HM Government

T-LEVELS

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

Light and Electric Vehicles (315)

Guide standard exemplification material

Threshold competence – Sample 2022

City & Guilds

First teaching from September 2022
Version 1.1

Version and date	Change detail	Section
1.1 Jan 2023	Minor typographical amendments	Through document

Contents

Introduction

The sample assessment materials within this document refer to the Light and Electric Vehicles occupational specialism assignment. The aim of these materials is to provide centres with examples of knowledge, skills and understanding that attest to minimal threshold competence. 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 minimal threshold competence 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. Minimal threshold competence 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 pass (threshold competence), a candidate will typically be able to:

Interpret technical information, plan, assess risk and follow safe working methods appropriately when applying practical skills to an acceptable standard to satisfy the requirements of the brief.

Adequately prepare working areas to allow safe working, acknowledging potential risks and applying acceptable housekeeping techniques during tasks.

Demonstrate basic technical skills for diagnosing components, assemblies and sub-assemblies to complete maintenance, service and repair activities, in line with the requirements of the brief.

Demonstrate adequate skills using tools and equipment for light and electric vehicle maintenance, service and repair, ensuring safe isolation, removal and replacement of components.

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

Work safely showing an understanding and suitable level of awareness in the preparation and application of processes, selection and use of tools, equipment, materials and components for maintenance, service and repair activities.

Mostly use industry and technical terminology accurately across different communication methods with some 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.

Requirements and Resources	Quantity	Justification
Tools/equipment/materials		
Spanner set	1	For nuts/bolts.
Driver set	1	For different screws, fixtures and fixings.
Pliers	3	To hold items or help with removal.
Torque wrench	1	To torque up nuts/bolts.
Socket set	3 sets	To use on appropriate components, nuts and bolts.
Multimeter	1	Conduct various electrical tests.
Diagnostic code reader	1	To interrogate the system for diagnostics assistance.
Laptop	1	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	To complete wheel and tyre inspections.
Air tools	As required	For various tasks.
Exhaust extraction	Per vehicle	Removes fumes from a running vehicle in a workshop safely.
Wheel and Tyre machines with balance weight	As required	To remove, refit and balance a wheel/tyre(s).
Welding kit	1	To weld the exhaust pipe.
Insulated tools for working on and electric/hybrid vehicle	Whole set/toolbox	To prevent accidental arc and work on parts near high voltage.
Cleaning fluids	As required	To clean brakes or small spillages.
PPE		
Gloves	1	To reduce chances of injury/contamination to hands.
Overalls	1	To protect the body from dirt and debris.

Safety shoes/boots	1	To reduce chances of injury to feet.
Safety eye wear	1	To prevent eye injury.
Hybrid/electric vehicle PPE	set	To prevent accidental electrocution.
Welding mask and gloves	1	PPE requirement when welding preventing arc eye and hand damage.
VPE		
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	To notify everyone in the workshop of High voltage potential.
Technical Information/documentation		
Manuals/posters	For refence for wheels, tyres and alignment.	
Autodata	To get technical information.	
Risk assessment	To complete before beginning the task.	
Job cards	To follow during the tasks.	
Waste disposal		
Oils/fluids, coolant	To comply with the HSE requirements of safe disposal of fluids.	
Tyres	To comply with the HSE requirements of safe disposal of tyres.	
Metal	To comply with the HSE requirements of safe disposal of metal.	
General	For general waste.	
Fault finding/diagnostic techniques and methods		
Sensory checks	Checking for any visual faults/components not connected etc.	
Interrogate system	Use code readers to check for more information.	
Test run vehicles	Run the vehicles on a rolling road.	
Half split technique	Break the system down to locate the fault.	
Unit substitution	Change suspected faulty components until system works.	

Commentary

The candidate has interpreted the requirements of the brief and applied their understanding to produce an adequate list of resources required, demonstrating technical knowledge for the system and maintenance requirements. For example, the need to use different tool types to inspect wheels and tyres to ensure road worthiness. This could have been developed further by explaining how each of these tools will be used. For example, the tread depth gauge is used at 4 points (12, 3, 6 and 9 o'clock) around the circumference of the tyre. This gauge is also used at these mentioned points to measure tread depth across the width of the tyre, noting the lowest measurement.

The candidate has listed amounts of each resource that they have planned to use, however they have not prepared any spares that may be required if issues arise, listing only one of each replacement component. This demonstrates that time saving, and system downtime may not have been considered in their initial planning and preparation.

The candidate has recognised the need to refer to supporting technical documentation in order to complete the task. There is limited detail provided on what documentation they would use, with no specific reference to assignment brief, specification, or diagrams – which could lead to errors or ineffective time management.

The candidate has interpreted the technical information to identify fault finding and diagnostic techniques and methods that are appropriate for the vehicles to correctly diagnose faults and inform the appropriate resolution methods. They have provided limited details of each method, demonstrating that they know the processes to be followed but not necessarily fully the reasoning behind them.

The candidate has demonstrated planning for safe working by identifying appropriate PPE and VPE, stating why each piece should be used, but some areas lack additional detail, such as ensuring overalls are made from heat resistant materials. To develop this area further, additional pieces could also be listed, such as closed-toe shoes to protect feet and an electrostatic discharge mat for working on the electric/hybrid vehicle.

1b. Risk assessment

Risk Assessment				
Hazard	Risk	Control	Likelihood	Severity
Working area throughout the maintenance and fault finding activities on the different vehicles	Slips, trips and falls, moving vehicles, fumes.	Wear PPE at all times. Ensure area is clean and tidy throughout preparation, maintenance and upon completion. Notify those nearby when moving a vehicle. Use extraction on when running vehicles and welding.	1	1
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
Spilt liquid when undertaking vehicle maintenance	Slipping.	Clean up spillages, using cloths and rags. MSDS sheets.	1	1
Manual handling of tools and equipment	Back injury.	Do not lift over maximum lifting limit. Ensure correct training has been received.	1	1
Undertaking vehicle maintenance with stored energy (temperature) present	Burns, scalding, injury.	Wear the correct PPE, including gloves. Do not handle components whilst still hot. Observe appropriate cool down periods.	2	2
Welding arc	Arc eye.	Work in a safe environment and wear an anti-reflective welding mask.	5	2
Using hand tools and equipment for maintenance of the vehicles	Cuts, abrasions, general hand injury.	Ensure proper use of all tools and equipment. Ensure correct PPE is obtained and worn, such as gloves when working with hot components and eye protection when welding.	1	1
Using pneumatic tools as part of vehicle maintenance	Ingress, noise, hand injury.	Appropriate training of pneumatic tools before use. Ensure maintenance of the pneumatic air line and connectors.	3	3
Undertaking vehicle maintenance where live electricity is present	Electrocution.	Safe isolation following ELV guidance.	2	4
Equipment malfunction/faulty components	System heating up when working on it.	Safe isolation following ELV guidance.	2	2

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 considered and identified hazards and risks associated with the maintenance and fault-finding activities on the system to ensure safe working is followed. All risks and hazards identified are relevant to the task and system to be worked on, demonstrating their understanding of risk identification and mitigation whilst completing vehicle maintenance activities. To develop the response further, the candidate could categorise each element of the activity and identify hazards for each element, demonstrating a deeper understanding of risks and hazards in the workplace to ensure the safety of themselves and others. For example, the specific hazards that relate to each vehicle, the welding activity and adding further detail for each stage of the maintenance of these with specific reference to the risks and hazards.

The candidate has considered appropriate control measures for each of the hazards identified, demonstrating acceptable knowledge for risk mitigation techniques in order to demonstrate that they are able to work safely. However, the measures identified lack specific detail, and do not appear to demonstrate that the candidate has considered a variety of scenarios or situations that could arise during the maintenance activities. Further consideration of a wider range of control measures and a greater level of detail would have developed the candidate's response further.

The candidate has labelled the likelihood and severity for each risk and hazard, with some accuracy. For example, working with stored energy is correctly rated as likelihood 2, severity 2. This demonstrates an acceptable standard of understanding and awareness of risk assessment and mitigation, and therefore safe to work. The candidate could have developed their response further by considering the likelihood and severity of all identified hazards and risks with a higher degree of accuracy. For instance, acknowledgement that risks may only cause minor injury, but would be of a higher likelihood rating, such as hand tools and equipment should be rated as 2 for likelihood, and 1 for severity, rather than 1 for both.

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

Prepared job card for Vehicle 1

Candidate's name: __Candidate.B_____ Date: _10/01/2022___	Vehicle Make: __ Vauxhall Model: _ Astra _____ Registration No: __ DP68XEK _____	**Details of Work activity** 1. Service 2. Check brake judder 3. Check EML

Job details: Put on PPE and apply VPE, get tools and service parts. Check EML with code reader, apply a reset method. Investigate brake judder, inspect wheels, tyres, brakes, and suspension. Complete service: • drain and refill engine oil with filter • check gearbox level • replace air filter • check all fluid levels under bonnet and battery charge • replace pollen filter • inspect and report any faults • check operation of all lamps (outside vehicle) and wiper blades for sweep and squirt • check all interior to include seat belts for operation and function • lubricate all locks and hinges. Dispose of any waste and tidy working area.	Health/Safety, relationship & times	
	Selected and used correct PPE and VPE	
	Communicated effectively	
	Identified hazards	
	Maintain environmental/sustainability	
	Tools used/care of/checks Torque wrench, tread depth gauge, brake pad gauge, vernier gauge, DTI gauge, diagnostic code reader, standard tools used for everything else.	
	Technical data/equipment/readings Autodata	

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.B_____ Date: _10/01/2022___	Vehicle Make: __ Vauxhall _____ Model: _ Astra _____ Registration No: __ DP68XEK ___	**Details of Work activity** • Weld exhaust pipe

Job details: Ensure welding PPE worn. Turn on extraction and MIG welder: • prep weld • weld pipe • check weld. Turn off extraction and MIG welder. Dispose of waste and tidy working area.	Health/Safety, relationship & times	
	Selected and used correct PPE	
	Communicated effectively	
	Identified hazards	
	Maintain environmental/sustainability	
	Tools used/care of/checks MIG welding equipment, chipping hammer, wire brush,	
	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 Vehicle 2

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

Job details: Ensure PPE worn and VPE applied. Apply/follow H&S regs for EV/hybrid vehicle in workshop. Investigate judder, inspect: • wheels • tyres • brakes • suspension. Plug code reader in for malfunction lamps – follow code reader guidance. Dispose of waste and tidy working area.	Health/Safety, relationship & times	
	Selected and used correct PPE and VPE	
	Communicated effectively	
	Identified hazards	
	Maintain environmental/sustainability	
	Tools used/care of/checks Torque wrench (check calibration date), tread depth gauge, brake pad gauge, vernier gauge, multimeter, diagnostic code reader, standard tools used for everything else.	
	Technical data/equipment/readings Autodata, code reader or laptop	

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 prepared basic but clear job cards for each of the vehicles and the welding activity, demonstrating their knowledge and understanding of the service and maintenance activities needed to be carried out to meet the requirements of the brief.

The candidate has considered and referred to one regulatory requirement, the use of PPE and ensuring working area is checked before starting each maintenance activity, demonstrating the candidate is following workplace regulations. The response could have been developed by referring to a wider range of regulatory requirements, such as waste disposal and guidance documents, and how they are applied.

The candidate has considered the fault finding and maintenance processes in their prepared job cards with basic but clear lists of their proposed actions. This shows an adequate level of planning with consideration of all of the key steps required to meet the requirements of the brief. The response could have been developed further through providing more detail of the intended actions and techniques. For example, the candidate has stated for vehicle 2 to follow code reader guidance which is not recognised as the most appropriate practice in industry. Instead, the candidate could have written to compare findings with technical data as an example.

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

(Assessment themes: Health and safety, 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 (photograph 2)

- 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 3)

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

Candidate evidence

2a. Completed job card for Vehicle 1

Candidate's name: __Candidate.B_____ Date: _10/01/2022___	Vehicle Make: __ Vauxhall Model: _ Astra _____ Registration No: __ DP68XEK _____	**Details of Work activity** 1. Service 2. Check brake judder 3. Check EML

Job details: • Put on PPE and apply VPE, get tools and service parts. • Completed a bodywork damage report on the service schedule doc. • Checked EML with code reader. The code was P0156 and P0157, this indicates a fault the lambda sensor. Cleared codes. • Placed vehicle on rolling road to test judder, judder felt and indicated as problem NSF. • Safely placed vehicle on two-post ramp and loosened off the locking wheel nuts. • Tooted horn, checked lamps with another person, opened bonnet. • Checked interior components for operation and function to include seat belts. Half raised car • Shook wheels, testing for wheel bearing play – all is good. • Buzzed wheel nuts off and removed wheels, placing them under the car. • Removed sump plug and caught oil in drain tray. • Measured brakes using DTI and micrometer. • Visually inspected surface rust on suspension. • Measured and inspected wheels and tyres. • Replaced discs due to warp. I asked for new discs and fitted them, removing surrounding components. I sanded the pads down till flat (using fig 8 style) and lubricated the contact points. Refitted all components, torquing them up as I went.	Health/Safety, relationship & times	✓
	Selected and used correct PPE and VPE	✓
	Communicated effectively	✓
	Identified hazards	✓
	Maintain environmental/sustainability	✓
	Tools used/care of/checks Torque wrench, tread depth gauge, brake pad gauge, micrometer, DTI gauge, diagnostic code reader, standard tools used for everything else. Pressure brake bleeder, buzz gun.	
	Technical data/equipment/readings Autodata Lambda sensor fault code P0156 and P0157 Wheel nut torque 140Nm sump plug torque 25Nm Oil with filters 4ltr 0w20 DTI NSF 0.8 mm minimum 0.04mm	

• Bled brakes, using pressure bleed kit, maintaining reservoir level, starting with the one furthest away from reservoir. Made sure fluid ran clear and was free of air, cleaned off nipples and reservoir area. • Replaced wheels, tightening wheel nuts by hand. Fully raised car • Visual check undertaken of the underside of car. • Checked and topped-up gearbox oil till dribbled out of level hole. • Removed oil filter, replaced with new, refit oil sump plug. Fully lowered car • Tightened wheel nuts with torque wrench, replaced locking wheel nut key. • Lubricated all locks and hinges. • Replaced air filter and pollen filter. • Topped-up washer fluid. • Re-filled oil, started car to check level and topped-up. • Reset service light. • Closed bonnet, checked wipers for condition, sweep and squirt – all okay. Cleaned down car, removed VPE, tidied tools and equipment away, disposed of waste and tidied working area.	**Brakes**: Min pads both front and rear 1.5mm NSF: Pads 4mm disc thickness 23mm on minimum OSF: Pads 4mm disc thickness 23.5mm NSR: Pads 3mm disc thickness 12mm min 10mm OSR: Pads 3mm disc thickness 12mm min 10mm **Tyres**: min 1.6 visible tread across ¾ 32psi all round NSF: 4mm OSF: 4mm NSR: 3mm OSR: 3mm Battery voltage 12.3v Coolant protection -30 deg C Recommend: NSR Shock misting – requires replacement. Suspension showing signs of age – rusty. Monitor O2 sensor fault. Work done: • Cleared code for O2 sensor • Replaced both front discs • Full service completed

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 created a job card with detail on how the work was carried out. The job card shows that a logical process was followed to complete the maintenance and service activities, but the amount of detail provided is limited. The way the job card is set out provides a basic but clear record for future reference and provides recommended potential future maintenance activities to improve the service life of the vehicle. For example, a misting NSR damper was discovered, the candidate recognising that this is not necessary part of the scheduled maintenance activity but should be flagged for future maintenance.

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.

The candidate did not diagnose or resolve the lambda sensor fault but did recommend further investigation to resolve the undiagnosed faults. To develop the response further, the candidate could have recommended completing further investigation and measurements with the half split technique with further analysis and interpretation of the results to identify the root cause.

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

Autodata

Date: 10/01/21

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 clicks	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	ok	Check/report ☑
Instruments/warning lamps	ok	Check/report ☑
Airbags/system	ok	Visual check ☑
Switches/controls	ok	Check/report ☑
Park/neutral position (PNP) switch	ok	Check/report ☑
Ignition lock	ok	Check/report ☑
Heater/air conditioning operation	ok	Check/report ☑
Horn	ok	Check/report ☑
Interior lamps	ok	Check/report ☑
Wash/wipe systems	ok	Check/report ☑
Instrument illumination	ok	Check/report ☑
Direction indicators/hazards	ok	Check/report ☑
Lighting system	ok	Check/report ☑
Headlight levelling system	ok	Check ☑
Headlights	ok	Check/report ☑
Body work/paint !	See back.	Check condition ☑

! 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	Ok	Check/report ☑
Engine oil !		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	OV0401547
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	Ok	Check/report ☑
Manual transmission oil leaks	Ok	Check/report ☑
Automatic transmission fluid (ATF) leaks	N/A	Check/report ☐
Steering joints	Ok	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	Ok	Check/report ☑
Road springs	Ok	Check/report ☑
Shock absorbers/mountings	NSR misting	Check/report ☑
Exhaust system/mountings	Rear pipe weld.	Check/report ☑
Brake pipe corrosion	Ok	Check/report ☑
Fuel system leakage !	Ok	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 — 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 — Replaced. 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 — NSF 0·8mm.

Rear brake pads — 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 — 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 — Renew ☑

More information

Brake fluid

Brake fluid	Type DOT 4+

Tyre condition — Check/report ☑

Tyre pressures — Check/adjust ☑

Tyre pressure monitoring system — N/A . Check ☐

ENGINE BAY OPERATIONS

Battery terminals — Clean/tighten/re-grease ☑

Washer bottle(s)

Washer fluid. OK 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 OK Check/report ☑

Engine coolant/anti-freeze 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) ! OK 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 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 !	OK	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 !		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

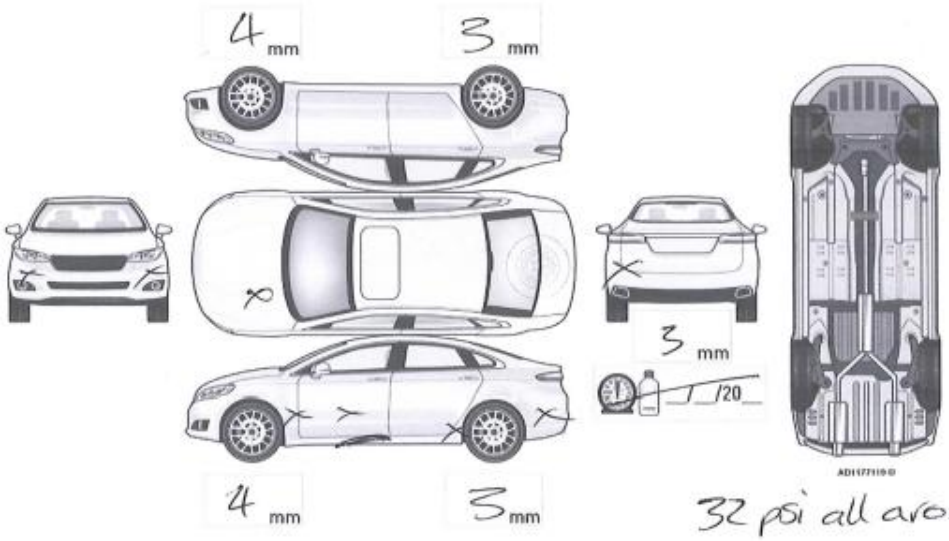
Sundries lubricant - Check/lubricate

✗ 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:

• NSR Shock misting — Investigate.

Technician's signature Candidate B Date 10/01/21

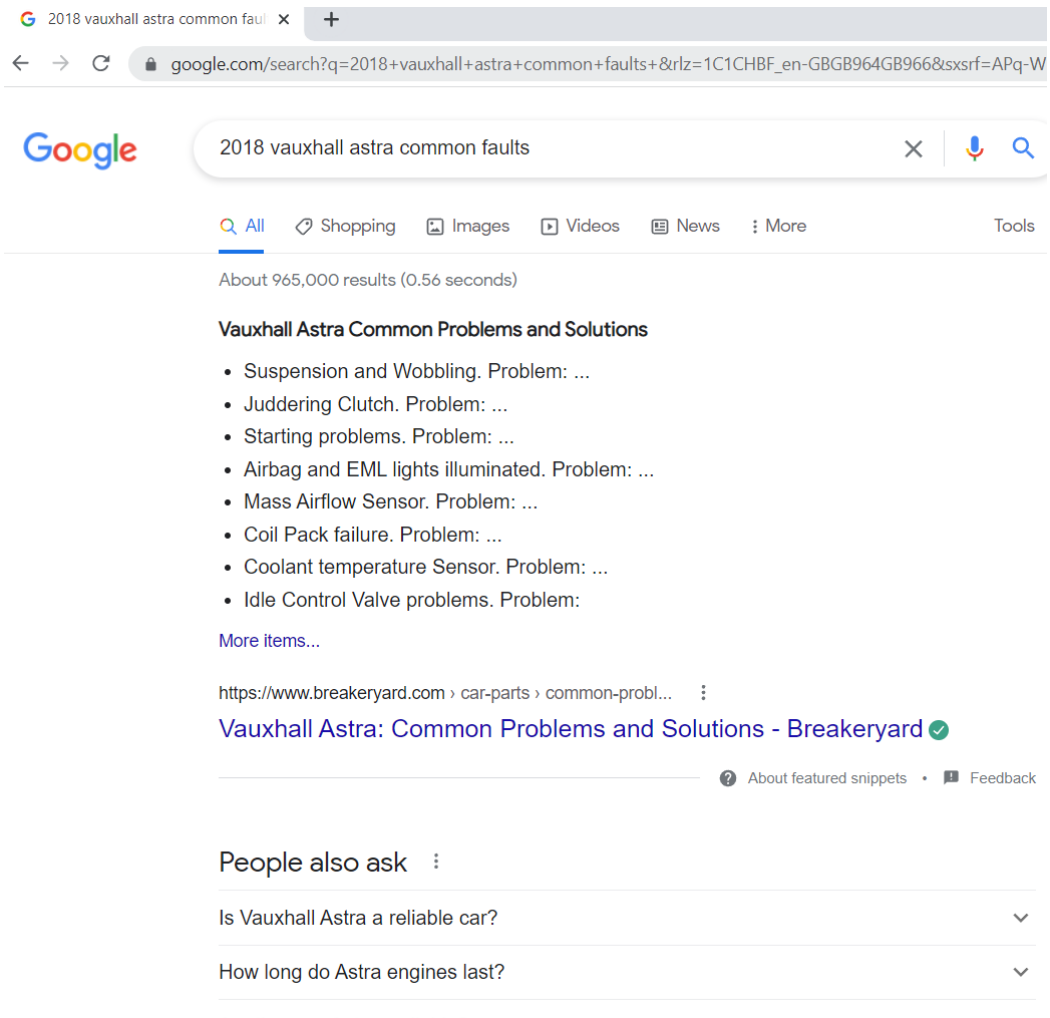
Commentary

The candidate has completed the service schedule appropriately, adding basic details of faults that were found outside of the planned routine service, and the testing data results that confirmed these. For example, the technical data states disc runout to be 0.004mm and the reading gained was 0.8mm.

The candidate demonstrates basic technical reporting and evaluation of the maintenance completed, using their findings to make recommendations for additional maintenance. For example, that the NSR Shock misting requires further investigation.

To develop this further, the candidate could have included additional information on all annotated areas of the completed service sheets. For example, when the candidate had thoroughly checked the brake pipes for corrosion, adding the detail that none was found and still fit for purpose.

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



Commentary

The candidate successfully demonstrated the ability to use Internet research techniques to identify some further relevant information in relation to the cause of potential faults based on the symptoms described. The information identified provided further areas for the candidate to consider the cause of faults alongside other investigative techniques but needed to undertake more detailed and specific searches in order to successfully narrow down the diagnosis of the specific fault. For example, they completed an internet search on commonly known faults for this vehicle which do lead to similar wobbling issues described by the customer but not the correct diagnosis and did not go any further with the lambda sensor fault code obtained. To develop the response further, the candidate could have obtained relevant information using workshop technical information, such as autodata, and used this to search for correct and accurate information to diagnose and resolve faults. For example, inputting the lambda sensor fault code obtained on the diagnostic code reader before clearing as noted in the maintenance activities practical observation.

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

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate.B	CG23456
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 1	The candidate gathered the tools, equipment and PPE listed in their resources list and checked the condition and calibration date of each. There did not appear to be any logical sequencing of tools and equipment placement in the working area. Visual inspection undertaken. Technical information, including their risk assessment, placed within reach of the working area, ensuring all basic health and safety requirements were followed before the maintenance activities began. VPE applied but some areas not fully covered.

Assessor signature	Date
Assessor.1	10/01/2022

Commentary

The candidate demonstrated an acceptable approach to preparing to work through undertaking basic preparatory checks of the work area. The candidate demonstrated consideration of checks across a range of key areas, such as checking the basic condition and calibration of tools and ensuring visual checks of the area. To further develop the response the candidate could have completed a thorough inspection of the two-post ramp before commencing work.

The candidate ensured to apply VPE to protect the vehicle, however missed some areas, and this could be further developed to ensure all areas are covered thoroughly.

The candidate could have developed their response further by placing technical resources in the work area with consideration of their prepared workflow. Considering this in more detail would demonstrate awareness of the efficiency and accuracy of their work in subsequent tasks.

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

Assessment ID	Qualification number
8712-315	8712-03
Candidate name	**Candidate number**
Candidate.B	CG23456
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	Prior to starting work, the candidate checked the condition of the vehicle – including the bodywork and recorded this. The candidate completed a test run of the vehicle on the rolling road checking brake efficiency. The candidate placed the vehicle on the ramp, loosened wheel nuts to remove the wheels and removed components in a logical order. Entire vehicle inspection carried out at appropriate heights, following the manufacturer's service schedule but not always in a logical order so time was wasted moving from task to task. Correct sub-assemblies and components were removed to disassemble and placed on tool-box and workbench with no apparent logical order of workflow to reassemble.
Fault detection and diagnosis	The candidate approached the fault finding logically but not always in a methodical sequence, checking overall functionality to begin with. The candidate completed sensory checks and half split techniques to locate faults. DTI gauge was initially set up incorrectly, touching the outer edge of the disc, which gave inaccurate readings first time. Candidate realised the issue and corrected its placement to identify accurate brake disc run out readings, which the candidate then compared to technical data. Diagnostic code reader used to read lambda sensor fault, and this was cleared without further investigation and so did not diagnose or resolve this fault. 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 regularly, tightening the wheel nuts in the correct sequence. Caliper carrier tightened to the wheel hub in correct sequence, tightened up the bolts to the correct torque followed by the caliper, also

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	tightened to the correct torque. All of this was done in the correct sequence to reassemble the brakes, using the appropriate lubrication. The brake pads were not renewed, they were sanded down using a recognised method and checked on an engineered flat surface. The oil sump bolt was tightened to correct torque using a new washer. Oil was refilled followed by engine being started for a short while before topping up. The candidate worked safely through all activities, following appropriate workshop requirements. Disconnected components were placed on a bench, rather than in containers which could have resulted in a trip hazard if knocked off the bench. The candidate made sure the location of removed components was not an obstruction to them, leaving an air line across a walkway for a period of time before actioning this themselves. Mostly returned tools and equipment to appropriate storage but did not clean down thoroughly. A spillage was cleaned up fully, but a slippery floor sign was not placed in the area to warn others.

Assessor signature	Date
Assessor.1	11/01/2022

Commentary

The candidate was able to demonstrate maintenance techniques showing competent and correct use of tools and equipment to ensure the maintenance was completed to an adequate standard, although fault finding was not always completed in the most logical order. For example, measuring the brakes and diagnosing a fault, then moving onto the next inspection point rather than dealing with the rectification immediately.

The candidate identified one of the two faults within the vehicle system and carried out an appropriate resolution method for this one fault. The candidate could have developed this response further by taking more care and consideration of the quality of these repairs. For example, replacing both the brake pads and discs rather than refurbishing the pads already in place. Completing a replacement of the pads rather than a refurbishment would be a more complete and longer lasting resolution than refurbishment.

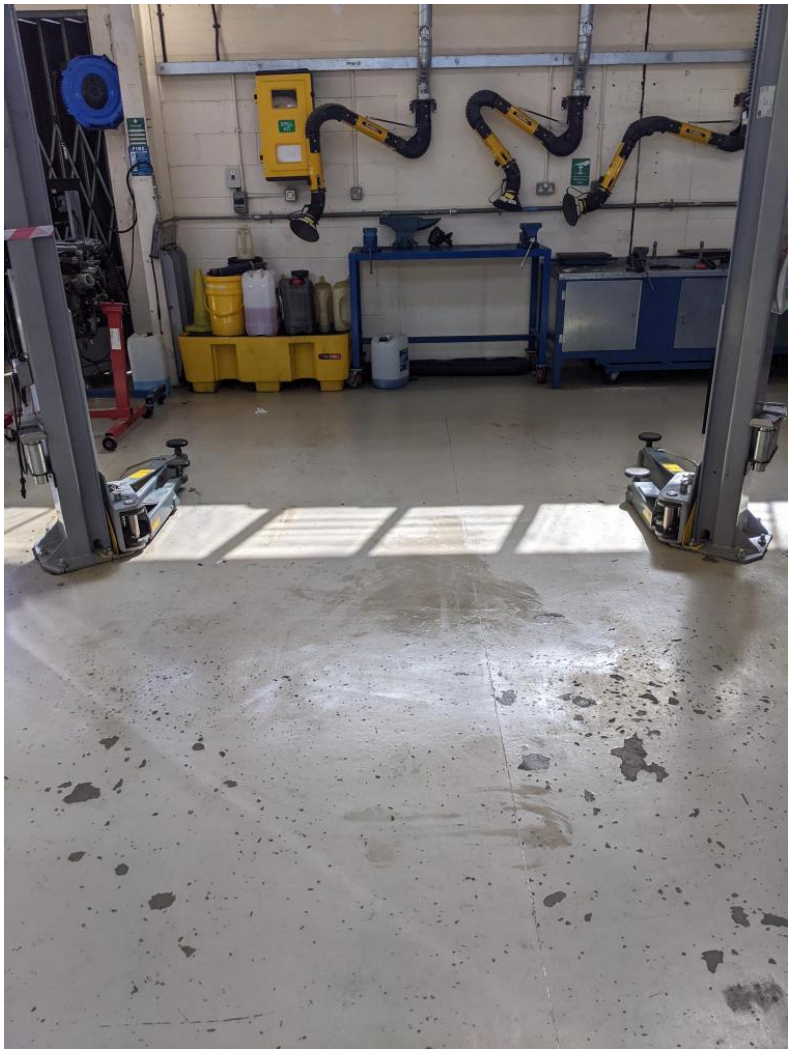
The candidate was not able to diagnose or resolve the lambda sensor fault, so was unable to complete full function of exhaust gases within manufacturer's specifications. This could lead to MOT failure. This meant that although they followed the correct processes and the vehicle was working, it could not produce fully accurate air to fuel ratio. To develop the response further, the candidate could have completed further fault-finding investigations into all systems and components within the vehicle, ensuring all were fully operational and working to manufacturer's specifications before undertaking final checks.

2a. Photographic evidence.

Photograph 1: Photographic evidence shows the prepared work area. Tools and equipment have been placed in the work area but have not been positioned in a fully logical sequence. Technical documentation is to hand but has been placed underneath the not yet fitted wing cover.

Photograph 2: Photographic evidence shows the prepared but not fully accurately fitted VPE on Vehicle 1, the wing cover is noted as sliding off.

Photograph 3:
Photographic evidence shows the initial set up and positioned DTI gauge to take brake run out readings, gauge has been set up to touch the outer edge of the disc which will give an inaccurate reading. This was subsequently corrected when the candidate realised the mistake and realigned.



Photograph 4: Photographic evidence shows the two pillar working area reinstated correctly. The area has been cleaned, including an attempt to mop up a spillage – however the floor is still slippery so should include a slippery floor sign.

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.B_____ Date: _10/01/2022___	Vehicle Make: __ Vauxhall Model: _ Astra _____ Registration No: __ DP68XEK _____	**Details of Work activity** • Weld exhaust pipe

Job details: To weld the exhaust which is approx. 2mm mild steel, I used a MIG welding set-up. I used the welding bay which has an anti-reflective environment with tinted curtains and fume extraction. I was wearing appropriate PPE. 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) set to 12 litres per minute. I set the extension tube and the exhaust in a jig to prevent movement. I used the MIG welding torch to carefully weld the pipe, stopping when access was no longer available and to allow the metal to cool (to prevent blowing a hole in the metal) before continuing to weld. Once the welding was complete, I cleaned up my working area and replaced all components, turning off the welding gas supply. Disposed of waste.	Health/Safety, relationship & times	✓
	Selected and used correct PPE	✓
	Communicated effectively	✓
	Identified hazards	✓
	Maintain environmental/sustainability	✓
	Tools used/care of/checks	
	Technical data/equipment/readings MIG welding equipment, chipping hammer, wire brush.	

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 completed a basic welding job card. The job card provides a simplistic overview of the completed work, but with the steps clearly shown. For example, the electrode wire diameter required and the flow rate the MIG welding machine needs to be set to. The job card has been set out in a way that provides an account for future reference but would have benefitted from being developed further with more detail of each of the steps undertaken.

In addition, the candidate could have developed their response further by focusing on steps that are not fully elaborated on within the job card. For example, details on how they prepared the welding bay and cleaned the weld would have demonstrated a deeper understanding and application of welding knowledge.

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 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 - Welding	The candidate gathered the tools and equipment listed in their resource list and checked each piece briefly for condition. There did not appear to be any logical sequencing of tools and equipment placement in the working area. Visual inspection was undertaken. Technical information was placed within the working area (safe distance). Visual inspection of working area. Welding PPE quickly checked for damage; heat proof gloves selected rather than welding gauntlets. Extraction checked for operation.

Assessor signature	Date
Assessor.1	10/01/2022

Commentary

The candidate prepared the working area with all listed resources from Task 1, checking the tools and equipment for condition and doing basic visual checks of the work area. This demonstrates an understanding of the importance of preparatory checks to ensure efficient and accurate health and safety procedures can be followed. The candidate selected heat proof gloves instead of the preferred welding gauntlets, which are adequate for heat work protection but not fully appropriate for welding. In this case, the candidate was wearing full sleeved overalls which provided sufficient protection whilst welding and so was not a health and safety concern. To develop the response further, the candidate could have selected accurate PPE, including long sleeved welding gauntlets, and completed a thorough inspection of PPE tools and equipment before use.

Resources were placed in the working area with consideration of the prepared job cards and health and safety considerations for welding, demonstrating an understanding of work area preparation and how this can ensure safe and efficient working throughout. To develop the response further, the candidate could have demonstrated a greater level of understanding of potential risks that may occur during the activity. For example, checking where fire extinguishers were held in the workshop prior to starting would have demonstrated their consideration of fire risks that are a consideration when welding.

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 de-isolation procedures LOTO before starting work on the weld and obtained permission to start work. They prepared the joint in a jig correctly, checking their job card and technical information as appropriate. The candidate's joining techniques were completed to a basic standard with surfaces inspected throughout the whole welding process. Use of all tools and equipment was appropriate throughout the welding activity, with 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. The candidate's final welded exhaust was acceptable with adequate signs of penetration.
Working area	The candidate worked safely throughout the welding activity, following all workshop and health and safety requirements. The candidate wore correct face protection when welding. Working areas were fully re-instated following all procedures, including waste managed appropriately and disposed of with consideration of requirements. Tools and equipment were cleaned, but not all tools were returned to correct storage. Floor and welding platform cleaned of debris. Waste was disposed of in correct separate bins noting that they could be hot. The candidate correctly followed all steps of isolation procedures after work LOTO to leave it in a safe state.

Assessor signature	Date
Assessor.1	10/01/2022

Commentary

The candidate was able to demonstrate welding techniques showing adequate hand skills and correct use of tools and equipment, ensuring the weld was completed to a basic standard. For example, producing basic penetrated joints with some consideration for accuracy and finish, allowing the run to cool before the next run. To develop the response further, the candidate could ensure to clean the welded joint to provide a more thorough finish. For example, the candidate did not clean the welding surfaces, before, during or after if this was followed it would have provided the candidate with a more efficient finish. The candidate followed and met basic health and safety requirements throughout the task ensuring to separate waste into the correct bins. To further develop their response, the candidate should have ensured all tools and equipment were fully returned to correct storage, leaving the working area safe and tidy.

Photographic/video evidence Task 2b.

Photograph 1: Photographic evidence showing the prepared welding area, using heat proof gloves instead of long-sleeved welding gauntlets.

Photograph 2: Photographic evidence shows the welded joint between the exhaust pipe and extender, showing the level of quality finish with bubbles and a difference in weld thickness throughout the join.

Photograph 3: Photographic evidence showing welding bay which has been cleaned to remove weld debris, but tools and equipment have not been fully returned to appropriate storage.

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

(Assessment themes: Health and safety, 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: 10/01/2022	Vehicle Make: Lexus Model: CT200H Registration No: BJ68UNX	**Details of Work activity** 1. Judder between 50-60mph 2. High voltage battery and MIL lights on

Job details:

Firstly, I fitted covers to the seat, floor mat and steering wheel. I asked the technician to take me and the car for a test run. This was to check the complaint plus listen for any other noises. On the test run the judder was felt on the steering wheel, not the brake pedal. This indicates wheel balance. No HV regeneration was indicated on the dash, this indicates a fault with the HV side of the vehicle. The technician returned the vehicle to the workshop and aligned it with the two-post ramps as requested. I then asked the technician to do the light check with me (as courtesy for the customer). I noticed the NSF headlamp requires a polish as it is hazy. I used I breaker bar to loosen off the wheel nuts using the locking wheel nut key. I safely raised the vehicle.

Half raised

- I checked the wheel bearings before removing the wheels, placing them safely under the vehicle.
- I completed a visual check of the brake, steering and suspension and driveshafts in case of fault. No obvious faults shown.
- I safely carried all four wheels over to the wheel balancing machine. I placed one wheel at a time onto the wheel balancer placing the measurements into the machine. Once I spun the wheels up [alloy wheels] I discovered the front wheels were out of balance offside by 15 g of weight and near side 25 g of weight. I balanced these wheels one at a time until the machine read 0 g in weight. Both rear wheels required five grammes of weight, but this is within an acceptable range.
- I fitted all wheels to the vehicle by hand and then safely lowered the vehicle until the weight was on the wheels and torqued up the will nuts to 103 Nm.

Fully lowered

Health/Safety, relationship & times	✓
Selected and used correct PPE and VPE	✓
Communicated effectively	✓
Identified hazards	✓
Maintain environmental/sustainability	✓

Tools used/care of/checks

Torque wrench (check calibration date), tread depth gauge, brake pad gauge, diagnostic code reader, standard tools used for everything else.

Technical data/equipment/readings

Autodata, code reader or laptop

Wheel balancer

Front wheels out of balance

OSF: 15g NSF: 25g

OSR: 5g NSR:5g

Stick on weights used.

Recommend:

• I plugged in the code reader and found code [POA0A] HV malfunction. I went to the boot of the car which was very wet. • I made sure that I was wearing the appropriate HV PPE, placing extra signage up and deenergised the system. • I removed the isolation switch, this looked green inside. I cleaned this with a screwdriver and placed a little contact grease in the terminals. • I refitted the isolator switch and reenergised the system. • I switched the car on and the light was not on the dash. • I pressed the throttle pedal and I could see the system operating as it should (on the dash). • I researched this fault to see if I could fully diagnose this but did not come to a solution. • Recommend monitoring this and to rectify the water in the boot. • I refitted all the removed components from the boot. • Removed VPE and signage cleaned the car tidy up everything. Dispose of waste and tidy working area.	• Hazy NSF headlamp to be polished. • Inspect and repair boot water ingress. Work done: • Balanced front wheels • Replaced isolation switch on HVB

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 created a job card with detail on how the work was carried out. The job card shows that a logical process was followed to complete the maintenance and service activities, but the amount of detail provided is limited. The way the job card is set out provides a basic but clear record for future reference and the candidate has recommended potential future maintenance activities to improve the service life of the vehicle. For example, a hazy NSF headlamp discovered and recommended for future attention – recognising that this is not necessary part of the scheduled maintenance activity.

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.

The method used was consistent and followed a good sequence however the candidate did not clear the fault that would have been stored on the vehicle ECU for the HVB isolation switch.

The candidate did not diagnose or resolve the HVB isolator switch fault but did recommending further investigation to resolve the undiagnosed fault. To develop the response further, the candidate could have recommend completing further investigation and measurements with the half split technique with further analysis and interpretation of the results to identify the root cause.

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

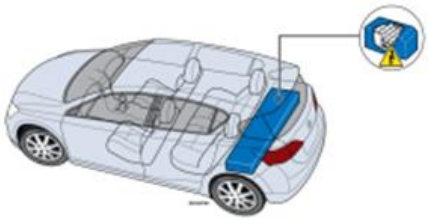
[redacted] Battery disconnection and reconnection | Autodata

Powered by Autodata

Battery disconnection and reconnection

Lexus CT
2ZR-FXE/1.8

Battery location



Location

Vehicle servicing

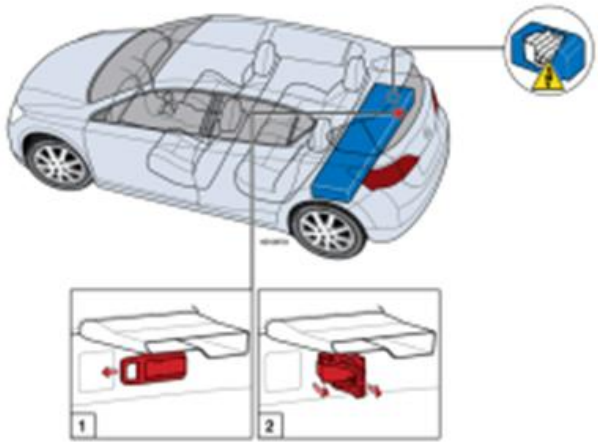
- Hybrid battery pack disconnection NOT required before carrying out the following procedure(s):
  - Regular service and maintenance operations.
  - Main vehicle battery disconnection.

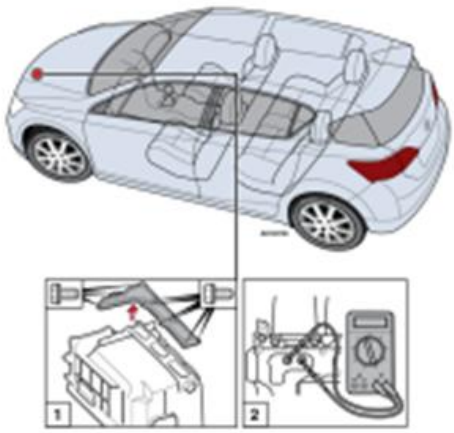
Safety precautions

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.

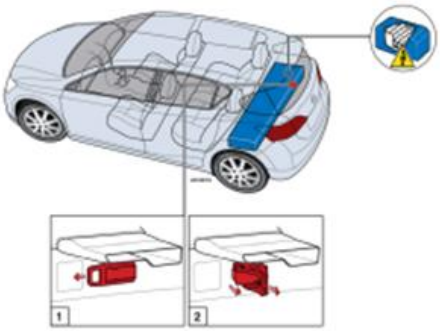
- Isolate high voltage hybrid battery pack.
- Ensure the recommended waiting time after high voltage hybrid battery pack isolation has elapsed, before working on the hybrid drive system.
- Check any residual circuit voltage is below the recommended safety level.
- Ensure all test equipment and tools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

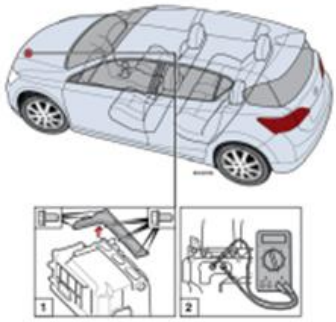
Note: Hybrid drive system high voltage wiring harness covered with orange insulation.

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

Diagnostic trouble codes

Lexus CT
2ZR-FXE/1.8

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

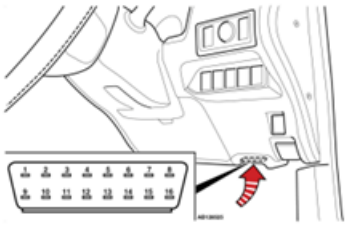
Probable causes

-

GENERAL INFORMATION

EOBD_2(P0)

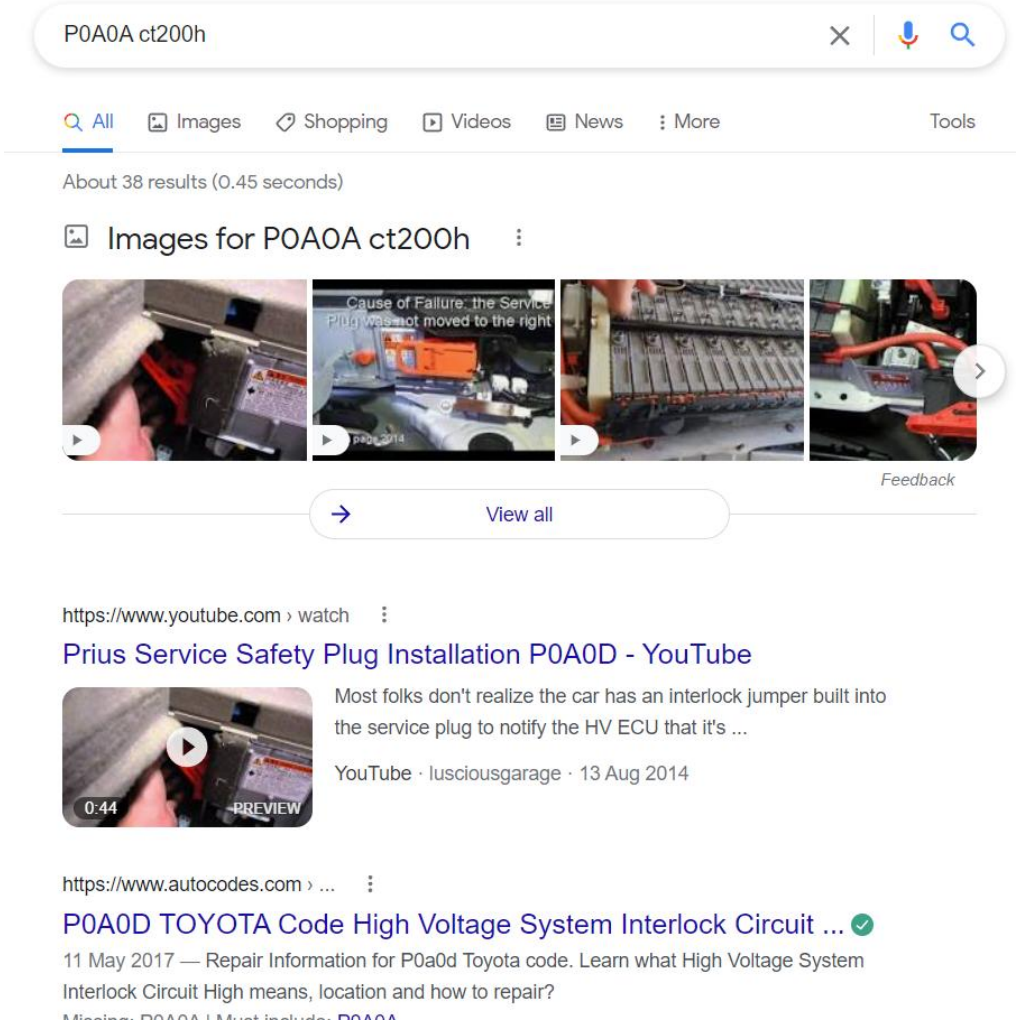
Data link connector (DLC) location



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.



Commentary

The candidate successfully demonstrated the ability to use Internet research techniques to identify some further relevant information in relation to the cause of potential faults based on the symptoms described. The information identified provided further areas for the candidate to consider the cause of faults alongside other investigative techniques but needed to undertake more detailed and specific searches in order to successfully narrow down the diagnosis of the specific fault.

For example, they completed an internet search on the fault code obtained finding relevant information on a widely available search engine which may not give fully correct and detailed procedures compared to workshop technical information, such as autodata. To develop the response further, the candidate could have obtained information using workshop autodata, using this to search for more detailed information to diagnose and resolve faults. For example, inputting the HVB fault code obtained from the diagnostic code reader which would give clear and detailed instructions to diagnose and resolution method for this fault.

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

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate.B	CG23456
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, equipment and PPE listed in their resources list and checked the condition and calibration date of each. 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. Missing out prior inspection of the wheel balancer. There did not appear to be any logical sequencing of tools and equipment placement in the working area. Visual inspection undertaken. Technical information, including their risk assessment, placed within reach of the working area, ensuring all basic health and safety requirements were followed before the maintenance activities began. Appropriate warning signs and barriers used for working on a HVB. VPE applied but areas not fully covered. 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	11/01/2022

Commentary

The candidate demonstrated an acceptable approach to preparing to work through undertaking basic preparatory checks of the work area. The candidate demonstrated consideration of checks across a range of key areas, such as checking the basic condition and calibration of tools and ensuring visual checks of the area. The candidate ensured to apply VPE to protect the vehicle, however missed some areas, and this could be further developed to ensure all areas are covered thoroughly.

The candidate could have developed their response further by placing technical resources in the work area with consideration of their prepared workflow. Considering this in more detail would demonstrate awareness of the efficiency and accuracy of their work in subsequent tasks. The response could be developed further by thoroughly inspecting the wheel banker before use.

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

Assessment ID	Qualification number
8712-315	8712-35
Candidate name	**Candidate number**
Candidate.B	CG23456
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 candidate completed a test run of the vehicle on the road with the workshop technician checking, eliminating possible faults and locating the fault instantaneously 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 safely placed these under the vehicle. 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.
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. 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 used to gain a code, 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, removing this. The candidate then followed a procedure that did not identify, nor rectify the fault. The candidate had followed a procedure that is merely a temporary fix. They re-energised the vehicle starting it to confirm rectification of faults they had found. The candidate made an effort to diagnose the fault by completing a web search without conclusion and recommended the water ingress to be a future action. During maintenance

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.*
	activities the candidate identified wear and tear on service parts and suggested recommendations.
Reassembly and recommissioning	The candidate reassembled the 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. All of this was done in the correct sequence to reassemble the vehicle back to a roadworthy condition.
Working area	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 were left on the ramp arm (wheel nuts). Tools and equipment were cleaned and mostly returned to correct storage. Waste was disposed of in correct separate bins and the working area was mostly left clean, and tidy, the wheel balancing area left with rags on the floor and on top of the wheel balancer. VPE was removed and the vehicle wiped down.

Assessor signature	Date
Assessor.1	11/01/2022

Commentary

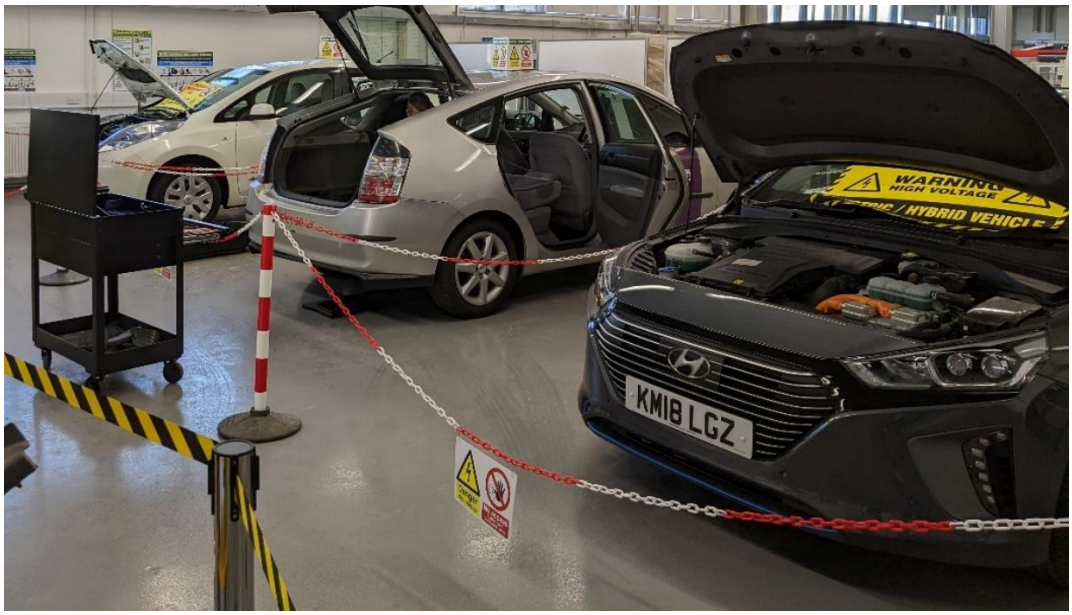
The candidate was able to demonstrate maintenance techniques showing competent and correct use of tools and equipment to ensure the maintenance was completed to an adequate standard, although fault finding was not always completed in the most logical order. For example, the HVB fault code was not cleared only read, so the fault was not fully diagnosed and resolved. The code would be stored in the ECU creating confliction for the next maintenance.

The candidate followed all steps of health and safety practices through safe isolation of a running vehicle before starting work and risk mitigation. The candidate was able to demonstrate maintenance techniques showing competent and correct use of tools and equipment to ensure the maintenance was completed to an adequate standard, although fault finding was not fully completed. For example, the HVB fault code was not cleared only read. The candidate presumed the fault had been cleared due to a light not being displayed on the dash. The code would still be stored in the ECU creating confliction for the next maintenance.

The candidate identified one fault within the vehicle systems and carried out a reasonable temporary resolution method for the HVB fault. The candidate could have developed this response further by taking more care and consideration of the quality of these repairs. For example, clearing all stored fault codes and using a multimeter to confirm isolation switch fault.

The wheel balancing was carried out to industry standard practice and completed in a timely manner.

2c. Photographic evidence.



Photograph 1: Photographic evidence shows that the work area has been prepared with consideration of the task to be undertaken. Warning signs have been placed on the windscreen to reflect this is a hybrid vehicle, and a barrier has been erected for safety purposes. Tools, equipment and technical documentation have been collected and placed in a toolbox but this has been positioned away from the vehicle in a way that is not most effective for the work to be carried out, with some tools also placed underneath the toolbox and not positioned logically within the toolbox in the order needed.

Photograph 2: Photographic evidence shows the prepared and not fully accurately fitted VPE. Steering wheel cover has mostly come off, the foot well protection is on the passenger seat rather than the driver's side floor and the seat cover has also partially come off from the seat. Wing cover has moved to under the bonnet instead of the wing.

Photograph 3: Photographic evidence shows the high voltage battery correctly exposed with tools prepared but placed improperly.

Photograph 4: Photographic evidence shows the re-instated wheel balancing work area, but not fully 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, including justifications.

Candidate evidence

3a. Technical report

Technical report	12/01/2022

Before beginning the task, I prepared job cards for each activity to follow during the tasks. The job cards gave me planned steps to follow as I worked through the maintenance. I also completed a risk assessment, as this is important for safety (especially working on an EV/Hybrid vehicle), before conducting any work and was also a requirement of the task. I used the scoring table to decide the likelihood and severity of the risks. Regulations that I followed, including the Health and Safety at work act and PPE regulations, working on electric/hybrid vehicles and welding.

Before beginning the task, I gathered all of the PPE and the tools and equipment listed in the materials list. I made sure that the area was clean and tidy before entering the area and setting up the working area, tools and equipment.

Both vehicles came in with 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.

The first task that needed to be completed was visual inspections to check the condition of the vehicle bodywork to identify damage or wear. Both vehicles were test driven/placed on the rolling road, to confirm the faults and start the diagnostic procedures.

The maintenance included the inspecting, testing, diagnosing and repairing of any faults found on the vehicles. The inspection techniques completed included sensory checks that included visual and smell, fault code reading, measurements and finally operational/functional checks of each of the systems within both 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, the obvious fault that matched the customer's description was the judder (wheel out of balance). Upon inspection using a wheel balancing machine, the front wheels were out of balance, and these were rebalanced using the wheel balancer. Wheels out of balance may be due to damage to previous weights (falling off) or poor driving.

I used a DTI gauge on the brakes, to discover a warped disc and both sides were replaced. Warped disc could be due to excessive wear and or going through puddles when the brakes are hot. I did not replace the pads. These were refurbished using the fig 8 method checking for a flat finish on an engineered square block.

For the exhaust that required a weld, this was done using all of the MIG welding equipment and I followed 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 faulty parts that were identified, I asked the workshop technician for the replacement components.

By plugging in the code reader, it showed me the lambda sensor, I cleared this code and it did not illuminate. This method was also used for the HV battery isolation switch, only through physical inspection was this fault found. The lambda sensor could have flagged a code due to poor fuelling as I could not find any further indications of a fault. I recommend completing further investigation of this.

Further faults identified:
Vehicle 1

- NSR Shock misting – requires replacement
- suspension showing signs of age – rust
- monitor O2 sensor fault
- notify customer to drive with care due to discs replaced.

Vehicle 2

- hazy NSF headlamp to be polished
- inspect and repair boot water ingress, possible cause of fault being displayed.

Vehicle 1 recommendations could be caused due to wear and tear and age of vehicle. Vehicle 2 had a faulty isolator switch, which I believe to be caused by water ingress in the boot, which requires further 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 to be placed in the appropriate drums and collected when required by an approved waste specialist.

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

Commentary

The candidate has provided a detailed technical 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 for the testing process.

The candidate has analysed and reviewed the maintenance and the issues that were found, providing a recommendation on how each of the issues identified can be rectified.

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 the 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 described how the diagnosed issues were then rectified showing a basic knowledge of the maintenance and fault resolution processes.

The candidate has demonstrated a basic understanding of test reports and their purpose by reviewing the actions taken, before providing clear recommendations for future actions. For example, recommending monitoring of rust found on the suspension as part of future maintenance activities.

The candidate has reported the stock used to complete the maintenance by listing some quantities of components and materials used, and how they disposed of their waste. The response could be further developed by noting exact levels of all stock used, such as the exact amount of solder, and what was left in the stock cupboard, then reporting this to the supervisor.

3a. Revised maintenance schedule

<table>
<tr><th colspan="2">Vehicle 1</th></tr>
<tr><th>Maintenance recommended date</th><th>Recommended services due to findings during maintenance</th></tr>
<tr><td>ASAP</td><td>▪ Complete further inspection and repair
▪ Inspect and repair any of the suspension components</td></tr>
<tr><td>12 months or 10,000 miles, whichever comes first</td><td>Check and top up:
○ oil
○ coolant
○ powered steering fluid
○ screen wash.

Check for functionality of the instrument panel and warning lamps.</td></tr>
<tr><td colspan="2">Justification to seniors</td></tr>
<tr><td colspan="2">Some vehicle components are showing signs of deterioration and require attention sooner than the next recommended schedule of 10,000 miles or 12 months. I recommend further inspection and repair work to address these as well as find and resolve any outstanding faults. Completing further investigation to address any outstanding faults will ensure the vehicle is roadworthy and safe to drive. I would also recommend adding to the current 12 monthly service schedule to check and top up fluids throughout the vehicle. This revision should just be a fluid check and top up rather than full replacement. My suggestion would be to complete the outstanding investigation and repair work as soon as possible and a fluid check along with a suspension inspection within the next 12 months or 10,000 miles.</td></tr>
</table>

Commentary

The candidate has considered the completed planned maintenance and outstanding maintenance issues to produce a basic, but accurate, revised maintenance schedule. This demonstrates their basic knowledge and understanding of the maintenance schedule process. For example, recommending additional fluid checks at 12 months or 10,000 miles ensures the levels are appropriate and avoids faults occurring because they are too low. To develop the response further, the candidate could explain in more detail why this is recommended for this vehicle and link it to the findings of the completed maintenance.

The candidate has provided a basic justification for recommending further investigation to diagnose and resolve any outstanding faults within the vehicle. To further develop the response, the candidate could add a specific timescale to complete this work and justify why the work is necessary to complete within the recommended timescale.

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 continue on a 12 monthly basis which may not be an effective maintenance schedule, I think it is too long a period of time when considering the current state of the vehicle. The documents produced allow for the maintenance to be recorded clearly. Further inspection is recommended ASAP but a specific time frame would be helpful.*
How appropriate are the recommended planned maintenance intervals and why?	*The alteration to the maintenance schedule that is proposed is not appropriate for the vehicle due to the age, usage and state of vehicle. The further recommended inspection does not give details which could lead to nothing further being done.*
What are the implications to the business of the proposed maintenance schedule?	*A revision to the maintenance schedule will mean that there will be very little change to the costs for the vehicle maintenance in only adding fluid checks and inspection of the dash indicators, however may reduce the vehicles roadworthiness and the likelihood of faults will be increased. There is a safety concern due to the HV battery being exposed to excessive moisture – this requires immediate attention and rectification.*
How can the maintenance schedule could be optimised/ improved?	*Where candidate.B has suggested a revision to the maintenance schedule, they have not suggested a specific date. I feel that the maintenance should reduce the intervals to a 6 monthly system to maintain a roadworthy vehicle. I also recommend adding a specific date for further inspection to be completed and 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 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. The planned maintenance activities are comprehensive, and the schedule is appropriate for the tasks to be completed.*
How appropriate are the recommended planned maintenance intervals and why?	*After reviewing the issues that the vehicles presented during the maintenance, the recommended planned maintenance intervals seem to be appropriate for the vehicle but the further inspection needs more detail to ensure it is completed and fully recorded for future reference.*
What are the implications to the business of the proposed maintenance schedule?	*The continued 12 monthly/10,000 mile intervals time will mean it's unlikely to add more costs to the business in terms of maintenance frequency, and so seniors are likely to approve the recommendation.*
How can the maintenance schedule could be optimised/ improved?	*I agree with candidate.A's recommendation to continue with current planned maintenance intervals from 12 monthly. I would recommend to complete the further inspection and repair work within two weeks of today's date to ensure the safety and roadworthiness of the vehicle. I also recommend completing wheel rebalancing at each service for safety purposes.*

Candidate evidence

3b. Maintenance schedule amended from peer review feedback

Vehicle 1	
Maintenance recommended date	**Recommended services due to findings during maintenance**
Complete by 21/01/2022	▪ Complete further inspection and repair ▪ Inspect and repair any of the suspension components
6 months or 5,000 miles, whichever comes first	Check and top up: ○ oil ○ coolant ○ powered steering fluid ○ screen wash. Check for functionality of the instrument panel and warning lamps. Complete wheel rebalance.
Justification to seniors	
From reviewing the peer feedback, I now recommend that vehicle 1 has a shorter service timeline due to the existing outstanding work and current condition. The vehicle components which are showing signs of deterioration will require attention sooner than the next recommended schedule of 10,000 miles or 12 months and so I recommend this to be completed at 6 months or 5,000 miles, whichever comes first. Completing further investigation to address any outstanding faults will ensure the vehicle is roadworthy and safe to drive. I recommend completing the outstanding investigation and repair work by 21/01 and a fluid check along with a suspension inspection within the next 6 months or 5,000 miles, whichever comes first. This should be a fluid check and top up rather than full replacement. It was also recommended from peer feedback that due to the wheels showing as imbalanced this time, the wheels should be rebalanced at each planned maintenance activity to maintain this and ensure no further issues.	

Commentary

The candidate has taken on board elements of peer feedback and implemented changes where they agreed changes were appropriate. For example, they have added an appropriate date for the further inspection completion which will ensure this is recorded correctly as well as not prolonging vehicle downtime. This demonstrates their ability to understand and respond to peer feedback received and understanding of the importance of preventative maintenance.

The recommended reduced intervals in which to carry out planned maintenance demonstrate knowledge and understanding of the requirement to ensure the vehicle's roadworthiness but may not be appropriate considering the age of this vehicle.

Changes made are not always fully appropriate and may be more costly to complete. For example, the wheels do not need to be rebalanced at each planned maintenance activity unless they are out of balance, and this will increase the time and cost of each activity.

The candidate has provided basic justifications for the changes made, for example that further inspection and repair should be completed within a short timeframe due to an outstanding issue not yet diagnosed. Justifications for some changes are not fully appropriate though as the wheel rebalancing is not a common issue with the vehicle. To further develop the response, the candidate could have added more detail to explain the technical reasoning behind decisions to adopt feedback. For example, why it is important for the further inspection and repairs within the two weeks recommended.

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 and manufacturer's vehicle service book.

Commentary

The candidate has provided a copy of the completed job cards and vehicle service books for both vehicles, obtained a signature from the supervisor on each job card to show that the work completed has been verified and handed over. To develop the response further, the candidate could have ensured to also handover the completed service sheets and updated maintenance schedule for Vehicle 1 to the supervisor, which would ensure all reporting procedures were fully followed.

The candidate has demonstrated a basic understanding for the process of handing over documentation and adhered to the requirements of the task. To develop the response further they could have provided a more detailed account of the outstanding issues and exact dates when these should be looked at again, prior to the next scheduled maintenance activity taking place.

4. Practical observation form – handover meeting

Assessment ID	**Qualification number**
8712-315	8712-35
Candidate name	**Candidate number**
Candidate.B	CG23456

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 verbally described the work they completed during the maintenance activity sufficiently, describing issues encountered during their approach to the fault finding. The candidate described the faults they found during the maintenance, these being the wheels out of balance, warped disc and the isolator switch being faulty, and how they chose to resolve them. The candidate also recommended further inspection and repair work to both vehicles to be completed by 21/01. The candidate provided a brief functional walk through of both vehicles. This however contained limited reference to their inspection and test results from the service and maintenance. Technical terminology was used correctly but limited. The candidate described where changes were made to the maintenance schedule as a result of the peer review feedback, including the difference of opinion regarding the intervals. They described that one peer recommended maintaining the current 12 monthly intervals and the other recommended reducing them from 12 to 6 months. They briefly explained that they chose to reduce the interval times because of outstanding issues that will need to be addressed before the 12 month/10,000 mile service. The candidate provided copies of some key documents including the job cards and service books. The candidate did not describe these documents in detail, simply providing a superficial overview of the main points, but ensured to obtain a signature. The candidate demonstrated good communication using some technical terminology appropriate to the audience, but mostly language more appropriate for a non-technical audience, rather than a subject matter expert that they were communicating with. Overall, the handover was adequate, but could have benefited from more attention to detail and thorough explanation when talking about the documents and potential future issues with the vehicles.

Assessor signature	Date
Assessor.1	12/01/2022

Commentary

The observation record details that the candidate undertook an adequate handover that reflected the key information to be handed over. For example, the candidate talked through the service and maintenance that they had completed and with a brief account of the outcomes for both vehicles.

The candidate acknowledged changes made to the planned maintenance schedule with a brief description. The candidate also acknowledged suggestions from the peer review feedback that they chose to dismiss. The response could have been developed further by explaining these in more detail, for example why they chose to reduce time between planned maintenance rather than keeping to the 12 monthly intervals and how this was linked to their completed maintenance.

The candidate shared some of the correct technical documentation expected in a handover but could have developed their response further by ensuring that all required documentation was correctly handed over and described in more detail. For example, the service sheets for vehicle 1 could have been handed over which would have supported their explanation of work carried out and future recommendations. Some appropriate use of technical and non-technical vocabulary was used, but this could have been more consistent and appropriately directed towards a technical audience.

The handover would have benefitted from being developed further in places, for example, the demonstration of the function of the vehicles was noted as being brief. The candidate could have developed their response by providing a walkthrough that provided a more detailed account of the maintenance and explaining the implications of test results on overall vehicle functionality in more detail.