

**T Level Technical Qualification in
Engineering and Manufacturing –
Maintenance, Installation and Repair**

**8712-315 Light and Electric Vehicles
Occupational Specialism**

**Grade Standard Exemplification Material
Distinction - Summer 2025**

Version and date	Change detail	Section	Question
v1-0 31 st October 2025	First published		

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Introduction

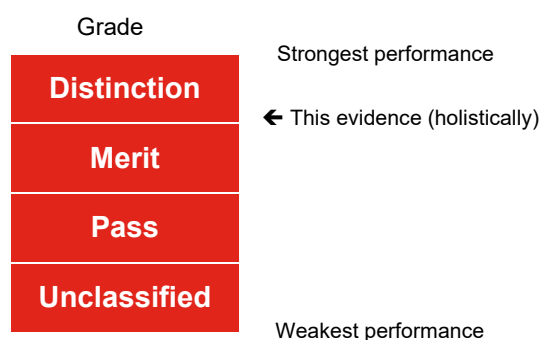
Summer 2025 Results

This document is aimed at providers and learners to help understand the standard that was required in the summer 2025 assessment series to achieve a distinction grade for the 8712-315 Light and Electric Vehicles Occupational Specialism (OS).

The Grade Standard Exemplification Material (Grade SEM) evidence provided for the distinction grade displays the holistic standard required across the tasks to achieve the distinction grade boundary in the Summer 2025 series.

The aim of these materials is to provide examples of knowledge, skills and understanding that attested to distinction competence in Summer 2025. 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.

The Occupational Specialism is graded Distinction, Merit, Pass or Unclassified.



The distinction grade boundary is based on a synoptic mark across all tasks. The materials in this Grade SEM are separated into two 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 photograph/video evidence. Also referenced in this section are the assessment themes the candidates were marked against when completing the tasks within it. In addition, candidate evidence that has been included or not been included in this Grade SEM has been identified within this section.

In this Grade SEM there is candidate evidence from:

- Task 1 Plan and prepare the service, maintenance and repair activities
- Task 2A Perform a full service and maintenance on vehicle 1
- Task 2B Perform the joining activity
- Task 2C Perform maintenance and repair activities on vehicle 2
- Task 3A Review and report the service, maintenance and repair activities
- Task 3B Peer review
- Task 4 Complete handover

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 was evidence that was captured as part of the assessment and then internally marked by the centre assessor.

The Occupational Specialism brief and tasks can be downloaded from [here](#).

Important things to note:

- We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (<https://www.gov.uk/government/publications/ofqual-guide-for-schools-and-colleges-2025/ofqual-guide-for-schools-and-colleges-2025#grading>), whilst also recognising the standards required for these qualifications.
- The evidence presented, as a whole, was sufficient to achieve the distinction grade. However, performance across the tasks may vary (i.e. some tasks completed to a higher/lower standard than distinction grade).

Grade descriptors

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

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

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

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

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

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

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

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

Task 1 Plan and prepare the service, maintenance and repair activities

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	1
Evidence title / description	A list of requirements and resources Completed risk assessment Job card template for each vehicle and welding/joining activity
Date submitted by candidate	DD/MM/YY

Task 1

Assessment themes:

- Health and safety
- Planning and preparation
- Systems and components

You must analyse the brief and technical information about both vehicles provided and then:

- create a list of the requirements and resources needed to complete the activities on both vehicles, including the full service, maintenance and bonding/joining activities, justifying your selections. This should include:
 - all necessary technical information to confirm the type, scope and requirements of the activities
 - tools and equipment
 - materials, components and consumables
 - wastage and disposal requirements
 - time needed to carry out the activity
 - fault diagnosis methods to be used
 - any access requirements
- produce and complete a risk assessment to cover both vehicles, including the full service, maintenance working with high voltage systems and welding/joining activity
- produce a job card for each vehicle and bonding/joining activity.

Additional evidence of your performance that must be captured for marking:

none

Candidate evidence

Task 1 – A list of requirements and resources

Resource list (tools/equipment)	How many?	Justification for use of tools/ equipment
Spanner set	As required	to fasten or unfasten fixings or bolts
Ratchet set	3 (1/2 inch, 3/4 inch, 3/8 inch)	To fasten or unfasten fixings, bolts, sump plug
Torque wrench	As required	To tighten wheel bolts or any other fixings or bolts required
Tire depth gauge	1	To check the tire tread depths of vehicle 1 and 2
Pad depth gauge	1	To check how long the pads have left and whether they will need changing asap or near in the future
DTI gauge	1	To check if the brake discs are unevenly worn which would cause a judder under braking
Brake fluid moisture tester	1	To check the water content in the brake fluid if the water level is too high then the brake fluid will have to be drained and replaced
Pry bar	1	To check any bearings or bushings for excessive play
Flashlight	1	To be able to see clearly what your working on and whilst checking the underside of the car (could prevent injury)
Oil drain pan	1	To collect old oil when being drained from vehicle
Wheel sockets	As required	To prevent any scratches when removing customers wheels
Power tools (impact gun, etc)	As required	To be used if bolts is too tight to be undone by hand
Air tools	As required	To inflate tires, use on air gun and other air used tools
Welding kit (MIG)	1	To weld an exhaust bracket to a exhaust pipe and other use

Extraction vent	Per car and welding bay	To evacuate fumes from enclosed building where engines may be running or welders in use
Vehicle emissions tester	Per car	To test the output of co2 from the exhaust of a car
Insulate tools	As required	To help prevent electrocution when working on a high voltage/electric vehicle
OBD scanner	1	To interrogate the cars system
Multi meter	1	To check electrical equipment
Battery health checker	1	To check the battery health and voltage output of the battery
File	1	To file down work piece for weld to ensure smooth finish and a clean surface
Sand paper	1	To ensure a clean surface for welding on
Hacksaw	1	To cut exhaust bracket to correct length before cleaning up the surface
Wire brush	1	To clean up weld once cooled
Materials/consumable items needed	How many	Justification for use of tools/equipment
Engine oil	As required	Fiesta 3.8 litres of 5w-30
Floor cleaning equipment and granules	As required	To clean up any spillages that may happen to prevent slipping and to clean up after the job is completed
Rags	As required	To clean up any spillages under the bonnet or to clean up/dry any cleaning products used on the vehicle
Replacement parts	As required	Ask the technician in the workshop for needed parts to be replaced on the vehicle
Windscreen fluid	As required	To top up/replace the washer fluid
Fuel	As required	If needed because of running or test drives
Personal protective equipment (PPE)	How many?	Justification for use of tools/equipment
Welding mask	1	To prevent you from getting arc eye

Welding gloves	1 set	To prevent any burns on hands
Welding hood	1	To prevent burns on scalp or burnt hair
Thicker protective gloves	1 set	To use when filing, sawing, sanding and other manual uses
Rubber gloves	As required	To use when working on a car to prevent any liquids or dirt getting on hands and to protect from any hazardous chemicals
Overalls	1	To prevent oil and dirt from getting on clothes or any other parts of skin
Steel toe boots	1	To protect feet from any falling object or feet getting ran over by moving vehicle
Eye protection	1	To use when working underneath a vehicle to prevent oil, dirt and any other fluids from getting in your eyes and when preparing surfaces for welding
Insulates gloves	1 set	To help prevent electrocution when working on a high voltage system
Insulate mat	As required	To help prevent electrocution when working on a high voltage system
Vehicle protective equipment (VPE)	How many	Justification for use of tools/equipment
Quarter panel cover	2-3	To prevent any scratches or any other damages from getting on the customers car when leaning into the bonnet to work/inspect
Plastic seat covers	2	To prevent any oil, dirt and other substances from getting on the customers seat when working on the vehicle
Floor mats	2	To prevent oil, dirt and other treaded on substances from getting on the customers floor of the vehicle
Steering wheel cover	1	To prevent oil, dirt and other substances that may be on the gloves or hands
Hybrid/electric vehicle signage	As required	To prevent any other workers are customers from coming near the high voltage vehicle whilst working on it
Technical information	How many	Justification for use of tools/equipment

Autodata	As required	This will give technical information about the vehicles ill be working on by putting in the registration
Vehicle manual	1	Gives manufacturers recommendations for oil and other information
OBD scanner	1	To interrogate the vehicle to find codes and pull up some system information about the vehicle
Other	How many	Justification for use of tools/equipment
Wastage	N/A	Justification for use
Oil and other hazardous liquids	N/A	To be dumped into the correct drums to be collected by a licenced waste disposal company
Used rubber gloves and other 1 use PPE	N/A	To be dumped into general waste bin
Granules	N/A	To be dumped into general waste bin
Tires	N/A	To be left in appropriate area to be picked up by a tire removal company
Time need to carry out job	N/A	Time to complete
Vehicle 1 Fiesta mk6		
Vehicle 2 hybrid system		
Welding job exhause		
Fault diagnosing	N/A	The method
OBD scanner		Interrogates the vehicles system to find fault codes and locates when the fault is if an electronic part has failed
Sense check		Using my senses such as hearing and seeing ill be able to listen out for any knocks are scraping and I will also be able to see to locate the faulty part that is making the noise
Test drive		I will have to get another technician to drive as I do not have a license, but I can sit in the passenger seat and list out for and knocking and feel for any abnormalities
Rolling road testing		Put the car on a rolling road to test brakes and to listen out for any abnormal noises throughout the rpm

Task 1 – Risk assessment

Risk	Injury	Cause	Likelihood	Injury
Gathering tools that may have sharp edge	Hand injury, cuts	Trip/fall, not paying attention	2	2
Non checked welding mask	Arc eye	Forgetting to check the functionality of welding mask	2	2/3
Touching hot exhaust when working in engine bay or underneath car	3 rd degree burns	Hand slipping of tool and not paying attention where hand is being place	2/3	2
Tripping over cables or exhaust extraction vent	Possible head injury or cuts and bruising	Not paying enough attention where hand is being place	2/3	2/3
Slipping on split oil, washer fluid, coolant	Possible head injury or cuts and bruising	No wet floor signs and no cleaning mess up after spillage	2/3	2/3
No eye protection	Debre in eye	Forgetting to wear eye protection	2	3
Wearing non fireproof overalls welding	Catching on fire	Not checking what the overalls are mad out off	2	3

Not wearing the correct insulated gloves or using floor mat on high voltage systems	Electrocution	Forgetting to wear or place floor mat	2	5
Not wearing welding gloves when welding	Burns	Forgetting to wear or because of arrogance	2	2/3
Not tying shoelace	Tip and fall	Not noticing or laziness	1/2	2/3
Not cornering off area and putting high voltage signs in correct space	Electrocution of customer or fellow technician	Laziness or forgetting to put them in place	1/2	5
Not wearing gloves when prepping work to be welded	Metal splinter	Arrogance or forgetting to wear PPE	1/2	1

Likelihood	Injury
1= very low chance of happening	1= not serious
2= not likely to happen	2= low priority
3= likely to happen	3= major injury
4= insanely likely	4= limb lost
5= certain	5= death

Task 1 – Job cards and welding activity

Candidate name-	Vehicle: Ford Fiesta	Supervising technician:
Date:	Registration:	
Candidate signature:	Vin:	Technician signature:

Task: To start the job off I will be preparing the area following my risk assessment to ensure that the possibility of injuries is at a minimum. I will then be checking all tools and resources to ensure I have all the necessary tools needed to complete the service and fault find. After I have checked all the tools and resources, I will be gathering my PPE to ensure I am safe at all times working on this vehicle. The following PPE would be rubber gloves, overalls, steel toe boots, eye protection and more which can be seen in my resource list. Once I am ready, I will begin with the standard service and checks I will start with the vehicle on the ground and check the body for any damages to the bodywork. After that I will move onto doing interior checks such as checking all interior buttons and dials work as well as checking the seatbelt condition and functionality. I will also check the window functionality and check that the condition of the front windscreen is good. I will also be checking that the blowers work on all speeds. Whilst inside I will be plugging in the OBD scanner to check if there are any faults I should know about and if so, I will record them. I will then move onto checking the front indicators, sidelights, low beam, high beam, hazards, and fog lights if the vehicle has front fog lights. Once completed I will move onto the rear lights going through the same process of checking brake lights, reverse lights,	Time taken: Parts bought: Labour cost: Parts costs: Total: Customers signature
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indicators, hazards, and fog light. As well as checking the rears I will also check the side repeaters indicators and hazards. After that I will then check the condition of the wiper blades.

After completing that I will then move onto the under the bonnet checks such as looking at auxiliary belt, coolant level, washer fluid level, brake fluid level, brake fluid moisture test, look for any serious rust and also just have a good look around to see if there's anything unplugged or damaged.

Once completing the under bonnet check I will then crack the wheel nuts loose ready for the car to be jacked up for the halfway up checks after checking the wheel bearings. During these checks I will do a quick test of the wheel bearing by applying force to the top and the bottom of the wheel to see if there is any excessive play in the wheel and I will also spin the wheel to see if there is any noises coming from the wheel bearing. I will then remove the wheels to check the pads, discs, and a general check of in the wheel arch looking at brake lines, drop links, track rods and looking for any damages to the springs and shock.

After that I will raise the car all the way up and look to at the underside for any rust, bushings that have play like on the wishbones, checking the exhaust system for leaks or holes and then I will be checking the rear springs and shock absorbers and all other components.

After that I will raise the car all the way up and look to at the underside for any rust, bushings that have play like on the wishbones, checking the exhaust system for leaks or holes and then I will be checking the rear springs and shock absorbers and all other components.

After the inspection is done, I will then move on to undoing the oil drain plug from the sump to drain the oil into an oil pan. Once that has drained, I will then move onto removing the oil filter and replace with a new one ensuring I covered the new seal on the filter with some oil to ensure the filter is sealed shut but will not be

stuck for the next change. I will then put the oil drain plug back in ensuring that the plug is tightened to 28nm or torque and no more. I will then move onto filling the car back up with 3.8 litres of oil. After that I will lower the car halfway again and start to put the wheels back on ensuring they are tight until it gets back on the ground so they can be torqued to 140nm of torque. After completing that I will then move onto fault finding techniques to try figure out why the car wont start. Customer states that the car will not turn over so I will begin with checking the battery charge and with a multimeter. If that is ok, I will move to the starter motor relay and replace with a new one to see if it will turn over. If that doesn't work, I will move onto checking the starting motor, checking the voltage into it, and listening out for noise when trying to turn over the engine. If the starter motor is broken, then I will replace it with a new one but if not, I will look further into the wires going from the battery to the alternator and then starter motor.	
Sign off: Technicians signature: Customers signature: Supervisor signature:	

Candidate name-	Vehicle: Toyota prius (rig)	Supervising technician:
Date:	Registration:	
Candidate signature:	Vin:	Technician signature:
Task: To start off I will be gathering all tools and PPE. After that I will be fencing off my area, so no other technicians or customers enter the high voltage work zone. I will also be placing the appropriate electric/ hybrid signage to warn people about the danger. I will ensure I have insulated tools, gloves, overalls, boots and eye protection. Customer states that the vehicle high voltage electrical system is not powering up and there is a warning light on the instrument panel. So, to start off I will try it myself and if it doesn't work, I will get to diagnosing. To start of the diagnosis, I will begin with plugging in an OBD reader as the 12-volt system is still up and running, the codes that will appear will be give me an understanding of where the fault is and what might be causing it. After I have read the codes on the scanner, I will begin to complete the process to discharge the high voltage system and the 12 volts. To begin I will pull the red key out for the 12-volt system and give it 1-2 minutes to ensure the system is discharged. After that I will the remove the orange service plug and let that discharge for 5 minutes to ensure the high voltage system is discharged. Whilst waiting the 5 minutes I will begin to test the service plug with a multimeter to see if that is causing the fault. If it is working, I will get a reading back of around 12 volts. If not, then that is causing the issue. Once the system is discharged, I will then begin to take of the invertor casing. Once the casing is off, I will then check to see if there is any voltage in the system. When sure there is little to no		Time taken: Parts bought: Labour cost: Parts costs: Total: Customers signature

voltage in the system it is safe to continue working. I will then check the resistance through the high voltage cable to see if there is too much or too little resistance. I will also test the ground of each connection to see if the cable is earthing out somewhere in the system. If that is not the case, I will also check for continuity through the high voltage cables. Once the fault is found the issue will be fixed and repaired to manufacturers standard ensuring all fittings, cables and parts are secured and fitted correctly.	
Sign off: Technicians signature: Customers signature: Supervisor signature:	

Candidate name- Date: Candidate signature:	Welding Weld type: MIG Job: exhaust weld	Supervising technician: Technician signature:
Task: This job I have been asked to MIG weld an exhaust bracket to an exhaust. To start off I will ensure I have all the correct PPE with me for the whole job. This includes safety glasses, work gloves, fireproof overalls, leather apron, steel toe boots preferably mostly leather, welding mask, welding gloves, welding sleeve and welding hood. After collecting the correct PPE I will then begin to cut the exhaust bracket to the correct length. Once the bracket is at the correct length, I will then file down any rough and sharp edges on the bracket and exhaust to prevent injury. After completing that I will then sand down the surfaces of the exhaust and exhaust bracket to ensure the surface is clean to ensure good contact when welding.		Time taken: Parts bought: Labour cost: Parts costs: Total: Customers signature

Once that is completed, I will then begin to bed the bracket around the exhaust slightly so there will be no less that 20mm of weld holding the bracket on. After bending I will then head over to the welding booth and ensure the area is clean and tidy ready to begin welding. But before I start, I will start setting everything up like turning on the extraction fan and light. After that I will then set up the MIG welding machine by setting my voltage to 18volts and my wire speed to 5. After that I will then turn my gas on setting it to around 13.5 litres a minute. Once everything is set up, I will then get prepped to welding ensuring that my mask is working correctly to prevent myself from arc eye and making sure the extractor is above my work piece. I will then tack weld the top and bottom to the piece to ensure it stays in the correct position. I will then proceed to weld along the join of both sides on the bracket to ensure the best results and strength come from this weld. After the weld is complete, I will then leave the piece to cool with a warning written on it or on a sign saying warning hot to warn people to prevent burns. Whilst the work is cooling, I will ensure that my welding booth is clean and if any weld splatter occurred it will be grinded off. After the piece has cooled, I will then clean up the welds and the surrounding metal.	
Sign off: Technicians signature: Customers signature: Supervisor signature:	

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

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2A
Evidence title / description	Completed job card for vehicle 1 Completed manufacturer service sheet Maintenance record Assessor observation Photographic evidence
Date submitted by candidate	DD/MM/YY

Task 2A

Assessment themes:

- Health and safety
- Planning and preparation
- Systems and components
- Working with faults

You must:

- prepare the working area to complete the full service and maintenance on vehicle 1
- perform the full service and maintenance on vehicle 1 in accordance with the planning documents produced in Task 1. This should include:
 - decommissioning and inspection of the vehicle systems
 - diagnosing and recording faults within the vehicle systems, including carrying out appropriate tests and measurements
 - replacing components and consumables as required in the service schedule and any fault diagnosis
 - safely using the appropriate tools and equipment
 - demonstration of vehicle functionality to the manager
 - re-instating the work area
- record the full service and maintenance, to include:
 - completed service schedule sheet
 - completed job card with description of all work carried out.

Additional evidence of your performance that must be captured for marking:

Assessor observation of:

- the work area preparation
- the service and maintenance activities for vehicle 1
- vehicle functionality demonstration.

Photographic evidence which shows:

- prepared working area for vehicle 1 service and maintenance
- prepared and fitted VPE
- the engine management fault codes
- re-instated work area

Candidate evidence

Task 2A – Completed job card for vehicle 1

Candidate name-	Vehicle: Ford Fiesta	Supervising technician:
Date:	Registration:	
Candidate signature:	Vin:	Technician signature:
Task: To start the job off I prepared the area following my risk assessment to ensure that the possibility of injuries is at a minimum. I then checked all tools and resources to ensure I have all the necessary tools needed to complete the service and fault find. After I had checked all the tools and resources, I will be gathering my PPE to ensure I am safe at all times working on this vehicle. The following PPE would be rubber gloves, overalls, steel toe boots, eye protection and more which can be seen in my resource list. I then made sure to put the vehicle protective equipment on such as seat covers, floor mats, and panel covers to ensure the customers car will be damage free. I then started off with the fault finding. So got in the car and turned the ignition on and there was zero power so I checked the voltage in the battery and it came up with 0.65v. so I then put in a fresh battery and then the car had power but still wouldn't crank over. Since the car now had power I decided to complete an OBD scan which came back with no fault codes. So I proceeded to double check the new battery and it was fine. So I then decided to look more into the starter motor and decided to check the starter motor relay. I test the relay by testing the resistance through the relay and it was showing little to none therefor I tried the battery test to see if the relay would activate or not which it did not so I then got the technician to order a new starter motor relay. Once I had		Time taken: Parts bought: Labour cost: Parts costs: Total: Customers signature

installed the new starter motor relay I then hooked up the exhaust extraction in case the car did start which it did. I then looked deeper into why the battery was dead by checking the charge going into the battery from the alternator which all checked out so by assumption the old batteries health must have been low and possible left to sit for a while as it wouldn't start.

I then proceeded to carry out the full service. I then started with the vehicle on the ground and check the body for any damages to the bodywork.

After that I moved onto doing interior checks such as checking all interior buttons and dials work as well as checking the seatbelt condition and functionality. I will also check the window functionality and check that the condition of the front windscreen is good. I will also be checking that the blowers work on all speeds. After I completed all the checks I then changed the pollen filter.

I then moved onto doing under the bonnet checks that consisted off checking brake fluid, checking coolant, checking power steering fluid, changing the air filter, checked all the wiring and hoses.

After that I fully raised the car up and completed the fully raised checks which included checking bushings, hoses, wiring, springs, shock absorbers and the general condition of the underside of the car. After completing the checks I then drained the oil and changed the old oil filter to a brand new one. Then lowered the car to fill the oil back up with 3.8 litres of fresh oil then I ran the car for about 45 second to let the new oil circulate the engine and then checked the oil level to ensure it was not underfilled or overfilled.

Whilst the car was down I cracked the wheel nuts loose so I could take them off whilst the vehicle was in the air. So I then did the half way up checks which consisted of take the wheels off, checking the pads, discs, drums, shoes as well as checking the suspension components, brake lines, drop links and track rods.

Once completed I put the wheels back on ensuring they were torqued to 140nm and then checking the tire pressures, tread depths and tire condition. I also recommended some future repairs for the service intervals such as auxiliary belt, brake drum, offside rear spring and pads.	
Sign off: Technicians signature: Customers signature: Supervisor signature:	

Task 2A – Maintenance schedule and records

Equipment/System type	Identification No.
Vehicle 1 (Petrol/Diesel)	8712-315
Brand/Model	Location
City & Guilds	Workshop

Equipment/System specification
Please refer to manufacturer's vehicle specification documentation (supplied by provider).

Maintenance records					
Service No	Maintenance date	Maintenance type (fault/repair, scheduled/routine, requested)	Checked by	Repair details (where relevant)	Technician signature
01	28/4/2024	Scheduled	JS	- Carried out an annual service to manufacturer specifications. Recommend coolant flush and change. - Vehicle functioning as per vehicle specification following annual maintenance activity.	J Smith

02	17/08/2024	Repair	AB	Diagnosed fault on airbag system, replaced control unit and checked vehicle working to manufacturer specifications.	A Bloggs
03	24/04/2025	Repair and schedule service		- Carried out an annual service to manufacturers specifications recommend auxiliary belt, discs and pads - Carried out a repair and diagnosed dead battery and starter motor relay (both now replaced)	

Maintenance Schedule – annual unless specified otherwise

Service No	Year	Detail inspection	Recommended planned maintenance	Service advisor signature	Technician signature
01	2023	Annual	Annual- routine/scheduled	D Jones	J Smith
02	2024	Annual	Annual- routine/scheduled	D Jones	A Bloggs
03	2025	Annual	Annual- routine/scheduled	D Jones	
04	2026	Annual	Annual – routine/scheduled	D Jones	

Commentary	
Service No	Recommendations for future maintenance activity
	Recommend the following service to include: Drum shoes Pads Discs
	Recommend the follow repairs Rear subframe Offside rear spring

Task 2a Practical observation form

8712-315 Maintenance Engineering Technologies: Light and Electric Vehicles - Summer 2025

Candidate Name	Candidate number
Provider name	Date

Complete the table below referring to the relevant marking grid, found in the assessment pack.

Do not allocate marks at this stage.

This observation must cover	Assessor observation should include:	Assessment Themes
Work area preparation	The work area preparation.	- Health and Safety - Planning and Preparation - Systems and Components
Service and maintenance activities – vehicle 1	- decommissioning and inspection of the vehicle system - diagnosis and recording of faults within the vehicle system, including carrying out appropriate tests and measurements - replacing components and consumables as required in the service schedule and any faults diagnosis - use of tools and equipment - recommissioning of the system - demonstration of vehicle functionality to the manager - re-instating the work area.	- Health and Safety - Planning and Preparation - Systems and Components - Working with faults - Reviewing and Reporting

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:**Work area preparation:**

- the work area preparation.

Vehicle area was prepared and also checked. Calibration of Tunbridge was seen.

Vehicle production has been applied, recollection of it appeared well. Risk assessment is being referred to, and open in the PC.

In summary candidate's area was fully prepared prior to them starting the inspection and fault find.

Candidate has completed suitable and comprehensive checks of their tools prior to using them and throughout the job. Using their risk assessment ensured that they are ready to start the job and that the area is safe.

Service and maintenance activities – vehicle 1:

- decommissioning and inspection of the vehicle system

Candidate has successfully and correctly carried out a body inspection of the vehicle.

Candidate then proceeded to diagnose why the car would not start, and in this process, they have completed their activities well, such as disconnecting the battery in the correct process and ensuring the car is equipped with vehicle protective equipment.

Once the candidate completed their fault finds they then continued into the service and methodically expected and performed maintenance on the vehicle prior to them working on reinstating systems.

The candidate's performance within the service was to a high standard, they worked with the vehicle systems ensuring that they were in line with the manufacturer specifications and that all maintenance and rectification activities were in compliance with vehicle standards.

- safely using the appropriate tools and equipment

Candidate has safely and appropriately used tools and equipment. Candidate ensured the calibration was checked prior to the use of tools and has ensured that tools that could be calibrated to the vehicle such as dial test indicators were set up correctly prior to being used.

- recommissioning of the vehicle system

Candidate has ensured that the vehicles have been recommissioned correctly, all the systems that have been worked on are in operational order ready to be handed over. Candidate has been thoughtful and methodical in their approach with a nice pace to their work. Candidate has been mindful to ensure that the documentation has been completed and that technical information has been referred to throughout the work.

- demonstration of vehicle functionality to the manager

Candidate has confirmed and demonstrated that all systems are working in correct order and that all works on the car complete.

- re-instating the work area

Candidate cleaned down the area and reinstated the vehicle, removing the VPE

- diagnosis and recording of faults within the vehicle system, including carrying out appropriate tests and measurements
- replacing components and consumables as required in the service schedule and any faults diagnosis

Calibration of multimeter has been checked. The candidate has taken the reading of the battery and this is shown at 0 V.

Technician has been requested to supply a replacement battery.

New battery fitted and battery retested, battery is normal.

Investigated the stater motor fault, checked starter relay

Using the wiring diagram candidate tested the circuit and found the starter relay to be at fault.

Replaced relay and started car – extraction used

Started on the service, checked the bonnet area, sat in the car and operated systems, checked seat belts etc.

Holistic completion of service check sheet

Wipers checked

Lights checked

Antifreeze check

Candidate ready to raise vehicle – vehicle raised. Candidate inspecting the underside of the vehicle.

Extraction used while running the vehicle.

Goggles used while under the vehicle

Lever bar used to check wear, ramp this was suggested to be slightly lowered to assist in the inspection.

Oil drained, oil filter replaced.

Technical data has been accessed for the sump torque and interpreted for the vehicle.

Candidate lowered the vehicle and the fit new oil to the vehicle.

Replaced filters and pollen filter.

Tyre pressures have been checked

Brakes have been accessed and checked with DTI and Micrometer

Rear brakes have been accessed and have been checked with internal external rule.

Tyre pressures have been checked and adjusted, tide deaths have been measured and recorded.

Tools have been checked and packed away draws.

Internal assessor signature	Date

Task 2A – Service sheet

	Service schedule Autodata	
	Date: 31/03/2025 Job number : Customer details: T Level Vehicle details: Ford Fiesta ('02) R-Cat	

Service schedule

Service schedule according to manufacturer's recommendation and specification.

Service type [2005-] Interim/major service without convenience checks - customer options (to identify if interim (and NOT standard) service applies, refer to vehicle service book.)

Service interval 125000 miles 120 months

Total time - 1.50 hrs

VEHICLE ON FLOOR

Outstanding campaigns and recalls	Check	☒
Parking brake travel	Check/adjust	☒
Seatbelts/mountings	Check/report	☒
Instruments/warning lamps	Check/report	☒
Switches/controls	Check/report	☒
Horn	Check/report	☒
Interior lamps	Check/report	☒
Front wiper blades	Check/report	☒
Rear wiper blade	Check/report	☒
Wash/wipe systems	Check/report	☒
Instrument illumination	Check/report	☒
Direction indicators/hazards	Check/report	☒
Lighting system	Check/report	☒
Headlight levelling system	Check	☒
Headlights	Check/report	☒
Body work/paint ! - scratches offside rear quarter panel + rear bumper + nearside front bumper	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

Underbody wiring harness	Check/report	☒
Underbody pipes and hoses	Check/report	☒
Engine oil leaks	Check/report	☒
Engine oil	Drain/refill	☒

More information

<https://workshop.autodata-group.com/w1/service-schedules/FOR13657?vm=AY54WFFV>

1/7

3/31/25, 10:38 AM

Service schedule | Autodata

Engine oil

Ambient temperature range	All temperatures
Engine oil grade	SAE 5W-20 Synthetic
Engine oil classification	OEM WSS-M2C948-B
Ambient temperature range	All temperatures
Engine oil grade	SAE 5W-30 Synthetic
Engine oil classification	OEM WSS-M2C913-C
Engine with filter(s)	litres 3,8
Sump drain bolt	28 Nm

Engine oil filter	Renew	☒
Manual transmission oil leaks	Check/report	☒
Automatic transmission fluid (ATF) leaks	<i>NA</i> Check/report	☒
Steering joints	Check/report	☒
Steering rack/box	Check/report	☒
Steering column couplings	Check/report	☒
Suspension joints/seals/gaiters	<i>play Subframe Pin or bush worn resulting in excessive</i> Check/report	☒
Drive shaft joints/seals/gaiters	Check/report	☒
Road springs	<i>offside rear casing split leading to corrosion</i> Check/report	☒
Shock absorbers/mountings	Check/report	☒
Exhaust system/mountings	Check/report	☒
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	90 Nm
-------------	-------

Important**Road wheels**

- Do NOT lubricate studs, nuts or mating surfaces.

Front brake padsCheck/report ☒**More information****Front brake pads**

7mm nearside - 8mm offside

Road wheels	90 Nm
-------------	-------

Important**Road wheels**

- Do NOT lubricate studs, nuts or mating surfaces.

<https://workshop.autodata-group.com/w1/service-schedules/FOR13657?vm=AY54WFFV>

2/7

3/31/25, 10:38 AM

Service schedule | Autodata

Minimum pad thickness	Front 1,5 mm
-----------------------	--------------

Front brake discs

Check/report ☒

More information	
Front brake discs - recommend changing both	
Brake caliper to carrier	Front 30 Nm
Brake caliper/carrier to hub	Front 70 Nm
Road wheels	90 Nm
Important	
Road wheels	
Do NOT lubricate studs, nuts or mating surfaces.	
Minimum disc thickness for replacement - ventilated	Front 20 mm - 20.10 mm outside - 21.03 mm inside
Disc thickness variation	Front 0,025 mm
Disc runout	Front 0,05 mm @ 1000 RPM greater than 0.05 mm

Rear brake pads

Check/report ☒

More information	
Rear brake pads	
Road wheels	90 Nm
Important	
Road wheels	
Do NOT lubricate studs, nuts or mating surfaces.	

Rear brake discs

Check/report ☒

More information	
Rear brake discs	
Road wheels	90 Nm
Important	
Road wheels	
Do NOT lubricate studs, nuts or mating surfaces.	

Rear brake drums/linings/cylinders !

Check/report ☒

! Important	
Only in event of leakage	
More information	
Rear brake drums/linings/cylinders	
Rear hub	235 Nm

<https://workshop.autodata-group.com/w1/service-schedules/FOR13657?vm=AY54WFV>

3/7

Important Use new nuts/bolts.	
Road wheels	90 Nm
Important	
Road wheels Do NOT lubricate studs, nuts or mating surfaces.	
Maximum drum diameter for replacement	Rear 204 mm - <u>80 mm</u> Near - <u>84 mm</u> <u>off</u>
Minimum shoe thickness	Rear 1 mm - <u>4 mm</u> Near - <u>6 mm</u> <u>off</u>
Tyre condition - <u>offside rear tyre starting to perish</u>	
	Check/report ☒
Tyre pressures	
	Check/adjust ☒
ENGINE BAY OPERATIONS	
Battery terminals	Clean/tighten/re-grease ☒
Battery electrolyte level	Check/top-up ☒
Battery condition/specific gravity	Check/report ☒
Engine bay wiring/connections	Check ☒
Engine bay pipes and hoses	Check/report ☒
Washer bottle(s)	Check/top-up ☒
Brake servo	Check/report ☒
Power steering fluid	Check/top-up ☒
More information	
Power steering fluid	
Power steering fluid	Type WSA-M2C195-A
Power steering system	Check/report ☒
Engine coolant/anti-freeze	Check/top-up ☒
More information	
Engine coolant/anti-freeze	
Cooling system - total capacity	litres 5,0
Radiator	Check/clean ☒
Automatic transmission fluid (ATF)	Check/top-up ☒
Auxiliary drive belt(s)	Renew ☒
More information	
<u>Auxiliary belt beginning to perish</u>	

3/31/25, 10:38 AM

Service schedule | Autodata



Auxiliary drive belt routing

• Auxiliary drive belt routing

Air conditioning !

Check/report ☒

! Important

Check temperature of air flow and visually check system every 36 months. May be carried out at customer's request at any other service

Air conditioning deodoriser !

Apply ☒

! Important

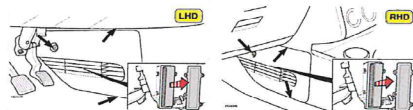
At customer's request

FINAL ITEMS CHECK

Cabin filter, pollen (if fitted)

Renew ☒

More information



Cabin filter

• Cabin filter

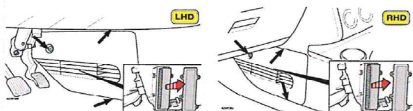
Cabin filter, odour (if fitted) !

Renew ☒

! Important

Upgrade options for the cabin filter may be available

More information



Cabin filter

• Cabin filter

Vehicle locks/hinges

Check/lubricate ☒

Road wheel nuts/bolts

Check tightness ☒

<https://workshop.autodata-group.com/w1/service-schedules/FOR13657?vrn=AY54WFFV>

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More information	
Road wheel nuts/bolts	
Road wheels	90 Nm
Important Road wheels Do NOT lubricate studs, nuts or mating surfaces.	

Bonnet latch and lock !

Check/report ☒

! Important Includes lubricating
--

Tyre repair canister expiry date (_/_/20__) *N/A*Check/report ☒**ROAD TEST VEHICLE**

Clutch operation

Check/report ☒**Total time - 1.50 hrs****Parts**

Engine oil - Drain/refill

Engine oil filter - Renew

Sundries lubricant - Clean/tighten/re-grease

Battery top up fluid - Check/top-up

Screen wash - Check/top-up

Power steering fluid - Check/top-up

Engine coolant/antifreeze - Check/top-up

Automatic transmission fluid (ATF) - Check/top-up

Auxiliary drive belt/s - Renew

Air conditioning deodoriser - Apply !

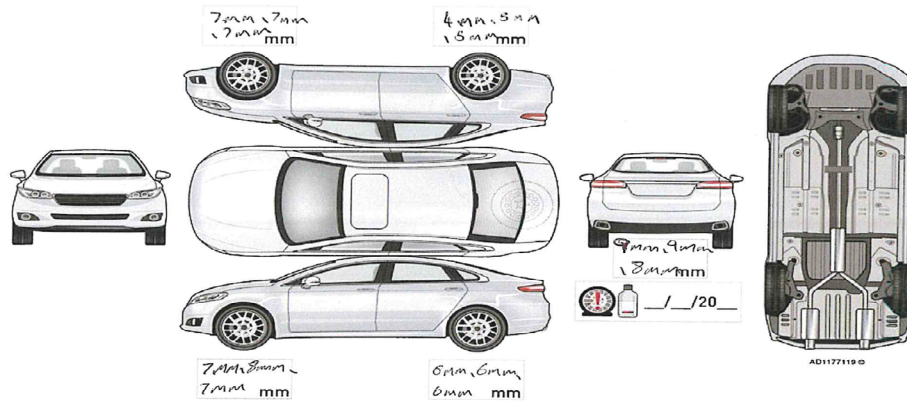
At customer's request

Pollen filter element - Renew

Odour filter - Renew !

Upgrade options for the cabin filter may be available

Sundries lubricant - Check/lubricate

**Notes/Comments:**

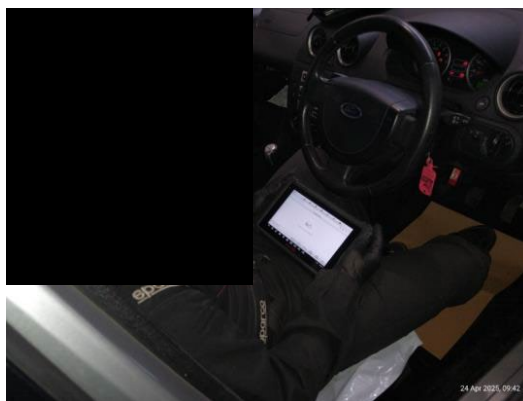
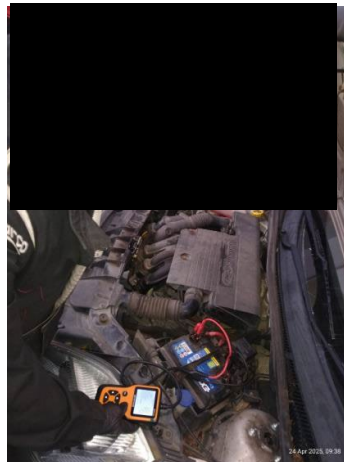
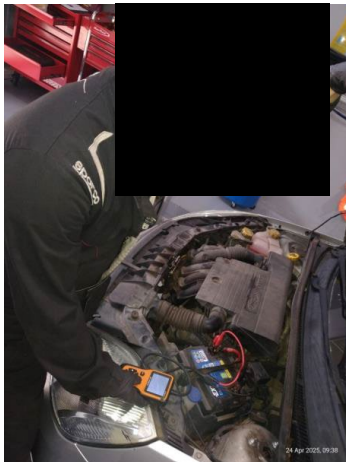
heated windscreen not functional, driver side front wiper blade need replacing, ~~pass~~ side near side ~~sh~~ front shock absorber boot split.

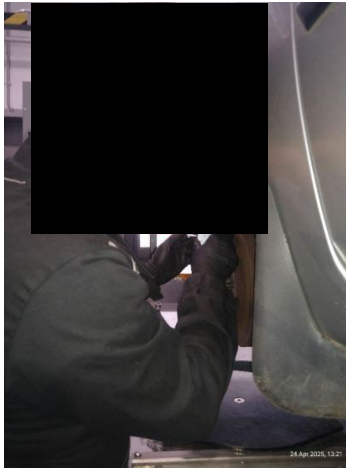
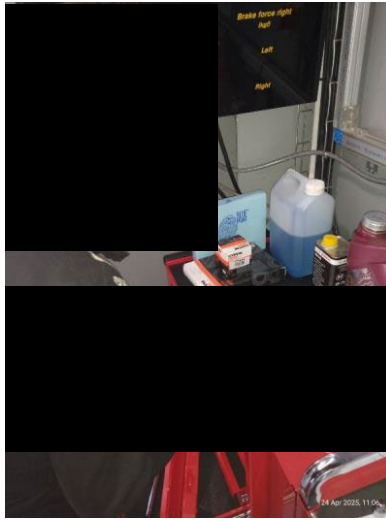
Technician's signature

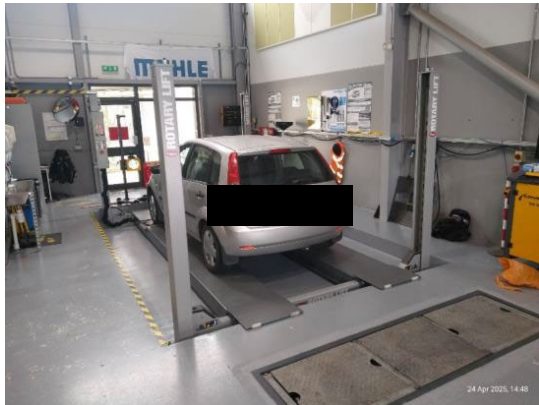
Date

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Task 2A – Photographic evidence







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Address bar: <https://workshop.autodata-group.com/w1/vehicles/FOR13657>

Navigation: SOLERA | Autodata, Home, Technical information, Estimate calculator, Training, Latest updates

QUICK LINKS

- Engine oil
- Service brakes
- Service air conditioning
- Service schedules
- Camshaft drive system

VEHICLE DETAILS

ENGINE CODE

ENGINE SPECIFICATION
59 KW (80HP) 5700 RPM

YEAR
2002-2008

TECHNICAL INFORMATION

SERVICE	POWERTRAIN	CHASSIS
Service schedules	Engine management	Anti-lock brake systems
Service advisor	Camshaft drive system	Wheel alignment
Service illustrations	Auxiliary drive belts	Tyre pressures
Service brakes	Clutches	Tyres

Was this page helpful?

Service checks and adjustments

Lubricants and capacities

Engine oil options

Ambient temperature range	All temperatures
Engine oil grade	SAE 5W-20 Synthetic
Engine oil classification	OEM WSS-M2C948-B
Ambient temperature range	All temperatures
Engine oil grade	SAE 5W-30 Synthetic
Engine oil classification	OEM WSS-M2C913-C
Engine with filter(s)	litres 3,8

Other lubricants and capacities

Manual transmission oil grade	SAE 75W-90 Synthetic
Manual transmission oil classification	WSD-M2C200-C
Manual transmission	litres 2,3

Was this page helpful?

Tighten 90°

Other engine tightening torques

Main bearings	Stage 1	i
Big end bearings	Stage 1	i
Oil pump to cylinder block	9 Nm	
Sump bolts	1)10 Nm 2)20 Nm	
Sump drain bolt	28 Nm	
Flywheel/driveplate	1)30 Nm 2)80°	i
Clutch pressure plate	29 Nm	
Crankshaft pulley/damper centre bolt		i
Camshaft sprocket/gear	60 Nm	
Camshaft carrier/cap	7 Nm+45°	
Camshaft/rocker cover	1)3 Nm 2)10 Nm	
Inlet manifold to cylinder head	18 Nm	
Exhaust manifold to cylinder head	54 Nm	
Water pump	9 Nm	
Spark plugs	15 Nm	

Was this page helpful?

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SOLERA | Autodata

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Find technical specifications

Starting and charging

Brake disc and drum dimensions

Brake disc and drum dimensions

Minimum disc thickness for replacement - ventilated	Front 20 mm
Disc thickness variation	Front 0,025 mm
Disc runout	Front 0,05 mm
Maximum drum diameter for replacement	Rear 204 mm
Minimum pad thickness	Front 1,5 mm
Minimum shoe thickness	Rear 1 mm

Air conditioning

Was this page helpful?

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Find technical specifications

Fuel rail	15 Nm
Crankshaft position (CKP) sensor/engine speed (RPM) sensor	9 Nm
Camshaft position (CMP) sensor	9 Nm
Engine coolant temperature (ECT) sensor	18 Nm
Knock sensor (KS)	20 Nm
Engine oil pressure switch	15 Nm
Chassis tightening torques	
Front hub	290 Nm <i>i</i>
Rear hub	235 Nm <i>i</i>
Steering wheel	45 Nm
Steering track rod end	48 Nm <i>i</i>
Brake caliper to carrier	Front 30 Nm
Brake caliper/carrier to hub	Front 70 Nm
ABS sensor	Front 9 Nm
ABS sensor	Rear 10 Nm
Road wheels	90 Nm <i>i</i>

Was this page helpful?

Task 2B Perform the welding/joining activity

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2B
Evidence title / description	Completed job card of the welding activity with description of the work carried out Assessor observation Photographic evidence
Date submitted by candidate	DD/MM/YY

Task 2B

Assessment themes:

- Health and safety
- Planning and preparation
- Systems and components
- Working with faults
- Reviewing and reporting

You must:

- prepare the working area to complete welding/joining activity
- perform the activity in accordance with the planning documents produced in Task 1, which should include:
 - preparing the exhaust for welding/joining activity
 - complete the welding/joining activity
 - safely using the appropriate tools and equipment
 - re-instating the work area
 - completing the job card for the welding/joining activity with a description of work carried out.

Additional evidence of your performance that must be captured for marking:

Assessor observations of:

- the work area preparation for welding/joining
- the welding/joining activity

Photographic evidence which shows:

- the work area prepared for the welding/joining activity
- the welding/joining of the bracket to the exhaust pipe
- re-instated work area

Candidate evidence

Task 2B – Completed job card

Candidate name-	Welding	Supervising technician:
Date:	Weld type: MIG	
Candidate signature:	Job: exhaust weld	Technician signature:
Task: When I started off the welding task, I made sure to gather all PPE ready for the task to take place. The PPE list was safety glasses, work gloves, fireproof overalls, leather apron, steel toe boots preferably mostly leather, welding mask, welding gloves, welding sleeve and welding hood. Once I had collected the correct PPE and tools, I then begin to cut the exhaust bracket to the correct length. Once the bracket is at the correct length, I then file down any rough and sharp edges on the bracket and exhaust to prevent injury. After completing that I then sanded down the surfaces of the exhaust and exhaust bracket to ensure the surface is clean to ensure good contact when welding. Once that was completed, I then begin to bend the bracket around the exhaust slightly so there was no less that 20mm of weld holding the bracket on. After bending I then head over to the welding booth and ensure the area is clean and tidy ready to begin welding. But before I start, I start setting everything up like turning on the extraction fan and light. After that I then set up the MIG welding machine by setting my voltage to 18volts and my wire speed to 5. After that I will then turn my gas on setting it to around 13.5 litres a minute. Once everything was set up, I then get prepared to weld ensuring that my mask is working correctly to prevent myself from arc eye and making sure the extractor is above my work piece.		Time taken: Parts bought: Labour cost: Parts costs: Total: Customers signature

I then tack weld the top and bottom to the piece to ensure it stays in the correct position. I then proceed to weld along the join of both sides on the bracket to ensure the best results and strength come from this weld. Once completed I let the work piece to cool down and then use a wire brush and some emery cloth to clean up around and on the weld to ensure of a nice finish. I also ensure that my welding bay was clean after I had finished with it.	
Sign off: Technicians signature: Customers signature: Supervisor signature:	

Task 2B – Assessor observation

8712-315 Maintenance Engineering Technologies: Light and Electric Vehicles - Summer 2025

Candidate Name	Candidate number
Provider name	Date

Complete the table below referring to the relevant marking grid, found in the assessment pack.

Do not allocate marks at this stage.

This observation must cover	Assessor observation should include:	Assessment Themes
Work area preparation for welding/joining	the work area preparation for welding/joining.	- Health and Safety - Planning and Preparation - Systems and Components
The welding/joining activity	- preparing the exhaust bracket for welding/joining activity - complete the welding/joining activity - safely using the appropriate tools and equipment - re-instating the work area	- Health and Safety - Planning and Preparation - Systems and Components - Reviewing and Reporting

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 for welding/joining:

Candidate put on the correct PPE this was gloves, glasses, overalls and work boots for the preparation of the piece.

Start Time: 10.10 am

The candidate was briefed and understood what was needed for the assessment. They chose the correct PPE, safety glasses, gloves, overalls and boots. The candidate chose a rat tail file, flat file and emery cloth for the clean up of the pipe and bracket, this was done to a good standard.

Candidate chose the correct tools to prepare the work pieces, a file was used to debur the pipe and bracket, then emery cloth was used to clean the pieces ready for welding.

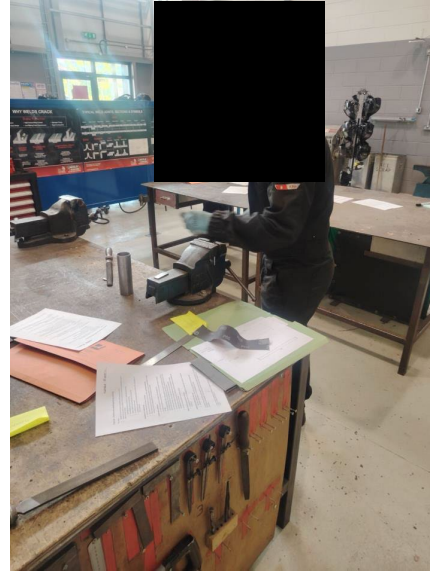
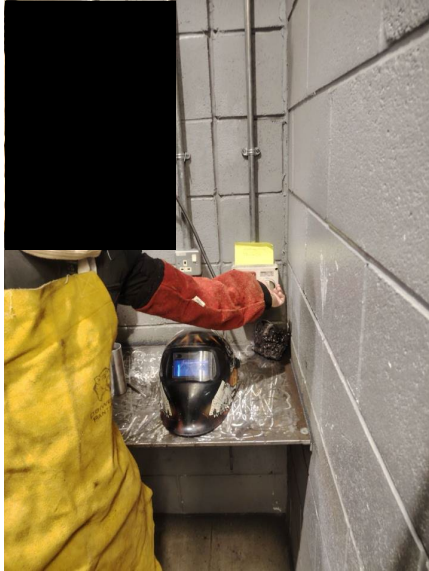
The candidate chose the correct PPE for the welding process, a welding mask, gaunlets, apron, sleeve, cevla hood, they also spotted a damaged welding glove and replaced straight away.

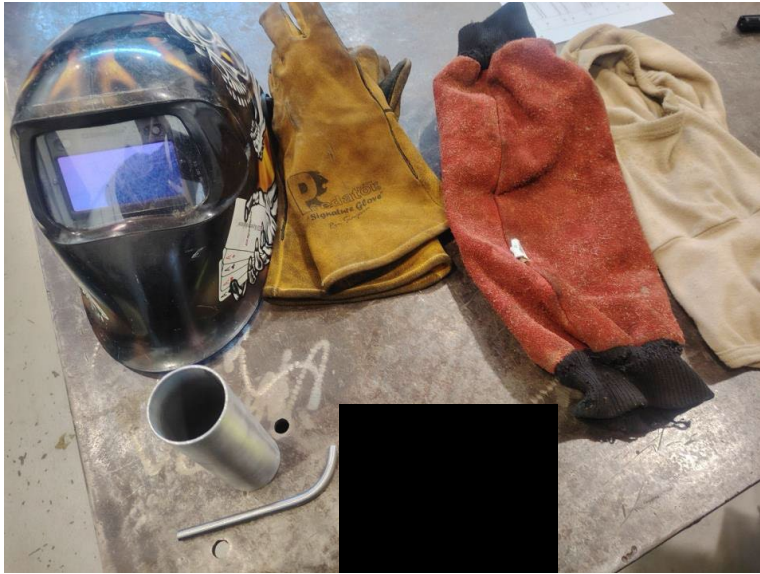
The welding start up was excellent, they turned on the main switch and then the welding machine, set the gas flow to 12.5 lpm and 18volts and wire speed at 56. They then went into the welding bay, set up the work piece and made a good piece. The shut down procedure was good.

The candidate then finished and cleaned up the work bay and their work bench, then replaced all tools and cleaned up.

Finish time: 11.30 am

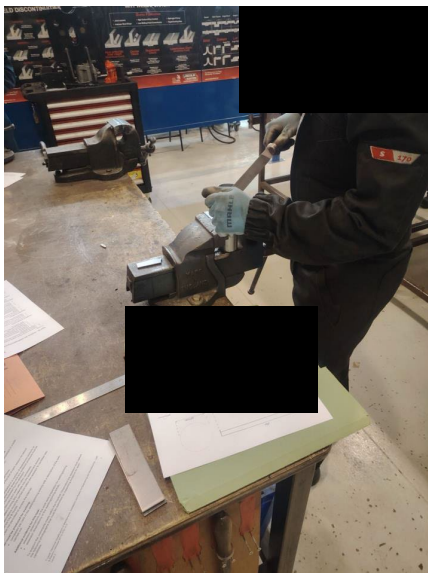
Task 2B – Photographic evidence





The welding/joining activity:

- preparing the exhaust bracket for welding/joining activity
- complete the welding/joining activity
- safely using the appropriate tools and equipment
- re-instating the work area





Task 2C Perform maintenance and repair activities on vehicle 2

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2C
Evidence title / description	Completed job card for vehicle 2 Maintenance schedule and records Assessor observation Photographic evidence
Date submitted by candidate	DD/MM/YY

Task 2C

Assessment themes:

- Health and safety
- Planning and preparation
- Systems and components
- Working with faults
- Reviewing and reporting

You must:

- prepare the work area for the maintenance and repair activities on vehicle 2
- perform the maintenance and repair activities on vehicle 2 in accordance with the planning documents produced in Task 1. This should include:
 - decommissioning and inspection of the vehicle systems
 - disassemble and reassemble the relevant system(s)
 - diagnosing and recording faults within the systems, including carrying out appropriate tests and measurements
 - safe isolation of the high voltage system
 - repairing faults and replacing components as required
 - safely using the appropriate tools and equipment
 - demonstration of vehicle functionality to the manager
 - re-energising the high voltage system and recommissioning the vehicle
 - re-instating the work area
- record the maintenance and repair activities, to include:
 - completed job card and control documents
 - record of measurements and test results completed.

Additional evidence of your performance that must be captured for marking:

Assessor observations of:

- the work area preparation
- the maintenance and repair activities to vehicle 2
- vehicle functionality demonstration.

Photographic evidence which shows:

- prepare work area to complete maintenance and repair to vehicle 2
- prepared and fitted VPE
- the working area after disassembly of the appropriate vehicle system(s)
- re-instated work area.

Candidate Evidence

Task 2c – Completed job card

Candidate name-	Vehicle: Toyota prius (rig)	Supervising technician:
Date:	Registration:	
Candidate signature:	Vin:	Technician signature:
Task: When starting off I cornered off the area to keep any other technicians or others coming into the area and running the risk of putting themselves and myself in danger of electrocution. Also putting high voltage signs on the vehicle and placing down isolated floor mat in the needed positions. I then made sure I had all the correct PPE and VPE needed to protect myself and the car. This include high voltage gloves, eye protection glasses, high voltage overalls, high voltage boots, high voltage floor mats, floor mats and seat covers. Once I had done that I turned on the ignition and tested to see if the car would start which it didn't therefor I plugged an OBD reader to see what codes would appear and the only that appeared was hybrid voltage battery circuit low. So to begin I removed the red 12-volt key waited 1 minute then removed the high voltage service plug and waited 5 minutes to make sure the high voltage system was fully discharged. Whilst waiting the 5 minutes I checked the resistance in the service plug and to find there was none and there was no voltage making it through the service plug and showing it as an open loop therefor the service plug was replaced. I then set the vehicle back up to test if the vehicle will start which it wouldn't so i looked deeper into the issue and started to look at the inverter. I discharged the system again and waited the appropriate time to begin working. I then removed the inverter cover and checked for voltage through the system. Once I had checked that it was all clear I checked for continuity and one of the connectors were dirty causing a bad connection and was		Time taken: Parts bought: Labour cost: Parts costs: Total: Customers signature

causing the connection to show as an open loop. I then cleaned up the connector and refitted the connectors and the inverter case torquing all bolts to 20nm. Once completed I then put the service plug back in place and the red 12 volt key also put in place. Once the system is all put back together I then tried starting the car up and it started and the job was complete. To finish off I tidied my work area to how it was when I first started working and put all tools used away in the correct place.	
Sign off: Technicians signature: Customers signature: Supervisor signature:	

Task 2c – Maintenance schedule and records

Equipment/System type	Identification No.
Vehicle 2 (Electric/Hybrid)	8712-315
Brand/Model	Location
City & Guilds	Workshop

Equipment/System specification
Please refer to manufacturer's vehicle specification documentation (supplied by provider).

Maintenance records					
Service No	Maintenance date	Maintenance type (fault/repair, scheduled/routine, requested)	Checked by	Repair details (where relevant)	Technician signature
01	29/05/2023	Scheduled	JS	- Carried out an annual service to manufacturer specifications. - Vehicle functioning as per vehicle specification following annual maintenance activity.	J Smith
02	18/04/2024	Scheduled	JS	Carried out an annual service to manufacturer specifications.	A Bloggs

				Noted both rear tyres are close to the legal limit.	
03	30/11/2024	Repair	AB	- Diagnosed engine management fault, replaced air mass meter confirmed component meets manufacturer specifications - Replaced both rear tyres (1.6mm)	J Smith
04	<u>28/04/2025</u>	<u>Repair</u>	<u>AB</u>	<u>Diagnosed service plug now working as intended and been replaced</u> <u>Diagnosed inverter connector showing open loops because of bad connection which has been cleaned up and is fixed</u>	

Maintenance Schedule – annual unless specified otherwise					
Service No	Year	Detail inspection	Recommended planned maintenance	Service advisor signature	Technician signature
01	2023	Annual	Annual- routine/scheduled	D Jones	J Smith
02	2024	Annual	Annual- routine/scheduled	D Jones	A Bloggs
03	2025	Annual	Annual- routine/scheduled	D Jones	Candidate

Commentary	
Service No	Recommendations for future maintenance activity

Task 2C – Assessor observation

Practical Observation Form

8712-315 Maintenance Engineering Technologies: Light and Electric Vehicles - Summer 2025

Candidate Name	Candidate number
Provider name	Date

Complete the table below referring to the relevant marking grid, found in the assessment pack.

Do not allocate marks at this stage.

This observation must cover	Assessor observation should include:	Assessment Themes
Work area preparation	The work area preparation.	- Health and Safety - Planning and Preparation - Systems and Components
Maintenance and repair activities – vehicle 2	- decommissioning and inspection of the vehicle systems - disassemble and reassemble the relevant system(s) - diagnosing and recording faults within the systems, including carrying out appropriate tests and measurements - safe isolation of the high voltage system - repairing faults and replacing components as required - safely using the appropriate tools and equipment - re-energising the high voltage system and recommissioning the vehicle - demonstration of vehicle functionality to the manager - re-instating the work area.	- Health and Safety - Planning and Preparation - Systems and Components - Reviewing and Reporting

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:

- Exam started at 09:10
- Candidate inspected the work area and checked it was clean and safe with the correct tools laid out correctly, safety hook bar available.
- VPE placed in the vehicle and non-conductive overalls worn
- Candidate laid out a safety according around the vehicle and put up the safety correct notices and laid out the safety mats
- Candidate found the customer fault, a non-start fault with a warning triangle on the dash, then code read the vehicle using Autel diagnostic
- Fault codes relating to the high voltage system and used technical data to support next steps
- Candidate tested the class zero HV gloves to make sure they were safe to use, and they had the correct insulated matting on the floor by the service plug and the inverter area
- With all safety precautions in place, the candidate then removed the service plug also being aware of the voltage discharge time of 10 minutes.
- Checking the calibrated multi-meter read zero, then checked the resistance across the service plug fuse found this to be open circuit and stated this is outside manufactures readings.
- The candidate requested a new service plug from the part department.
- Candidate installed the service plug in the correct manner
- Then retested the vehicle and found it was still not showing the ready light and with a code linked to the HV system
- Investigation to these codes lead them to disarm the HV system again
- After waiting the discharge time 10 minutes and using the correct insulated tools and PPE, candidate accessed the inverter and tested the system to showing 0v
- Then using manufacturers data to support their testing the three phases to the inverter correctly
- Candidate showed the Phase from MG1 was insulated and open circuit and outside manufactures settings

- Candidate reinstalled the cable and tested to show the correct resistance for the manufacture and used a calibrated torque wrench reinstated the phase cable correctly
- Then fully and correctly instated the system and then rechecked they system with diagnostic equipment and cleared fault codes logged.
- Candidate completed their final vehicle checks and ran the engine with no faults
- Candidate then cleaned and check their tools and removed the vehicle cordon and warning signs and the work area returned as they found it and moved to working on their job card

Internal assessor signature	Date

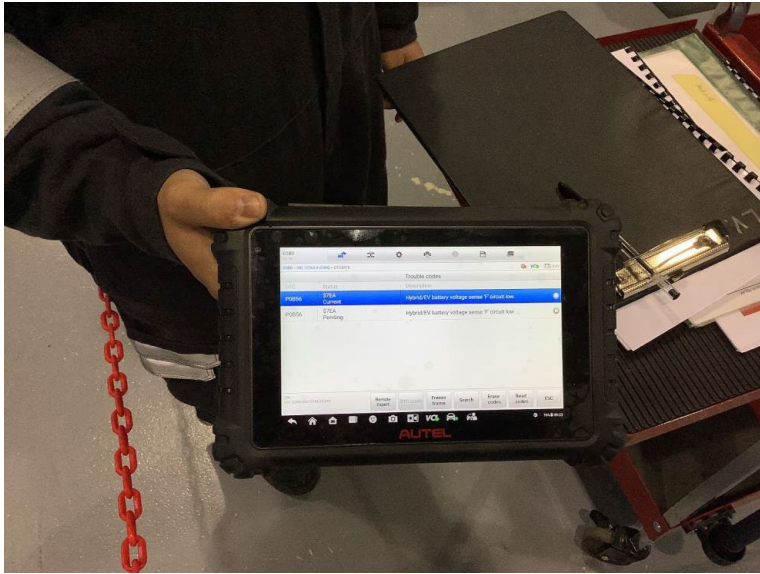
Task 2C – Photographic evidence

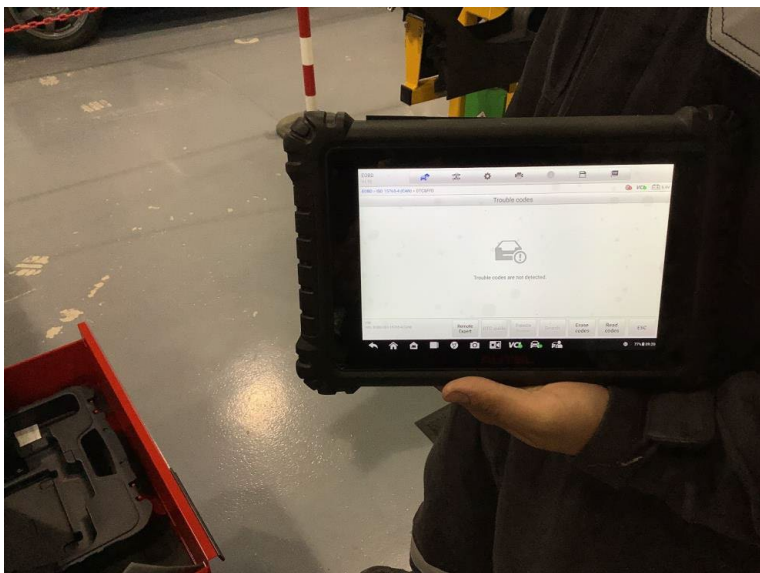
Maintenance and repair activities – vehicle 2:

- decommissioning and inspection of the vehicle systems
- disassemble and reassemble the relevant system(s)
- diagnosing and recording faults within the systems, including carrying out appropriate tests and measurements
- safe isolation of the high voltage system
- repairing faults and replacing components as required
- safely using the appropriate tools and equipment
- re-energising the high voltage system and recommissioning the vehicle
- re-instating the work area

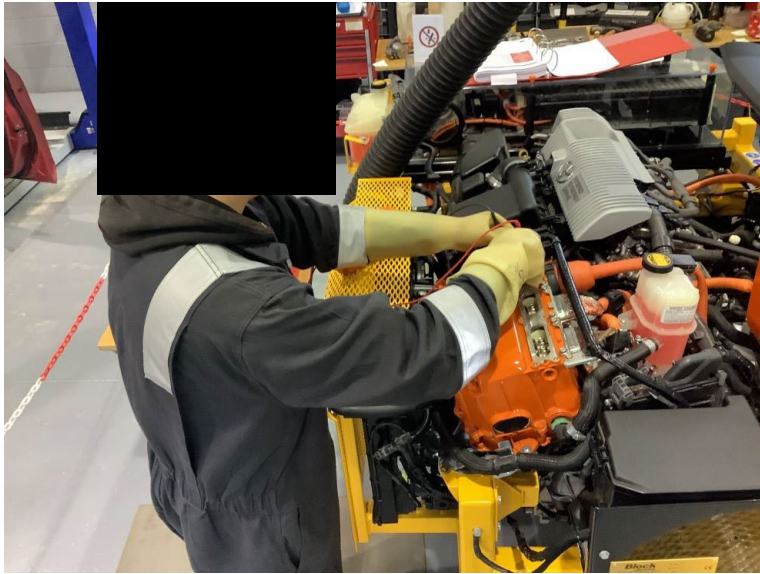


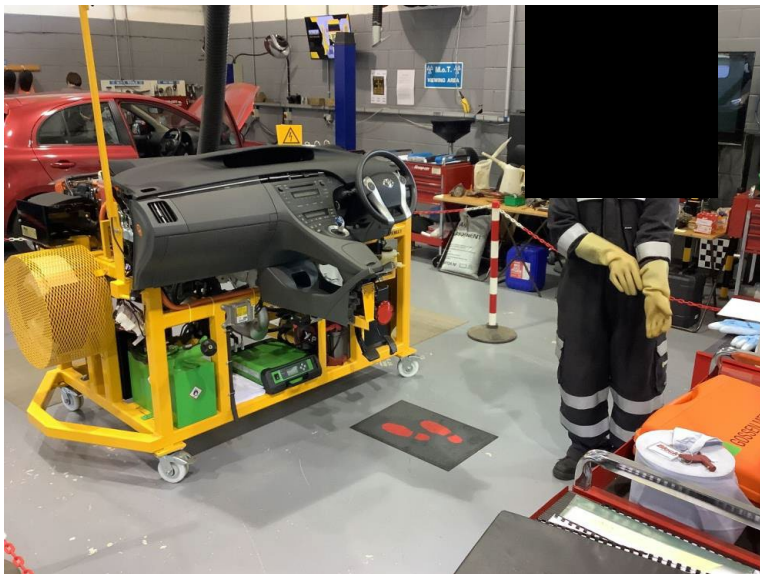
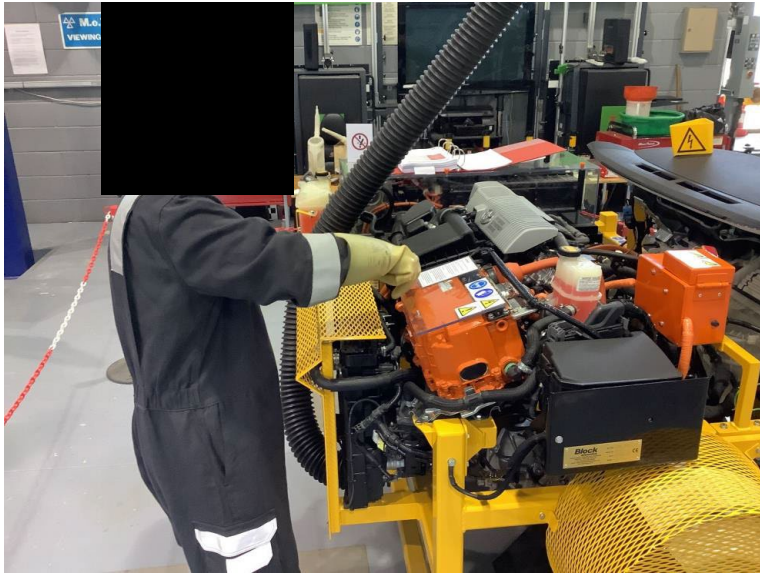


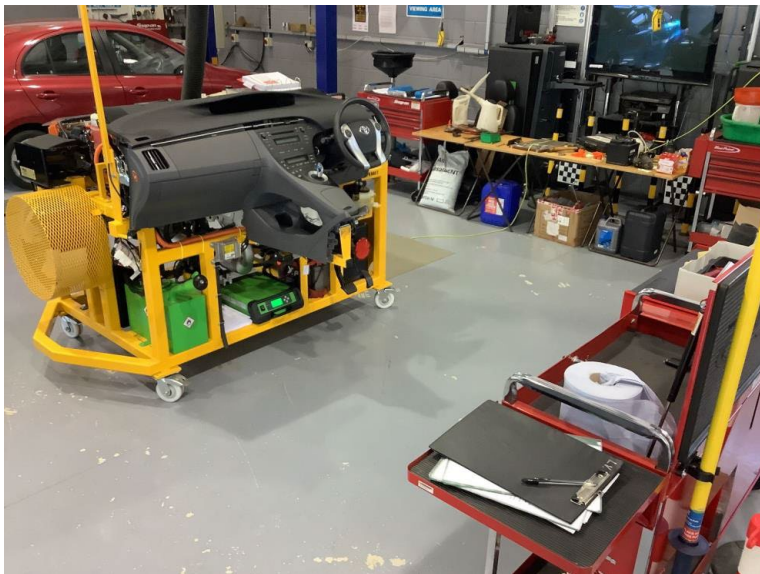
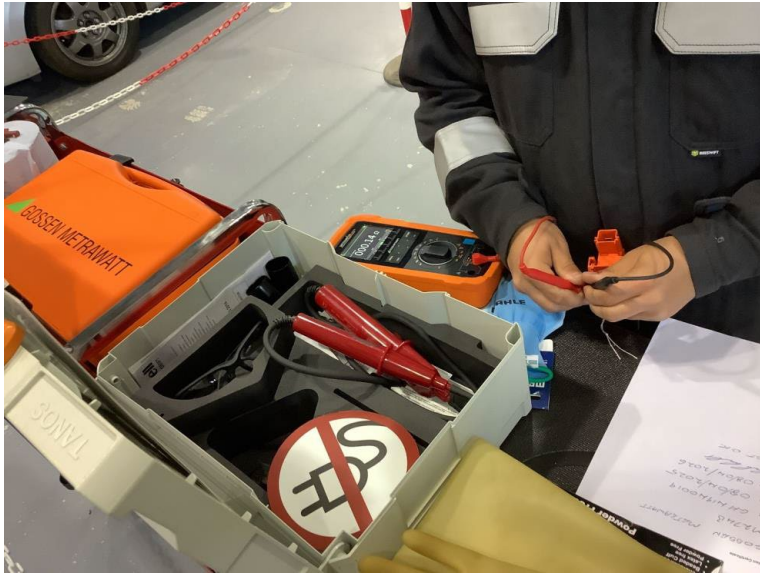














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P0B56 Hybrid battery voltage sensor F - circuit low

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P112 HYBRID BATTERY CONTROL - HYBRID BATTERY SYSTEM

HYBRID BATTERY SYSTEM

PRECAUTION

1. PRECAUTIONS FOR INSPECTING HYBRID BATTERY SYSTEM

(a) Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip (see page IN-5). After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.

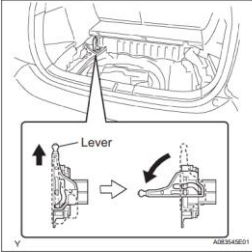
NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause a malfunction. Therefore, do not turn the power switch ON (READY) unless instructed by the repair manual.

(b) After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.

HINT:
At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

(c) Since liquid leakage may occur, wear protective goggles when checking inside the HV battery.

(d) Wear insulated gloves, turn the power switch OFF, and disconnect the negative terminal of the auxiliary battery before touching any of the orange-colored wires of the high-voltage system.



Task 3A Review and report the service, maintenance and repair activities

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	3A
Evidence title / description	Technical report Revised maintenance schedule for vehicle 1
Date submitted by candidate	DD/MM/YY

Task 3A

Assessment themes:

- Health and safety
- Systems and components
- Reviewing and reporting

You must:

- produce a technical report for your manager, covering both vehicles and includes the service, maintenance and welding/joining activities. This should typically be 850 words and must include:
 - a review of the service, maintenance and welding/joining activities, including fault diagnosis/detection techniques used and suggestions for future improvements
 - the faults found and how they were rectified
 - any outstanding faults, including recommendations that may require attention before the next planned maintenance activity according to the current maintenance schedule
 - reporting of stock levels and waste disposal
- produce a revised maintenance schedule for vehicle 1 from your activities and findings, this should include:
 - recommendations for future planned maintenance including justifications
 - due date of next service and maintenance activity.

Additional evidence of your performance that must be captured for marking:

None

Candidate evidence

Task 3A – Technical report

<u>Technical report</u>
<u>Vehicle 1:</u>
Petrol car
Service and maintenance
Customer stated vehicle won't start (doesn't turn over)
<u>Vehicle 2:</u>
EV hybrid car
Maintenance
Customer stated vehicle won't start and is also flashing a high voltage system fault
<u>Welding:</u>
Exhaust bracket needs welding to exhaust
Review of the service
On vehicle one the customer stated the car wont start/ turn over. So, to begin with I gathered all PPE and gathered some help to push the car into the inspection bay and on the ramps. Once I had got the car on the ramp and prepared, I began to start checking around the vehicle for any damages that occurred to the vehicle beforehand, so I cover my back if the customer tries to blame the damages on me. When starting the service and maintenance I started to diagnose the car not starting and not turning over. I went to plug an OBD code scanner into the vehicle which is when I realised that the battery on the car had gone flat. This could've been caused by the car sitting for a long period of time or simply n interior light being left on. So, I swapped the battery out and plugged in the OBD scanner and received no codes back. This could've been because the battery was flat for a period of time. The car still didn't turn over, so I looked into the starter motor more and decided to look at the starter motor relay and it was the easiest thing to access and didn't involve a lot of time needed. Once I checked the relay with the battery method and a multi meter I found out the starter motor relay wasn't working so I asked the technician for a new one and installed it and it fired up straight up. Once fixing the faults and doing a final code

scan after the engine had been ran, I moved onto the service following the auto data service sheet.

On vehicle two the customer stated the vehicle won't start because of a high voltage system fault. So once again I gathered all PPE and gathered some help to get the hybrid car into a bay and onto the ramps. I then checked around the vehicle for damages to record before I start the maintenance on the vehicle. Once completed I cornered off my area and ensured the correct signage was placed on top on the car. To begin with I plugged the OBD scanner into the car and I received the code P0B56 which indicated there was a fault with the hybrid voltage sensor F. Therefor I started to discharge to the system and whilst waiting I checked the service plug with a multi meter, and it showed as an open loop so that needed to be replaced. This could've been caused by a leak in the boot. I then moved onto the inverter once the system had discharged which I the removed the inverter casing to find one of the prongs were dirty a covered in a substance. This could've been caused by a bad seal on the inverter casing allowing the ingress of dirt, water and other fluid. I then turned on the vehicle and made sure it was in working order.

Any outstanding faults

Recommended to fix before next service/maintenance scheduled

Vehicle 1:

- Both front discs were above the maximum runout specified by the manufacturer which is 0.08. Recommend changing as soon as possible
- Rear subframe pin or bushing worn resulting in excessive play. Recommend changing withing the next month
- Rear offside spring casing split resulting in corrosion to metal Recommend changing as soon as possible to prevent more damage
- Offside rear tyre perished. Recommend changing as soon as possible to prevent tire blowout
- Auxiliary belt starting to perish. Recommend changing as soon as possible to prevent further damages
- Nearside front shock absorber boot split. Recommend changing within the next month or so to prevent ingress of dirt and water getting into the absorber and causing more damage

Vehicle 2:

- No outstanding faults

Reporting stock levels and waste disposal

I will be sending back any extra supplies/ materials back to the correct place and recording what has been used and the stuff I didn't use so that the technician that keeps track of supplies used so they know when to buy more stock to ensure that there is no delay in parts arriving so the jobs can be completed which also saves time that the cars are on the ramp for meaning less money lost because of cars being on ramps for extended periods of time.

When disposing of any waste materials or liquids I will be ensuring that they get put into the correct place such as oil into an oil drum to be taken when its full, general waste such as used gloves etc go into the general waste bin.

Task 3A – Maintenance schedule

Maintenance schedule	Vehicle 1: Ford Fiesta mk6 Due date: 10/12/2025 or 6000miles
Recommendation for changing soon	Justification
1. Both front brake discs 2. Rear subframe pin or bushing work resulting in excessive play 3. Rear offside spring casing split causing rust and recommend changing 4. Offside rear tyre perished/cracking 5. Auxiliary belt starting to perish 6. Near side shock absorber boot split	1. The disc are wearing unevenly as the runout is greater than 0.08mm and will cause a judder under breaking soon. 2. Excessive play in the bushing can cause the car to become unstable or out of control if not fixed soon 3. Spring could snap whilst driving and cause an accident or could damage other components 4. High chance of tire blowout and lower performance of said tire 5. Could snap and cause water pump not to work and alternator causing loss of electric power and overheating 6. Needs changing to prevent the ingress of dirt and fluids getting into the absorber
Technician: Technicians signature: Candidate	

Task 3B Peer Review

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	3B
Evidence title / description	Completed peer review forms Candidates amended document following peer review
Date submitted by candidate	DD/MM/YY

Task 3B

Assessment themes:

- Health and safety
- Systems and components
- Reviewing and reporting

Your job card for vehicle 1 (Task 2A) will now be reviewed by two peers to provide you with feedback. All candidates will also peer review two job cards produced by other candidates. Assessors must distribute the job cards for candidates to review and provide Peer review forms for candidates to complete the written feedback.

You must:

- carry out a peer review on two job cards provided by the assessor. You must consider the following:
 - how well does the job card for vehicle 1 record the service work completed and align to the planned maintenance activity?
- how appropriate are the recommended service works to complete and why?
 - what are the implications to the business of the proposed job card for vehicle 1?
 - how could the job card for vehicle 1 be optimised / improved?
- write up feedback for each of the job cards produced by other candidates on separate peer review forms
- update your own job card for vehicle 1 following feedback from the peer review. Any updates need to include justifications for these changes and any changes not made will be reviewed in the handover.

Additional evidence of your performance that must be captured for marking:

none

Candidate Evidence

Task 3b – Peer Review Forms

Assessment ID	Qualification number
Candidate name	Candidate number
Provider name	Provider number
Date	Series

Question	Feedback
How well does the job card for vehicle 1 record the service work completed and align to the planned maintenance activity?	Goes through the process very detailed and good use of torques and measurements well described the faults that were presented and their process of fixing those faults
How appropriate are the recommended service works to complete and why?	All the replacement and fittings were needed and justified and also later proven to be useful and functional
What are the implications to the business of the proposed job card for vehicle 1?	This shows that this individual is a very competent technician that is capable of carrying out a service and handing the vehicle back with quality assurance, the implications of this work will grow a strong customer base with the good quality work
How could the job card be optimised/ improved?	At the very end there is a list of suggested repairs might be useful to list reasons for the repairs and possible preventatives instead

Peer Review Form

Assessment ID	Qualification number
Candidate name	Candidate number
Provider name	Provider number
Date	Series

Question	Feedback
How well does the job card for vehicle 1 record the service work completed and align to the planned maintenance activity?	Very well, lots of detail included oil specs and the procedure used
How appropriate are the recommended service works to complete and why?	They are appropriate as they have given a valid reason to why the parts need replacing
What are the implications to the business of the proposed job card for vehicle 1?	Positive due to the sale of more parts and the potential of future work from the recommended feature repairs
How could the job card be optimised/ improved?	I would include more technical information including brake pad thickness ect Also include justification of why you did certain things (checking coolant brake fluid ect)

Task 4 Complete Handover

Assessment number (eg 1234-033)	8712-315
Assessment title	Light and Electric Vehicles Occupational Specialism

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	4
Evidence title / description	Assessor observation Handover documentation
Date submitted by candidate	DD/MM/YY

Task 4

Assessment themes:

- Reviewing and reporting

You must now hold a meeting with the manager to return to service and complete handover procedures, including:

- welded/joined exhaust repair
- confirmation of work completed
- amended job card for vehicle 1 and how they addressed peer review feedback, including any suggested changes that were not made and why
- appropriate handover documentation.

Additional evidence of your performance that must be captured for marking:

Assessor observation of:

- handover meeting

Candidate evidence

Task 4 – Assessor observation

Task 4 Practical observation form

8712-315 Maintenance Engineering Technologies: Light and Electric Vehicles - Summer 2025

Candidate Name	Candidate number

Complete the table below referring to the relevant marking grid, found in the assessment pack.

Do not allocate marks at this stage.

This observation must cover	Assessor observation should include:	Assessment Themes
Handover	the handover of the work completed.	- Health and Safety - Reviewing and Reporting

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:

Candidate has completed the handover, they presented themselves polite and professional. They went through the health and safety and tools that they used, including showing the toolbox and the area that they were working in.

The candidate described the work that they completed on the three tasks and has provided significant detail of each of these jobs. Throughout each of the descriptions they addressed health and safety and how they approached the job. They talked about the faults that were found, how they interrogated and diagnosed and repaired them. The candidate did this with confidence and clarity.

The candidate has explained how they have taken the peer feedback and their opinions against what was critiqued. The candidate has shown me the changes that were made to the job card and the changes that they would make going forward.

The candidate's approach was calm and purposeful.

Vehicle functionality has been demonstrated during observation on Task 2A and C.

Internal assessor signature	Date

Principal Moderator Commentary

The candidate has shown a strong ability to interpret technical information accurately and apply it with precision to practical tasks. For example, during the oil replacement activity, they consulted the service documentation, correctly identified the torque settings for the sump bolt, and executed the process without error. Their planning was detailed and systematic, tools and materials were arranged in a logical sequence, and the workflow was efficient with minimal downtime. Risk assessments were thorough, with hazards anticipated and mitigated effectively. Importantly, the candidate's application of safe working methods went beyond compliance, demonstrating professional awareness and proactive management of risks.

The candidate demonstrated exemplary preparation of the working area. Workspaces were cleared, hazards were systematically removed, and protective measures were implemented with precision. Tools and components were neatly organised, and floor coverings ensured environmental as well as operational safety. During tasks, used parts were segregated and labelled, preventing any confusion or hazard. On completion, the work area was restored to a professional standard, with tools returned, waste disposed of appropriately, and the bench left clear.

The candidate displayed strong diagnostic reasoning and technical skills. When presented with a non-start vehicle, they methodically tested multiple possible causes, ruling out irrelevant issues before identifying the starter motor fault. Their diagnostic process was systematic, using appropriate test equipment accurately and recording results clearly. Corrective actions were not only completed to specification but also checked against manufacturer's tolerances to ensure reliability. In service and repair activities, such as the starter motor replacement, the candidate demonstrated dexterity, accuracy, and a clear understanding of underlying mechanical and electrical principles. These outcomes exceed the minimum requirement, evidencing a high degree of independence and technical fluency.

The candidate's handling of tools and workshop equipment was consistently proficient and precise. In the battery replacement task, they executed isolation and reconnection sequences exactly as per safety protocols, demonstrating both technical accuracy and professional caution. Torque wrenches and specialist equipment were applied correctly, with values checked against specifications to ensure compliance. Their efficiency in tool use resulted in tasks being completed to a high standard and within expected timeframes. The

evidence shows consistent confidence in tool selection, safe handling, and correct application.

The candidate exhibited a clear and well-structured understanding of the theoretical principles underpinning their practical tasks. When removed and replaced components, such as the light vehicle starter motor, they not only followed procedures correctly but also explained the mechanical and electrical functions of the component and its interaction within the wider system. Their work showed accurate application of tolerances, correct calibration of tools, and consistent adherence to manufacturer's specifications without prompting. This evidences a depth of understanding characteristic of distinction-level knowledge and application.

The candidate consistently demonstrated advanced awareness of health and safety protocols. For example, during the electric vehicle activity, they confidently applied insulated tools, adhered to high-voltage safety procedures, and provided a rationale for each precaution. PPE was selected and used appropriately throughout all tasks, with a proactive awareness of potential hazards. Their behaviour in the workshop set a strong example of professional practice, ensuring both personal safety and the safety of others. This surpasses the pass-level requirement of "sufficient awareness" and aligns with the distinction descriptor of consistently safe, proactive practice.

The candidate communicated using accurate and professional terminology, both verbally and in written documentation. For instance, they consistently used terms such as "hub retaining nut," "charging circuit," and "torque specification," demonstrating fluency in industry language. Written reports were structured, concise, and technically accurate, while verbal explanations showed the ability to adjust tone and clarity for technical and non-technical audiences alike. This reflects Distinction-level communication: clear, accurate, and consistently professional.

Get in touch

The City & Guilds Quality team are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

Monday - Friday | 08:30 - 17:00 GMT

T: 0300 303 53 52

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