Practical Training Workbook

3902 Entry level 3 and Level 1/ SCQF Level 3 and Level 4 in Vehicle Systems Maintenance

Foundation Learning

Centre logo

Instruction to candidates

Before starting each practical task Candidates **must:**

- discuss the task with the tutor before starting
- check the vehicle / training rig is appropriate and in a satisfactory condition for the task
- wear the correct PPE (personnel protective equipment)
- obtain the correct vehicle details and data
- complete a Health & Safety and risk assessment and complete the section on the record sheet
- complete the vehicle details and data section on the record sheet before commencing the task (to be checked by tutor / assessor)
- obtain the necessary tools and equipment
- check the tools and equipment to make sure they are in a safe working condition
- document / report any faulty tools (not use them if they are unsafe)
- answer the questions in each of the sections
- complete the self assessment section when the task has been completed

During each practical task Candidates **must:**

- use tools and equipment safely at all times
- document all relevant readings
- report any breakages
- show their tutor relevant stages of the task, as requested (ie component removal)
- refit all nut /bolt /washers/fixings
- complete all parts of the task
- answer all questions relating to the task and complete the self assessment section
- return all tools and equipment in a safe and clean condition

Tutors/assessors **must:**

- check vehicle details and data
- feedback on performance
- sign off and date completed task

Skills integration:

Numeracy skills

Each task incorporates numeracy skills including: addition, subtraction, multiplication and division. Candidates will be using many different types of measuring equipment; these are used to measure parts of a millimetre up to complete metres. Other measurements will be taken when carrying out compression and pressure testing, cylinder leakage and exhaust emission tests.
There are also some calculations involving electrical units.
By using these practical task sheets, numeracy skills can be integrated and supported into the core curriculum.

Communication skills

During these tasks there will be the opportunity for:

- group discussion with regard to Health & Safety within the workshop environment
- taking instructions and being provided with support from instructors and tutors
- completing task worksheets and feeding back on problems found during the task
- presentation skills within the written work
- using wall charts and vehicle manuals for information.

ICT skills

Vehicle information is often accessed via computer using systems such as AUTODATA. Many of the diagnostic tools used for the modern vehicle involves the use of computer diagnostics.
Word processing the task sheets will help improve ICT skills.

Problem solving

All tasks involve having to work things out and identifying vehicle system faults (engine, chassis, transmission, ancillary electrical), this will provide opportunities for problem solving.

Working with others

Many of the tasks involve working with others to lift, push, pull, and hold vehicle units and components. Effective communication is an important aspect of vehicle work in order to maintain a safe working environment.

Improving own learning

Every task will provide an opportunity to improve learning. In most cases Candidates would not have carried out these tasks before and therefore distance travelled can easily be measured.
A series of practical assessments will need to be carried out; this will determine the practical skills and competences gained.

Environmental issues

Education for sustainable development and global citizenship – ESDGC (Wales only)

Each task involves using power, energy and materials, some of which can be recycled and some which need to be disposed of. These can be identified and Candidates will need to state how this was carried out and the possible effects on the environment.

Task tracking document		
Tasks	**Date completed**	**Comments on Candidate's own performance (not signed by the tutor/assessor)**
1. Workshop investigation		
2. Safe lifting of a vehicle using a trolley jack		
3 Use of tyre fitting equipment		
4. Wheel and tyre balancing		
5. Change oil and filter		
6. Changing brake pads		
7. Removal and refitting of a front suspension unit		
8. Removal and refitting of brake drums and shoes		
9. Remove and test a thermostat, check antifreeze. Make gasket and refit thermostat		
10. Remove, check and replace Serpentine – Poly V drive belt & check alternator charging		
11. Under bonnet level checks & air filter		
12. Fit a number plate to a vehicle		
13. Soldering exercise		
14. Block and stud manufacture		
15. Spark plug and HT lead checks		
16. Remove and replace a clutch unit		
17. Pop riveting task		
18. Using a multimeter to test components		
19. Remove and replace track rod ends and check alignment		
20. Remove and replace exhaust silencer and check emission readings		
21. Remove and replace a cylinder head gasket using the correct tightening procedures		
22. Remove and refit headlamp unit and check alignment		
23. Cam belt change on a CI (diesel) engine		
24. Remove and replace a suspension strut (Macpherson type). Remove and replace spring		
25. Brake light switch removal, test and refit		
26. Using an engine fault code reader		
27. Repair puncture in tyre		

Vehicle workshop investigation

Carry out a vehicle workshop investigation to identify the main areas where you will be working in. You need to identify the following: *main working area, tool stores, fire extinguishers, fuel store, exit points, hand wash area, vehicle lifts, first aid kit, pillar drill, bench grinder, battery store and any other important significant areas.*
Draw a plan of the workshop and show the position of the items listed above. You will need to use a PENCIL AND RULER **not ink**.

Candidate's name:

Feedback from assessor:

Signature: **Date:**
____/_____/_____

Safe lifting of a vehicle using a trolley jack

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (communication/numeracy skills)

Make/Model of vehicle:_____
Engine capacity:_____

Approximate vehicle weight:_____

SWL of lifting equipment:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Where is the trolley jack to be positioned:_____

Where are the support stands to be positioned:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

Support stands:_____

Trolley jack:_____

Other as necessary:_____

Work results: self assessment for practical skills

Workarea left tidy and tools stored correctly:_____

Vehicle lifted safely with correct positioning of lift and stands:_____

State if any damage was caused while carrying out this task:_____

Questions to answer: (problem solving / improving own learning)

How many support stands are used:_____

What would you do with a trolley jack which leaked oil: _____

What do the letters SWL stand for: _____

State two places the jack or support stands must not be placed under:

1._____

2._____

3._____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly: _____

Was the environment effected by your work:_____

Tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Use of tyre fitting equipment

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle:_____
Engine capacity:_____

Recommended vehicle tyre size and pressure:_____/_____

Wheel nut torque:_____ Nm

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn: _____

Eye/ ear/ head protection needed (state): _____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tyre fitting hand tools:_____/ Vehicle lift:_____

Tyre fitting machine make:_____

Tyre fitting lubricant:_____/ Torque wrench:_____

Air line and pressure gauge:_____

Work results: self assessment for practical skills

Work area left tidy and tools stored correctly:_____

Tyre fitted without damage:_____

Tyre pressure setting:_____

Wheel nuts/bolts fitted and correctly tightened:_____

Vehicle left clean and tidy:_____

Questions to answer: **(problem solving / improving own learning)**

What is the minimum legal tread depth: _____mm

What is the purpose of tyre fitting lubricant:_____

How should the torque wrench be left after use:_____

What is the technical name for a tyre pressure valve:_____

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date**___/_____/_____

Wheel and tyre balancing

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____
Engine capacity:_____

Wheel nut torque:_____

Type of wheels being balanced (steel/alloy/wire):_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Type of balance machine:_____

Torque wrench:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

Wheel fitted correctly:_____

Balance machine final reading:_____

All nuts/bolts fitted and correctly tightened:_____

Questions to answer: (problem solving / improving own learning)

How many wheel nuts/bolts per wheel:_____

Total value of balance weights used:_____

In what position, on the wheel rim, did you place the weights:_____

_____

What would the driver experience with an out of balance wheel:_____

Are the balance weights self adhesive on or knock on: _____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All area left tidy and tools stored correctly:_____

Feedback from assessor

Signature **Date** ___/_____/____

Change oil and filter

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____
Engine capacity:_____

Oil capacity:_____ Make and type of oil:_____

Tightening method for oil filter:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Oil drain:_____

Torque wrench:_____

Oil filter strap/wrench/chain/tool:_____

Work results: self assessment for practical skills

Work area left tidy and tools stored correctly:_____

Filter removed and fitted:_____

Drain plug fitted and tightened with torque wrench:_____

Drain plug sealed and oil level correct:_____

Engine runs without leaks:_____

Questions to answer: (problem solving / improving own learning)

What marks are on the dip stick:_____

What colour is the vehicle oil warning light :_____

State two checks to make after changing the oil and filter:

1._____

2._____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Changing brake pads

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____ Wheel nut torque:_____ Nm

Minimum disc thickness:_____ mm: Minimum brake pad thickness:_____ mm
Minimum disc run–out:_____ mm
Brake fluid normal boiling point:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

DTI and Micrometer:_____

Ruler:_____

Brake fluid tester:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

Brake pads removed and refitted correctly:_____

Thickness of brake pad material left:_____
mm

Disc run-out reading and disc thickness:_____ mm: _____mm

Brake fluid test result:_____

Questions to answer: (problem solving / improving own learning)

State the number of pistons in the brake calliper:_____

Why do some vehicles use a ventilated disc:_____

Has the vehicle got anti lock brakes (ABS):_____

What brake fluid is normally used:_____

What are the purpose of the wires attached to the brake pads:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All area left tidy and tools stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Removal of and refiiting of a front suspension unit

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____

Wheel nut torque:_____ Nm

Suspension mounting bolt torques:_____ Nm

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn: _____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Ball joint splitter if applicable:_____

Torque wrench:_____

Questions to answer: (problem solving / improving own learning)

How would you check a suspension damper:_____

State a symptom of a broken suspension spring:_____

List any faults found on the front suspension:

_____

_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

Front suspension unit fitted correctly:_____

Any faults in the unit reported to assessor:_____

Type of spring fitted to unit:_____

All nuts/bolts fitted and correctly tightened:_____

Feedback from assessor

Signature **Date** ____/_____/____

Removal and refitting of brake drums and shoes

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name Tutor's initials:

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle: _____

Minimum brake shoe wear: _____ mm: Maximum drum run-out:_____ mm

State the expected hand brake limit:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task
Safety footwear, clothing always worn: _____

Eye/ ear/ head protection needed (state): _____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

DTI:_____

Ruler:_____

Torque wrench:_____

Work results: self assessment for practical skills

Brake shoes removed and refitted:_____

Readings for drum ovality and wear:_____ mm / _____ mm

Condition of brake shoes and lining thickness:_____

All nuts/bolts fitted and correctly tightened:_____

Questions to answer: **(problem solving / improving own learning)**

Name the two shoes fitted inside the drum: 1._____ 2. _____

How many operating cylinders are fitted inside the drum assembly: _____

State a symptom if fluid was leaking onto the brake shoes:_____

Are the brakes manual or self adjusting type: _____

Faults identified:_____

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date ____/_____/_____**

Remove and test a thermostat, check antifreeze. Make gasket and refit thermostat

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____

Engine normal running pressure and temperature:_____ / _____

Antifreeze frost protection:_____ and percentage:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Coolant boiling equipment:_____

Thermometer:_____

Pressure and Antifreeze tester:_____

Work results: self assessment for practical skills

Thermostat removed and fitted:_____/gasket made:_____

State antifreeze frost protection:_____

State any coolant leaks after pressure testing:_____

All nuts/bolts fitted correctly and area left clean:_____

Questions to answer: (problem solving / improving own learning)

What is the thermostat gasket made from:

State a symptom of lack of antifreeze in the coolant:

Which component in the cooling system maintains the correct pressure:

What drives the water pump:

Name two materials which are used to make a radiator: 1. _____ 2. _____

Faults identified:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Remove, check and replace Serpentine – Poly V drive belt & check alternator charging

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle _____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Multi-meter (Volts DC):_____

Work results: self assessment for practical skills

State the condition the of belt:_____

Battery voltage engine not running:_____ Volts

Battery voltage engine running above normal idle speed:_____ Volts

Belt refitted correctly and all nuts/bolts fitted:_____

Questions to answer: **(problem solving / improving own learning)**

State two things that would happen if the belt failed:

1. _____

2. _____

What is the approximate length of the serpentine belt:_____ mm

What should happen to the battery voltage when the engine is running above normal idle speed:_____

Faults identified:_____

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Under bonnet vehicle level checks & air filter

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle:_____ Engine capacity:_____

Oil type: _____ Brake fluid type:_____ Power steering fluid if applicable:_____

Air filter change interval:_____ Antifreeze change interval:___ Brake fluid:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Battery hydrometer / refract meter:_____

Brake fluid temperature test equipment:_____

Antifreeze Test equipment:_____

Work results: self assessment for practical skills

Condition of the air filter:_____

All levels checked and topped up: (oil, coolant, brake fluid, power steer, brake fluid)

_____

Hoses checked for serviceability:_____

Work area left clean and tidy:_____

Questions to answer: **(problem solving / improving own learning)**

What would happen if the air filter element was left out:_____

_____

What happens to brake fluid over time:_____

At what intervals should the owner of a vehicle carry out level checks:_____

Faults identified:_____

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Fit a number plate to a vehicle (measuring exercise)

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____

Front or rear number plate to be fitted:_____

Type of fixings to be used:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Drill:_____

Ruler:_____

Questions to answer: (problem solving / improving own learning)

Number plate
Measure your plate and enter dimensions in this box

0 0

Note: this is a replicated task and the number plate should be pre made to size from hard board. This task is basically a measuring and correct fitting exercise

What is the legal size for number plate letters:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

Number plate fitted in correct position and level:_____

Fixings correct and number plate secure:_____

Work area left clean and tidy:_____

Vehicle left clean and tidy:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Soldering exercise

Complete the, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Soldering iron:_____

Solder/flux/wire/terminals:_____

Work results: self assessment for practical skills

Wire cut to length:_____ mm

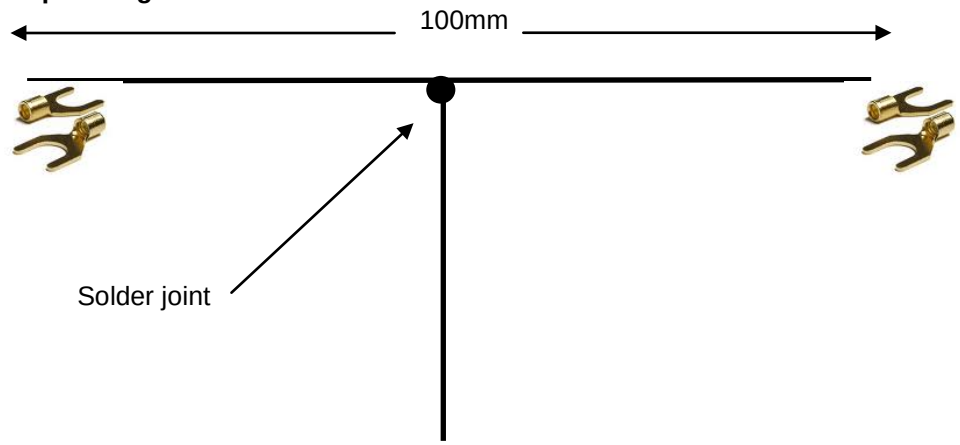
Terminals correctly and neatly soldered:_____

Wrap joint correctly soldered:_____

Working area left clean and tidy:_____

(Communication/Numeracy skills)

Task planning



Two lengths of wire, 100mm, solder to make a 'T' shape and solder a terminal to either end.

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Block and stud manufacture

Complete the Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools are checked before use, used correctly and returned in good condition.

General tools:_____

Drill and bits:_____

Taps/Dies:_____

Measuring equipment:_____

Work results: self assessment for practical skills

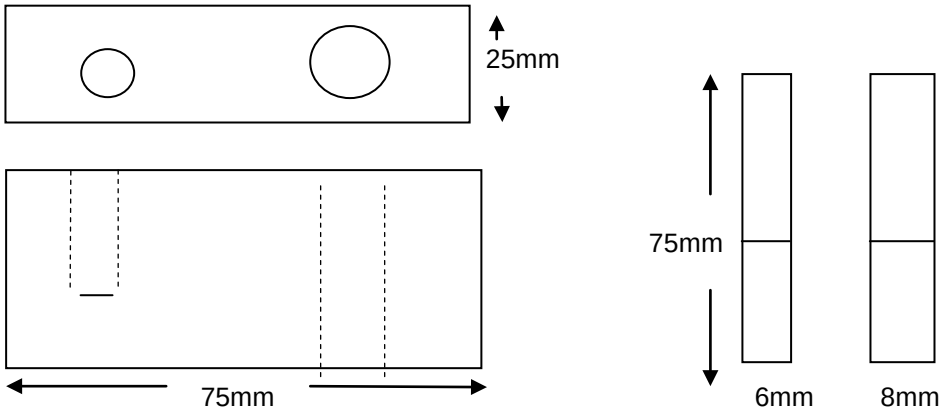
Block and studs manufactured to tolerance:_____

Threads allow smooth operation:_____

Presentation and finish acceptable:_____

Working area left clean and tidy:_____

(Communication/Numeracy skills)



Manufacture a block 25mm x 25mm x 75mm. Produce two threads in the block, one a blind hole, the other all the way through. These should be drilled to accept 6mm and 8mm threads. Manufacture two studs which will fit these threads; both 75 mm in length.

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Spark plugs and HT lead checks

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____ Engine firing order:_____

Spark plug gaps:_____ mm Spark plug tighten torque:_____ Nm

Spark plug (HT) lead resistance should be approximately 15-25KOhm/meter

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Multi-meter/ohms:_____

Feeler blades/ torque wrench:_____

Work results: self assessment for practical skills

Spark plug gaps adjusted to:_____

Plug leads fitted in the correct order:_____

Plug leads resistances: 1._____ 2._____ 3._____ 4._____

Plug lead lengths: 1._____ 2._____ 3._____ 4._____

Engine runs smoothly:_____

Questions to answer: (problem solving / improving own learning)

Are the plug leads serviceable:_____

Which part of the plug do you adjust to provide the correct the gap:_____

What will be the effect if the plug leads are fitted to the wrong plugs:_____

Faults identified:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Remove and replace a clutch unit

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____ FWD/RWD: State type: _____

Clutch pressure plate torque:_____ Nm

Method of clutch operation (hydraulic- mechanical - air):_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Clutch alignment tools:_____

Torque wrench:_____

Engine/transmission support:_____

Work results: self assessment for practical skills

Faults identified: Clutch cover:_____ Drive plate:_____

Release bearing:_____

All nuts / bolts fitted:_____

Working area left clean and tidy:_____

Questions to answer: (problem solving / improving own learning)

State a symptom of oil on the clutch ilinings:_____

State the correct order when tightening clutch cover bolts:_____

What component does the clutch centre plate drive:_____

Is there a provision for clutch adjustment:_____

Faults identified:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Pop riveting task

Complete the Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor 's initials:

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Pop rivet gun:_____

Measuring equipment:_____

Files/hacksaw/drill:_____

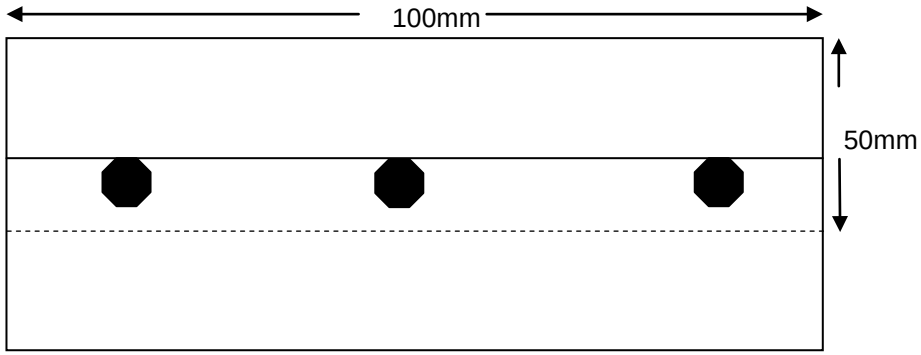
Work results: self assessment for practical skills

Are the three pop rivets equal distance apart:_____

Have all work piece edges been de-burred:_____

Working area cleaned and left tidy:_____

(Communication/Numeracy skills)



Join two pieces of metal plate; 100mm x 50mm with a lap joint using 3 x 3mm pop rivets or similar

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Using a multi-meter to test electrical/electronic components

Complete the Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills:

Assortment of components:

1. Petrol fuel injector
2. Fuse
3. Diode
4. Twin filament bulb
5. Plug lead
6. Resistor
7. Battery

You will need access to the above components and a multi-meter, take readings and complete the test results.

Work results: self assessment for practical skills

All components tested and results logged:_____

All components returned and stored:_____

Working area cleaned and left tidy:_____

(Communication/Numeracy skills)

Test results of electrical and electronic components:

Resistance of fuel petrol injector:_____ Ohms

Condition of fuse:_____

Results of diode test:_____

Results of twin filament bulb: 1. filament:_____ 2. filament:_____

Resistance of plug lead:_____ Ohms

Resistance of the resistor:_____ Ohms

Battery voltage:_____ Volts

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Remove and replace rack rod ends and check tracking

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle:_____ FWD/RWD:_____

Wheel nut torque:_____ Nm Track rod end nut torque:_____ Nm

Alignment/toe setting:_____ (mm or degrees):

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Torque wrench:_____

Tracking equipment:_____

Ball joint splitter:_____

Work results: self assessment for practical skills

All bolts and fittings correctly tightened with locking devices:_____

Track rod ends fitted correctly:_____

Tracking correct and checked:_____

Wheels torque up and vehicle left clean:_____

Questions to answer: **(problem solving / improving own learning)**

How did you check the equipment before use:_____

State a symptom of excessive positive toe:_____

State a symptom of excessive negative toe:_____

What causes tyre wear only in the tread centre:_____

Number of turns the track rod needed when fitted:_____

Faults identified:_____

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date ____/_____/_____**

Remove and replace exhaust silencer and check emission readings

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle: _____

Recommended CO:_____ % HCC:_____ PPM

Exhaust mounting bolts/clamp torque:_____

Health & Safety and risk assessment

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Torque wrench:_____

Exhaust emissions tester:_____

Questions to answer: (problem solving / improving own learning)

State a symptom of a hole in the exhaust:_____

What does the gas term CO mean:_____

What does the gas term HCC mean:_____

What does the gas term CO2 mean:_____

What does the gas term 02 mean:_____

Fault identified:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

All bolts and fittings correctly tightened with locking devices:_____

Exhaust aligned and secure:_____

Emissions: CO_____ % HC:_____ PPM

Vehicle left clean:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Remove and replace a cylinder head gasket using correct tightening procedures

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____ Engine capacity:_____

Inlet valve clearance:_____ mm Exhaust valve clearance:_____ mm

Head tightening procedure: stage 1:_____ stage 2:_____ stage 3:_____

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Torque wrench:_____

Feeler blade:_____

Work results: self assessment for practical skills

All bolts and fittings correctly tightened with locking devices:_____

Inlet valves adjusted:_____

Exhaust valves adjusted:_____

Covers and gasket tightened down:_____

Vehicle left clean:_____

Questions to answer: (problem solving / improving own learning)

What is the correct tightening procedure for the cylinder head fixings:_____

State the method used to adjust the valves:_____

What material is the cylinder head made from:_____

What material is the cylinder block made from:_____

Faults identified:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Remove and refit headlamp unit and check alignment

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle:_____

Head lamp wattages for dip:_____ Main beam:_____ Side lamp:_____

Indicator:_____ Brake lamp:_____

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Torque wrench:_____

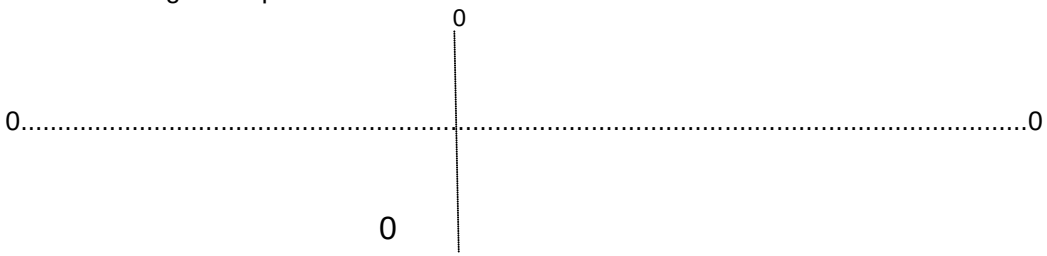
Headlamp alignment equipment:_____

Questions to answer: **(problem solving / improving own learning)**

State two checks to the headlamps before alignment is carried out:_____

Calculate the current flow in one 60w headlamp bulb:_____
(Use the formula W = V x A)

Sketch the alignment pattern below:



Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly: _____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

All bolts and fittings correctly tightened with locking devices:_____

Headlamp removed and fitted correctly:_____

Alignment correct and checked:_____

Vehicle left clean:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Cam belt change on a CI (diesel) engine

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____ Engine capacity:_____

Recommended mileage change / time for the cam belt:_____

Crankshaft to camshaft ratio:_____

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Locking/marking devices:_____

Questions to answer: (problem solving / improving own learning)

How many cylinders does the engine have:_____

Is the engine SOHC or DOHC:_____

Did you use any locking devices and if so where:_____

Did the diesel pump need to be timed to the engine:_____

State the importance of having the belt timed correctly:_____

State the consequences of the belt being loose or breaking:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Work results: self assessment for practical skills

Area left tidy and tools stored correctly:_____

Cam belt fitted and adjusted:_____

Timing marks all aligned and tensioned correctly:_____

All nuts/bolts fitted and correctly tightened:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Remove and replace a suspension strut (Macpherson type) Remove and replace the spring

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____ Engine capacity:_____

Top mounting torque:_____ Nm Lower mounting torque:_____ Nm

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Suspension spring compressor:_____

Torque wrench:_____

Work results: self assessment for practical skills

Area left tidy and tools stored correctly:_____

Spring and damper checked:_____

Spring and damper reassembled:_____

All nuts/bolts fitted and correctly tightened:_____

Vehicle left clean and tidy:_____

Questions to answer: (problem solving / improving own learning)

State three checks you made to the unit: 1._____

2._____3._____

What are the dangers when using spring compressors:_____

Did you take the brake calliper off and how should it be supported:

State a test for a damper:_____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Brake light switch removal, test and refit

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name Tutor's initials:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____

Brake bulb typical wattage:_____ w

Position of brake switch:_____

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn:_____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Multi-meter:_____

Work results: self assessment for practical skills

Area left tidy and tools stored correctly:_____

Brake switch removed and fitted:_____

Brake lights work effectively:_____

Vehicle left clean and tidy:_____

Questions to answer: (problem solving / improving own learning)

Are any LEDs used in the braking lights (including high level type):_____

What method of adjustment is available to the brake switch:_____

What is the resistance of the switch when operated:_____ Ohms

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Faults identified:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Using an engine fault code reader

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor's initials:

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn: _____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

Engine diagnostic equipment:_____

State where it connects to:_____

Work results: self assessment for practical skills

Faults identified:_____

Fault code for Lambda sensor (02 sensor):_____

Fault code for air mass meter:_____

Fault code for throttle position switch:_____

Fault code for Coolant thermistor:_____

All codes cleared:_____

Vehicle left clean and tidy:_____

Vehicle details and data **(Communication/Numeracy skills)**

Make/Model of vehicle:_____

Fault codes for: Coolant thermistor:_____ Air mass meter:_____

Throttle position switch:_____ Lamda (02) sensor:_____

Questions to answer: **(problem solving / improving own learning)**

What does the term OBD mean:_____

What does the term EOBD mean:_____

What does the term CAN mean in regards to CAN-BUS:_____

_____

You may have to search the internet or consult a text book for the above

Environmental issues: **recycling, disposal of waste (ESDGC)**

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Faults identified:_____

Feedback from assessor

Signature **Date** ____/_____/_____

Repair puncture in tyre

Complete the vehicle details, Health & Safety, risk assessment, and tools/equipment before starting the **practical skills** of this job. This will need to be signed off first by your tutor. It is an important part of the **skills requirements**.

Candidate's name: Tutor initial:

Vehicle details and data (Communication/Numeracy skills)

Make/Model of vehicle:_____

Tyre pressure:_____ Speed rating:_____

Diameter:_____ Tyre sizes:_____

Practical skills

Identify Health & Safety and risks with this practical task

Safety footwear, clothing always worn: _____

Eye/ ear/ head protection needed (state):_____

Other risks identified:_____

Equipment used for practical skills

You need to make sure all tools you use are checked before using, correctly used and returned in good condition after use.

General tools:_____

Tyre drilling equipment:_____

Tyre stones and dressing wheels:_____

Glues and rubber seals (mushrooms):_____

Work results: self assessment for practical skills

Area left tidy and tools stored correctly:_____

Tyre repaired:_____

Pressure checked:_____

Vehicle and area left clean and tidy:_____

Questions to answer: (problem solving / improving own learning)

What areas of a tyre should not be repaired:_____

Was an inner tube fitted:_____

Was the tyre a cross ply or radial ply:_____

What was the minimum tread depth on the tyre:_____

What was the maximum tread depth of the tyre: _____

Environmental issues: recycling, disposal of waste (ESDGC)

Was there any waste recycled:_____

Was all waste disposed of correctly:_____

Was the environment effected by your work:_____

All tools returned and stored correctly:_____

Faults identified:_____

Feedback from assessor

Signature **Date** ____/_____/_____