp, loosened the locking wheel nuts on the floor before loosening the rest. The candidate half raised the vehicle and shook the wheels – checking play. They then removed the wheels and removed components in a logical order. When disassembled, the candidate observed good health and safety techniques relating to storage of removed components. The candidate made sure the location was not an obstruction to them or others surrounding them. The candidate inspected the vehicle, finding a hazed headlamp outside of the scheduled work.
Fault detection and diagnosis	The candidate approached the fault finding logically, checking overall functionality to begin with. Candidate completed sensory checks and half split techniques to locate faults. They measured the tyres using tread depth gauge, brakes using vernier calipers and pad tool, gaining readings to compare with technical data. The wheels were safely placed on the wheel balancing machine, where the candidate diagnosed the vibration to be the front wheels/tyres. They followed safe procedures to complete wheel balancing and got someone to witness the result of balancing. Diagnostic code reader was used to complete testing, confirming HV Battery fault. The candidate safely de-energised the vehicle and dismantled the boot area to gain access to the HV battery. The candidate identified water ingress in the boot and found the isolation switch to be excessively corroded. They asked for a new one and replaced it, refitting

Task	Notes – *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
	everything in a logical order. They re-energised the vehicle, starting it and using the code reader to check and compare values. During maintenance activities, the candidate identified wear and tear on service parts and suggested recommendations.
Reassembly and recommissioning	The candidate reassembled removed components logically, referring to technical information as they went, tightening the wheel nuts in the correct sequence. Using a torque wrench to tighten these to the correct torque value. All of this was done in the correct sequence to reassemble the vehicle back to a roadworthy condition. The candidate asked to go for a test drive with the workshop technician (with VPE still in the vehicle) to confirm rectification of faults.
Working area	Prior to starting work, the candidate checked the condition of the vehicle – including the bodywork and recorded this. Fuel, oil and coolant was checked to be at adequate levels before beginning any diagnosis. The candidate worked safely and neatly throughout all activities, following all workshop and health and safety requirements. The candidate took extra care to alert others of a silent running vehicle in the workshop and an EV/hybrid by verbalising this to colleagues and placing the appropriate signage in and around the vehicle, returning this once work was completed. Removed components and fixings were placed into organised containers and magnetic trays which mitigated any trip hazards, kept them tidy and prepared for appropriate waste disposal. All tools and equipment were cleaned and returned to correct storage. Waste was disposed of in correct separate bins and the working area was left safe, clean, and tidy. VPE removed and vehicle thoroughly wiped down.

Assessor signature	Date
Assessor.1	04/04/2022

Commentary

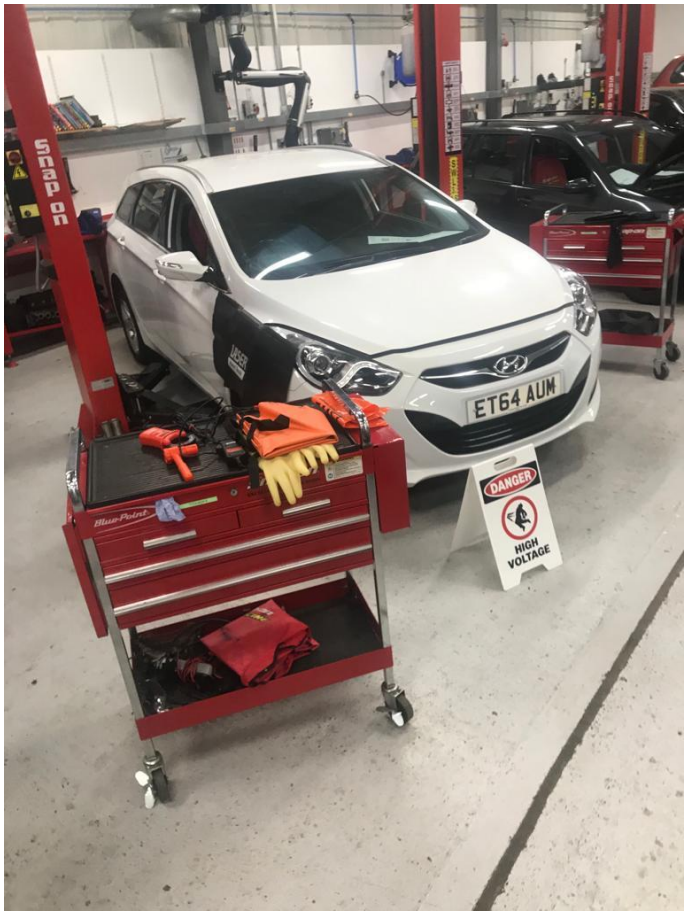
The candidate demonstrated exemplary health and safety practices through safe isolation of a running vehicle before starting work and risk mitigation. They paid extra attention to having an EV/hybrid vehicle in the workshop demonstrating their knowledge of the health and safety requirements of having this type of vehicle in the workshop. For example, shouting out to others to make them aware due to the lack of noise created by this vehicle. The candidate demonstrated that they were able to interpret requirements and perform maintenance and fault-finding tasks in line with the requirements of the brief and best practice procedures.

The candidate demonstrated correct and accurate fault-finding techniques during the maintenance activity, showing excellent hand skills and correct use of tools and equipment, ensuring the maintenance was completed to a high standard. For example, using the wheel

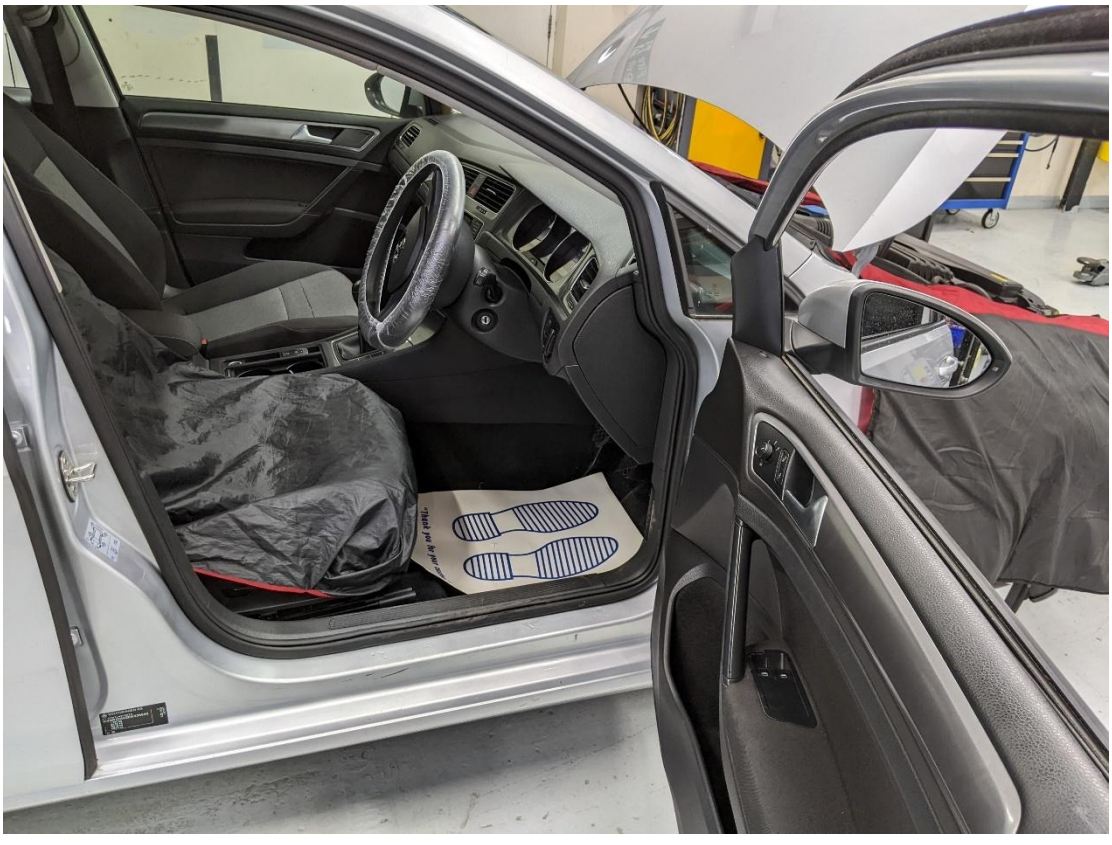
balancing machine to gauge correct weight and comparing these results to the industry standard to interpret fault diagnosis. The half split technique was clearly used by placing the vehicle on the rolling road to eliminate the braking system, followed by a visual inspection, and a physical manipulation to feel for faults. Finally, the diagnosis was completed with the wheel balancer – excellent methodology demonstrated. To enhance the diagnosis practices further the candidate could have tested the removed switch for resistance, proving this was faulty rather than substitution.

The activities were undertaken with demonstration of efficient use and application of test equipment, which ensured the tightening torques were completed correctly. Through doing so, the candidate demonstrated their ability to interpret correctly the calibration requirements and those of documentation, resulting in system accuracy and road worthiness. For example, checking calibration date of the torque wrench before use, using it correctly when tightening bolts and winding it off once finished with.

2c. Photographic evidence.



Photograph 1: Photographic evidence shows the tools, equipment and all relevant technical documentation placed in their working area within reach and methodical order of use in the prepared working area and appropriate HV warning signage.



Photograph 2: Photographic evidence shows the prepared and accurately fitted VPE on Vehicle 2.

Photograph 3: Photographic evidence shows the high voltage battery exposed and candidate has prepared the vehicle and area for work and mitigating risk.

Photograph 4: Photographic evidence shows the re-instated wheel balancer working area cleaned and tidy.

Task 3a - Review and report the service, maintenance and repair activities

(Assessment themes: Health and safety, Systems and components, Reviewing and reporting)

For task 3a candidates need to produce the following pieces of evidence:

- technical report
- revised maintenance schedule for Vehicle 1, including justifications.

Candidate evidence

3a. Technical report

Technical report	12/01/2022

Both vehicles came in with varying faults reported.

Vehicle 1 – petrol powered

- full service required
- customer complaining of a juddering when applying the brakes
- the engine management light (EML) is illuminated
- the exhaust needs to be extended to meet manufacturer's guidelines by welding an extension onto the existing exhaust.

Vehicle 2 – hybrid vehicle

- the high voltage battery light and EML malfunction induction lamp (MIL) are both illuminated
- unusual vibration noticed when travelling between at speeds 50mph and 60mph.

One vehicle was a petrol-powered vehicle and the other a hybrid. When working on the hybrid vehicle, safety is essential to be followed mainly due to it being silent running and accidents can easily occur or cause damage to the combustion engine. Another real health and safety concern is electrocution. In normal operation, the petrol-powered engine is a combustion engine that requires adequate ventilation when being run in a workshop. The hybrid vehicle uses a high voltage battery to run when travelling below 20mph (or in the right conditions) and regenerates battery charge when braking or slowing down. All Health and Safety was addressed, including the use of PPE and safe preparation of the working area. I acknowledged the regulations that would be adhered to and complied with, including the Health and Safety at work act and PPE regulations, working on electric/hybrid vehicles and welding.

The vehicles were visually examined for any damage or obvious signs of wear and tear. There was a varied amount of body work damage which was recorded on the service schedule. This is done to prevent the customer from complaining about damage that may have occurred during activities. I ensured that both vehicles had enough fuel, coolant and oil before starting, and before both vehicles were test driven/placed on the rolling road – which was done to confirm the customer complaints and start the diagnostic procedures. The reason for checking these areas is that if there was insufficient oil the engine could

seize, insufficient coolant would create further faults and potentially overheat the engine and insufficient fuel would not allow for activities / engine running happen.

The maintenance included the inspecting, testing and diagnosing and repairing of any faults found within the vehicles. The inspection techniques completed included sensory checks that included visual and smell, fault diagnostic tests, measurement of key parameters and finally operational/functional checks of each system within the vehicles.

I followed the job cards created and used autodata service schedules / technical information as a guide and as a quick reference for tightening torques etc.
Upon examination of the vehicles, no obvious faults matched the customer's description with the exception of the MIL on the hybrid vehicle. By plugging in the diagnostic tool, it guided me towards the lambda sensor fault and through live data testing I was able to diagnose the fault, comparing it with technical data. This method was also used for the HV battery isolation switch, only through physical inspection was this fault found. With the wobble at speed this was clear through previous experience and learning that this was wheel/tyre related. Upon inspection using a wheel balancing machine, the wheels were out of balance and needed to be rebalanced using the appropriate machinery. Through using a DTI gauge, I was able to discover the warped disc and both sides were replaced. For the exhaust that required a weld this was done using all of the correct welding equipment and following the correct health and safety procedures to weld. Due to being circular, the exhaust pipe required to be moved and only small welds were appropriate for this task.

For all of the parts that were identified as faulty, I asked the workshop technician for the appropriate replacement components.

Lambda sensor could be faulty due to age/service life or poor fuel or poor vehicle maintenance.

Warped disc could be due to heavy breaking and or going through puddles when the brakes are hot.

Wheels out of balance may be due to poor road surfaces, damage to previous weights (falling off) or driving up and down curb stones at speed.

Further faults identified:
Vehicle 1

- NSR Damper misting
- exhaust hangers rusty – requires monitoring
- thermostat housing showing signs of leaks – requires inspection
- auxiliary belt perished – recommend replacement
    - brake fluid bled through
    - notify customer to drive with care due to discs and pads replaced.

Vehicle 2

- water in boot requires investigation, I believe this is the cause of the isolation switch fault
- recommend brake fluid change
- NSF headlight requires polishing
- surface rust on all four suspension corners – monitor.

Vehicle 1 identified faults could be caused due to environmental issues, for example wet climate leading to early deterioration of components. Carrying excessive loads or long drives could cause the damper to deteriorate.
Vehicle 2 had a faulty isolation switch, which I believe to be caused by water ingress into the boot, this requires investigation before rectification.

All tools and equipment were returned to their correct locations. The waste disposal requirements for these tasks are:

- Waste metal, tyres, brakes placed in the appropriate bin and collected by an authorised disposal company.
- Waste fluids collected and placed in the appropriate drums and collected when required by an approved waste specialist.

The spare stock that had been taken initially as part of the preparation for the check was returned to the correct location and this was reflected on the stock management sheet as returned. This helps to keep track of what stock has been used and when stock is running low. The wheel weights stock was reduced as once this comes to a certain stock level this is when stock is replenished for the workshop (ordered in bulk).

Once I was satisfied the faults were rectified, I tested the vehicles where possible and double checked for vehicle cleanliness and leaks. All tools and equipment were cleaned and replaced.

Commentary

The candidate has provided a detailed report which begins with an introduction to each of the vehicles and how they are expected to function which demonstrates the candidate's knowledge and understanding of the vehicles in order to support the testing process.

The candidate has stated the fault-finding and testing methods applied and explained how these were used to aid with the locating and diagnosing of faults. For example, the candidate both identified and diagnosed a warped disc, using fault diagnosis methods to determine the root cause of the fault. The candidate has explained clearly how the issues were then rectified showing a comprehensive knowledge of the maintenance and fault resolution processes.

The candidate has demonstrated a comprehensive understanding of test reports and their purpose by reviewing and analysing the actions taken, before completing the report with a conclusion and providing clear recommendations for future actions. For example, recommending monitoring of surface rust on the suspension for future maintenance activities.

3a. Revised maintenance schedule

Vehicle 1	
Maintenance recommended date	**Recommended services due to findings during maintenance**
6 months or 5,000 miles, whichever comes first	▪ Replace auxiliary belt ▪ Replace brake fluid ▪ Inspect and repair, if necessary, exhaust hangers ▪ Inspect and repair any of the suspension components ▪ Investigate and repair the thermostat coolant leak Check and top up: ○ Oil ○ Coolant ○ Powered steering fluid ○ Screen wash Check for functionality of the instrument panel and warning lamps.
Justification to seniors	
I would recommend that vehicle 1 has a shorter service timeline due to the existing outstanding repair work that I have recommended above. There are components showing signs of deterioration (auxiliary belt, exhaust hangers, suspension), that I believe may require attention sooner than the next recommended schedule of 10,000 miles or 12 months. I also recommend adding a fluid check and top up at each service and this ensures system efficiency within each of the vehicle systems as well being cost effective for the customer as it will be a top up rather than full replacement which may become necessary if levels become too low or even run out completely. My suggestion would be to complete the outstanding repair work and a fluid check, along with a brake inspection within the next 6 month or 5,000 miles. By doing this work it will be more customer focused, it should make the customer feel 'cared for' and help them to budget the work required. Overall, this would keep this vehicle suitable for continued road use if addressed.	

Commentary

The revised maintenance schedule has been completed efficiently with clear recommendations provided from their findings of the maintenance activities completed on the vehicle, with comprehensive justifications for these recommendations. For example, that certain vehicle components are currently showing signs of deterioration and will require attention sooner than the original recommended service schedule of 10,000 miles or 12 months to ensure road worthiness. The candidate has considered the requirement to keep the vehicle road-worthy, alongside the need to support the customer.

Task 3b – Peer review

(Assessment themes: Reviewing and reporting)

For task 3b candidates will be asked to peer review two maintenance schedules and then be given two completed peer reviews to review and amend their proposed maintenance schedule. This is supporting evidence for assessors to see what suggestions have been given to each candidate in order to base their amendments on and will not be marked.

For task 3b candidates need to produce the following pieces of evidence:

- maintenance schedule amended from peer review feedback, including justifications.

3b. Peer review forms

Candidate name	**Candidate number**
Candidate.C	34567
Centre name	**Centre number**
ABCDE	12345

Question	**Feedback**
How well does the schedule enable planned maintenance activities to be performed and recorded over time?	*The schedule enables planned maintenance to be completed on a 6 monthly basis which is an effective maintenance schedule considering they have identified areas of wear and tear to certain components. The documents produced allow for the maintenance to be recorded clearly.*
How appropriate are the recommended planned maintenance intervals and why?	*The alteration to the maintenance schedule proposed may not be appropriate considering the noted deterioration for some components within the vehicle. There is more chance for breakdown as the time between the maintenance is still quite lengthy at 6 months. The coolant leak could effectively cause more defects to occur, leading to fault investigation, costing the customer more money over time.*
What are the implications to the business of the proposed maintenance schedule?	*A revision to the maintenance schedule will mean that more time is being spent on the maintenance which may have a cost implication, however, overall will reduce costs as the vehicles will more roadworthy and the likelihood of faults will be reduced.*
How can the maintenance schedule could be optimised/ improved?	*Where candidate.A has suggested a revision to the maintenance schedule on a 6 monthly schedule reduced form the original 12 monthly. I feel that the maintenance should be completed on a 3 monthly system as to prevent the further rusting and deterioration of components and maintain road worthy vehicle. Vehicle 1 requires the coolant to be completely renewed due to the investigation process combined with mileage, this would be required to be completed*

Candidate name	Candidate number
Candidate.D	45678
Centre name	**Centre number**
ABCDE	12345

Question	Feedback
How well does the schedule enable planned maintenance activities to be performed and recorded over time?	*The schedule enables planned maintenance to be completed on a 6 monthly basis which is an effective maintenance schedule but considering the age of the vehicle may be too frequent. The documentation that is in place allows the maintenance steps to be recorded and stored efficiently and can be referenced back to during future maintenance activities.*
How appropriate are the recommended planned maintenance intervals and why?	*After reviewing the issues found during the maintenance and overall condition, age and mileage of vehicle 1, the recommended planned maintenance intervals may not be fully appropriate mainly because the vehicle is not that old.*
What are the implications to the business of the proposed maintenance schedule?	*The reduced interval time will mean it's more costly to the business and customer as well as time consuming so seniors may not approve the recommendation and may prefer to remain on the current 12 monthly or 10,000 with reactive maintenance whenever required.*
How can the maintenance schedule could be optimised/ improved?	*I disagree with candidate.A's recommendation to reduce planned maintenance from 12 monthly to 6 monthly, I believe this is unnecessarily costly to the customer and the cost implications need to be more thoroughly considered. I would recommend maintaining the 12 monthly maintenance schedule but complete further inspection and repair work to the noted areas which will avoid further and more catastrophic faults with the vehicle. I also recommend replacing the lambda sensor at each service to prevent failure in future.*

Candidate evidence

3b. Maintenance schedule amended from peer review feedback

<table>
<tr><td colspan="2">Vehicle 1</td></tr>
<tr><td>Maintenance recommended date</td><td>Recommended services due to findings during maintenance</td></tr>
<tr><td>21/01/2022</td><td>▪ Replace auxiliary belt
▪ Investigate and repair the thermostat coolant leak
▪ Renew the coolant</td></tr>
<tr><td>12 months or 10,000 miles, whichever comes first</td><td>▪ Replace brake fluid
▪ Inspect and repair, if necessary, exhaust hangers
▪ Inspect and repair any of the suspension components

Check and top up:
○ Oil
○ Coolant
○ Powered steering fluid
○ Screen wash

Check for functionality of the instrument panel and warning lamps.
General inspection of the vehicle.</td></tr>
<tr><td colspan="2">Justification for changes:
From the peer review feedback, it was highlighted that due to the age of the vehicle, 6 months/5,000 miles may be too frequent to complete a service even with consistent use and may be wasteful of time and unnecessarily costly. I believe there are areas of further investigation that do need to be completed before the next planned maintenance so instead of reducing the time before the next service is due, which would involve inspection of the whole vehicle which may not be needed, I am now recommending further inspection and repair work on these specific areas to be completed by 21/01/2022. The wear and tear to the auxiliary belt and coolant leak found can be addressed in a reactive maintenance activity which will ensure the vehicles roadworthiness and reduce these from causing a safety incident or failure of the roadworthiness test so taking the vehicle off the road for longer than necessary.
With consideration of the feedback, I have decided to maintain the original 12 monthly or 10,000 mile service schedule but with additional checks to the vehicle, including inspection of exhaust hangers and suspension components as well as fluid checks. This will reduce the likelihood of complete and catastrophic full system failure whilst maintaining a cost-effective maintenance schedule. All feedback received was considered and actioned where I believe appropriate.</td></tr>
</table>

Commentary

The candidate has taken on board elements of the peer review feedback and implemented changes where they agreed changes were appropriate considering their maintenance findings and all aspects of the vehicle. For example, initially the candidate recommended reducing the intervals to 6 monthly or 5,000 miles but due to the age of the vehicle, agreed

that this reduction is not fully appropriate and so maintained the original 12 monthly or 10,000 mile schedule.

Changes made to the maintenance schedule are appropriate to the vehicle considering it's age, usage, mileage and the candidates findings during their maintenance activities with clear consideration of roadworthiness. For example, the candidate has recommended further inspection on a worn auxiliary belt and minor coolant leak which are not currently causing issues, demonstrating their understanding to address these issues before causing a safety or roadworthiness issue.

The candidate has provided clear justifications for the changes made, giving detailed reasoning for their decision and recommendations. For example, explaining that not completing further inspection and repair work to the auxiliary belt and coolant leak may lead to a safety incident or failure of the roadworthiness test and so increasing downtime of the vehicle.

Task 4 – Complete handover

(Assessment themes: Health and safety, Reviewing and reporting)

For task 4 candidates need to produce the following pieces of evidence:

- handover documentation.

For task 4, assessors will need to produce the following pieces of supporting evidence from the handover:

- assessor observations of the handover meeting.

The following task 4 supporting evidence has not been included for this version of the guide standard exemplification materials:

- video evidence showing the handover meeting.

Candidate evidence

4. Handover documentation

Completed job cards, completed service sheets, updated maintenance schedule and manufacturers vehicle service book.

Commentary

The candidate has ensured to hand over all relevant documentation required, including the job cards, service schedule, vehicle service book, and ensuring to obtain a signature confirming that work has been completed. This shows comprehensive understanding of the importance of thorough documentation and recording procedures as well as the requirements of handover procedures.

4. Practical observation form – handover meeting

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate.A	CG12345
Centre name	**Assessment theme**
City & Guilds	Reviewing and reporting

Complete the table below referring to the relevant marking grid, found in the assessment pack. **Do not** allocate marks at this stage.

Task	**Notes –** *detailed, accurate and differentiating notes which identify areas of strength and weakness are necessary to distinguish between different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.*
Handover	The candidate started by providing an overview of the work that they had undertaken on both of the vehicles, including the welding activity needed on the petrol-powered vehicle. For each vehicle, the candidate explained in detail the actions taken to complete the maintenance and thoroughly explained and justified the actions taken to rectify the faults found. For each vehicle, vehicle functionality was demonstrated clearly, and using the correct technical terminology for each part of the system. The candidate explained the revision of the maintenance schedule, providing the supervisor with an overview of the peer feedback they received, including the difference of opinion from the two sets about the time of planned maintenance intervals. The candidate then explained the decision to amend the revised maintenance schedule, explaining their decision to not include the suggestion of changing the lambda sensor each time a service is carried out due to it being unnecessary and costly to both the business and the customer. The candidate demonstrated excellent communication skills using accurate and consistent technical terminology that was fully appropriate to the audience, supporting this with the handover documentation. The candidate ensured all the documentation had been completed correctly and asked the supervisor to confirm they were happy with the information and findings presented, signing the completed documentation, then handed over the keys to both vehicles. Overall, the handover was complete, comprehensive and used excellent communication skills.

Assessor signature	Date
Assessor.1	05/04/2022

Commentary

The observation report identifies the different areas of the handover process and how the candidate met the requirements. They shared all correct documentation and obtained the supervisor's signature to confirm they were satisfied with the work completed, demonstrating they understand the handover processes and how to correctly follow them for quality assurance.

The candidate provided a technically detailed functional overview of the vehicles and verbally explained the faults found, using correct terminology throughout, and the rectification processes followed. They shared all key documentation, explaining these in an appropriate level of technical detail to the assessor and then handing over the keys to both vehicles.

The candidate clearly addressed the revised maintenance schedule and the peer review feedback received, explaining some feedback they chose to dismiss as it was unnecessary. For example, dismissing the suggestion to change the lambda sensor at each service instead of waiting for it to fail, the candidate understood and justified that this was unnecessary because it would add additional costs to both the business and customer.