



Assessment Pack

Vehicle Systems Maintenance

Assessment Recording Forms

3902-01 Entry level 3

3902-71 SCQF Level 3

Centre logo here

Candidate unit tracking assessment and verification page

Candidate's name: _____

City & Guilds registration/ID number: _____

Date enrolled at centre: ___/___/_____

Date registered with City & Guilds: ___/___/_____

Unit number and title	Practical work tick when complete	Knowledge tick when complete	Assessor/signature/date
(Unit 001) (SCQF Unit 301): Introduction to vehicle engine lubrication systems			
(Unit 002) (SCQF Unit 302): Introduction to vehicle engine cooling systems			
(Unit 003): (SCQF Unit 303) Introduction to vehicle fuel and exhaust systems			
(Unit 004) (SCQF Unit 304): Introduction to Vehicle Spark Ignition Systems			
(Unit 005) (SCQF Unit 305): Introduction to vehicle electrical systems			
(Unit 006) (SCQF Unit 306): Introduction to vehicle braking systems			
(Unit 007) (SCQF Unit 307): Introduction to vehicle transmission systems			
(Unit 008) (SCQF Unit 308): Introduction to vehicle steering and suspension systems			
(Unit 009) (SCQF Unit 309): Introduction to vehicle wheels and tyre systems			
(Unit 010) (SCQF Unit 310): Introduction to principles of vehicle body and interior cleaning			
(Unit 011) (SCQF Unit 311): Introduction to vehicle engine operating principles			
(Unit 012) (SCQF Unit 312): Introduction to vehicle workshop bench skills			

Internal verifier sampling	Units sampled	Document reference	Name signature and date
External verifier sampling	Units sampled	Document reference	Name signature and date

Information

All the unit tasks can be completed as stand alone units or as a complete qualification made up of a combination of units.

The 3902 entry qualification units (SCQF Level 3 units) are about what the learner can achieve practically, these are competence based units which are designed to support hand skills and provide a clearer and better understanding of vehicle types they are working upon.

The vehicle types

The units are flexible and are designed in a way to support all types of vehicles; examples include:

Light vehicle

Heavy vehicles

Motorcycles and scooters

Quad and land-based

Tractors

Assessment

The vehicles used for assessment should have a realistic resemblance to current vehicles. Centres can use whole vehicles and specially prepared realistic vehicle rigs for training and assessment. It is expected that the technology used is similar to that used today.

Tools and equipment

Providers should have the tools and equipment to facilitate the vehicle types and units being worked upon; they should be in a safe condition to support learning and assessment.

Evidence submitted for assessment and verification

All units have a simple one page assessment document to cover the practical content. The knowledge element can be supported by a number of methods. Unit questions can be answered either orally, written or centre devised to support vehicle types, including photographic, video, tape and other recording methods. Product and evidence of components made during the assessment should also be made available.

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. engine oil and filter replacement
2. replacement of engine gasket valve cover gasket or similar

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Oil capacity	
Engine type		Valve cover torque	
Cubic capacity		Sump nut torque	
Oil type		Filter type	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed (✓)

Oil drainer		Health & Safety/organisational procedures		Valve cover gasket or similar type changed	
Torque wrench		Tools cleaned, checked and stored		Oil changed	
Gasket		Recycling and disposal		Oil filter changed	

Candidate knowledge questions: these may be either oral, written or a combination of both (✓)

1. Why is it important to change oils and filters at recommended intervals and what are the implications for engine service life
2. What are the correct tightening procedures when tightening valve covers or similar casings after gasket replacement
3. What are the correct procedures before and after using a torque wrench to maintain reliability of equipment
4. How have you supported correct waste procedures for disposal and recycling for: oils, filters and gaskets
5. State two checks which should be made after all work has been carried out

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for any two from 1 and all of 2:

1. (a) thermostat and gasket replacement **or** (b) water pump and gasket replacement **or** (c) radiator removal and refitting
2. removing and replacing a cooling system drive belt or similar activity

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Cooling system capacity	
Engine type		Housing/unit torque figure	
Cubic capacity		Type of drive belt fitted	
Frost protection % needed		Filter type	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed

✓

Coolant drainer		Health & Safety/organisational procedures		Thermostat or water pump cover gasket changed	
Torque wrench		Tools cleaned, checked and stored		Drive belt removed, refitted and checked	
Gasket		Recycling and disposal		Coolant replenished and frost protection checked	

Candidate knowledge questions: these may be either oral, written or a combination of both

✓

1. What are the main features which determine whether the engine is either air or liquid cooled
 2. What are the correct tightening procedures when tightening cooling system or water pump units after gasket replacement
 3. What are the correct procedures before and after using a torque wrench to maintain reliability of equipment
 4. How have you supported correct waste procedures for disposal and recycling for: coolant and gaskets
- Describe the basic operation of the cooling system with reference to the components removed and refitted

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. (a) air filter replacement (b) fuel filter replacement
2. checking exhaust system for corrosion and security

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Type of fuel and filter	
Engine type		Catalyst fitted with lambda	
Cubic capacity		Multi point/single point injection or carburetor	
Type of air filter fitted		Fuel capacity of the vehicle	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed

✓

Screwdriver used		Health & Safety/organisational procedures		Air filter changed	
Spanner set		Tools cleaned, checked and stored		Fuel filter changed	
Fuel pipe clips		Recycling and disposal		Exhaust checked for corrosion and security	

Candidate knowledge questions: these may be either oral, written or a combination of both

✓

1. What are the main features which determine whether the engine is either multi point, single point fuel injection or carburetor
2. Where on the vehicle is the catalytic converter and lambda sensor normally fitted
3. What are the correct health and safety personnel protective procedures before handling fuels
4. How have you supported correct waste procedures for disposal and recycling for: fuels, and filters
5. Why must the filters be changed on a regular basis for the type of vehicle worked upon

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. (a) spark plugs removal inspection and fitting (b) high tension lead removal inspection and fitting
2. removing and replacing an ignition coil, including visual checks

Candidate's name:

Date: / /

Candidates **must**

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Type of ignition system used	
Engine type		High tension lead resistance per meter	
Cubic capacity		Spark plug gap if applicable	
Quantity and part code of spark plugs		Number of ignition coils used	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed ✓

Plug spanner		Health & Safety/organisational procedures		Spark plugs removal, inspection and fitting	
Feeler blade		Tools cleaned, checked and stored		High tension removal, inspection and fitting	
Multi-meter		Recycling and disposal		Ignition coil removed, visual inspection and refit	

Candidate knowledge questions: these may be either oral, written or a combination of both ✓

1. What are the main features which determine whether the engine is either a coil per plug, conventional distributor or DIS system
2. What is the correct tightening procedure for the spark plugs
3. State two checks which would normally be carried out to high tension leads
4. How have you supported correct waste procedures for disposal and recycling for: used ignition components
5. What is the purpose of the ignition coil and state an important inspection procedure

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. vehicle electrical systems checks to: lighting systems, horn, wiper, washer system and battery voltage
2. removal and replacement of fuses, relays, batteries, brake and headlamp bulbs
3. soldering a wire and terminal connection

Candidate's name:

Date: / /

Candidates must:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Headlamp wattages (dip and main beam)	
Engine type		Side and brake lamp wattage	
Cubic capacity		Length of wiper blades	
Good battery voltage		Number of horns fitted	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed

✓

Soldering equipment	Health & Safety/organisational procedures	Lighting systems checked and bulbs fitted	
Solder terminal to wire	Tools cleaned, checked and stored	Washer wiper systems checked	
Battery voltmeter test	Recycling and disposal	Battery, fuse and relay removed and refitted	

Candidate knowledge questions: these may be either oral, written or a combination of both

✓

1. What are typical voltages for fully charged and half charged batteries
2. What is the correct safe procedure for removal and fitting of battery leads
3. What is the correct procedure for handling quartz halogen lamps
4. How have you supported correct waste procedures for disposal and recycling for: used electrical components
5. What is the purpose of a flux and state the importance of cleanliness of metals when soldering

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. replacement of brake pads or brake shoes
2. inspection of brake fluid, brake pipes and cables

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Minimum brake shoe/pad thickness	
Engine type		Brake fluid type	
Cubic capacity		Wheel nut torque figure	
Type of braking system		Brake adjustment method	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed ✓

Hand tools	Health & Safety/organisational procedures	Brake shoes/pad replacement completed	
Torque wrench	Tools cleaned, checked and stored	Brake master cylinder topped up	
Ruler/vernier caliper	Recycling and disposal	Brake cables/pipes checked	

Candidate knowledge questions: these may be either oral, written or a combination of both ✓

1. Why must spilt brake fluid be cleaned from paint immediately, and with what
2. What are the functions of the master cylinder and wheel operating cylinders
3. How are the brakes adjusted to maintain optimum performance
4. How have you supported correct waste procedures for disposal and recycling for: used brake fluids and brake components
5. What are the purposes of the brake cables and flexible hydraulic brake hoses

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for any two from 1 and all of 2:

1. (a) removing/refitting a clutch unit (b) removing/refitting a drive line component: (prop or drive-shaft, chain-sprockets) (c) removing/refitting a wheel bearing
2. checking transmission unit levels and topping up with lubricants

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Transmission lubricant grade	
Engine type		Clutch bolt torque figure	
Cubic capacity		Wheel bearing lubricant grade	
Number of driven wheels		Type of wheel bearings	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed ✓

Hand tools		Health & Safety/organisational procedures		Clutch removed and refitted	
Torque wrench		Tools cleaned, checked and stored		Drive line component removed and refitted	
Transmission unit level checked		Recycling and disposal		Wheel bearing removed and refitted	

Candidate knowledge questions: these may be either oral, written or a combination of both ✓

1. What are the main unit components of an automatic transmission system
2. What are the correct tightening procedures when tightening a clutch unit
3. What are the implications of using the incorrect transmission lubricants
4. How have you supported correct waste procedures for disposal and recycling for: transmission lubricants and components
5. Describe the correct tightening procedure for the wheel bearing

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for any two from **1** and **2**:

1. (any two) (a) removing/refitting a suspension damper unit (b) removing/refitting a suspension spring (c) removing/refitting a steering joint or bearing
2. (any two) (a) Checking front wheel alignment (b) checking front to rear wheel alignment (c) damper inspection

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Wheel alignment data	
Engine type		Damper bolt torque	
Cubic capacity		Number of steered wheels	
Type of suspension spring		Type of steering unit	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed ✓

Hand tools		Health & Safety/organisational procedures		Damper removed refitted/checked	
Torque wrench		Tools cleaned, checked and stored		Spring removed and fitted	
Steering joint or bearing removed and fitted		Recycling and disposal		Alignment checked	

Candidate knowledge questions: these may be either oral, written or a combination of both ✓

1. State two inspections to a suspension damper unit
2. What is a symptom of incorrect wheel alignment
3. What is a symptom of a broken suspension spring
4. How have you supported correct waste procedures for disposal and recycling
5. State two steering system inspections needed for the type of vehicle worked upon

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. removing and refitting a tyre from a road wheel, inspecting for damage and fitting road wheel to the vehicle
2. balancing a road wheel and tyre using recommended equipment for the type of vehicle worked upon

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Road wheel nut torque	
Engine type		Legal minimum tyre depth	
Cubic capacity		Type of road wheels fitted	
Tyre dimensions and data		Speed rating of tyre	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed ✓

Hand tools and air equipment		Health & Safety/organisational procedures		Wheel removed and fitted	
Torque wrench and depth gauge		Tools cleaned, checked and stored		Tyre removed, checked and fitted	
Wheel balance machine		Recycling and disposal		Wheel and tyre balanced	

Candidate knowledge questions: these may be either oral, written or a combination of both ✓

1. State one method used to detect air leaks from a tyre and road wheel
2. State two safety requirements when lifting vehicles
3. What is a symptom of an out of balance road wheel and tyre
4. How have you supported correct waste procedures for disposal and recycling
5. State the legal requirements for the tyres fitted to this vehicle

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. vehicle body exterior and internal cleaning as appropriate to the type of vehicle worked upon
2. reporting on visual damage identified during cleaning activities

Candidate's name:

Date: / /

Candidates **must**:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 understand how the vehicle system operates
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		Type of paint finish to vehicle	
Engine type and size		Is pressure washer needed	

COSHH (control of substances hazardous to health). List all substances which are used and relate to this area of importance:

Tools equipment and procedural activities used and carried out correctly. Tick areas completed

✓

Electrical cables and sockets		Health & Safety/organisational procedures		All substances stored correctly	
Bucket and sponge		Equipment cleaned, checked and stored		Vehicle cleaned satisfactory	
Detergents/polish/sprays/tyre shine		Recycling and disposal		Vehicle report of damage carried out	

Candidate knowledge questions: these may be either oral, written or a combination of both

✓

1. What personnel protective equipment is needed when carrying out this task
2. What would you normally use to clean a vehicle windscreen
3. Why is it important to report vehicle damage to the supervisor before carrying out this task
4. How have you supported correct waste procedures for disposal and recycling
5. How would you deal with a frayed electrical cable which is connected to cleaning equipment being used during this task

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. dismantling a static engine
2. identifying components
3. reassembling the engine

Candidate's name:

Date: / /

Candidates must:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 identify the engine main components
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information: include data source

Vehicle make model		State OHV or OHC	
Engine type: 2 or 4 stroke		Valve clearance	
Cylinder head bolt torque/angle		Number of cylinders	
Sump bolt torque		Petrol or diesel	

Tools equipment and procedural activities used and carried out correctly. Tick areas completed

✓

Torque wrench	Health & Safety/organisational procedures	Engine dismantled following correct procedures	
Feeler blade	Tools cleaned, checked and stored	Main components identified	
General sockets/spanners	Recycling and disposal	Engine reassembled following correct procedures	

Candidate knowledge questions: written answers should be attached to this work sheet: oral questions may also be used

✓

1. What are the main moving components of the engine you are working on
2. State the correct tightening procedure for the cylinder head
3. How many valves did the engine have and what are they
4. How would you determine the difference between an engine with OHC and OHV
5. How have you supported correct waste procedures for disposal and recycling for: oils, filters and gaskets

Assessor's feedback on practical and knowledge elements

Signature:

Date:

Candidates need to demonstrate by direct observation and written or oral questioning the correct procedures for:

1. working to simple sketches and drawing
2. manufacturing using a variety of workshop techniques

Candidate's name:

Date: / /

Candidates must:

- 1 observe correct legislative and organisational procedures
- 2 know how and where to locate relevant sources of information
- 3 work safely in an engineering environment
- 4 select appropriate tools and equipment
- 5 carry out the unit task activities

Vehicle details and relevant information:

Component manufactured		Type of sketch or drawing	
Component materials		Methods of joining materials	

- COSHH (control of substances hazardous to health). List all substances which are used and relate to this area of work:

- Main health and safety risks identified:

Tools equipment and procedural activities used and carried out correctly. Tick areas completed ✓

Cutting materials		Hand tools/equipment used: (circle types) hammer, weld equipment, taps, dies, ruler, files, punch, vice, drill, saw, scribe, square, surface plate, engineers dye, glue, rivet gun grind-stone.	Health & Safety/organisational procedures followed	
Filing to size			Equipment cleaned, checked and stored	
Joining materials			Recycling and disposal	

Candidate knowledge questions: these may be either oral, written or a combination of both ✓

1. What personnel protective equipment is needed when carrying out this task
2. What is the importance of following sketches and drawings accurately
3. What is the correct policy for dealing with broken tools and equipment
4. How would you determine materials which contain iron such as steel from other non-metallic materials
5. How have you supported correct waste procedures for disposal and recycling of waste

Assessor's feedback on practical and knowledge elements

Signature:

Date: