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<td>BP17-V56</td>
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<td>BP18-V57</td>
<td>Repair Glass Reinforced Panels and Vehicle Bodies</td>
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[This page is intentionally left blank]
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.
Information for VRQs (Technical Certificates).

To complete this unit you must:
Remove and replace:

1. Bumper.
2. Headlamp unit.
3. Door trim.
4. Window or 1 waist moulding.
5. Road wheel.
6. Battery.
7. Bonnet.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements
You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

7. Your assessor must physically observe you removing and fitting at least:
   - 2 bumpers, each on different vehicles on different occasions
   - 2 headlamp units, each on different vehicles on different occasions
   - 2 door trims, each on different vehicles on different occasions
   - 1 window or 1 waist moulding
   - 2 road wheels, each on different vehicles on different occasions
   - 2 batteries, each on different vehicles on different occasions
   - 1 bonnet or 1 boot lid trim.

8. Your assessor must observe you using spanners, socket set, screwdrivers, manufacturer’s specified specialist tools, pliers and self locking grips, power drill and drill bits, trolley jack, axle stands, vehicle lift and torque wrench.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
**Evidence reference summary**

<table>
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<tr>
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<th>VRQ</th>
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<th>Approved centre or workplace</th>
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<td>Window or waist moulding</td>
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<tr>
<td>Bonnet or boot lid trim</td>
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**Note:** Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.

Supplementary evidence (if used) PRN

On line test reference for this unit PRN
**Unit assessment and verification declaration**

<table>
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<tr>
<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
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<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work.</td>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work.</td>
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</tr>
</thead>
<tbody>
<tr>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
</tr>
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<td>(Leave blank if sampling of this unit did not take place.)</td>
<td>(Leave blank if sampling of this unit did not take place.)</td>
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<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
</tr>
<tr>
<td>• sampling candidate and assessment evidence</td>
<td>• sampling candidate and assessment evidence</td>
</tr>
<tr>
<td>• observation of assessment practice</td>
<td>• observation of assessment practice</td>
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<tr>
<td>• discussion with candidate</td>
<td>• discussion with candidate</td>
</tr>
<tr>
<td>• other – please state:</td>
<td>• other – please state:</td>
</tr>
<tr>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
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<tr>
<td>Date: …………………</td>
<td>Date: …………………</td>
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</table>
### Performance objective checklist

To be competent you must ensure that:

- Use the appropriate personal protective equipment when removing and fitting basic MET components.
- Protect the vehicle and its contents effectively when removing and fitting basic MET components.
- Select and use the correct tools and equipment for the components you are going to remove or fit.
- Ensure that the tools and equipment you require are in a safe working condition.

Remove and fit basic MET components following:
- Removal and fitting procedures
- Manufacturers’ instructions
- Your workplace procedures
- Health, safety and legal requirements.

Avoid damaging other components and units on the vehicle.
Store all removed components safely in the correct location.
Check that the components you have fitted operate correctly following the manufacturer’s specification.
Report any additional faults you find during the course of your work to the relevant person(s) promptly.
Report any delays in completing your work to the relevant person(s) promptly.
Remove and fit basic MET components within the agreed timescale.
Complete work records accurately, in the format required and pass them to the relevant person(s) promptly.

### Scope of this unit

All of the items listed below form part of this National Occupational Standard.

1. **Basic MET components are:**
   a. Bumpers
   b. Headlamp units
   c. Door trim
   d. Window and waist mouldings
   e. Road wheels
   f. Batteries
   g. Bonnet and boot lid trim.

2. **Tools and equipment are:**
   a. Spanners
   b. Socket set
   c. Screwdrivers
   d. Manufacturer’s specified specialist tools
   e. Pliers and self locking grips
   f. Power drill and drill bits
   g. Trolley jack
   h. Axle stands
   i. Vehicle lifts
   j. Torque wrench.

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
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<td>Candidate</td>
<td>Date</td>
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**Essential knowledge**

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<th>You need to understand:</th>
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<tr>
<td><strong>Legislative and organisational requirements and procedures</strong></td>
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<tr>
<td>1. The health, safety and legal requirements relating to the removal and fitting of basic MET components.</td>
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</tr>
<tr>
<td>2. Your workplace procedures for:</td>
<td></td>
</tr>
<tr>
<td>• the referral of problems</td>
<td></td>
</tr>
<tr>
<td>• reporting of delays to the completion of work</td>
<td></td>
</tr>
<tr>
<td>• completion of work records.</td>
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<tr>
<td>3. The work that needs to be done and the standard required.</td>
<td></td>
</tr>
<tr>
<td>4. The requirements for protecting the vehicle and contents from damage before, during and after removing and fitting activities.</td>
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<tr>
<td>5. The importance of selecting, using and maintaining the appropriate personal protective equipment when removing and fitting basic MET components.</td>
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</table>

**Removing and fitting basic MET components**

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>6. Find, interpret and use sources of information applicable to the removal and fitting of basic MET components.</td>
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</tr>
<tr>
<td>7. How to select, check and use all the <strong>tools and equipment</strong> required to remove and fit basic MET components.</td>
<td></td>
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<tr>
<td>8. The procedures for removing and fitting <strong>basic MET components</strong>.</td>
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<tr>
<td>9. The methods of storing removed parts and the importance of storing them correctly.</td>
<td></td>
</tr>
<tr>
<td>10. The different types of fastenings and the reasons for their use.</td>
<td></td>
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<tr>
<td>11. The need for correct alignment of components and the methods used to achieve this.</td>
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<tr>
<td>12. The types of quality checks that can be used to ensure correct alignment and operation of components to manufacturer’s specification and their purpose.</td>
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In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

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## Key and core skills signposting

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<td><strong>Working with Others:</strong> Access 3, Outcomes 1 and 2</td>
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Syllabus

Remove and Fit Basic MET Components to Vehicles

This unit is about the straightforward removal and fitting of basic mechanical, electrical and trim components to vehicles. It is also about checking the operation of the components fitted.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the student must be able to:

1. Identify and interpret sources of manufacturer approved technical information.
2. Identify and undertake procedures relevant to the selection, checking and storing of approved tools and equipment.
3. Identify and undertake manufacturer approved procedures for the removal and replacement of basic MET components.
4. Identify and undertake manufacturer and workplace approved quality checks.
Outcome 1
Identify and interpret sources of manufacturer approved technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer technical data relative to
   a) manufacturer approved replacement parts and components
   b) manufacturer approved tools and equipment.

2. Identify and follow manufacturer and workplace approved processes and procedures relative to
   a) removal and replacement procedures
      I. workshop manuals
      II. CD ROMs
   b) workplace documentation
      I. job cards
      II. work records.

3. Identify and follow manufacturer and workplace approved timescales
   a) Repair timescales
   b) Replacement timescales.

4. Identify and follow approved health and safety legislation and regulations
   a) HASWA, COSHH, EPA and use of PPE
   b) Correct disposal of special waste material (BS140001).
Outcome 2
Identify and undertake procedures relevant to the selection, checking and storing of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and select manufacturer approved hand tools
   a) screwdrivers e.g. flat, cross, hexagon, torx, etc
   b) pliers and locking grips
   c) trolley jacks, axle stands and supports
   d) torque wrench
   e) sockets and ratchets etc
   f) spanners
   g) trim tools.

2. Identify and select power tools and equipment
   a) pneumatic and electric hand tools
   b) vehicle lifts and hoists
   c) manufacturer specific tools.

3. Identify and select manufacturer approved materials
   a) sealers
   b) adhesives
   c) sound deadening materials
   d) plastic membrane (door card weather seal)
   e) Cavity Waxes.

4. Follow recommended routine maintenance procedures and storage methods
   a) visual safety checks
   b) compliance to health and safety regulations e.g. PAT testing, vehicle lift maintenance record, safe working loads for lifts and hoists, etc
   c) tool storage methods e.g. mobile boxes, shadow boards etc.
Outcome 3
Identify and undertake manufacturer approved procedures for the removal and replacement of basic MET components.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer approved procedures to protect adjacent surfaces from accidental damage
   a) plastic and fabric vehicle covers
   b) wing protectors
   c) masking methods
   d) interior protection kit
      i. seat cover
      ii. steering wheel and gear shift cover
      iii. floor protectors, etc.

2. Identify and follow manufacturer approved processes to remove and store basic MET components
   a) recognise types of fastening and state their appropriate use
      i. nuts
      ii. bolts
      iii. screws
      iv. captive and self tap systems
      v. clips and secret devices
      vi. Rivets.
   b) safe removal, transportation and storage of vehicle batteries
   c) contact adhesive mouldings
   d) manual window winding mechanisms
   e) non-bonded glazing systems
   f) headlamp systems
   g) bumpers
   h) road wheels
   i) doors, tailgates, bonnets and associated trim.

3. Identify and follow manufacturer approved processes to replace and align basic MET components
   a) headlamps
   b) road wheels
   c) vehicle batteries
   d) bumpers
   e) windows
   f) waist mouldings
   g) bonnets, boot lids, tailgates, doors and their trim.

4. Identify and follow manufacturer and employer approved procedures to conform to health and safety regulations
   a) outline and use appropriate safety equipment PPE
   b) manual lifting guidelines
   c) safe disposal of waste
   d) hazards when handling, storing and recharging vehicle batteries
   e) PUWER / LOLER.
Outcome 4
Identify and undertake manufacturer and workplace approved quality checks.

Objectives
To achieve this outcome the candidate has to:

1. Identify and follow manufacturer and workplace approved processes for checking that the repair meets the quality standard for alignment and operation
   a) visual methods
   b) functional methods
   c) importance of maintaining appropriate records
   d) importance of keeping supervisors informed where standards are not being met.
2. Identify and follow manufacturer warranty procedure for the replacement of basic MET components
   a) Identify specific manufacturer warranty procedure
   b) Identify and describe the advantages of selecting manufacturer approved replacement components.
3. Identify and follow workplace procedures for reporting anticipated delays to the appropriate authority
   a) procedures for following agreed timescales
   c) procedures for reporting problems and anticipated delays to the appropriate authority.
4. Identify and follow workplace procedures for recording individual operative efficiency.
   a) State the relationship between time, cost and profitability.

Assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
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<th>Outcome</th>
<th>Number of questions</th>
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<tr>
<td>Test duration 35mins</td>
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</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

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Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:

Remove and refit:

1. 1 wing
2. 1 door
3. 1 bonnet
4. 1 boot lid or tailgate.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements
You must:

1. Produce evidence to show you meet all of the performance objectives consistently.

2. Produce evidence to show that you have covered all the items listed in the scope for this unit.

3. Produce evidence to show that you possess all the knowledge required.

4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.

5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.

6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

7. Produce evidence of removing and fitting at least:
   - 2 wings, each on different vehicles on different occasions
   - 2 doors, each on different vehicles on different occasions
   - 2 bonnets, each on different vehicles on different occasions
   - 1 boot lid and 1 tailgate.

8. Your assessor must physically observe you removing and fitting:
   - 1 wing
   - 1 door
   - 1 bonnet
   - 1 boot lid or tailgate.

9. Your assessor must observe you using all the tools and equipment listed in the Scoping Statement for this unit.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier. Your assessor will ask questions to ensure you understand the task you are performing. If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
### Evidence reference summary

<table>
<thead>
<tr>
<th>Portfolio reference number (PRN)</th>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved centre or workplace</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observed assessment</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removing and fitting wing 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removing and fitting wing 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removing and fitting door 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removing and fitting door 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removing and fitting bonnet 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removing and fitting bonnet 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removing and fitting boot lid or tailgate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.

**Supplementary evidence (if used) PRN**

**On line test reference for this unit PRN**
# Unit assessment and verification declaration

<table>
<thead>
<tr>
<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work.</td>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work.</td>
</tr>
<tr>
<td>Candidate name:</td>
<td>Candidate name:</td>
</tr>
<tr>
<td>Candidate enrolment number:</td>
<td>Candidate enrolment number:</td>
</tr>
<tr>
<td>Candidate signature:</td>
<td>Candidate signature:</td>
</tr>
<tr>
<td>Date:</td>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VRQ Assessor declaration:</th>
<th>N/SVQ Assessor declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
</tr>
<tr>
<td>Assessor name:</td>
<td>Assessor name:</td>
</tr>
<tr>
<td>Assessor signature:</td>
<td>Assessor signature:</td>
</tr>
<tr>
<td>Date:</td>
<td>Date:</td>
</tr>
<tr>
<td>Countersignature: (if relevant):</td>
<td>Countersignature: (if relevant):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VRQ Internal verifier Declaration:</th>
<th>N/SVQ Internal verifier Declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Leave blank if sampling of this unit did not take place.) I have internally verified the assessment work on this unit in the following ways (please tick):</td>
<td>(Leave blank if sampling of this unit did not take place.) I have internally verified the assessment work on this unit in the following ways (please tick):</td>
</tr>
<tr>
<td>- sampling candidate and assessment evidence</td>
<td>- sampling candidate and assessment evidence</td>
</tr>
<tr>
<td>- observation of assessment practice</td>
<td>- observation of assessment practice</td>
</tr>
<tr>
<td>- discussion with candidate</td>
<td>- discussion with candidate</td>
</tr>
<tr>
<td>- other – please state:</td>
<td>- other – please state:</td>
</tr>
<tr>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
</tr>
<tr>
<td>Internal verifier name:</td>
<td>Internal verifier name:</td>
</tr>
<tr>
<td>Internal verifier signature:</td>
<td>Internal verifier signature:</td>
</tr>
<tr>
<td>Date:</td>
<td>Date:</td>
</tr>
<tr>
<td>Countersignature: (if relevant)</td>
<td>Countersignature: (if relevant)</td>
</tr>
<tr>
<td>Date:</td>
<td>Date:</td>
</tr>
</tbody>
</table>
**Performance objective checklist**

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the appropriate personal protective equipment when removing and fitting non-welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>Protect the vehicle and its contents effectively when removing and fitting non-welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>Select and use the correct tools and equipment for the panels you are going to remove or fit.</td>
<td></td>
</tr>
<tr>
<td>Ensure that the tools and equipment you require are in a safe working condition.</td>
<td></td>
</tr>
<tr>
<td>Remove all necessary body panels and components following:</td>
<td></td>
</tr>
<tr>
<td>• The manufacturer’s approved methods</td>
<td></td>
</tr>
<tr>
<td>• Your workplace procedures</td>
<td></td>
</tr>
<tr>
<td>• The vehicle work specification</td>
<td></td>
</tr>
<tr>
<td>• Health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Avoid damaging other components, units and panels on the vehicle.</td>
<td></td>
</tr>
<tr>
<td>Store all removed panels safely in the correct location.</td>
<td></td>
</tr>
<tr>
<td>Realign the panels you have fitted correctly in a way which regains their original manufactured gaps.</td>
<td></td>
</tr>
<tr>
<td>Check that the components you have fitted operate correctly following the manufacturer’s specification.</td>
<td></td>
</tr>
<tr>
<td>Report any additional faults you notice during the course of your work to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td>Report any delays in completing your work to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td>Remove and fit non-welded non-structural body panels within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Complete work records accurately, in the format required and pass them to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

**Scope of this unit**

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Non-welded non-structural body panels are:</td>
<td></td>
</tr>
<tr>
<td>a. wings</td>
<td></td>
</tr>
<tr>
<td>b. doors</td>
<td></td>
</tr>
<tr>
<td>c. bonnets</td>
<td></td>
</tr>
<tr>
<td>d. boot lids and tailgates.</td>
<td></td>
</tr>
<tr>
<td>2. Tools and equipment are:</td>
<td></td>
</tr>
<tr>
<td>a. spanners</td>
<td></td>
</tr>
<tr>
<td>b. socket set</td>
<td></td>
</tr>
<tr>
<td>c. screwdrivers</td>
<td></td>
</tr>
<tr>
<td>d. manufacturer’s specified specialist tools.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Essential knowledge

**You need to understand:**

<table>
<thead>
<tr>
<th><strong>Legislative and organisational requirements and procedures</strong></th>
<th><strong>PRN</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The health, safety and legal requirements relating to the removal and fitting of non welded non-structural body panels.</td>
<td></td>
</tr>
</tbody>
</table>
| 2. Your workplace procedures for:  
  - the referral of problems  
  - reporting of delays to the completion of work  
  - completion of work records. |  |
| 3. The work that needs to be done and the standard required. |  |
| 4. The requirements for protecting the vehicle and contents from damage before, during and after removing and fitting activities. |  |
| 5. The importance of selecting, using and maintaining the appropriate personal protective equipment when removing and fitting non welded non-structural body panels. |  |

<table>
<thead>
<tr>
<th><strong>Removing and fitting non-structural body panels</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. How to find, interpret and use sources of information applicable to the removal and fitting of basic non welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>7. How to select, check and use all the tools and equipment required to remove and fit basic non welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>8. The different types of mechanical fixings for non welded non-structural body panels and when and why they should be used.</td>
<td></td>
</tr>
<tr>
<td>9. The correct procedures and processes for removing and fitting non welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>10. The need for correct alignment of panels and the methods used to achieve this.</td>
<td></td>
</tr>
<tr>
<td>11. The types of quality control checks that can be used to ensure correct alignment and contour of panels and operation of components to manufacturer’s specification.</td>
<td></td>
</tr>
<tr>
<td>12. The methods of storing removed panels and the importance of storing them correctly.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
</tr>
</tbody>
</table>
## Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
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<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td>Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong></td>
</tr>
<tr>
<td>N2.1; N2.2</td>
<td>Intermediate 1, Outcomes 1, 2, 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td><strong>Information Technology:</strong></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong></td>
</tr>
<tr>
<td>WO1.1 WO1.2</td>
<td>Access 3, Outcomes 1 And 2</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td>No parallel unit.</td>
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<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong></td>
</tr>
<tr>
<td>PS2.1; PS2.2; PS2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

*Remove and Fit Non Welded Non-Structural Vehicle Body Panels*

This unit is about removing and fitting basic non welded panels such as wings, doors, bonnets, boot lids and tailgates on vehicles.

**Course Outline**

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

**Outcomes**

On completion of this unit, the candidate must be able to:

1. Prepare for the removal of non welded non structural vehicle body panels and components.
2. Remove non welded non-structural vehicle body panels and components.
3. Fit non welded non-structural vehicle body panels and components.
4. Remove and replace external and internal components.
5. Demonstrate and carry out quality checks following manufacturer and workplace guidelines.
Outcome 1
Prepare for the removal of non welded non structural vehicle body panels and components.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and use sources of information relevant to equipment and procedures used for the removal and replacement of non-structural body panels
   a) manufacturers technical data
   b) MIRRC methods manuals
   c) workplace documentation for vehicle repair procedures
   d) manufacturer / MIRRC repair times, schedules and procedures.

2. Identify and use tools and equipment for the removal and replacement of non welded non structural vehicle body panels and components.
   a) Identify and carry out a range of routine maintenance checks on hand and powered tools and equipment:
      i. spanners
      ii. sockets
      iii. screwdrivers
      iv. pin removers
      v. grips
      vi. clamps
      vii. pliers
      viii. safety stands
      ix. hydraulic and mechanical jacks and supports
      x. pneumatic and electrically powered tools.
   b) Identify panel fasteners and locking devices:
      i. nuts
      ii. bolts
      iii. screws
      iv. studs
      v. spring, flat and shake proof washers
      vi. captive nuts
      vii. nylon and self locking systems
      viii. cable clips and ties.

3. Plan effectively the procedures and methods to remove and replace non welded non structural vehicle body panels.
   a) Seek assistance and advice when appropriate.
   b) Identify and follow workplace systems and guidelines
   c) Identify a range of non welded non structural vehicle body panels:
      i. doors
      ii. bonnet
      iii. bolt on wings
      iv. bumpers
v. tailgate and rear loading door
vi. boot lid
vii. Slam Panel
viii. Scuttle Panel.

d) Identify and follow panel alignment methods and techniques.
e) Identify workplace procedures for protecting the vehicle from accidental damage.

4. Work to approved methods, within agreed timescales, following health and safety guidelines:
   a) Identify and follow the appropriate health and safety guidelines.
   b) Identify and follow agreed and approved timescales.
   c) Identify and follow agreed and approved procedures for the removal and replacement of non-structural body panels.
Outcome 2
Remove non welded non structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify non welded non structural vehicle body panel attachment methods.
   a) Type of fastener
      i. captive and non captive types
      ii. manufacturer specific (door hinge systems).
   b) Removal procedure
      i. follow manufacturer approved processes
      ii. use of manufacturer specific tools.

2. State the recommended workplace procedure for protecting the vehicle from accidental damage and use of
   a) vehicle covers
   b) plastic or fabric seat covers
   c) masking methods
   d) foam edge panel protectors.

3. Identify and follow approved procedures for the removal of non welded non structural vehicle body panels.
   a) State approved procedures for the safe removal of non welded non structural vehicle body panels.
   b) Follow all health and safety guidelines e.g. manual lifting, use of PPE.
   c) Save disposal of all waste products following local authority and national legislative guidelines and regulations.
   d) Seek assistance and advice when appropriate.
   e) State workplace procedures for the storage of panels components and vehicle contents.
Outcome 3
Fit and align external non welded non structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:
1. Identify and inspect replacement non welded non structural vehicle body panels.
   a) Identify and follow manufacturer warranty procedures for the selection and use of approved panels.
   b) Identify and follow procedures for panel inspection prior to fitting.
2. Identify the appropriate securing devices and components.
   a) Identify damaged or worn fittings.
   b) Identify 'sacrificial' clips and devices.
3. State manufacturers’ approved processes for methods of panel attachment.
   a) Methods and procedures for panel preparation prior to attachment.
   b) Selection and application of approved seam and joint sealing processes (brush and spray systems).
   c) Use of anti-corrrosive procedures and materials.
   d) Health and Safety procedures.
   e) Safe disposal of waste products.
4. Identify and follow recommended panel alignment methods and techniques.
   a) Use of visual checks.
   b) Use of non-metallic gauges.
   c) Adjustment of catches, pins, striker plates, locks, adjustable rubber dampers / bump stops.
Outcome 4
Remove and replace external and internal components.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow sources of approved information relevant to the removal and replacement of external and internal components.
   a) Manufacturer technical data.
   b) MIRRC methods manuals.

2. Identify and follow the approved methods for component labelling and the importance of suitable safe storage of
   a) plastic component containers (bit boxes)
   b) use of ties
   c) printed labels
   d) cages
   e) masking tapes
   f) fixed and mobile storage methods.

3. Identify and follow manufactures approved procedures for the removal and replacement of components.
   a) Manufacturer technical data sheet.
   b) MIRRC methods manuals.
   c) Correct use of special tools:
      i. trim removal tools
      ii. manufacturer specific tools.

4. Identify common components and the procedures for removal and replacement.
   a) Identify and follow procedures for testing and adjusting components.
   b) Identify components:
      i. door handles / locks
      ii. interior / exterior trim
      iii. door glass mechanisms (mechanical and electrical types)
      iv. mirrors
      v. wiring looms.
Outcome 5
Identify and follow workplace and manufacturers Quality Control procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Work within agreed timescales.
   a) State the relationship between efficiency and profitability.
   b) Identify and follow the procedure for evaluating and estimating time allowance schedules.

2. Identify and follow procedures for reporting anticipated delays to supervisors or managers.
   a) Identify and follow employer reporting procedures.
   b) State the consequences of exceeding time allowances.

3. Describe and carry out systematic quality checks to confirm that the appropriate standard has been achieved.
   a) Complete and maintain accurate Quality Control records.
   b) Identify and follow customer contracts and manufacturer warranty procedures.
   c) Identify and follow approved systematic quality checking procedures.

Assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
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<tr>
<td>3</td>
<td>6</td>
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<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Remove and replace:

1. full fairings
2. seat cowlings
3. tank panels
4. mudguards
5. screens
6. mirror.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements
You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

8. Your assessor must physically observe you removing and fitting each of the following on at least 2 occasions:
   1. Full fairings
   2. Seat cowlings
   3. Tank panels
   4. Mudguards
   5. Screens

9. Your assessor must observe you using all the tools and equipment listed in the Scoping Statement for this unit.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing. If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
# Evidence reference summary

<table>
<thead>
<tr>
<th>Portfolio reference number (PRN)</th>
<th>VRQ</th>
<th>N/SVQ</th>
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<tr>
<td><strong>Observed assessment</strong></td>
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<td><strong>Approved centre or workplace</strong></td>
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<tr>
<td><strong>Observed assessment</strong></td>
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<table>
<thead>
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<th>Component</th>
<th>Observed assessment</th>
<th>Approved centre or workplace</th>
<th>Observed assessment</th>
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</thead>
<tbody>
<tr>
<td>Full fairing</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Seat cowling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tank panel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mudguards</td>
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<td></td>
<td></td>
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<tr>
<td>Screens</td>
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<tr>
<td>Mirror</td>
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### Supplementary evidence (if used) PRN

### On line test reference for this unit PRN
### Unit assessment and verification declaration

<table>
<thead>
<tr>
<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work</td>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work</td>
</tr>
<tr>
<td>Candidate name:.........................</td>
<td>Candidate name:.........................</td>
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<tr>
<td>Candidate enrolment number:................</td>
<td>Candidate enrolment number:................</td>
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<tr>
<td>Candidate signature:.........................</td>
<td>Candidate signature:.........................</td>
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<tr>
<td>Date: ..................................</td>
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</table>

<table>
<thead>
<tr>
<th>VRQ Assessor declaration:</th>
<th>N/SVQ Assessor declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
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</tr>
<tr>
<td>Assessor name: .........................</td>
<td>Assessor name: .........................</td>
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<td>Assessor signature:.........................</td>
<td>Assessor signature:.........................</td>
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<tr>
<td>Date: ..................................</td>
<td>Date: ..................................</td>
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<tr>
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<td>Countersignature: (if relevant) .........................</td>
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<th>VRQ Internal verifier Declaration:</th>
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<tr>
<td>(Leave blank if sampling of this unit did not take place.)</td>
<td>(Leave blank if sampling of this unit did not take place.)</td>
</tr>
<tr>
<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
</tr>
<tr>
<td>• sampling candidate and assessment evidence</td>
<td>• sampling candidate and assessment evidence</td>
</tr>
<tr>
<td>• observation of assessment practice</td>
<td>• observation of assessment practice</td>
</tr>
<tr>
<td>• discussion with candidate</td>
<td>• discussion with candidate</td>
</tr>
<tr>
<td>• other – please state:</td>
<td>• other – please state:</td>
</tr>
<tr>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
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<td>Date: .................................</td>
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</table>
### Performance objective checklist

To be competent you must ensure that:

<table>
<thead>
<tr>
<th>Objective</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the appropriate personal protective equipment when removing and fitting motorcycle non-welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>Protect the motorcycle and its contents effectively when removing and fitting motorcycle non-welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>Select and use the correct tools and equipment for the panels you are going to remove or fit.</td>
<td></td>
</tr>
<tr>
<td>Ensure that the tools and equipment you require are in a safe working condition.</td>
<td></td>
</tr>
<tr>
<td>Remove and fit motorcycle non-welded non-structural body panels following:</td>
<td></td>
</tr>
<tr>
<td>• Removal and fitting procedures</td>
<td></td>
</tr>
<tr>
<td>• Manufacturers’ instructions</td>
<td></td>
</tr>
<tr>
<td>• Your workplace procedures</td>
<td></td>
</tr>
<tr>
<td>• Health, safety and legal requirements.</td>
<td></td>
</tr>
<tr>
<td>Avoid damaging other components, units and panels on the motorcycle.</td>
<td></td>
</tr>
<tr>
<td>Store all removed panels safely in the correct location.</td>
<td></td>
</tr>
<tr>
<td>Realign the panels you have fitted correctly in a way which regains their original manufactured gaps.</td>
<td></td>
</tr>
<tr>
<td>Check that the components you have fitted operate correctly following the manufacturer’s specification.</td>
<td></td>
</tr>
<tr>
<td>Report any additional faults you notice during the course of your work to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td>Report any delays in completing your work to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td>Remove and fit motorcycle non-welded non-structural body panels within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Complete work records accurately, in the format required and pass them to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

### Scope of this unit

All of the items listed below form part of this National Occupational Standard.

<table>
<thead>
<tr>
<th>Motorcycle non-welded non-structural body panels are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. full fairings</td>
</tr>
<tr>
<td>b. seat cowlings</td>
</tr>
<tr>
<td>c. tank panels</td>
</tr>
<tr>
<td>d. mudguards</td>
</tr>
<tr>
<td>e. screens</td>
</tr>
<tr>
<td>f. mirror.</td>
</tr>
</tbody>
</table>

2. Tools and equipment are:

<table>
<thead>
<tr>
<th>Tools and equipment are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. spanners</td>
</tr>
<tr>
<td>b. socket set</td>
</tr>
<tr>
<td>c. screwdrivers</td>
</tr>
<tr>
<td>d. Allen keys</td>
</tr>
<tr>
<td>e. manufacturer’s specified specialist tools.</td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Date</th>
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<tbody>
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<td></td>
<td></td>
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</tbody>
</table>
Essential knowledge

You need to understand:

<table>
<thead>
<tr>
<th>Legislative and organisational requirements and procedures</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The health, safety and legal requirements relating to the removal and fitting of motorcycle non-welded non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>2. Your workplace procedures for:</td>
<td></td>
</tr>
<tr>
<td>- the referral of problems</td>
<td></td>
</tr>
<tr>
<td>- reporting of delays to the completion of work</td>
<td></td>
</tr>
<tr>
<td>- completion of work records.</td>
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<tr>
<td>3. The work that needs to be done and the standard required.</td>
<td></td>
</tr>
<tr>
<td>4. The requirements for protecting the motorcycle and contents from damage before, during and after removing and fitting activities.</td>
<td></td>
</tr>
<tr>
<td>5. The importance of selecting, using and maintaining the appropriate personal protective equipment when removing and fitting motorcycle non-welded non-structural body panels.</td>
<td></td>
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</tbody>
</table>

Removing and fitting motorcycle non-structural body panels

<table>
<thead>
<tr>
<th>PRN</th>
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</thead>
<tbody>
<tr>
<td>6. How to find, interpret and use sources of information applicable to the removal and fitting of basic motorcycle non-welded non-structural body panels.</td>
</tr>
<tr>
<td>7. How to select, check and use all the tools and equipment required to remove and fit basic motorcycle non-welded non-structural body panels.</td>
</tr>
<tr>
<td>8. The different types of mechanical fixings for motorcycle non-welded non-structural body panels and when and why they should be used.</td>
</tr>
<tr>
<td>9. The correct procedures and processes for removing and fitting motorcycle non-welded non-structural body panels.</td>
</tr>
<tr>
<td>10. The need for correct alignment of panels and the methods used to achieve this.</td>
</tr>
<tr>
<td>11. The types of quality control checks that can be used to ensure correct alignment and contour of panels and operation of components to manufacturer’s specification.</td>
</tr>
<tr>
<td>12. The methods of storing removed panels and the importance of storing them correctly.</td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Candidate</td>
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## Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
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<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td>Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
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<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong></td>
</tr>
<tr>
<td>N2.1; N2.2</td>
<td>Intermediate 1, Outcomes 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td><strong>Information Technology:</strong></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong></td>
</tr>
<tr>
<td>WO1.1; WO1.2</td>
<td>Access 3, Outcomes 1 and 2</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td><em>No parallel unit.</em></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong></td>
</tr>
<tr>
<td>PS2.1; PS2.2; P2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Remove and Fit Non-Welded Non-Structural Motorcycle Body Panels

This unit is about removing and fitting basic non welded panels such as full fairings, seat cowlings, tank panels on motorcycles.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of manufacturer approved technical information.
2. Identify and undertake procedures relevant to the selection, checking and storing of approved tools and equipment.
3. Identify and follow manufacturer approved procedures to remove and fit non-welded non-structural motorcycle body panels.
4. Identify and undertake manufacturer and workplace approved quality checks.
5. Identify and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of manufacturer approved technical information

Objectives
To achieve this outcome the candidate must be able to:

1. Describe and follow manufacturer technical data
   a) recognise and describe motorcycle panels, parts and procedures
      I. material lists
      II. research and development information (after market)
      III. body panel and parts technical data
      IV. trim information
      V. manufacturer repair warranty specifications.
   b) manufacturer approved tools and equipment
      I. promotional and sales literature
      II. tools and equipment lists.

2. Describe and follow manufacturer and workplace approved processes and procedures
   a) recommended repair procedures
      I. workshop manuals
      II. technical data sheets
      III. electronic systems (including CD ROMs)
   b) workplace documentation
      I. job cards
      II. work records
      III. quality procedures
      IV. statutory workshop notices
      V. manufacturer guides and recommendations.

3. Describe and follow manufacturer and workplace approved and agreed timescales
   a) approved removal and fitting schedules
   b) repair estimators guidelines and procedures
   c) policy for reporting anticipated delays and problems.

4. Describe and follow approved health and safety regulations and guidelines
   a) national legislation
      I. COSHH
      II. HASAWA
      III. EPA
      V. PPE at work regulations
      VI. Manual handling regulations
      VII. Risk assessment
   b) local regulations
      I. duty of care (special waste regulations)
      II. PPE guidance
      III. workplace policies.
Outcome 2
Identify and undertake procedures relevant to the selection, checking and storing of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. State the importance of selecting approved tools and equipment
   a) air supply equipment
      i. air line
      ii. compressor
      iii. regulator/transformer
      iv. air duster gun (blower)
   b) general tools and equipment
      i. hand tools
         a. cloths and wipes
         b. spanners
         c. screwdrivers (cross, flat)
         d. torx system
         e. Allen key
         f. sockets
         g. ratchets
         h. torque wrench
         i. trim tools
         j. grips
         k. pliers
         l. clamps
      m. safety stands
      n. manufacturer specific tools
   II. power tools (electric and pneumatic)
      a. drills
      b. impact wrench
      c. hydraulic and mechanical jacks and supports
      d. power cable extensions and leads
      e. adaptors and transformers
      f. health and safety equipment
      I. select and use PPE
         a. overalls
         b. gloves
         c. boots
         d. ear protection
         e. eye and face protection
         f. before and after work skin creams
         g. respirator face mask (organic vapour and dust types)
   II. legislation requirements
      a. visual inspection
      b. maintenance record
      c. local and national requirements for flammable stores
      d. waste disposal (duty of care).

2. Identify and undertake approved routine maintenance activities
   a) visual checks
      I. PAT labelling
      II. damaged air lines and couplers
      III. safety inspections
   b) functional
      I. compressor lubrication
      II. air receiver drainage
      III. power tools
      IV. hand tools
   c) aural
      I. compressed air leaks.

3. Identify and undertake approved storage of tools and equipment
a) boxes and trays
b) cupboards and racks
c) shadow boards
d) mobile storage.
Outcome 3
Identify and follow manufacturer approved procedures to remove and fit non-welded non-structural motorcycle body panels.

Objective
To achieve this outcome the candidate must be able to:

1. Describe and carry out approved schedules and agreed timescales
   a) replacement parts lists
      I. supplier manuals
      II. electronic systems
   b) work progress documentation
      I. job cards
      II. additional parts request
   c) customer contracts.

2. Identify and describe non-welded non-structural motorcycle body panels and fittings
   a) body panels
      I. full fairings
      II. seat cowlings
      III. tank panels
      IV. mudguards
      V. screens
      VI. mirrors
   b) fittings
      I. nuts
      II. bolts
      III. screws
      IV. studs
      V. spring and flat washers
      VI. captive nuts
      VII. nylon and self locking systems
      VIII. cable clips and ties
   c) jointing compounds
      I. sealers
         A. bead sealer
         B. sprayable sealer
      II. adhesives
         A. 2 pack cold curing
         B. 1 pack air drying
         C. panel bonding adhesives.

3. Identify and carry out manufacturer and workplace approved procedures for the removal and re-fitting of motorcycle body panels
   a) Describe the process to remove and fit motorcycle body panels
      I. following approved procedure
      II. and store motorcycle panels, parts and components
         A. labelling and identification
         B. use boxes and trays
         C. fixed and mobile racks
         D. safe and secure storage to avoid accidental damage
      III. following workplace agreed timescales
   b) Identify and align motorcycle body panels
      I. visual methods
         A. panel gaps
         B. panel contours
      II. functional methods
         A. tapes
         B. measurement
         C. trammels
         D. rigs and gauges
   c) Identify and replace manufacturer approved decals and motives
      I. contact adhesive
      II. water slide transfers.
Outcome 4
Identify and undertake manufacturer and workplace approved quality checks.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer and workplace approved processes for checking that the repair meets the quality standard
   a) visual methods
   b) functional methods.

2. Identify and follow manufacturer warranty procedure for the repair of motorcycle bodies
   a) specific manufacturer warranty procedures
   b) describe the advantages of selecting manufacturer approved materials, parts and processes.

3. Identify and follow workplace procedures for reporting anticipated delays and problems to the appropriate authority
   a) maintain the appropriate records
   b) processes and schedules following agreed timescales
   c) procedures to demonstrate the relationship between time, cost and profit
   d) keep fully inform workplace supervisors where standards and timescales are not being met.
Outcome 5
Identify and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures

Objectives
To achieve this outcome the candidate must be able to:

1. recognise and interpret national and local legislation and guidance
   a) HASAWA
   b) COSHH
   c) EPA
   d) PPE at work regulations
   e) Manual handling regulations
   f) Risk assessment
   g) Duty of care regulations (special waste)
   h) PUWER
   i) LOLER.

2. Describe and undertake manufacturers’ and workplace approved procedures following health and safety precautions and guidelines
   a) use of PPE
      I. overalls
      II. gloves
      III. footwear
      IV. ear protection
      V. eye and face protection
      VI. before and after work skin creams
      VII. respirator face mask (organic vapour and dust types)
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) workplace procedures to control hazards
      I. risk assessment guidelines
      II. control of dusts and fumes.

Assessment

Essential knowledge assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
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<tr>
<td>3</td>
<td>7</td>
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<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.
Information for VRQs (Technical Certificates).

To complete this unit you must:
Carry out six out of the following ten tasks:

- removing and refitting radiators, cowls, cooling fans, hoses and thermostatic switches
- removing and refitting a complete exhaust system
- making safe, removing and storing a safety restraint system
- removing and refitting a front suspension unit
- checking and adjusting front wheel tracking
- removing, rebuilding, refitting and realigning head lamp units
- removing and refitting an electro-mechanical door unit
- removing and refitting a complete front seat unit
- removing and refitting a section of carpeting to facilitate repair
- removing and refitting drop glass and operating mechanism.

Your tutor or assessor will either set or observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements
You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

7. Provide evidence of successfully carrying out the following:
   - removing and refitting radiators, cowls, cooling fans, hoses and thermostatic switches on at least 1 occasion
   - removing and refitting a complete exhaust system on at least 1 occasion
   - making safe, removing and storing a safety restraint system on at least 1 occasion
   - removing and refitting a front suspension unit on at least 1 occasion
   - checking and adjusting front wheel tracking on at least 1 occasion
   - removing, rebuilding, refitting and realigning head lamp units on at least 1 occasion
   - removing and refitting an electro-mechanical door unit on at least 1 occasion
   - removing and refitting a complete front seat unit on at least 1 occasion
   - removing and refitting a section of carpeting to facilitate repair on at least 1 occasion
   - removing and refitting drop glass and operating mechanism on at least 1 occasion.
8. Your assessor must physically observe you competently carrying out each of the following:
   - removing and refitting radiators, cowls, cooling fans, hoses and thermostatic switches on at least one occasion in your workplace
   - checking and adjusting front wheel tracking on at least one occasion in your workplace
   - removing and refitting drop glass and operating mechanism on at least one occasion in your workplace.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing. If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
### Evidence reference summary

<table>
<thead>
<tr>
<th>Task Description</th>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
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<tbody>
<tr>
<td>Removing and refitting radiators, cowls, cooling fans, hoses and thermostatic switches</td>
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<tr>
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<tr>
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</tbody>
</table>

* Choose six out of the ten tasks listed

**Note:** Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.

**Supplementary evidence (if used) PRN**

**On line test reference for this unit PRN**
**Unit assessment and verification declaration**

<table>
<thead>
<tr>
<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work</td>
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</tr>
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<thead>
<tr>
<th>VRQ Assessor declaration:</th>
<th>N/SVQ Assessor declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
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</tr>
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<td>Date: ............................</td>
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<tr>
<td>Countersignature: (if relevant) ..................</td>
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<tr>
<th>VRQ Internal verifier Declaration:</th>
<th>N/SVQ Internal verifier Declaration:</th>
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<tr>
<td>(Leave blank if sampling of this unit did not take place.)</td>
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</tr>
<tr>
<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
</tr>
<tr>
<td>• sampling candidate and assessment evidence</td>
<td>• sampling candidate and assessment evidence</td>
</tr>
<tr>
<td>• observation of assessment practice</td>
<td>• observation of assessment practice</td>
</tr>
<tr>
<td>• discussion with candidate</td>
<td>• discussion with candidate</td>
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<tr>
<td>• other – please state:</td>
<td>• other – please state:</td>
</tr>
<tr>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
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</table>
### Performance objective checklist

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
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</thead>
<tbody>
<tr>
<td>Use the appropriate personal protective equipment when removing, renewing and fitting MET units within systems.</td>
<td></td>
</tr>
<tr>
<td>Protect the vehicle and its contents effectively when removing, renewing and fitting MET units within systems.</td>
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</tr>
<tr>
<td>Support your removal and replacement activities by referring to:</td>
<td></td>
</tr>
<tr>
<td>- Vehicle technical data</td>
<td></td>
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<tr>
<td>- Removal and replacement procedures</td>
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<tr>
<td>- Legal requirements.</td>
<td></td>
</tr>
<tr>
<td>Prepare, test and use all the equipment required following manufacturers’ instructions.</td>
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<tr>
<td>Carry out all removal, renewal and refitting activities following:</td>
<td></td>
</tr>
<tr>
<td>- Manufacturers’ instructions</td>
<td></td>
</tr>
<tr>
<td>- Your workplace procedures</td>
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<tr>
<td>- Health and safety requirements.</td>
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<tr>
<td>Work in a way which minimise the risk of:</td>
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<tr>
<td>- Damage to other vehicle systems</td>
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<tr>
<td>- Damage to other components and units</td>
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<tr>
<td>- Contact with leakage</td>
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<tr>
<td>- Contact with hazardous substances.</td>
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<tr>
<td>Store all removed MET units and components safely in the correct location.</td>
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<tr>
<td>Ensure renewed MET units and components conform to the vehicle operating specification and any legal requirements.</td>
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<tr>
<td>Record and report any additional faults you find during the course of your work promptly.</td>
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<tr>
<td>Use suitable testing methods to evaluate the performance of the reassembled system accurately.</td>
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<tr>
<td>Ensure the reassembled system performs to the vehicle operating specification and meets any legal requirements prior to return to the customer.</td>
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<tr>
<td>Ensure interior trims are refitted and realigned to meet the original manufacturer’s specification.</td>
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<tr>
<td>Ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.</td>
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<tr>
<td>Complete all removal, renewal and fitting activities within the agreed timescale.</td>
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</tr>
<tr>
<td>Report any expected delays in completion to the relevant person(s) promptly.</td>
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</tbody>
</table>
**Scope of this unit**

All of the items listed below form part of this National Occupational Standard.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand tools</td>
<td></td>
</tr>
<tr>
<td>Special purpose tools</td>
<td></td>
</tr>
<tr>
<td>General workshop equipment</td>
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<tr>
<td>Electrical meters</td>
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<tr>
<td>Tracking.</td>
<td></td>
</tr>
</tbody>
</table>

**Testing methods are**

- Visual
- Aural
- Measuring.

**Systems are**

- Cooling
- Exhaust
- Fuel
- Undeployed safety restraint systems
- Suspension
- In vehicle entertainment
- Lighting
- Electro-mechanical locking.

**Interior trims are**

- Seats
- Carpets
- Drop glass.

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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<table>
<thead>
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</table>
**Essential knowledge**

<table>
<thead>
<tr>
<th>You need to understand:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legislative and organisation requirements and procedures</strong></td>
<td></td>
</tr>
<tr>
<td>1. The legal requirements relating to the vehicle (including road safety requirements).</td>
<td></td>
</tr>
<tr>
<td>2. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection.</td>
<td></td>
</tr>
<tr>
<td>3. The health and safety risks associated with safety restraint systems and the implications for work practices.</td>
<td></td>
</tr>
<tr>
<td>4. The legal requirements for the storage of safety restraint systems.</td>
<td></td>
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<tr>
<td>5. The importance of working to agreed timescales and keeping others informed of progress.</td>
<td></td>
</tr>
<tr>
<td>6. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
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<tr>
<td>7. How to complete records conforming to workplace requirements and the importance of doing so.</td>
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<tr>
<td><strong>Equipment</strong></td>
<td></td>
</tr>
<tr>
<td>8. How to prepare, test and use removal and refitting equipment.</td>
<td></td>
</tr>
<tr>
<td><strong>Removal, renewal and refitting of MET units within systems</strong></td>
<td></td>
</tr>
<tr>
<td>9. How to find, interpret and use sources of information applicable to MET unit and component removal, renewal and refitting.</td>
<td></td>
</tr>
<tr>
<td>10. How to remove and replace MET unit and components within vehicle systems for cooling, exhaust, fuel, undeployed safety restraint systems, suspension, steering, braking, in vehicle entertainment, lighting and electro-mechanical locking.</td>
<td></td>
</tr>
<tr>
<td>11. How to remove and refit seats, carpets and drop glass and its operating mechanism.</td>
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</tr>
<tr>
<td>12. How to work safely avoiding damage to other vehicle systems, components and units and contact with hazardous substances.</td>
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<tr>
<td>13. How and where to store removed items safely.</td>
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<tr>
<td>14. How to test and evaluate the performance of renewed MET units and refitted systems against vehicle operating specifications and any legal requirements.</td>
<td></td>
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<tr>
<td>15. How to file, fit, tap, thread, cut and drill plastics and metals</td>
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<tr>
<td>16. How mechanical, electrical and electronic vehicle systems are constructed, operate, removed and refitted for the classification of vehicle worked upon.</td>
<td></td>
</tr>
<tr>
<td>17. The manufacturer’s specification for the type and quality of units and components to be used within the vehicle’s systems.</td>
<td></td>
</tr>
<tr>
<td>18. The manufacturer’s specification for interior trims for the vehicle worked upon.</td>
<td></td>
</tr>
<tr>
<td>19. The relationship between test methods and the unit(s) renewed – the use of appropriate testing methods.</td>
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</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
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### Key and core skills signposting

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<tr>
<td><strong>Communication:</strong> C1.1; C1.3; C2.2</td>
<td><strong>Communication:</strong> Access 3, Outcomes 2 and 3</td>
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<td>Intermediate 1, Outcome 1</td>
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<tr>
<td><strong>Application of Number:</strong> N2.1; N2.2</td>
<td><strong>Numeracy:</strong> Intermediate 1, Outcomes 1, 2 and 4</td>
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<tr>
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<td><strong>Information Technology:</strong> Not applicable</td>
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<tr>
<td><strong>Working with Others:</strong> WO1.1 WO1.2</td>
<td><strong>Working with Others:</strong> Access 3, Outcomes 1? And 2</td>
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<tr>
<td><strong>Improving Own Learning and Performance:</strong> Not applicable</td>
<td><strong>Problem Solving:</strong> Not applicable</td>
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<tr>
<td><strong>Problem Solving:</strong> PS2.1; PS2.2; PS2.3</td>
<td><strong>Problem Solving:</strong> Intermediate 1, Outcomes 1, 2 and 3</td>
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*No parallel unit.*
Syllabus

Remove, Renew and Refit MET Units within Vehicle Systems

This unit is about the removal, renewal and refitting of major units and components within vehicle mechanical and electrical systems, including interior trims. Ensuring that renewed and refitted units and components operate to manufacturers’ and legal requirements is included.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of manufacturer approved technical information.
2. Identify and undertake procedures relevant to the selection, checking and storing of manufacturer approved tools and equipment.
3. Identify and undertake manufacturer approved procedures for the removal, refitting and testing of MET units.
4. Identify and undertake manufacturer and workplace approved quality checks.
5. Identify and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of manufacturer approved technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer technical data
   a) identify approved replacement parts and components
   b) identify approved tools and equipment
   c) identify and follow relevant health and safety legislation, codes of practice and guidelines.

2. Identify and follow manufacturer and workplace approved processes and procedures
   a) manufacturer removal and replacement procedures
      I. workshop manuals
      II. electronic systems (CD ROMs)
   a) workplace documentation
      I. job cards
      II. work records
      III. MIRRC methods manuals.

3. Identify and follow manufacturer and workplace approved and agreed timescales
   a) approved repair schedules
   b) workplace policy for reporting anticipated delays and problems.

4. Identify and follow approved health and safety regulations and guidelines
   a) HASAWA, COSHH, EPA, use of PPE guidance
   b) removal and storage of SRS systems
   c) duty of care (special waste disposal)
   d) safe storage of components
   e) safe storage of vehicle contents.
Outcome 2
Identify and undertake procedures relevant to the selection, checking and storing of manufacturer approved tools and equipment.

Objectives
To achieve this outcome a student must be able to:

1. Identify and select manufacturer approved hand tools
   a) spanners, sockets, ratchets and hammers
   b) grips and pliers (including cir-clip devices)
   c) torque wrench
   d) trolley jacks, vehicle lifts and hoists
   e) axle stands and supports
   f) multimeters
   g) pressure testing device (radiator)
   h) tyre inflation equipment
   i) manufacturer specific tools.

2. Identify and select manufacturer approved power tools and equipment
   a) impact tools, electric tools and pneumatic tools
   b) headlamp alignment
   c) steering geometry checking devices
   d) brake testers
   e) fuel retriever.

3. Identify and carry out manufacturer approved routine checks on hand, power and testing tools and equipment
   a) visual safety check
      I. PAT testing (only undertaken by a competent person)
      II. damaged cables and plugs
      III. air leaks
      IV. air transformer
      V. compressor
      VI. worn parts
   a) functional check
      I. lubrication
      II. operation
      III. calibration.

4. Identify and follow manufacturer approved procedures for the storage of tools and equipment
   a) mobile tool boxes
   b) fixed storage (shadow boards and racks)
   c) store rooms
   d) special storage for undeployed SRS systems
      I. types
      II. location
      III. design.
Outcome 3
Identify and undertake manufacturer approved procedures for the removal, refitting and testing of MET units.

Objective
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer approved schedules and agreed timescales
   a) technical processes data
   b) customer contract
   c) work progress documentation.

2. Identify and follow manufacturer approved procedures for the removal and refitting of MET units
   a. cooling system
   b. exhaust system
   c. fuel system
   d. un-deployed and deployed SRS systems
   e. suspension system
   f. steering system
   g. braking system
   h. lighting system
   i. electro-mechanical locking systems
   j. in vehicle entertainment systems
   k. sealing
   l. drop glass mechanism
   m. carpets
   n. headlinings
   o. dash and instrument panel.

3. Identify and follow manufacturer approved procedures for testing MET units using visual, aural and measuring techniques
   a) pressure testing of cooling systems
   b) antifreeze content
   c) cooling fan operation
   d) SRS systems
   e) fuel systems
   f) lighting
   g) road wheels and tyres
   h) braking systems
   i) steering geometry.

4. Identify and follow workplace procedures for protecting the vehicle from accidental damage to
   i) vehicle systems
   ii) vehicle components.
Outcome 4
Identify and follow manufacturer and workplace approved quality control procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer and workplace approved processes for checking that the repair meets the required quality standard
   a) visual methods
   b) functional methods
   c) road testing
   d) specific manufacturer warranty procedures.

2. Identify and follow employer procedure for reporting anticipated delays and problems to the appropriate authority
   a) maintaining appropriate records
   b) following agreed timescales.

3. State the
   a) relationship between time, cost and profitability
   b) importance of promptly informing supervisors when standards and timescales are not being met.
Outcome 5
Identify and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow Health & Safety guidelines and legislation
   a) HASAWA
   b) COSHH
   c) PPE at work regulations
   d) manual handling regulations
   e) hazard & risk assessments
   f) duty of care (special waste regulations)
   g) LOLER / PUWER.

2. Identify and
   a) follow safe work practices when
      I. handling & storing undeployed SRS systems
      II. handling & storing fuel
      III. decanting processes and procedures (including flammable liquids) are carried out
      IV. portable and fixed ventilation and extraction equipment is used
      V. disposing of waste products
      VI. road testing.
   b) use appropriate approved PPE
      I. overalls
      II. gloves
      III. Barrier creams
      IV. footwear
      V. eye and face protection
      VI. respiratory equipment
      VII. protective headgear.

Assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
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<td>2</td>
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<td>Test duration 35mins</td>
<td>Total 25</td>
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</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Produce evidence of successfully carrying out the removal and replacement of the following non-structural body panels:

1. Combinations of 3 or more adjacent panels
2. Welded rear panel.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements
You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that your performance has covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

7. Produce evidence of successfully carrying out the removal and replacement of the following non-structural body panels:
   - 2 combinations of 3 or more adjacent panels
   - 1 welded rear panel.
8. Your assessor must physically observe you competently carrying out 2 different operations, 1 of which must be a welded rear panel.

One of the assessor observations must be carried out in your normal workplace.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
### Evidence reference summary

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<thead>
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<td>Approved centre or workplace</td>
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<td></td>
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<td>Observed assessment</td>
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<tr>
<td>Combinations of 3 or more adjacent panels 1</td>
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<tr>
<td>Combinations of 3 or more adjacent panels 2</td>
<td></td>
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<tr>
<td>1 welded rear panel</td>
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</tbody>
</table>

**Supplementary evidence (if used) PRN**

**On line test reference for this unit PRN**

### Unit assessment and verification declaration

**VRQ Candidate declaration:**  
I confirm that the evidence listed for this unit is authentic and a true representation of my own work  
Candidate name:  
Candidate enrolment number:  
Candidate signature:  
Date:  

**VRQ Assessor declaration:**  
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.  
Assessor name:  
Assessor signature:  
Date:  
Countersignature: (if relevant)  
Date:  

**VRQ Internal verifier Declaration:**  
(Leave blank if sampling of this unit did not take place.)  
I have internally verified the assessment work on this unit in the following ways (please tick):  
- sampling candidate and assessment evidence  
- observation of assessment practice  
- discussion with candidate  
- other – please state:  
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.  
Internal verifier name:  
Internal verifier signature:  
Date:  
Countersignature: (if relevant)  
Date:  

**N/SVQ Candidate declaration:**  
I confirm that the evidence listed for this unit is authentic and a true representation of my own work  
Candidate name:  
Candidate enrolment number:  
Candidate signature:  
Date:  

**N/SVQ Assessor declaration:**  
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.  
Assessor name:  
Assessor signature:  
Date:  
Countersignature: (if relevant)  
Date:  

**N/SVQ Internal verifier Declaration:**  
(Leave blank if sampling of this unit did not take place.)  
I have internally verified the assessment work on this unit in the following ways (please tick):  
- sampling candidate and assessment evidence  
- observation of assessment practice  
- discussion with candidate  
- other – please state:  
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.  
Internal verifier name:  
Internal verifier signature:  
Date:  
Countersignature: (if relevant)  
Date:  
**Performance objective checklist**

**To be competent you must ensure that:**

| Use the appropriate personal protective equipment when removing and replacing non-structural body panels. | PRN |
| Protect the vehicle and its contents effectively when removing and replacing non-structural body panels. | |
| Support the removal and replacement activities by referring to:  
  - Vehicle technical data  
  - Removal and replacement procedures. | |
| Prepare, test and use all the tools and equipment required following manufacturer’s instructions. | |
| Remove all necessary body panels and components following:  
  - The manufacturer’s approved methods  
  - Your workplace procedures  
  - The vehicle work specification  
  - Health and safety requirements. | |
| Where there is the potential for your work to disturb other vehicle systems, you seek assistance from the relevant person(s) promptly. | |
| Store all removed panels safely in the correct location. | |
| Use replacement body panels and components which conform to the vehicle specifications for dimensions, materials and functional capability. | |
| Refit all body panels and components following:  
  - The manufacturer’s approved methods  
  - Your workplace procedures  
  - Suitable fitting techniques  
  - The vehicle work specification  
  - Health and safety requirements. | |
| Use and apply sealants and anti-corrosion materials conforming to the manufacturer’s specification. | |
| Ensure welded panels are replaced minimizing damage to the vehicle and its systems. | |
| All refitted body panels and components are aligned correctly with adjacent panels and fittings. | |
| Complete all removal and replacement activities within the agreed timescale. | |
| Report any anticipated delays in completion to the relevant person(s) promptly. | |

**Scope of this unit**

All of the items listed below form part of this National Occupational Standard.

| Non-structural body panels are: | PRN |
| Combinations of 3 or more adjacent panels | |
| welded panel | |
| Fitting methods are:  
  - Mechanical fastening  
  - Adhesive bonding  
  - Spot welding  
  - Metal Inert Gas (MIG) welding | |
| Tools and equipment:  
  - Hand and powered tools  
  - Adhesive application tools  
  - Manufacturer’s specified specialist tools  
  - Welding equipment  
  - Fume extraction equipment. | |

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
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<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
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</table>
## Essential knowledge

### You need to understand:

#### Legislative and organisational requirements and procedures
1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection.
2. The agreed vehicle work specification.
3. The importance of working to agreed timescales and keeping others informed of progress.
4. The relationship between time, cost and profitability.
5. The requirements for protecting the vehicle and contents from damage before, during and after removing and fitting activities.
6. Your workplace procedures for:
   - The referral of problems
   - Reporting delays to the completion of work.
7. The importance of reporting anticipated delays to the relevant person(s) promptly.

#### Equipment
8. How to prepare, test and use the **tools and equipment** required for the removal and replacement of body panels and ancillary fittings.

#### Materials
9. The properties and safe use of body component sealants, adhesives and anti-corrosion materials.
10. The type of sealants and anti-corrosion materials to use and the manufacturer’s recommended methods for their application and thickness.
11. How to apply sealants and anti-corrosion materials.

#### Removal and replacement of non-structural body panels
12. Basic principles of welding.
13. How to spot and mig weld vehicle panels.
14. How to remove spot and mig welded vehicle panels.
15. How to interpret and use sources of information relevant to the removal and refitting of non-structural (i.e. Non-stressed) **body panels**.
16. The need for correct alignment of panels and the methods used to achieve this.
17. The types of quality control checks that can be used to ensure correct alignment and contour of panels and operation of components to manufacturer’s specification.
18. How to work safely avoiding damage to the vehicle and its systems.
19. The methods of storing removed panels and the importance of storing them correctly.
20. The removal and replacement procedures for **non-structural body panels** using mechanical fastening, adhesive bonding and welding techniques.
21. How panel removal and refitting affects the overall body structure of the vehicle.

The manufacturer’s approved methods of working for the removal and replacement of non-structural body panels.

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

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### Key and core skills signposting

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Syllabus

**Remove and Replace Vehicle Non-Structural Body Panels**
This unit is about removing and refitting exterior, cosmetic non-structural panels using mechanical fastening, adhesive bonding and welding techniques.

**Course Outline**
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.
Reference should also be made to the National Standards.

**Outcomes**
On completion of this unit, the candidate must be able to:

1. Identify approved procedures and prepare for the removal of non-structural vehicle body panels.
2. Identify approved procedures and remove non-structural vehicle body panels.
3. Identify approved procedures and replace non-structural vehicle body panels.
4. Identify approved procedures and replace non-structural vehicle body panels using spot and MIG welding processes.
5. Identify and apply manufacturer approved adhesive bonding materials for the attachment of non-structural vehicle body panels.
6. Identify and undertake approved manufacturer and workplace quality checks and procedures.
Outcome 1
Identify approved procedures and prepare for the removal of non-structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow sources of information relevant to equipment and procedures used for the removal and replacement of non-structural body panels
   a. manufacturer technical data
   b. workplace job card systems
   c. manufacturer repair times and procedures
   d. MIRRC methods manuals.

2. Identify and use tools and equipment for the removal and replacement of non-structural body panels
   a. identify and range of hand and powered tools and equipment
      i. spanners, sockets and screwdrivers
      ii. pin removers, grips, clamps and pliers
      iii. safety stands, hydraulic and mechanical jacks and supports
      iv. portable pneumatic and electrical equipment
      v. MIG and spot welding plant
      vi. adhesive application equipment
   b. identify a range of panel fasteners and locking devices
      i. nuts, bolts, screws, studs and rivets
      ii. spring, flat and shakeproof washers
      iii. captive nuts, nylon and self locking systems
      iv. adhesives and bonding agents and welding processes.

3. Identify and follow procedures and methods to remove and replace non-structural body panels
   a. manufacturers recommended procedures
   b. workplace systems and procedures
   c. identify a range of non structural body panels
      i. doors, bonnet and bolt on wings
      ii. bumpers, tailgate and rear loading door
      iii. boot lid
   d. using recommended panel alignment methods and techniques
   e. protecting vehicle contents, components and systems from accidental damage.

4. Identify and follow safe methods and agreed timescales
   a. health and safety legislation
   b. manufacturer approved timescales
   c. workplace agreed timescales.
Outcome 2
Identify approved procedures and remove non-structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify non-structural vehicle body panel attachment methods
   a) mechanical fasteners
   b) adhesive bonding
   c) spot welding
   d) MIG welding.

2. Identify and follow the recommended workplace procedure to avoid accidental damage to vehicle components and adjacent vehicles
   a) vehicle covers
   b) plastic or fabric seat covers
   c) fire resistant covers
   d) masking methods
   e) foam panel edge protectors
   f) safe storage of vehicle components and contents.

3. Identify and follow manufacturer and workplace approved procedures for the removal of non-structural body panels
   a) for spot and MIG welded panels
   b) and follow recommended and approved practices when removing mechanical fasteners to avoid accidental damage
   c) and seek assistance and advice when appropriate
   d) identify the effects of panel removal on the stability of the vehicle body structure.

4. Identify and follow safe methods and agreed timescales
   a. health and safety legislation
   b. manufacturer approved timescales
   c. workplace agreed timescales.
Outcome 3
Identify approved procedures and replace non-structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and inspect replacement non-structural vehicle body panels.
   a) State the advantages of using manufacturer approved panels
   b) Identify and follow procedures for the inspection of non structural vehicle body panels prior to fitting
   c) Identify panel damage and correct part number
   d) Identify damaged or worn fittings.

2. Identify and follow manufacturer approved procedures for refitting non-structural vehicle body panels
   a) manufacturer specific fittings and devices
   b) types of adhesive
   c) welding processes
   d) panel preparation prior to attachment
   e) mechanical methods
   f) adhesive bonding methods
   g) spot and MIG welding methods
   h) selection and application of approved seam and joint sealing processes
   i) use of anti-corrosive procedures and materials.

3. Identify and follow appropriate panel alignment methods and techniques
   a) use of visual methods
   b) use of non-metallic gauges
   c) use of clamps and rigs
   d) follow manufacturer approved procedures for the alignment of body panels.
Outcome 4
Identify approved procedures and replace non-structural vehicle body panels using spot and MIG welding processes.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow technical data relevant to spot and MIG welding processes
   a) manufacturer approved technical data
   b) equipment operating manuals
   c) health and safety guidelines
      i. PPE
      ii. fume extraction
      iii. fire prevention
      iv. types of approved fire extinguishers.

2. Identify and follow manufacturers recommended removal processes for MIG and spot welds
   a) protect all adjacent surfaces and systems to avoid accidental damage
   b) operate all tools and equipment following health and safety guidelines
   c) preparation of surfaces prior to attachment.

3. Carry out routine checks and adjustments on welding equipment
   a) electrodes types and maintenance of tips
   b) MIG spool replacement
   c) gas pressure adjustment
   d) weld speed and current flow adjustment.

4. Operate welding equipment to manufacturers specifications
   a) principles of welding
   b) testing welded joints
   c) use of portable and fixed fume ventilation systems
   d) health and safety requirements.
Outcome 5
Identify and apply manufacturer approved adhesive bonding materials used for the attachment of non-structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. State the advantages of types of approved adhesives recommended for panel bonding processes
   a) two pack systems
   b) single pack systems.

2. Identify and follow manufacturers approved procedures for the replacement of vehicle non-structural body panels using adhesive bonding processes
   a) identify approved types of equipment
   b) substrate identification
   c) types of adhesive bonding materials
   d) substrate preparation processes
   e) application of adhesive bonding materials
   f) types of approved joints
   g) drying / curing
   h) preparation prior to painting.

3. Identify and follow safe methods and agreed timescales
   a) health and safety legislation
   b) manufacturer approved timescales
   c) workplace agreed timescales.
Outcome 6
Identify and undertake approved manufacturer and workplace quality checks and procedures

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer and workplace approved quality control procedures
   a) visual methods
   b) functional methods
   c) road testing
   d) specific manufacturer warranty procedures.

2. Identify and follow employer procedure for reporting anticipated delays and problems to the appropriate authority,
   a) maintaining appropriate records
   b) following agreed timescales
   c) state the relationship between time, cost and profitability
   d) promptly informing supervisors when standards and timescales are not being met.

3. Identify and follow workplace procedures for the safe and efficient fitting of non structural body panels
   a) safe use of all tools and equipment (hand and powered tools)
   b) health and safety guidelines e.g. manual lifting, use of PPE
   c) safe disposal of all waste products following local authority and national legislative guidelines and regulations
   d) promptly reporting anticipated delays and problems to the relevant person.

Assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

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Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.
For the knowledge test you must pass the City & Guilds computer based (GOLA)
multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical
Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in
the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your
assessor. These forms, when completed and signed by you and your assessor, provide
confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which
combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you
need to provide.

Information for VRQs (Technical Certificates).
To complete this unit you must:
Provide evidence of successfully carrying out four of the following:

1. Removing a dent using specialist equipment
2. Hot shrinking a high crown metal panel
3. Filling and finishing of dents in metal panels
4. Metal finishing of a dent
5. Preparing and repairing a split in a plastic component
6. Preparing and repairing a scuff in a plastic component.

Your tutor or assessor will either set or observe a practical assessment task, which has
been designed to cover the performance objectives, or you may be observed by your
assessor in your workplace. If this qualification forms part of an apprenticeship
workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording
form for each task. Your tutor or assessor will advise you on this. Other paperwork
such as job cards, inspection sheets, servicing lists and reporting paperwork,
appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and
entered where required on the recording forms. This evidence should be collected in a
portfolio and may need to be made available to your internal verifier or the City & Guilds
external verifier.

Your assessor will ask questions to ensure you understand the practical task you are
performing.
Information for N/SVQs

General Requirements
You must:

1. Produce evidence to show you meet **all** of the performance objectives consistently.
2. Produce evidence to show that your performance has covered **all** the items listed in the scope for this unit.
3. Produce evidence to show that you possess **all** the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - Your normal workplace
   - An approved centre, or
   - A combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

7. Provide evidence of successfully carrying out each of the following on at least 1 occasion:
   7. Removing a dent using specialist equipment
   8. Hot shrinking a high crown metal panel
   9. Filling and finishing of dents in metal panels
  10. Metal finishing of a dent
  11. Preparing and repairing a split in a plastic component
  12. Preparing and repairing a scuff in a plastic component.

Your assessor must physically observe you competently filling and finishing dents in metal panels on at least 2 occasions in your workplace.

With your assessor you must complete a suitable **City & Guilds evidence recording form** for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an **apprenticeship** workplace observation will also provide VRQ evidence.
### Evidence reference summary

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- Removing a dent using specialist equipment
- Hot shrinking a high crown metal panel
- Filling and finishing of dents in metal panels
- Metal finishing of a dent
- Preparing and repairing a split in a plastic component
- Preparing and repairing a scuff in a plastic component

*Choose four of the six tasks

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

### Unit assessment and verification declaration

**VRQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work.

Candidate name: 
Candidate enrolment number: 
Candidate signature: 
Date: 

**Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor name: 
Assessor signature: 
Date: 
Countersignature: (if relevant) 
Date: 

**Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)

I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:

I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.

Internal verifier name: 
Internal verifier signature: 
Date: 
Countersignature: (if relevant) 
Date: 

**N/SVQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work.

Candidate name: 
Candidate enrolment number: 
Candidate signature: 
Date: 

**Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor name: 
Assessor signature: 
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- observation of assessment practice
- discussion with candidate
- other – please state:

I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.

Internal verifier name: 
Internal verifier signature: 
Date: 
Countersignature: (if relevant) 
Date: 

**Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)

I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:

I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.

Internal verifier name: 
Internal verifier signature: 
Date: 
Countersignature: (if relevant) 
Date: 

BP06/BP06-V45 Repair Vehicle Non-Structural Body Panels.doc Version 1.1
**Performance objective checklist**

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the appropriate personal protective equipment when carrying out repairs to non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>Protect the vehicle and its contents effectively when carrying out repairs to non-structural body panels.</td>
<td></td>
</tr>
<tr>
<td>Support the preparation and repair of non-structural body panels by reviewing:</td>
<td></td>
</tr>
<tr>
<td>• Technical data</td>
<td></td>
</tr>
<tr>
<td>• Repair procedures.</td>
<td></td>
</tr>
<tr>
<td>Prepare and test all the tools required, following manufacturers’ instructions, prior to use.</td>
<td></td>
</tr>
<tr>
<td>Carry out repairs to non-structural body panels following:</td>
<td></td>
</tr>
<tr>
<td>• The correct technique and process</td>
<td></td>
</tr>
<tr>
<td>• Manufacturer’s instructions</td>
<td></td>
</tr>
<tr>
<td>• Your workplace procedures</td>
<td></td>
</tr>
<tr>
<td>• Health, safety and legal requirements.</td>
<td></td>
</tr>
<tr>
<td>Use specialist dent removal tools effectively to relieve all damaged panels.</td>
<td></td>
</tr>
<tr>
<td>Complete repairs to non-structural body panels so they are restored to their original contour using hand tools and filling materials effectively.</td>
<td></td>
</tr>
<tr>
<td>Avoid damaging other components, units and panels on the vehicle.</td>
<td></td>
</tr>
<tr>
<td>Replace correctly any sealer, anti-corrosion and sound deadening materials which were removed prior to the repair.</td>
<td></td>
</tr>
<tr>
<td>All plastic repairs regain the strength of the original part.</td>
<td></td>
</tr>
<tr>
<td>Pass on the completed repairs in a suitable condition for painting.</td>
<td></td>
</tr>
<tr>
<td>Complete all repair activities within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

**Scope of this unit**

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Repairs are:</strong></td>
<td></td>
</tr>
<tr>
<td>a. body filling and finishing of flat areas of a panel</td>
<td></td>
</tr>
<tr>
<td>b. repairs to dents that are over 7 cms in diameter in non-structural body panels, including double curvature panels and swage lines.</td>
<td></td>
</tr>
<tr>
<td>c. repairs to splits and scuffs on plastic components</td>
<td></td>
</tr>
<tr>
<td><strong>Techniques and processes are:</strong></td>
<td></td>
</tr>
<tr>
<td>a. plastic repairs</td>
<td></td>
</tr>
<tr>
<td>b. hot shrinking</td>
<td></td>
</tr>
<tr>
<td>c. panel pulling</td>
<td></td>
</tr>
<tr>
<td>d. metal finishing</td>
<td></td>
</tr>
<tr>
<td>e. plastic filling</td>
<td></td>
</tr>
<tr>
<td>f. panel beating</td>
<td></td>
</tr>
<tr>
<td>g. indirect hammering</td>
<td></td>
</tr>
<tr>
<td>h. direct hammering</td>
<td></td>
</tr>
<tr>
<td>i. spring hammering</td>
<td></td>
</tr>
<tr>
<td>j. body filing.</td>
<td></td>
</tr>
<tr>
<td><strong>Tools are:</strong></td>
<td></td>
</tr>
<tr>
<td>a. panel hammers</td>
<td></td>
</tr>
<tr>
<td>b. dollies</td>
<td></td>
</tr>
<tr>
<td>c. body spoons</td>
<td></td>
</tr>
<tr>
<td>d. body file</td>
<td></td>
</tr>
<tr>
<td>e. dual action sander</td>
<td></td>
</tr>
<tr>
<td>f. rubbing down hand blocks</td>
<td></td>
</tr>
<tr>
<td>g. beating file</td>
<td></td>
</tr>
<tr>
<td>h. abrasives</td>
<td></td>
</tr>
<tr>
<td>i. mixing and sanding tools</td>
<td></td>
</tr>
<tr>
<td>j. specialist dent removal tools.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Essential knowledge**

**You need to understand:**

<table>
<thead>
<tr>
<th>Legislative and organisation requirements and procedures</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when repairing body panels.</td>
<td></td>
</tr>
<tr>
<td>2. The vehicle work specification agreed.</td>
<td></td>
</tr>
<tr>
<td>3. The importance of working to agreed timescales and keeping others informed of progress.</td>
<td></td>
</tr>
<tr>
<td>4. The relationship between time, cost and profitability.</td>
<td></td>
</tr>
<tr>
<td>5. Your workplace procedures for the referral of problems.</td>
<td></td>
</tr>
<tr>
<td>6. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td>7. The requirements for protecting the vehicle and contents from damage before, during and after minor repair activities.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The principles governing the selection and use of hand tools for metal finishing and plastic filling repairs.</td>
<td></td>
</tr>
<tr>
<td>9. How to select the correct tools to carry out reshaping work, including specialist dent removal tools.</td>
<td></td>
</tr>
<tr>
<td>10. How to prepare, test, use and maintain the hand and power tools required to prepare damage and reshape damaged areas.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. How to mix and apply plastic fillers.</td>
<td></td>
</tr>
<tr>
<td>12. The properties and use of metals used to manufacture body panels.</td>
<td></td>
</tr>
<tr>
<td>13. The properties and safe use of types of filling materials used to repair panels.</td>
<td></td>
</tr>
<tr>
<td>14. The different types and grades of abrasive and their use.</td>
<td></td>
</tr>
<tr>
<td>15. The techniques for identifying the type of plastics used for manufactured components.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Repairing non-structural body panels</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. How to interpret and use sources of information relevant to the removal of body components.</td>
<td></td>
</tr>
<tr>
<td>17. How to prepare the vehicle to avoid contamination.</td>
<td></td>
</tr>
<tr>
<td>18. How to prepare damaged areas to facilitate repairs.</td>
<td></td>
</tr>
<tr>
<td>19. How to repair plastic components using thermal and adhesive techniques.</td>
<td></td>
</tr>
<tr>
<td>20. How to rough out and metal finish body panels.</td>
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<tr>
<td>21. How to reshape filling materials to match the original panel contour.</td>
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<tr>
<td>22. How to finish repairs to a suitable condition for handing on to the painting stage.</td>
<td></td>
</tr>
<tr>
<td>23. How to work safely avoiding damage to the vehicle and its systems.</td>
<td></td>
</tr>
<tr>
<td>24. The techniques for reshaping damaged body panels using hand and specialist tools.</td>
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<tr>
<td>25. The procedures for reinstating anti-corrosion, sealant and sound deadening materials.</td>
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<tr>
<td>26. The procedures for repairing damage to plastic components.</td>
<td></td>
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<tr>
<td>27. The techniques and processes for</td>
<td></td>
</tr>
<tr>
<td>- plastic repairs</td>
<td></td>
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<td>- hot shrinking</td>
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<td>- plastic filling</td>
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<tr>
<td>- indirect hammering</td>
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<tr>
<td>- direct hammering</td>
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<tr>
<td>- spring hammering</td>
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<tr>
<td>- body filing.</td>
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<tr>
<td>28. The techniques used to regain the contours of repaired plastic components.</td>
<td></td>
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<tr>
<td>29. Methods of checking reshaped panel contours for accuracy.</td>
<td></td>
</tr>
<tr>
<td>30. Standards of finish required to enable the next stage of repairs to proceed.</td>
<td></td>
</tr>
<tr>
<td>31. The manufacturer's approved methods of working for the preparation and repair of non-structural body panels.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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<tbody>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Date</th>
</tr>
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<tbody>
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</tbody>
</table>
### Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td>Communication:   Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td></td>
</tr>
<tr>
<td>N2.1; N2.2</td>
<td>Numeracy:</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Information Technology:</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td></td>
</tr>
<tr>
<td>WO1.1 WO1.2</td>
<td>Working with Others:</td>
</tr>
<tr>
<td></td>
<td>Access 3, Outcomes 1? and 2</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td><em>No parallel unit.</em></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td></td>
</tr>
<tr>
<td>PS2.1; PS2.2; PS2.3</td>
<td>Problem Solving:</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Repair Vehicle Non-Structural Body Panels
This unit is about repairing exterior, cosmetic non-structural body panels and panel sections using a variety of techniques.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the essential knowledge. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify and select a range of hand tools and equipment used in the repair of non structural vehicle body panels.
2. Identify repair non structural vehicle body panels in accordance with manufacturer approved methods and procedures.
3. Identify and follow manufacturer technical information and workplace procedures relevant to approved repair processes for non structural vehicle body panels.
4. Identify and follow manufacturer and workplace quality control procedures.
Outcome 1
Identify and select a range of hand tools and equipment used in the repair of non structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and select the appropriate hand and power tools for the repair of damaged non structural vehicle panels using
   a) panel hammers and dollies
   b) body spoons (flippers) and files
   c) pneumatic and electric tools and equipment
   d) manufacturer specific tools
   e) specialised dent removal systems
   f) sanding blocks
   g) dust extraction equipment.

2. Undertake routine safety and function check of all tools and equipment.
   a) Identify damaged or worn tools and equipment following manufacturer and workplace guidelines and policies
   b) Identify and follow the approved procedure for the reporting of damaged or worn tools and equipment
   c) State the importance of Portable Appliance Testing for electrical tools and equipment
   d) Identify and follow recommended workplace procedures for the correct storage of all tools and equipment.
**Outcome 2**
Repair non structural vehicle body panels in accordance with manufacturer approved methods and procedures.

**Objectives**
To achieve this outcome the candidate must be able to:

1. Identify a comprehensive range of non structural vehicle body panels
   - i. bolt on wings
   - ii. doors
   - iii. bonnet
   - iv. bumper
   - v. boot lid and tailgate etc.

2. Identify and follow technical data for the repair of non structural vehicle body panels
   - a) vehicle manufacturer technical data
   - b) MIRRC repair / methods manuals
   - c) product manufacturer technical data
   - d) identification of type of plastic.

3. Identify the uses and state the properties of materials used for the manufacture and repair of non structural vehicle body panels
   - a) steel, aluminium
   - b) thermoplastic & thermosetting plastic
   - c) two pack body fillers
   - d) types of abrasive
     - i) silicon carbide
     - ii) aluminium oxide
     - iii) tungsten carbide
     - iv) scotchbrite pads.

4. Identify and follow workplace procedures for the prevention of accidental damage prior to repair of non structural vehicle body panels.
   - a) preparation of the vehicle to avoid contamination
   - b) safe storage of vehicle contents
   - c) protection of adjacent panels and components.

5. Identify and follow recommended procedures for substrate preparation prior to the repair of non structural vehicle body panels
   - a) rough out metal panels
   - b) cleaning / degreasing.

6. Identify and follow the recommended techniques used to carry out repairs to non structural vehicle body panels.
   - a) metal finish damaged area
   - b) repair metal substrates using indirect and direct panel beating methods
   - c) repair and reshape plastic panels and components (split and scuff)
   - d) reshape damaged areas using plastic body filler
e) use specialised dent removal procedures
f) repair damaged surfaces using hot panel shrinking processes
g) reinstate approved sealer, anti-corrosive and sound deadening materials
h) mixing and applying plastic body fillers
i) spring hammering
j) body filing
k) panel pulling.
Outcome 3
Identify and follow manufacturer and workplace procedures relevant to approved repair processes for non structural vehicle body panels.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer approved repair processes
   a) vehicle manufacturer warranty procedures
   b) product manufacturer repair procedures.

2. Identify and follow technical data for the repair of non structural vehicle body panels
   a) vehicle manufacturer technical data
   b) MIRRC repair / methods manuals
   c) product manufacturer technical data
   d) identification of types of plastic.

3. Identify and follow workplace procedures and policies for the efficient repair of non structural vehicle body panels
   a) repairs are finished to the required standard prior to painting
   b) completed within the agreed timescale and to the agreed specification
   c) anticipated problems and delays are reported promptly to the appropriate authority
   d) state the relationship between time, cost and profitability.

3. Identify and follow national legislation and workplace procedures relevant to the safe repair of non structural vehicle body panels
   a) duty of care regulations (waste disposal)
   e) correct use of PPE
   f) workplace procedures
   d) COSHH HASAWA etc.
Outcome 4
Identify and follow workplace quality control procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer warranty procedures for the repair of non-structural vehicle body panels
   a) general specifications
   b) specific guidelines
   c) ensure all repairs meet manufacturer warranty standards.

2. Identify and follow approved procedures for checking that the repair meets accepted standards before it is passed onto the next stage of the repair process
   a) accuracy of alignment
   b) contour / shape of the repair
   c) sealers and sound deadening are correctly applied
   d) ensuring supervisors are informed when standards are not met.

Assessment

**Essential knowledge assessment**
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
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<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Prepare Vehicle Panels to Accept Foundation and Topcoats

Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.
Information for VRQs (Technical Certificates).

To complete this unit you must:
Successfully carry out two primer and one topcoat tasks from the following:

1. Surface preparation to accept primer on
   - 1 repaired metal panel
   - 1 new metal panel
   - 1 plastic panel.

2. Surface preparation to accept topcoats on
   - 1 original manufacturer’s finish panel
   - 1 previously primed panel.

Your tutor or assessor will set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements

You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in your normal workplace.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit

Your assessor must physically observe you in your normal workplace successfully carrying out each of the following:

7. Surface preparation to accept primer on
   - 1 repaired metal panel
   - 1 new metal panel
   - 1 plastic panel.

8. Surface preparation to accept topcoats on
   - 1 original manufacturer’s finish panel
   - 1 previously primed panel.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
**Evidence reference summary**

<table>
<thead>
<tr>
<th>Note: Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.</th>
<th>Portfolio reference number (PRN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VRQ</td>
</tr>
<tr>
<td></td>
<td>Observed assessment</td>
</tr>
<tr>
<td>Surface preparation to accept primer on 1 repaired metal panel</td>
<td>*</td>
</tr>
<tr>
<td>Surface preparation to accept primer on 1 new metal panel</td>
<td>*</td>
</tr>
<tr>
<td>Surface preparation to accept primer on 1 plastic panel</td>
<td>*</td>
</tr>
<tr>
<td>Surface preparation to accept topcoats on 1 original manufacturer’s finish panel</td>
<td>*</td>
</tr>
<tr>
<td>Surface preparation to accept topcoats on 1 previously primed panel</td>
<td>*</td>
</tr>
</tbody>
</table>

*Choose two primer and one topcoat tasks

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

**Unit assessment and verification declaration**

**VRQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name: ………………………………….
Candidate enrolment number: ………………….
Candidate signature: …………………………….
Date: ………………………

**VRQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ………………………………….
Assessor signature: …………………………….
Date: ………………………
Countersignature: (if relevant) ……………………….
Date: ………………….

**VRQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: ……………………….
Internal verifier signature: ……………………….
Date: ……………
Countersignature: (if relevant) ……………………….
Date: ……………

**N/SVQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name: ………………………………….
Candidate enrolment number: ………………….
Candidate signature: …………………………….
Date: ………………………

**N/SVQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ………………………………….
Assessor signature: …………………………….
Date: ………………………
Countersignature: (if relevant) ……………………….
Date: ………………….

**N/SVQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: ……………………….
Internal verifier signature: ……………………….
Date: ……………
Countersignature: (if relevant) ……………………….
Date: ……………
**Performance objective checklist**

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To be competent you must:</strong></td>
<td></td>
</tr>
<tr>
<td>Use the appropriate personal protective equipment when carrying out all surface preparation activities.</td>
<td></td>
</tr>
<tr>
<td>Protect the vehicle and its contents effectively when carrying out all surface preparation activities.</td>
<td></td>
</tr>
<tr>
<td>Select and use the correct tools and equipment for the type of surface preparation activities you carrying out.</td>
<td></td>
</tr>
<tr>
<td>Ensure that the tools and equipment you require are in a safe working condition.</td>
<td></td>
</tr>
<tr>
<td>Identify the body panel surfaces accurately prior to undertaking any preparation work.</td>
<td></td>
</tr>
<tr>
<td>Follow the work instructions given for the job correctly.</td>
<td></td>
</tr>
<tr>
<td>Clean and protect all surfaces adjacent to those being prepared using the specified method.</td>
<td></td>
</tr>
<tr>
<td>Report any unrecorded damage to surfaces and ancillary fittings to the relevant person(s) promptly and accurately.</td>
<td></td>
</tr>
<tr>
<td>Remove and store safely any components likely to be affected by the preparation process.</td>
<td></td>
</tr>
<tr>
<td>Keep your work area clean and tidy throughout all preparation activities.</td>
<td></td>
</tr>
<tr>
<td>Prepare all the panel surfaces required following health and safety requirements and using:</td>
<td></td>
</tr>
<tr>
<td>• suitable materials for the type of surface</td>
<td></td>
</tr>
<tr>
<td>• the approved method and technique</td>
<td></td>
</tr>
<tr>
<td>• the approved tools and equipment.</td>
<td></td>
</tr>
<tr>
<td>Leave all the areas prepared free from contamination and ready for the application of foundation and topcoats.</td>
<td></td>
</tr>
<tr>
<td>Dispose of waste materials to conform with legal and workplace requirements.</td>
<td></td>
</tr>
<tr>
<td>Complete all vehicle preparation activities with the agreed timescale.</td>
<td></td>
</tr>
</tbody>
</table>

**Scope of this unit**

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surfaces are on:</strong></td>
<td></td>
</tr>
<tr>
<td>Electro-coated panels</td>
<td></td>
</tr>
<tr>
<td>Repaired panels</td>
<td></td>
</tr>
<tr>
<td>Original manufacturer's finish</td>
<td></td>
</tr>
<tr>
<td>Plastic components</td>
<td></td>
</tr>
<tr>
<td>Zinc coated panels</td>
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<tr>
<td>Steel panels</td>
<td></td>
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<tr>
<td>Aluminium panels</td>
<td></td>
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<tr>
<td>Previously primed panels.</td>
<td></td>
</tr>
<tr>
<td><strong>Methods and techniques are:</strong></td>
<td></td>
</tr>
<tr>
<td>Feathering out</td>
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<tr>
<td>De-greasing</td>
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<tr>
<td>Flattening using guide coats</td>
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</tr>
<tr>
<td>Masking for foundation and topcoats</td>
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</tr>
<tr>
<td>Plastic preparation</td>
<td></td>
</tr>
<tr>
<td>Tack off.</td>
<td></td>
</tr>
<tr>
<td><strong>Tools and equipment are:</strong></td>
<td></td>
</tr>
<tr>
<td>Hand and power sanders</td>
<td></td>
</tr>
<tr>
<td>Masking material dispensers</td>
<td></td>
</tr>
<tr>
<td>Extraction.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

Assessor | Date |
---|---|
Candidate | Date |
### Essential knowledge

#### You need to understand:

<table>
<thead>
<tr>
<th>Legislative and organisational requirements and procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The health, safety and legal requirements relating to the preparation of panel surfaces for foundation and topcoats.</td>
</tr>
<tr>
<td>2. Your workplace procedures for:</td>
</tr>
<tr>
<td>- the referral of problems</td>
</tr>
<tr>
<td>- reporting of delays to the completion of work</td>
</tr>
<tr>
<td>- completion of work records</td>
</tr>
<tr>
<td>- personal protection.</td>
</tr>
<tr>
<td>3. The work that needs to be done and the standard required.</td>
</tr>
<tr>
<td>4. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
</tr>
<tr>
<td>5. The requirements for protecting the vehicle and contents from damage before, during and after foundation and topcoat preparation activities.</td>
</tr>
<tr>
<td>6. The importance of selecting, using and maintaining the appropriate personal protective equipment when preparing panel surfaces for foundation and topcoats.</td>
</tr>
<tr>
<td>7. The relationship between time and cost.</td>
</tr>
</tbody>
</table>

#### Tools and equipment

| 8. How to prepare, test and adjust hand and power sanders and masking material dispensers. |
| 9. How to use hand and power sanders, extraction and masking equipment. |

#### Foundation and topcoats preparation

| 10. How to recognise damage to surfaces and ancillary fittings. |
| 11. How to recognise substrates. |
| 12. How the substrate affects the preparation process. |
| 13. How to interpret manufacturer’s preparation schedules. |
| 14. How to prepare new and repaired panels using feathering out, de-greasing, flattening using guide coats, masking for foundation and topcoats, plastic preparation and tack off techniques. |
| 15. How to carry out masking procedures to avoid materials wastage and vehicle contamination for each stage of the preparation process. |
| 16. How to prepare panels and parts adjacent to the area being painted. |
| 17. The factors governing the choice of panel preparation methods for electro-coated panels, repaired panels, original manufacturer’s finish, plastic components, zinc coated panels, steel panels, aluminium panels and previously primed panels. |
| 18. The types and grades of available abrasives and the factors governing their use for different substrates. |
| 19. Methods of protecting panels and parts adjacent to the areas being painted and the circumstances in which they should be used. |
| 20. Methods and techniques of masking (including paper and sheet masking) and the circumstances in which they should be used. |
| 21. The importance of following manufacturers’ instructions and using their approved methods of working (including use of materials and equipment). |
| 22. The consequences of failing to follow manufacturers’ instructions. |
| 23. The importance of working to agreed timescales and keeping others informed. |

#### Health and safety

| 24. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues. |
| 25. How to dispose of waste materials. |
| 26. The importance of disposing of waste safely and the consequences of not doing so to others and the environment. |

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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</table>

<table>
<thead>
<tr>
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<th>Date</th>
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### Key and core skills signposting

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<th>Core Skills</th>
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<tr>
<td>Communication: C1.1; C1.2</td>
<td>Communication: Access 3, Outcomes 1 and 3</td>
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<tr>
<td>Application of Number:</td>
<td>Numeracy:</td>
</tr>
<tr>
<td>Information Technology: Not applicable</td>
<td>Information Technology: Not applicable</td>
</tr>
<tr>
<td>Working with Others: WO1.1; WO1.2</td>
<td>Working with Others: Access 3, Outcomes 1 and 2</td>
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<tr>
<td>Improving Own Learning and Performance: Not applicable</td>
<td>No parallel unit.</td>
</tr>
<tr>
<td>Problem Solving: PS2.1</td>
<td>Problem Solving: Intermediate 1, Outcome 1</td>
</tr>
</tbody>
</table>
Syllabus

Prepare Vehicle Panels to Accept Foundation and Topcoats
This unit is about preparing a wide variety of different panel and component surfaces to accept foundation materials and paint topcoats. The ability to identify body panel surfaces is required.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.
Reference should also be made to the National Standards.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify and select a range of hand and power tools, equipment and materials used in the preparation of vehicle panels ready to accept foundation and topcoats.
2. Interpret and follow manufacturer technical information and workplace procedures relevant to the preparation of vehicle panels ready to accept foundation and topcoats.
3. Identify and follow manufacturer approved processes used in the preparation of vehicle panels ready to accept foundation and topcoats.
4. Interpret and follow health and safety legislation and workplace guidelines relative to the preparation of vehicle panels to accept foundation and topcoats.
5. Interpret and follow manufacturer and workplace quality control procedures relevant to the preparation of vehicle panels.
Outcome 1
Identify and select a range of hand and power tools, equipment and materials used in the preparation of vehicle panels ready to accept foundation and topcoats.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and use the appropriate hand and power tools for the preparation of vehicle bodies and panels
   a) sanders
      i. D.A.
      ii. Rotation
      iii. orbital machines
      iv. dust extraction equipment
   b) backing pads
      i. hard
      ii. soft
      iii. interface types
   c) hand tools
      i. types of rubbing blocks
      ii. air dusters
   d) masking equipment.

2. Carry out routine maintenance checks on tools and equipment
   a) visual and functional checks
   b) safety checks.

3. Identify and use a range of approved materials and products
   a) types and grades of abrasives
      i. aluminium Oxide
      ii. silicon carbide
      iii. scotch-brite pads
      iv. liquid types
   b) solvents, cleaning and degreasing agents
      i. water based
      ii. solvent based
      iii. tack cloths and wipes
   c) masking materials
      i. plastic sheeting
      ii. kraft paper
      iii. masking tapes.

4. Identify the factors affecting the choice of abrasive and method of panel preparation
   i) type / extent of damage
   ii) type of substrate
   iii) previously painted substrates
   iv) zinc coating.
Outcome 2
Interpret and follow paint manufacturers’ technical data and workplace procedures relevant to the preparation of vehicle panels to accept foundation and topcoats.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret technical data and follow recommended procedures
   a) paint manufacturers technical data (TDS)
   b) material safety data sheets (MSDS)
   c) substrate preparation procedures
   d) vehicle manufacturer warranty procedures
   e) substrate identification
   f) plastics identification.

2. Identify and follow workplace procedures for operating efficiently
   a) Work specification (job card)
   b) working within agreed timescales
   c) promptly reporting problems and delays to a supervisor
   d) seeking assistance and advice when problems occur.

3. Identify and follow workplace risk assessment procedures
   a) safe handling and use of hazardous materials
   b) extraction of toxic dust
   c) working practices
   d) use of machinery and equipment.

4. State the consequences of failing to follow manufacturers warranty procedures when preparing panels to accept foundation and topcoats
   a) invalid warranty
   b) inadequate corrosion protection
Outcome 3
Identify and follow manufacturer approved processes used in the preparation of vehicle panels ready to accept foundation and topcoats.

Objectives
To achieve this outcome a student must be able to:

1. Identify types of substrate
   a) coated surfaces
      i. electro-coated
      ii. OEM finishes
      iii. pre-primed panels
      iv. repaired panels
      v. after market finishes
      vi. zinc coated
   b) metal panels
      i. steel
      ii. aluminium
   c) plastic panels
      i. GRP
      ii. thermoplastics and thermosetting plastics
      iii. flexible
      iv. rigid
      v. textured and smooth surfaces.

2. State how the type of substrate affects the preparation process.

3. Identify and follow manufacturer approved panel preparation processes
   a) sanding techniques
      i. wet and dry processes
      ii. hand and machine methods
   b) de-greasing procedures
      i. fast and slow evaporation types
      ii. wipe on and wipe off process
   c) removal of oxide layers from bare metal surfaces
      i. hand and machine processes
      ii. use of metal conditioning agents
   d) masking methods
      i. localised masking
      ii. soft edging
      iii. use of plastic sheets
   e) feather edge repair techniques
      i. hand and machine techniques
      ii. wet and dry processes
f) guide coating
   i) wet and dry.

4. Identify damage to vehicle substrates and trim
   a) steel
   b) aluminium
   c) plastics
   d) GRP.

5. Identify and follow workplace procedures for the protection of vehicle contents and adjacent panels from accidental damage
   a) safe storage of vehicle contents
   b) protection of seats and interior trim
   c) masking of adjacent panels.
Outcome 4
Interpret and follow health and safety legislation and workplace guidelines relative to the preparation of vehicle panels to accept foundation and topcoats

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and interpret local and national legislation
   a) Health and Safety at Work Act
   b) COSHH and Risk Assessments
   c) EPA
   d) Duty of Care (special waste regulations)
   e) Health surveillance guidelines
   f) disposal of waste materials.

2. Identify and follow manufacturer and workplace guidelines for the use of PPE
   a) barrier creams and after creams
   b) overalls, gloves and footwear
   c) respiratory equipment.

3. Identify and follow manufacturer and workplace approved procedures for the disposal of waste materials
   a) general waste
   b) classified waste.
Outcome 5
Interpret and follow manufacturer and workplace quality control procedures relevant to the preparation of vehicle panels

Objectives
To achieve this outcome the candidate must be able to
1. Interpret and follow manufacturer warranty procedures for the preparation of vehicle body panels
   a) general specifications
   b) specific guidelines
   c) ensure all repairs meet manufacturer warranty standards.
2. Interpret and follow workplace procedure for the reporting of anticipated delays to the appropriate authority
   a) approved processes following agreed timescales
   b) procedures to demonstrate the relationship between time and cost.
3. Interpret and follow the approved procedure for checking that the repair meets accepted standards before it is passed onto the next stage of the repair process
   a) visual inspection
   b) tactile inspection
   c) importance of maintaining appropriate records
   d) importance of keeping supervisors informed where standards are not met.

Assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
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<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Successfully carrying out each of the following:

   a) setting up and using application and safety equipment
   b) mixing etch primers and primer fillers
   c) applying foundation coats
   d) dry curing filling and foundation materials
   e) cleaning application equipment and disposing of waste.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements

You must:
1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that your performance has covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in your normal workplace.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit

7. Your assessor must physically observe you in your normal workplace successfully carrying out each of the following on 2 separate occasions on different vehicles:
   a. setting up and using application and safety equipment
   b. mixing etch primers and primer fillers
   c. applying foundation coats
   d. dry curing filling and foundation materials
   e. cleaning application equipment and disposing of waste.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
**Evidence reference summary**

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting up and using application and safety equipment 1</td>
<td>Observed assessment</td>
<td>Approved centre or workplace</td>
<td>Observed assessment</td>
</tr>
<tr>
<td>Setting up and using application and safety equipment 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixing etch primers and primer fillers 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixing etch primers and primer fillers 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applying foundation coats 1</td>
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<td></td>
<td></td>
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<tr>
<td>Applying foundation coats 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry curing filling and foundation materials 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry curing filling and foundation materials 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning application equipment and disposing of waste 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning application equipment and disposing of waste 2</td>
<td></td>
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</tbody>
</table>

**Supplementary evidence (if used) PRN**

**On line test reference for this unit PRN**
### Unit assessment and verification declaration

<table>
<thead>
<tr>
<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work.</td>
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<tr>
<td>Candidate name:…………………………………….</td>
<td>Candidate name:…………………………………….</td>
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<tr>
<td>Candidate enrolment number:………………………….</td>
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<td>Candidate signature:…………………………………</td>
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<td>Date: ………………………</td>
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| Countersignature: (if relevant)…………………… | Countersignature: (if relevant)…………………… |
| Date: ……………………… | Date: ……………………… |

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<th>VRQ Internal verifier Declaration: (Leave blank if sampling of this unit did not take place.)</th>
<th>N/SVQ Internal verifier Declaration: (Leave blank if sampling of this unit did not take place.)</th>
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</tr>
</tbody>
</table>

| Countersignature: (if relevant)…………………… | Countersignature: (if relevant)…………………… |
| Date: ……………………… | Date: ……………………… |
### Performance objective checklist

To be competent you must ensure that:

- Use the appropriate personal protective equipment when carrying out the preparation and application of foundation materials.
- Protect the vehicle and its contents effectively when carrying out the preparation and application of foundation materials.
- Support the preparation and application activities by reviewing: foundation materials data, work instructions.
- Prepare, test and adjust all the equipment required, following manufacturers’ instructions, prior to use.
- When necessary, apply the correct type of fillers and stoppers to rectify surface defects.
- Report any unrecorded damage to surfaces and ancillary equipment to the relevant person(s) promptly and accurately.
- Mix all the foundation materials required following health and safety requirements and using:
  - suitable compatible materials
  - the approved method
  - the approved equipment.
- Apply all the foundation materials required following health and safety requirements and using:
  - the approved method
  - the approved equipment.
- Dry and cure foundation materials following health and safety requirements and using:
  - the approved method
  - the approved equipment.
- Dispose of waste materials to conform with legal and workplace requirements.
- Leave all application equipment in a clean and serviceable condition.
- Complete all preparation and application activities within the agreed timescale.
- Report any anticipated delays in completion to the relevant person(s) promptly.

### Scope of this unit

All of the items listed below form part of this National Occupational Standard.

<table>
<thead>
<tr>
<th>1. Equipment</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. viscosity measuring</td>
<td></td>
</tr>
<tr>
<td>b. paint mixing and application equipment</td>
<td></td>
</tr>
<tr>
<td>c. paint rollers</td>
<td></td>
</tr>
<tr>
<td>d. spray booth</td>
<td></td>
</tr>
<tr>
<td>e. heating and drying equipment</td>
<td></td>
</tr>
<tr>
<td>f. fume and dust extraction equipment</td>
<td></td>
</tr>
<tr>
<td>g. air feed breathing apparatus.</td>
<td></td>
</tr>
<tr>
<td>h. Foundation materials are:</td>
<td></td>
</tr>
<tr>
<td>i. etch primers</td>
<td></td>
</tr>
<tr>
<td>j. primer fillers,</td>
<td></td>
</tr>
<tr>
<td>k. primer surfacers</td>
<td></td>
</tr>
<tr>
<td>l. stoppers</td>
<td></td>
</tr>
<tr>
<td>m. anti-stone chip treatments</td>
<td></td>
</tr>
<tr>
<td>n. anti-corrosion treatments.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Materials</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. chemical cleaning agents</td>
<td></td>
</tr>
<tr>
<td>b. conditioning agents.</td>
<td></td>
</tr>
<tr>
<td>c. dilutants and hardeners</td>
<td></td>
</tr>
<tr>
<td>d. adhesion promoters.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Surface defects</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. stone chips</td>
<td></td>
</tr>
<tr>
<td>b. scratches</td>
<td></td>
</tr>
<tr>
<td>c. pin holes.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

Assessor | Date
---|---
Candidate | Date
**Essential knowledge**

<table>
<thead>
<tr>
<th>You need to understand:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legislative and organisational requirements and procedures</strong></td>
<td></td>
</tr>
<tr>
<td>1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection.</td>
<td></td>
</tr>
<tr>
<td>2. The importance of disposing of waste safely and the consequences of not doing so to others and the environment.</td>
<td></td>
</tr>
<tr>
<td>3. The importance of selecting, using and maintaining the appropriate personal protective equipment when preparing and applying foundation materials.</td>
<td></td>
</tr>
<tr>
<td>4. The vehicle work specification agreed.</td>
<td></td>
</tr>
<tr>
<td>5. Your workplace procedures for - the referral of problems - reporting of delays to the completion of work - completion of work records - personal protection.</td>
<td></td>
</tr>
<tr>
<td>6. The requirements for protecting the vehicle and contents from damage before, during and after preparing and applying foundation materials.</td>
<td></td>
</tr>
<tr>
<td>7. The importance of working to agreed timescales and keeping others informed of progress.</td>
<td></td>
</tr>
<tr>
<td>8. The relationship between time and cost.</td>
<td></td>
</tr>
<tr>
<td>9. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td><strong>Equipment</strong></td>
<td></td>
</tr>
<tr>
<td>10. How to prepare, test and adjust all the equipment required for the preparation and application of foundation materials.</td>
<td></td>
</tr>
<tr>
<td>11. How to use viscosity measuring equipment, paint mixing and application equipment, heating and drying equipment, fume and dust extraction, air supply systems, and air feed breathing apparatus.</td>
<td></td>
</tr>
<tr>
<td>12. Spray gun faults, their cause and their rectification.</td>
<td></td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td></td>
</tr>
<tr>
<td>13. How to prepare foundation materials.</td>
<td></td>
</tr>
<tr>
<td>14. The properties of foundation materials.</td>
<td></td>
</tr>
<tr>
<td>15. The factors affecting the choice and use of foundation materials.</td>
<td></td>
</tr>
<tr>
<td>16. The principles of paint mixing, the importance of the right additive (hardener or thinner) in the correct ratio.</td>
<td></td>
</tr>
<tr>
<td>17. The curing and drying recommendations for various fillers and foundation materials.</td>
<td></td>
</tr>
<tr>
<td><strong>Preparation and application of foundation materials</strong></td>
<td></td>
</tr>
<tr>
<td>18. How to find, interpret and use sources of information relevant to the mixing and application of foundation coatings.</td>
<td></td>
</tr>
<tr>
<td>19. How to condition and clean surfaces prior to the application of foundation coats.</td>
<td></td>
</tr>
<tr>
<td>20. How to rectify surface defects.</td>
<td></td>
</tr>
<tr>
<td>21. How to apply foundation coatings.</td>
<td></td>
</tr>
<tr>
<td>22. How to avoid application defects.</td>
<td></td>
</tr>
<tr>
<td>23. How to dispose of waste materials.</td>
<td></td>
</tr>
<tr>
<td>24. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues.</td>
<td></td>
</tr>
<tr>
<td>25. The importance of viscosity and its effect on the surface finish.</td>
<td></td>
</tr>
<tr>
<td>26. The importance of proper cleaning and using the correct foundation material to ensure adequate adhesion of the paint system.</td>
<td></td>
</tr>
<tr>
<td>27. The manufacturer’s approved instructions for working when applying foundation materials.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
</tr>
</tbody>
</table>
### Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td>Communication: Access 3, Outcomes 2 and 3 Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td></td>
</tr>
<tr>
<td>N2.1; N2.2; N2.3</td>
<td>Numeracy: Intermediate 1, Outcomes 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Information Technology: Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td></td>
</tr>
<tr>
<td>WO1.1; WO1.2</td>
<td>Working with Others: Access 3, Outcomes 1 and 2</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td>No parallel unit.</td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td></td>
</tr>
<tr>
<td>PS2.1; PS2.2; PS2.3</td>
<td>Problem Solving: Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Prepare and Apply Foundation Materials to Vehicles

This unit is about identifying substrates including any unrecorded damage, mixing and adjusting the viscosity of fillers and foundation materials, applying fillers and foundation materials.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the candidate must be able to:

1. Identify and follow manufacturer technical information and workplace procedures relevant to the preparation and application of foundation coatings.

2. Describe the process to select, adjust and undertake routine equipment maintenance activities to meet the appropriate manufacturer recommendations.

3. State the procedures used to prepare and apply a range of approved foundation coating to meet the appropriate manufacturer warranty recommendations.

4. State the procedures used to carry out recommended methods for the drying / curing of manufacturer approved foundation coatings.

5. Explain how to dispose of all waste products in accordance with manufacturer and workplace guidelines.
Outcome 1
Identify and follow manufacturer technical information and workplace procedures relevant to the preparation and application of foundation coatings

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and interpret manufacturer technical data for use of approved
   a) tools and equipment
   b) foundation coatings
   c) additives e.g. appropriate diluents, hardeners, etc
   d) methods and techniques.
2. Identify and interpret health and safety guidelines and recommendations
   a) HASAWA
   b) COSHH
   c) EPA
   d) Employer risk assessments
   e) PPE regulations.
3. Identify and interpret manufacturer recommendations for the routine maintenance of tools and equipment
   a) approved procedures for daily checks
   b) maintenance of records
   c) procedures for reporting damaged or worn tools and equipment
4. Identify and interpret workplace workshop control procedures
   a) job card systems
   b) quality control records
   c) procedures for reporting anticipated delays.
5. Identify and follow workplace procedures for protecting the vehicle and contents from accidental damage
   a) secure storage of vehicle contents
   b) exterior protective covers
   c) masking of adjacent panels
   d) seat, steering wheel and floor mat covers.
**Outcome 2**

Describe the process to select, adjust and undertake routine equipment maintenance activities to meet the appropriate manufacturer recommendations.

**Objectives**

To achieve this outcome the candidate must be able to:

1) **Describe a range of application tools and compliant equipment**
   - a) gravity, pressure and syphon feed spray guns
   - b) paint rollers
   - c) aerosols
   - d) plastic and rubber applicators.

2) **Describe a range of spray gun faults and their rectification**
   - a) distorted fan shape
   - b) restricted material flow
   - c) poor atomisation
   - d) jerky or fluttery fan pattern.

3) **Identify, select and adjust a range of application equipment to meet manufacturer recommendations for the application of foundation coatings.**
   - a) types of spray guns
   - b) select appropriate spray gun ‘set up’
   - c) adjust spray gun controls
   - d) use of viscosity measuring equipment
   - e) paint strainers
   - f) regulate atomising air pressure.

4) **Identify and follow approved methods for cleaning and storing tools and equipment.**
   - a) spray guns
   - b) paint rollers
   - c) aerosols
   - d) plastic and rubber applicators
   - e) enclosed gun cleaning systems
   - f) cabinet and rack storage.

5) **Identify and follow routine maintenance activities to meet the manufacturer recommendations**
   - a) replacement of worn or damaged spray gun parts
   - b) use of approved lubrication of spray guns
   - c) air fed masks
   - d) transformers and regulators
   - e) waste disposal.
Outcome 3
State the procedures used to prepare and apply a range of approved foundation coating to meet the appropriate manufacturer warranty recommendations.

Objectives
To achieve this outcome the candidate must be able to:

1) Identify and follow manufacturer technical information relevant to the mixing and applying of foundation coatings
   a) technical data sheets
   b) material safety data sheets
   c) process charts
   d) electronic systems.

2) Identify and follow the manufacturers approved processes for the preparation and application of foundation coatings to meet the appropriate warranty standards
   a) etch primers
   b) 1k rub through primers (aerosol)
   c) 2k primers and primer fillers
   d) adhesion promoters
   e) anti-stone chip treatments
   f) anti-corrosive treatments
   g) underbody coatings
   h) stoppers and fillers.

3) Describe and select appropriate application tools and equipment in accordance with manufacturer guidelines
   a) spray booths
   b) ventilation equipment / systems
   c) compliant spray guns
   d) paint rollers
   e) paint brushes
   f) hand applicators
   g) stir / measuring sticks
   h) electronic balance system (weight mixing scheme)
   i) mixing vessels.

4) Identify and follow manufacturer and workplace guidelines for health and safety issues relating to application of foundation coatings
   a) HASAWA
   b) COSHH
   c) risk assessment
   d) PPE
   e) skin protection.

5) Identify and follow manufacturer recommendation for the cleaning of equipment in accordance with regulations.
Outcome 4
State the procedures used to carry out recommended methods for the drying / curing of manufacturer approved foundation coatings.

Objective
To achieve this outcome the candidate must be able to:

1) Identify and interpret manufacturer technical data for the drying of foundation coatings
   a) low bake schedules
   b) air drying processes.
2) Identify and adjust approved drying equipment to conform to manufacturer recommendations
   a) combination convection systems
   b) separate spraybooth and convection oven
   c) infra-red systems.
3) Identify types of portable force drying equipment
   a) infra red
   b) ultra violet.
4) Identify and state the purpose of the component parts of a spraybooth / low bake oven
   a) inlet and extraction filters
   b) heat exchanger
   c) induction and extraction fans
   d) pressure relief panels
   e) doors and seals
   f) built in safety features.
5) Identify and follow manufacturers recommended procedures for the safe operation and adjustment of spraybooths and low bake ovens
   a) positive / negative pressure
   b) exhausting of fumes before and during the bake cycle
   c) filtration of incoming and extracted air.
6) Identify and state the causes and methods of prevention and rectification of foundation coat defects.
   a) Pinholes
   b) Sinkage
   c) Poor adhesion
   d) Scratch opening
   e) Runs and sags
   f) Dry spray.
Outcome 5

Explain how to dispose of all waste products in accordance with manufacturer and workplace guideline.

Objectives

To achieve this outcome the candidate must be able to:

1) Identify and interpret local and national legislation for control and disposal of special waste products
   a) EPA
   b) COSHH
   c) duty of care (special waste) regulation
   d) maintenance of appropriate records.

2) Identify and demonstrate manufacturer and workplace approved methods for the disposal of waste products
   a) liquid waste
      i. paints
      ii. solvents, etc
   b) solid waste
      i. masking tapes and papers
      ii. rags and wipes
      iii. empty tins.

Assessment

Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
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<tr>
<td>2</td>
<td>6</td>
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<tr>
<td>3</td>
<td>6</td>
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<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
BP09/BP09-V48 Repair Minor Vehicle Paint Defects

Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Successfully carry out each of the following:

1. The rectification of loss of gloss.
2. The rectification of scuffs and scratches to the manufacturer’s original finish.
3. The rectification of dirt inclusions on a newly applied finish.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
**Information for N/SVQs**

**General Requirements**

You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

**Specific Performance Evidence for this Unit**

You must:

7. Produce evidence of successfully carrying out each of the following:
   - the rectification of loss of gloss
   - the rectification of scuffs and scratches to the manufacturer's original finish
   - the rectification of dirt inclusions on a newly applied finish
   - the rectification of runs and sags on a newly applied finish
   - the rectification of orange peel.

Your assessor must observe you carrying out 2 different rectification activities from the above list in your normal workplace.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
**Evidence reference summary**

<table>
<thead>
<tr>
<th>Portfolio reference number (PRN)</th>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed assessment</td>
<td>Approved centre or workplace</td>
<td>Observed assessment</td>
</tr>
<tr>
<td>The rectification of loss of gloss</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The rectification of scuffs and scratches to the manufacturer's original finish</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The rectification of dirt inclusions on a newly applied finish</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The rectification of runs and sags on a newly applied finish</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>The rectification of orange peel</td>
<td></td>
<td>*</td>
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</tr>
</tbody>
</table>

*Observation of any two activities required

**Unit assessment and verification declaration**

**VRQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work.
Candidate name:………………………………………………
Candidate enrolment number:……………………………..
Candidate signature:…………………………………………
Date: ……………………………..

**VRQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ……………………………………………..
Assessor signature: …………………………………………
Date: ……………………………………………………..
Countersignature: (if relevant)…………………………
Date: ……………………………………………………..

**VRQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: …………………………………
Internal verifier signature: ……………………………
Date: ……………………………………………………
Countersignature: (if relevant) ………………………
Date: ……………………………………………………

**N/SVQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work.
Candidate name: ……………………………………………
Candidate enrolment number: ……………………………..
Candidate signature: ……………………………………..
Date: ……………………………………………………..

**N/SVQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ……………………………………………
Assessor signature: ………………………………………
Date: ……………………………………………………..
Countersignature: (if relevant) ………………………
Date: ……………………………………………………..

**N/SVQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: …………………………………
Internal verifier signature: ……………………………
Date: ……………………………………………………..
Countersignature: (if relevant) ………………………
Date: ……………………………………………………..
### Performance objective checklist

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the appropriate personal protective equipment when carrying out the repair of minor paint defects to paint surfaces.</td>
<td></td>
</tr>
<tr>
<td>Protect the vehicle and its contents effectively when carrying out the repair of minor paint defects to paint surfaces.</td>
<td></td>
</tr>
<tr>
<td>Support repair activities by reviewing:</td>
<td></td>
</tr>
<tr>
<td>- product data</td>
<td></td>
</tr>
<tr>
<td>- work instructions.</td>
<td></td>
</tr>
<tr>
<td>Prepare, test and adjust all the tools and equipment required, following manufacturer’s instructions prior to use.</td>
<td></td>
</tr>
<tr>
<td>Correct defects using the approved tools and equipment and materials following manufacturer’s instructions</td>
<td></td>
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<tr>
<td>- the correct methods and techniques</td>
<td></td>
</tr>
<tr>
<td>- health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Ensure the paint surface finish produced is free from contamination and defects.</td>
<td></td>
</tr>
<tr>
<td>Dispose of waste materials to conform with legal and workplace requirements.</td>
<td></td>
</tr>
<tr>
<td>Complete all paint repair activities within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

### Scope of this unit

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minor paint defects are:</strong></td>
<td></td>
</tr>
<tr>
<td>- Loss of gloss</td>
<td></td>
</tr>
<tr>
<td>- Industrial fallout</td>
<td></td>
</tr>
<tr>
<td>- Sags and runs</td>
<td></td>
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<tr>
<td>- Minor dirt inclusions</td>
<td></td>
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<tr>
<td>- Orange peel</td>
<td></td>
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<tr>
<td>- Light scuffs and scratches</td>
<td></td>
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<tr>
<td>- Minor stone chips</td>
<td></td>
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<tr>
<td>- Over spray.</td>
<td></td>
</tr>
<tr>
<td><strong>Methods and techniques are:</strong></td>
<td></td>
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<tr>
<td>- Flatting</td>
<td></td>
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<tr>
<td>- Burnishing</td>
<td></td>
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<tr>
<td>- Polishing.</td>
<td></td>
</tr>
<tr>
<td><strong>Tools and equipment are:</strong></td>
<td></td>
</tr>
<tr>
<td>- Polishing machines</td>
<td></td>
</tr>
<tr>
<td>- Denibbing blocks</td>
<td></td>
</tr>
<tr>
<td>- Flatting equipment.</td>
<td></td>
</tr>
<tr>
<td><strong>Materials are:</strong></td>
<td></td>
</tr>
<tr>
<td>- Compounds</td>
<td></td>
</tr>
<tr>
<td>- Flatting papers</td>
<td></td>
</tr>
<tr>
<td>- Polishes</td>
<td></td>
</tr>
<tr>
<td>- Pre-prepared paint</td>
<td></td>
</tr>
<tr>
<td>- Glazes.</td>
<td></td>
</tr>
<tr>
<td><strong>Paint surfaces are:</strong></td>
<td></td>
</tr>
<tr>
<td>- Clear over base</td>
<td></td>
</tr>
<tr>
<td>- Direct gloss</td>
<td></td>
</tr>
<tr>
<td>- Manufacturer’s original finish</td>
<td></td>
</tr>
<tr>
<td>- Newly painted.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
</tr>
</tbody>
</table>
## Essential knowledge

**You need to understand:**

<table>
<thead>
<tr>
<th>PRN</th>
<th>Legislative and organisational requirements and procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection.</td>
</tr>
<tr>
<td>2</td>
<td>The importance of disposing of waste safely and the consequences of not doing so to others and the environment.</td>
</tr>
<tr>
<td>3</td>
<td>The importance of selecting, using and maintaining the appropriate personal protective equipment when repairing minor paint defects.</td>
</tr>
<tr>
<td>4</td>
<td>The vehicle work specification agreed.</td>
</tr>
<tr>
<td>5</td>
<td>Your workplace procedures for personal protection.</td>
</tr>
<tr>
<td>6</td>
<td>The referral of problems.</td>
</tr>
<tr>
<td>7</td>
<td>Reporting of delays to the completion of work.</td>
</tr>
<tr>
<td>8</td>
<td>Personal protection.</td>
</tr>
<tr>
<td>9</td>
<td>The requirements for protecting the vehicle and contents from damage before, during and after repairing minor paint defects.</td>
</tr>
<tr>
<td>10</td>
<td>The importance of working to agreed timescales and keeping others informed of progress.</td>
</tr>
<tr>
<td>11</td>
<td>The relationship between time and cost.</td>
</tr>
<tr>
<td>12</td>
<td>The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. How to prepare, test and adjust all the tools and equipment required for the repair of minor paint defects.</td>
</tr>
<tr>
<td>14. How to use polishing machines, denibbing blocks and flattening equipment.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. How to select, prepare and use compounds, flattening papers, polishes, pre-prepared paints and glazes.</td>
</tr>
<tr>
<td>16. The factors affecting the choice and use of materials.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correction of defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. How to identify the existing paint surface finish on which the defect has occurred.</td>
</tr>
<tr>
<td>18. How to identify minor paint defects, their cause and method(s) of rectification suitable for the paint surface finish.</td>
</tr>
<tr>
<td>19. How to carry out flattening, burnishing, polishing and touch in techniques to correct minor paint defects.</td>
</tr>
<tr>
<td>20. How to prevent further paint damage during rectification.</td>
</tr>
<tr>
<td>21. How to dispose of waste.</td>
</tr>
<tr>
<td>22. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues.</td>
</tr>
<tr>
<td>23. The importance of proper cleaning prior to and after paint rectification work.</td>
</tr>
<tr>
<td>24. The importance of keeping equipment and materials clean and free from contamination during rectification work.</td>
</tr>
<tr>
<td>25. How to interpret product manufacturer’s instructions.</td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
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<tbody>
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<tr>
<td></td>
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</table>
## Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong> Access 3, Outcomes 2 and 3 Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td></td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong> Access 3, Outcome 4 Intermediate 1, Outcomes 1 and 2</td>
</tr>
<tr>
<td>N2.1; N1.2</td>
<td></td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td><strong>Information Technology:</strong> Not applicable</td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong> Intermediate 1, Outcome 2</td>
</tr>
<tr>
<td>WO2.2</td>
<td></td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong> Not applicable</td>
<td><strong>No parallel unit.</strong></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong> Intermediate 2, Outcomes 1, 2 and 3</td>
</tr>
<tr>
<td>PS3.1; PS3.2; PS3.3</td>
<td></td>
</tr>
</tbody>
</table>
Syllabus

Repair Minor Vehicle Paint Defects
This unit is about rectifying a range of minor paint finish defects using a variety of basic methods and techniques.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the essential knowledge. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify workplace procedures relevant to the identification and rectification of minor paint refinishing defects.
2. Identify and select manufacturer approved equipment and materials for the rectification of minor paint defects.
3. Identify and follow manufacturer approved procedures for the identification and rectification of minor paint refinishing defects.
4. Identify and follow workplace quality control procedures.
Outcome 1
Identify workplace procedures relevant to the identification and rectification of minor paint refinishing defects.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow the agreed workplace procedures for recording efficiency and productivity.
   a) job cards
   b) procedures for prompt reporting of problems and delays to a supervisor
   c) time sheets.

2. Identify the effects of poor productivity and failure to work within agreed timescales
   a) low profit
   b) poor company image.

3. Identify and follow legislation and workplace procedures for safe working.
   a) HASAWA
   b) COSHH
   c) PPE regulations
   d) Disposal of waste products to BS14001.

4. Identify and follow workplace procedures for protecting the vehicle and contents before, during and after the rectification of minor paint defects
   a) safe storage of vehicle contents
   b) masking of adjacent panels
   c) use of interior and exterior protective covers.
Outcome 2
Identify and select manufacturer approved equipment and materials for the rectification of minor paint defects.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and select manufacturer approved hand tools
   a) wet flatting blocks
   b) dry flatting blocks
   c) de-nibbing blocks.
2. Identify and select manufacturer approved pneumatic and electrical equipment
   a) DA sanders
   b) orbital sanders
   c) polishing machines
   d) type of machine backing pads (hard, medium, soft and interface types).
3. Identify and select manufacturer approved materials
   a) grades of abrasives (wet and dry types)
   b) compounds
   c) polishes
   d) glazes
   e) cloths, papers, tissue and wipes
   f) pre-prepared paints (touch up).
4. State the importance of keeping equipment and materials clean during minor paint fault rectification work
   a) prevention of further damage
   b) prevention of contamination.
Outcome 3
Identify and follow manufacturer approved procedures for the identification and rectification of minor paint refinishing defects.

Objective
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer approved technical information for the identification and rectification of minor paint refinishing defects
   a) paint manufacturers data
   b) abrasive manufacturer data.

2. Identify and follow the recommended procedure for identification of existing paint finish
   a) solvent test
   b) abrasive test.

3. Identify the factors affecting the method of rectification and choice of materials
   g) type of substrate
   h) type existing finish
   i) age of existing finish.

4. Identify and state the cause of the following minor paint refinishing defects
   c) loss of gloss
   d) industrial fallout
   e) runs and sags
   f) orange peel
   g) light scuffs and scratches
   h) minor stone chips
   i) overspray.

5. Identify and follow approved processes for rectification.
   a) flatting processes (wet and dry)
   b) hand and machine techniques
   c) de-nib techniques
   d) buffing and burnishing
   e) ‘touch up’ techniques.
Outcome 4
Identify and follow workplace quality control procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer approved warranty procedures
   a) appropriate manufacturer warranty scheme
   b) importance of following correct procedures.
2. Identify and complete workplace quality control documentation.
   a) approved processes for following agreed timescales
   b) procedures to demonstrate the relationship between time and cost
   c) Quality control check sheets.
3. Identify criteria for quality checking of rectified defects
   a) low gloss
   b) poor colour match
   c) poor metallic effect
   d) dirt nibs
   e) dry spray
   f) overspray.
4. State the importance of keeping the vehicle clean during and after minor paint fault rectification
   a) customer satisfaction
   b) company image.

Assessment

Essential knowledge assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
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<tr>
<td>2</td>
<td>6</td>
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<tr>
<td>3</td>
<td>9</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Successfully carry out each the following:

1. Mixing and applying a metallic or mica clear over base finish.
2. Blending colour into an adjacent panel.
3. A spot repair.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements

You must:
1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit

You must:
7. Provide evidence of successfully undertaking complete vehicle refinishing operations involving:
   a. The application of a metallic or mica clear over base finish on 2 different vehicles.
   b. The application of a textured finish on 1 vehicle.
   c. The blending of colour into an adjacent panel on 2 different vehicles.
   d. A spot repair on 1 vehicle.
   e. An edge to edge application on a new panel on 1 vehicle.
8. Your assessor must physically observe you successfully carrying out each the following on at least 1 occasion:
   a. Mixing and applying a metallic or mica clear over base finish.
   b. Blending colour into an adjacent panel.
   c. A spot repair.
9. Your assessor must observe you competently using all the tools and equipment specified in the Scoping Statement of this unit.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
Evidence reference summary

<table>
<thead>
<tr>
<th>Note: Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.</th>
<th>Portfolio reference number (PRN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VRQ</td>
</tr>
<tr>
<td></td>
<td>Observed assessment</td>
</tr>
<tr>
<td>The application of a metallic or mica clear over base finish</td>
<td></td>
</tr>
<tr>
<td>The mixing and application of a metallic or mica clear over base finish</td>
<td></td>
</tr>
<tr>
<td>The application of a textured finish</td>
<td></td>
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<tr>
<td>The blending of colour into an adjacent panel</td>
<td></td>
</tr>
<tr>
<td>A spot repair</td>
<td></td>
</tr>
<tr>
<td>An edge to edge application on a new panel</td>
<td></td>
</tr>
</tbody>
</table>

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

Unit assessment and verification declaration

**VRQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name: _____________________________
Candidate enrolment number: __________________
Candidate signature: _________________________
Date: _____________________________

**VRQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: _____________________________
Assessor signature: _________________________
Date: _____________________________
Countersignature: (if relevant) _________________________
Date: _____________________________

**VRQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: _____________________________
Internal verifier signature: _________________________
Date: _____________________________
Countersignature: (if relevant) _________________________
Date: _____________________________

**N/SVQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name: _____________________________
Candidate enrolment number: __________________
Candidate signature: _________________________
Date: _____________________________

**N/SVQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: _____________________________
Assessor signature: _________________________
Date: _____________________________
Countersignature: (if relevant) _________________________
Date: _____________________________

**N/SVQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: _____________________________
Internal verifier signature: _________________________
Date: _____________________________
Countersignature: (if relevant) _________________________
Date: _____________________________
Performance objective checklist

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear suitable personal protective equipment and use the specified environmental safety equipment throughout all refinishing operations.</td>
<td></td>
</tr>
<tr>
<td>Support vehicle refinishing operations by reviewing:</td>
<td></td>
</tr>
<tr>
<td>• product data</td>
<td></td>
</tr>
<tr>
<td>• the vehicle manufacturer’s technical data</td>
<td></td>
</tr>
<tr>
<td>• colour libraries</td>
<td></td>
</tr>
<tr>
<td>• work instructions.</td>
<td></td>
</tr>
<tr>
<td>Identify the body panel surfaces accurately prior to undertaking any refinishing work.</td>
<td></td>
</tr>
<tr>
<td>Prepare, test and adjust all the tools and equipment required, following manufacturers’ instructions, prior to use.</td>
<td></td>
</tr>
<tr>
<td>Prepare all the refinishing systems and materials required following health and safety requirements and using:</td>
<td></td>
</tr>
<tr>
<td>• materials which conform to the specification required</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved method</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved equipment.</td>
<td></td>
</tr>
<tr>
<td>Ensure all paints you prepare meet the specification required for colour and viscosity prior to application.</td>
<td></td>
</tr>
<tr>
<td>Apply all refinishing systems and materials using approved tools and equipment and following:</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s instructions</td>
<td></td>
</tr>
<tr>
<td>• the correct methods and techniques</td>
<td></td>
</tr>
<tr>
<td>• the correct application techniques for managing colour and tone variables</td>
<td></td>
</tr>
<tr>
<td>• health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Dry all refinishing applied materials follow health &amp; safety requirements &amp; using:</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved method</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved equipment.</td>
<td></td>
</tr>
<tr>
<td>Ensure the finish produced:</td>
<td></td>
</tr>
<tr>
<td>• meets the requirements of the manufacturer’s warranty</td>
<td></td>
</tr>
<tr>
<td>• meets the refinishing specification required and customer needs</td>
<td></td>
</tr>
<tr>
<td>• blends with the existing finish</td>
<td></td>
</tr>
<tr>
<td>• is free from contaminants and defects.</td>
<td></td>
</tr>
<tr>
<td>Dispose of waste materials to conform with legal and workplace requirements.</td>
<td></td>
</tr>
<tr>
<td>Complete all refinishing activities within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>
Scope of this unit

All of the items listed below form part of this National Occupational Standard.

1. Vehicle refinishing operations cover:
   - Preparation
   - Application
   - Drying
   - Polishing.

2. Tools and equipment are:
   - Polishing machines
   - Denibbing blocks
   - Flatting equipment
   - Masking material dispensers
   - Dust extraction
   - Paint mixing and application equipment
   - Viscosity measuring equipment
   - Air supply equipment
   - Spray booth
   - Drying equipment.

3. Refinishing systems and materials are:
   - Compounds
   - Flatting papers
   - Polishes
   - Etch primers
   - Fillers
   - Surfacers.
   - Anti-stone chip treatments
   - Anti-corrosion treatments
   - Cleaning agents
   - Conditioning agents
   - Adhesion promoters
   - Metallic clear over base paints
   - Non-metallic clear over base paints
   - Mica clear over base paints
   - Dilutants
   - Tinters
   - Additives
   - Hardeners.

4. Application techniques are:
   - Edge to edge
   - Fade out
   - Blending colour into adjacent panels
   - Spot repair.

5. Surfaces are:
   - Electro-coated panels
   - Repaired panels
   - Original manufacturer's finish
   - Plastic components
   - Zinc coated panels
   - Steel panels
   - Aluminium panels
   - Previously primed panels.

6. Methods and techniques are for:
   - De-greasing
   - Flatting
   - Burnishing
   - Removing materials to a sound substrate
   - Feathering out
   - Masking
   - Recoating
   - Polishing
Plastic preparation
Tack off.

| Plastic preparation | Tack off. |

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

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You need to understand:

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<thead>
<tr>
<th>Legislative and organisational requirements and procedures</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The health and safety and environmental legislative requirements specific to vehicle refinishing operations and why it is important that these are followed.</td>
<td></td>
</tr>
<tr>
<td>2. Workplace procedures and workshop practices relevant to personal and vehicle protection before, during and after vehicle refinishing operations.</td>
<td></td>
</tr>
<tr>
<td>3. The importance of disposing of waste safely and the consequences of not doing so to others and the environment.</td>
<td></td>
</tr>
<tr>
<td>4. The vehicle work specification agreed.</td>
<td></td>
</tr>
<tr>
<td>5. Your workplace procedures for - the referral of problems - reporting delays to the completion of work - personal protection.</td>
<td></td>
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<td>6. The importance of working to agreed timescales and keeping others informed of progress.</td>
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<td>7. The relationship between time, cost and profitability.</td>
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</tr>
<tr>
<td>8. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and equipment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9. How to prepare, test, adjust and use all the tools and equipment required for vehicle refinishing operations.</td>
<td></td>
</tr>
<tr>
<td>10. Spray gun faults, their cause and their rectification.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>11. How to prepare refinishing systems and materials for use.</td>
<td></td>
</tr>
<tr>
<td>12. The properties of refinishing systems and materials and the factors affecting their use.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foundation and topcoats preparation</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>13. How to recognise damage to surfaces and ancillary fittings.</td>
<td></td>
</tr>
<tr>
<td>15. How the substrate affects the preparation process.</td>
<td></td>
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<tr>
<td>16. How to interpret manufacturer’s preparation schedules.</td>
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<tr>
<td>17. How to prepare new and repaired panels using feathering out, de-greasing, flattening using guide coats, masking for foundation and topcoats, plastic preparation and tack off techniques.</td>
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</tr>
<tr>
<td>18. How to carry out masking procedures to avoid materials wastage and vehicle contamination for each stage of the preparation process.</td>
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<tr>
<td>19. How to prepare panels and parts adjacent to the area being painted.</td>
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</tr>
<tr>
<td>20. The factors governing the choice of panel preparation methods for electro-coated panels, repaired panels, original manufacturer’s finish, plastic components, zinc coated panels, steel panels, aluminium panels and previously primed panels.</td>
<td></td>
</tr>
<tr>
<td>21. The types and grades of available abrasives and the factors governing their use for different substrates.</td>
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</tr>
<tr>
<td>22. Methods of protecting panels and parts adjacent to the areas being painted and the circumstances in which they should be used.</td>
<td></td>
</tr>
<tr>
<td>23. Methods and techniques of masking (including paper and sheet masking) and the circumstances in which they should be used.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparation and application of foundation materials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>24. How to find, interpret and use sources of information relevant to the mixing and application of foundation coatings.</td>
<td></td>
</tr>
<tr>
<td>25. How to condition and clean surfaces prior to the application of foundation coats.</td>
<td></td>
</tr>
<tr>
<td>26. How to rectify surface defects.</td>
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</tr>
<tr>
<td>27. How to apply foundation coatings.</td>
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</tr>
<tr>
<td>28. How to avoid application defects.</td>
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<tr>
<td>29. How to dispose of waste foundation materials.</td>
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</tr>
<tr>
<td>30. The importance of viscosity and its effect on the surface finish.</td>
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</tr>
<tr>
<td>31. The importance of proper cleaning and using the correct foundation material to ensure adequate adhesion of the paint system.</td>
<td></td>
</tr>
<tr>
<td>32. The manufacturer’s approved instructions for working when applying foundation materials.</td>
<td></td>
</tr>
</tbody>
</table>
### Applying top coats

33. How to find, interpret and use sources of information relevant to the refinishing of vehicles.
34. How to apply top coat materials using edge to edge, fade out and blending techniques when applying top coats and undertaking spot repairs, avoiding contamination and defects.
35. How to dry top coats.
36. How to assess and evaluate colour match, blending and the final finish.
37. How to dispose of waste materials.
38. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues.
39. How to minimize the spray area when carrying out spot repairs.
40. The effect of the spray environment and natural environment on vehicle finishes.
41. How application can affect colour variation and tone.
42. The importance of following manufacturers’ instructions and using their approved methods of working (including the use of refinishing systems and materials and equipment).
43. The consequences of failing to follow manufacturers’ instructions.

<table>
<thead>
<tr>
<th>In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessor</td>
</tr>
<tr>
<td>Candidate</td>
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</tbody>
</table>
### Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
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<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td>Communication: Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td></td>
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<tr>
<td>N2.1; N2.2; N2.3</td>
<td>Numeracy: Intermediate 1, Outcomes 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Information Technology: Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td></td>
</tr>
<tr>
<td>WO2.1 WO2.2; WO2.3</td>
<td>Working with Others: Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td>No parallel unit.</td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td></td>
</tr>
<tr>
<td>PS3.1; PS3.2; PS3.3</td>
<td>Problem Solving: Intermediate 2, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Carry out Complete Vehicle Refinishing Operations
This unit is about the ability to undertake the complete vehicle re-painting process, including the preparation and application of foundation materials, on repaired and new vehicle panels.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of workplace and manufacturer approved information.
2. Identify and follow procedures relevant to the selection, testing and maintenance of approved tools and equipment.
3. Identify factors and processes affecting the refinishing operation.
4. Identify and undertake manufacturer approved procedures to complete vehicle refinishing operations.
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of manufacturer approved technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify, follow and state the importance of workplace documentation and policies relevant to vehicle refinishing operations
   a) job cards
   b) time sheets
   c) Quality control checksheets
   d) statutory workshop notices
   e) vehicle protection procedures
      i) interior covers
      ii) exterior covers
   f) prompt reporting of problems and delays to a supervisor.

2. Interpret and follow and state the importance of paint manufacturer technical data relevant to vehicle refinishing
   a) paint data sheets
   b) colour directories
   c) formula microfiche
   d) computer software
   e) websites
   f) process charts.

3. State the consequences of failing to follow paint manufacturers instructions.
   a) surface defects
   b) poor quality finish.

4. Identify and follow manufacturer and workplace approved and agreed timescales
   a) manufacturer approved refinishing schedules
   b) repair estimators guidelines and procedures
   c) workplace policy for reporting anticipated delays and problems.

5. Identify and follow approved health and safety regulations and guidelines
   a) national legislation
      I. COSHH
      II. HASAWA
      III. EPA
      IV. Health surveillance regulations (lung function test)
      V. PPE at work regulations
      VI. Manual handling regulations
      VII. Risk assessment
      VIII. BS 14001
   b) local regulations
      I. duty of care (special waste regulations)
      II. PPE guidance
      III. workplace policies.
Outcome 2
Identify and follow procedures relevant to the selection, testing and maintenance of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and select manufacturer approved hand tools
   a) general hand tools
      I. rubbing blocks
      II. sponges
      III. leathers
      IV. trigger sprays
      V. specialised spray gun spanners
      VI. trimming knife
      VII. paint scraper
      VIII. plastic, rubber and metal applicators
      IX. viscosity measuring equipment
      X. masking dispensers.

2. Identify and select manufacturer approved power tools and equipment
   a) pneumatic, electric and hydraulic types
      I. D.A. fine finishing sander
      II. orbital sander
      III. polisher
      IV. portable and fixed vacuum extraction systems (dust free)
      V. enclosed spray gun cleaner system (compliant)
      VI. portable infra-red emitters
      VII. compressors
      VIII. air regulators, air lines and pressure transformers
      IX. air pipes (ring main)
      X. air connectors
   b) application equipment
      I. paint brushes
      II. spray guns
         • gravity
         • suction
         • pressure
         • hot spray
         • HVLP / LVLP
         • mini types
      III. paint rollers
   c) spray booths/low bake ovens
      I. combi types
      II. separate systems
      III. infra red
   d) paint mixing schemes
      I. scales
      II. microfiche viewers
      III. computerised systems
      IV. solvent and water based systems.

3. Identify and carry out manufacturer approved routine checks on hand, power tools and equipment
   a) safety checks
      I. visual
      II. aural
   b) functional checks
      I. manufacturer specification
   c) recognise and rectify spray gun faults
i. poor atomisation
ii. distorted fan pattern
iii. blocked or dirty fluid tip
iv. poor fluid flow
d) test and calibrate spraybooths
   i. exhaust/intake balance and damper adjustment
   ii. filter checks
   iii. temperature adjustment
   iv. spray and bake cycle time adjustment
   v. fluid and air leaks.

4. Identify and follow procedures for the use and maintenance of essential
   a) personal protection equipment
   b) full face air fed masks
   c) overalls
   d) boots
   e) latex gloves
   f) charcoal masks
   g) dust / particle masks.

5. Identify and rectify spray gun faults
   a) jerky or fluttery fan
   b) poor atomisation
   c) distorted spray fan
   d) fluid or air leakage.
Outcome 3
Identify factors and processes affecting the refinishing operation.

Objective
To achieve this outcome the candidate must be able to:

1. Identify types of substrates prior to refinishing activities
   a) electro-coated panels
   b) repaired panels
   c) original manufacturer’s finish
   d) plastic components
   e) zinc coated panels
   f) steel panels
   g) aluminium panels
   h) previously primed panels.

2. State how the type of substrate affects the preparation process
   a) preparation method
   b) choice of primer
   c) choice of topcoat.

3. Identify the factors governing the choice of preparation method
   a) type of substrate
   b) type and extent of damage
   c) type and depth of existing paint film
   d) colour.

4. Identify substrate preparation methods and techniques
   a) chemical paint stripping
   b) wet hand and machine flatting
   c) dry hand and machine flatting (dust free)
   d) feather edging
   e) preparation of panels adjacent to the repair
      i. scotchbrite
      ii. compound.

5. Identify the factors affecting the quality of the surface finish
   a) viscosity
   b) temperature
   c) humidity
   d) airflow
   e) mixing ratio
   f) method of drying
      i) chemical reaction
      ii) solvent evaporation
      iii) oxidation.
Outcome 4
Identify and undertake manufacturer approved procedures to complete vehicle refinishing operations.

Objective
To achieve this outcome the candidate must be able to:

1. Identify and state the purpose of manufacturer approved preparation materials
   a) types and grades of coated abrasives
      i. open coat
      ii. closed coat
      iii. aluminium oxide (production paper)
      iv. silicon carbide (dry and wet)
      v. fibre types (scotch-brite)
      vi. stearate coated paper
   b) types and grades of liquid abrasives and polishes
      i. burnishing compounds
      ii. waxes
      iii. glazes
   c) types and properties of stoppers
      i. polyester 2 pack
      ii. single pack acrylic an cellulose
   d) types and properties of corrosion prevention treatments
      i. phosphoric acid
      ii. anti-stone chip treatments
      iii. conditioning agents
   e) types and uses of masking material
      i. tapes
         • general grade
         • moisture resistant
         • fine line
         • soft edge
      ii. kraft papers
      iii. plastics sheets
   f) types and properties of stoppers
      i. polyester 2 pack
      ii. single pack acrylic an cellulose.

2. Identify and state the purpose of manufacturer approved refinishing materials
   a) types and properties of high adhesion and etch primers
      i. 1k and 2k coatings
      ii. aerosol types
      iii. primers for plastics
      iv. adhesion promoters
   b) types and properties of primer fillers and surfacers
      i. high build
      ii. epoxy wet-on-wet
      iii. combination etch and primer fillers
   d) types and properties of dilutants
      i. thinners
      ii. hardeners (catalysts)
      iii. additives
   e) types and properties of topcoats
      i. direct gloss finishes (MS, HS, UHS)
      ii. solvent and water-based basecoats
      iii. metallic and mica pearl basecoats.

3. Identify and follow recommended application procedures
   a) spraygun techniques
      i) spray overlap
      ii) triggering
iii) fan adjustment
iv) fluid adjustment
v) air pressure adjustment

b) application techniques
   i) edge to edge
   ii) fade out
   iii) blending colour into adjacent panels
   iv) spot repairs.

4. Identify and follow manufacturers recommended drying procedures
   a) low bake schedules
   b) localised and full vehicles
   c) convection systems
   d) infra-red processes
   e) air drying processes.

5. Identify surface defects.
   a) state the cause and methods of prevention and rectification
      i) dirt nibs
      ii) fisheyes
      iii) orange peel
      iv) solvent popping
      v) microblistering
      vi) dryspray
   b) identify the factors affecting the tone of a metallic finish
      i) temperature
      ii) humidity
      iii) type and amount of thinner
      iv) mixing ratio
      v) application method
   c) identify and follow recommended colour matching procedures
      i) comparison in north daylight
      ii) use of colour variant chips
      ii) burnishing the existing paint film
   d) state the causes of metamerism
      i) light source
      ii) observer
      iii) colour mix.
Outcome 5
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret and state the importance of following national and local legislation and guidance
   a. HASAWA
   b. COSHH
   c. EPA
   d. PPE at work regulations
   e. Health surveillance regulations (lung function test)
   f. Manual handling regulations
   g. Risk assessment
   h. Duty of care regulations (special waste).

2. Identify and follow manufacturer and workplace approved health and safety precautions and guidelines
   a) use of PPE
      I. disposable overalls (non-absorbent)
      II. gloves
      III. footwear
      IV. ear protection
      V. eye and face protection
      VI. before and after work skin creams
      VII. respirator face mask (organic vapour and dust types)
      VIII. air fed respiratory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) workplace procedures to control hazards
      I. risk assessment guidelines
      II. control of dusts and fumes.

3. Identify and follow workplace procedures and legislation for the disposal of waste refinishing material
   a) recycling of waste solvent
   b) disposal of waste to conform with BS 14001.

Assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
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<td>2</td>
<td>5</td>
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<td>3</td>
<td>7</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>5</td>
<td>4</td>
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<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
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</tbody>
</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Successfully mix and matching on at least 1 occasion:
1. Non-metallic colour.
2. Metallic colour.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements

You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in:
   1. your normal workplace
   2. an approved centre, or
   3. a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit

You must:

7. Produce evidence of mixing and matching 3 non-metallic and 3 metallic colours.
8. Your assessor must physically observe you in your normal workplace successfully mixing and matching on at least 1 occasion:
   1. 1 non-metallic colour
   2. 1 metallic colour.

Your assessor must observe you competently using paint mixing equipment, viscosity measuring equipment, paint application equipment, air supply equipment, fume extraction equipment, spray booth and drying equipment.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
### Evidence reference summary

<table>
<thead>
<tr>
<th>Note: Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.</th>
<th>Portfolio reference number (PRN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VRQ</td>
</tr>
<tr>
<td>Observed assessment</td>
<td>Approved centre or workplace</td>
</tr>
<tr>
<td>Mixing and matching non-metallic colour 1</td>
<td></td>
</tr>
<tr>
<td>Mixing and matching non-metallic colour 2</td>
<td></td>
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<tr>
<td>Mixing and matching non-metallic colour 3</td>
<td></td>
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<tr>
<td>Mixing and matching metallic colour 1</td>
<td></td>
</tr>
<tr>
<td>Mixing and matching metallic colour 2</td>
<td></td>
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<tr>
<td>Mixing and matching metallic colour 3</td>
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</tbody>
</table>

**Supplementary evidence (if used) PRN**

**On line test reference for this unit PRN**

### Unit assessment and verification declaration

#### VRQ Candidate declaration:
I confirm that the evidence listed for this unit is authentic and a true representation of my own work

Candidate name: 

Candidate enrolment number: 

Candidate signature: 

Date: 

#### VRQ Assessor declaration:
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor name: 

Assessor signature: 

Date: 

Countersignature: (if relevant) 

Date: 

#### VRQ Internal verifier Declaration:
(Leave blank if sampling of this unit did not take place.)

I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:

I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.

Internal verifier name: 

Internal verifier signature: 

Date: 

Countersignature: (if relevant) 

Date: 

#### N/SVQ Candidate declaration:
I confirm that the evidence listed for this unit is authentic and a true representation of my own work

Candidate name: 

Candidate enrolment number: 

Candidate signature: 

Date: 

#### N/SVQ Assessor declaration:
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor name: 

Assessor signature: 

Date: 

Countersignature: (if relevant) 

Date: 

#### N/SVQ Internal verifier Declaration:
(Leave blank if sampling of this unit did not take place.)

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- observation of assessment practice
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- other – please state:

I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.

Internal verifier name: 

Internal verifier signature: 

Date: 

Countersignature: (if relevant) 

Date: 

|
**Performance objective checklist**

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear suitable personal protective equipment and use the specified environmental safety equipment</td>
<td></td>
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<tr>
<td>throughout all paint mixing and matching activities.</td>
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<tr>
<td>Support paint mixing and matching activities by reviewing:</td>
<td></td>
</tr>
<tr>
<td>• the vehicle manufacturer’s technical data</td>
<td></td>
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<tr>
<td>• material manufacturer’s data</td>
<td></td>
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<tr>
<td>• colour libraries</td>
<td></td>
</tr>
<tr>
<td>• work instructions.</td>
<td></td>
</tr>
<tr>
<td>Prepare, test and adjust all the <strong>equipment</strong> required, following manufacturers’ instructions, prior to use.</td>
<td></td>
</tr>
<tr>
<td>Prepare all the <strong>refinishing systems and materials</strong> required following health and safety requirements and using:</td>
<td></td>
</tr>
<tr>
<td>• materials which conform to the specification required</td>
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<tr>
<td>• the manufacturer’s approved method</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved equipment</td>
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</tr>
<tr>
<td>Mix, compare and adjust colour tones and effects correctly using suitable <strong>mixing and matching techniques</strong>.</td>
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</tr>
<tr>
<td>Ensure all <strong>refinishing systems and materials</strong> prepared meet the specification required for colour and viscosity prior to application.</td>
<td></td>
</tr>
<tr>
<td>Apply <strong>refinishing systems and materials</strong> to colour test cards using approved <strong>equipment</strong> and following:</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s instructions</td>
<td></td>
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<tr>
<td>• the correct application techniques for managing colour and tone variables</td>
<td></td>
</tr>
<tr>
<td>• health and safety requirements.</td>
<td></td>
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<tr>
<td>Dry all colour test cards before checking colour following health and safety requirements and using:</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved method</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved equipment</td>
<td></td>
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<tr>
<td>Ensure the colour produced:</td>
<td></td>
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<tr>
<td>• meets the material manufacturer’s requirements</td>
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<tr>
<td>• meets the customer’s requirements</td>
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<tr>
<td>• is a blendable match to the existing colour</td>
<td></td>
</tr>
<tr>
<td>Dispose of waste materials to conform with legal and workplace requirements.</td>
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</tr>
<tr>
<td>Complete all mixing and matching activities within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
<td></td>
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</tbody>
</table>
## Scope of this unit

All of the items listed below form part of this National Occupational Standard.

<table>
<thead>
<tr>
<th>Equipment is:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. paint mixing equipment</td>
<td></td>
</tr>
<tr>
<td>b. paint formulation equipment</td>
<td></td>
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<tr>
<td>c. viscosity measuring equipment</td>
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<tr>
<td>d. paint application equipment</td>
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<tr>
<td>e. air supply equipment</td>
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<tr>
<td>f. fume extraction equipment</td>
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</tr>
<tr>
<td>g. spray booth</td>
<td></td>
</tr>
<tr>
<td>h. drying equipment.</td>
<td></td>
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</tbody>
</table>

Refinishing systems and materials are:

<table>
<thead>
<tr>
<th>Refinishing systems and materials are:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. textured finishes</td>
<td></td>
</tr>
<tr>
<td>b. metallic clear over base paints</td>
<td></td>
</tr>
<tr>
<td>c. non-metallic clear over base paints</td>
<td></td>
</tr>
<tr>
<td>d. mica clear over base paints</td>
<td></td>
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<tr>
<td>c. dilutants</td>
<td></td>
</tr>
<tr>
<td>d. tinters</td>
<td></td>
</tr>
<tr>
<td>e. additives</td>
<td></td>
</tr>
<tr>
<td>f. hardeners</td>
<td></td>
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</tbody>
</table>

Mixing and matching techniques for:

<table>
<thead>
<tr>
<th>Mixing and matching techniques for:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. colour identification</td>
<td></td>
</tr>
<tr>
<td>b. colour mixing</td>
<td></td>
</tr>
<tr>
<td>c. colour test card production</td>
<td></td>
</tr>
<tr>
<td>d. colour comparison</td>
<td></td>
</tr>
<tr>
<td>e. colour adjustment</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
</tr>
</tbody>
</table>
## Essential knowledge

### You need to understand:

<table>
<thead>
<tr>
<th><strong>Legislative and organisational requirements and procedures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The health and safety and environmental legislative requirements specific to mixing and matching vehicle colours and why it is important that these are followed.</td>
</tr>
<tr>
<td>2. Workplace procedures and workshop practices relevant to personal and vehicle protection before, during and after mixing and matching vehicle colours.</td>
</tr>
<tr>
<td>3. The importance of disposing of waste safely and the consequences of not doing so to others and the environment.</td>
</tr>
<tr>
<td>4. The vehicle work specification agreed.</td>
</tr>
<tr>
<td>5. Your workplace procedures for</td>
</tr>
<tr>
<td>- the referral of problems</td>
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<tr>
<td>- reporting delays to the completion of work.</td>
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<tr>
<td>6. The importance of working to agreed timescales and keeping others informed of progress.</td>
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<tr>
<td>7. The relationship between time, cost and profitability.</td>
</tr>
<tr>
<td>8. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
</tr>
</tbody>
</table>

### Equipment

| 9. How to prepare, test, adjust and use all the equipment required for mixing and matching vehicle paint colours. |
| 10. How spraying equipment adjustments can alter colour. |
| 11. Spray gun faults, their cause and their rectification. |

### Refinishing systems and materials

| 12. The properties of refinishing systems and materials and the factors affecting their use. |

### Mixing and Matching Paint Colours

| 13. How to find, interpret and use sources of information relevant to the mixing and matching of vehicle paint colours. |
| 14. The principles of colour, the colour wheel and the effects of light. |
| 15. How to compare, mix, test and adjust colour tones and effects, including metallic and mica effects. |
| 16. The consequences of adding too much tinter and the process for correcting and adjusting it. |
| 17. The factors affecting colour variation and tone, including the effects of metamerism |
| 18. How to dry test panels and colour test cards and the importance of doing so. |
| 19. How to identify the causes of, and rectify, colour mismatch. |
| 20. How to assess and evaluate the need for blending techniques to achieve an acceptable colour match. |
| 21. The importance of correctly preparing the existing finish for colour matching and checking the match using the correct light source. |
| 22. How to identify the paint substrate and the importance of doing so. |
| 23. How to dispose of waste materials. |
| 24. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues. |
| 25. The importance of following manufacturers’ instructions and using their approved methods of working, including using of refinishing systems and materials and equipment. |
| 26. The consequences of failing to follow manufacturers’ instructions. |

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

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<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
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</tbody>
</table>
### Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
</tr>
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<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong></td>
</tr>
<tr>
<td>C1.1; C1.3 C2.2</td>
<td>Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong></td>
</tr>
<tr>
<td>N2.1; N2.2; N2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td><strong>Information Technology:</strong></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong></td>
</tr>
<tr>
<td>WO2.1 WO2.2; WO2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td><strong>No parallel unit.</strong></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong></td>
</tr>
<tr>
<td>PS3.1; PS3.2; PS3.3</td>
<td>Intermediate 2, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Mix and Match Vehicle Paint Colours
This unit is about the ability to identify, mix and match vehicle paint colours, including the use of tinters and the preparation of colour test cards.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of information.
2. Identify and follow procedures relevant to the selection, checking and storing of approved tools and equipment.
3. Identify and undertake manufacturer approved procedures to mix and match vehicle colours.
4. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of information.

Objectives
To achieve this outcome the candidate must be able to:

1. Describe and follow manufacturer technical data
   a) manufacturer approved vehicle refinishing procedures and repair techniques and materials
      I. material lists
      II. technical data
      III. colour registers
      IV. variant lists
      V. colour mixing formulae/recipes
      VI. vehicle refinishing warranty specifications
   b) manufacturer approved tools and equipment
      I. promotional and sales literature
      II. tools and equipment lists
      III. legislative restrictions and guidelines governing application of refinishing paints.

2. Describe and follow manufacturer and workplace approved processes and procedures
   a) recommended preparation and application procedures.

3. Interpret and follow manufacturer technical data
   a) paint data sheets
   b) material lists
   c) process charts
   d) colour directories / colour registers
   e) microfiche
   f) computer software
   g) paint company websites
   h) vehicle refinishing warranty procedures/specifications
   i) colour chips and variants
   j) VIN plates / paint codes.

2. State the importance of following manufacturers recommended procedures and the consequences of failing to do so.
   a) poor quality finish
   b) bad colour match
   c) surface defects

3. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) PPE
   d) protecting the vehicle from damage
e) quality control procedures
f) statutory workshop notices
g) procedures for reporting progress.

4. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.
Outcome 2
Identify and follow procedures relevant to the selection, checking and storing of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and adjust approved tools and equipment
   a) paint mixing equipment
      I. mixing scheme
      II. scales
      III. electronic balance
      IV. automatic stirrers and agitators
   b) paint formulation equipment
      I. microfiche reader and slides
      II. computerised smart scales/balance
   c) viscosity measuring equipment
      I. flow cup
      II. stop watch (timer)
      III. decanting vessels
      IV. stir sticks and agitators
   d) paint application equipment
      I. strainers
      II. mixing vessels
      III. spray guns
      IV. automatic and manual enclosed equipment cleaning systems
   e) air supply equipment
      I. air line
      II. compressor
      III. regulator/transformer
      IV. air duster gun (blower)
   f) fume extraction equipment
      I. mixing room ventilation
   g) spray booth
      I. separate and combination types
   h) drying equipment
      I. infra-red hand held emitter
      II. low bake system
      III. air blower (waterborne basecoats)
   i) colour testing (non-destructive)
      I. spray out cards
      II. gloss meter
      III. spectrophotometer
      IV. dry film thickness gauge
      V. magnifier (paint inspection gauge)
   j) health and safety equipment
      I. select and use PPE
      • overalls
      • gloves
      • boots
      • ear protection
      • eye and face protection
      • before and after work skin creams
      • air-fed apparatus
   II. legislation requirements
      • visual inspection
      • maintenance record
      • breathable air quality checks.

2. Undertake approved routine maintenance activities
   a) visual checks
I. PAT label
   II. damaged air lines and couplers
      b) functional
         I. compressor lubrication
      c) aural
         I. compressed air leaks
      d) spray booth
         I. filters
         II. door seals
         III. exhaust/intact balance (magnahelic gauge).

3. Identify spray gun faults, state the cause, and method of rectification
   a) poor atomisation
   b) distorted fan pattern
   c) fluid and air leaks
   d) poor fluid flow.

4. Undertake approved storage of tools and equipment
   a) boxes and trays
   b) cupboards and racks
   c) shadow boards
   d) flame proof considerations (paint mixing room).
Outcome 3
Identify and follow manufacturer approved procedures to mix and match vehicle colours.

Objective
To achieve this outcome the candidate must be able to:

1. State the principles of light and colour
   a) describe colour in terms of the munsell colour notation
      i) hue
      ii) value
      iii) chroma
      iv) chromatic / achromatic
   b) describe the principles of the colour wheel
      i) state the primary colours of colour (RBY)
      ii) secondary colours
      iii) tertiary colours
      iv) contrasting and complementary colours
      v) after image
   c) describe light as a wavelength
      i) state the spectrum of light; red, orange, yellow, green, blue, indigo, violet
      ii) state the primary colours of light, (RBG)
   d) state the types and causes of metamerism
      i) the effect of various light sources (natural and artificial)
      ii) the observer
      iv) the colour mix
   e) describe the principles of colour variation in metallic and mica paints
      I. side tone
      II. flip tone
      III. face tone.

2. Describe the factors that influence colour variation in metallic and mica paints
   a) atomising air pressure
   b) viscosity
   c) spray gun speed and distance
   d) trigger adjustment
   e) fan width adjustment
   f) flash off
   g) airflow
   h) spray booth temperature
   i) humidity.

3. Interpret and follow the process for tinting and adjusting colour
   a) procedures for preparation of the vehicle prior to colour matching
      i) the importance of correct substrate identification
      ii) the importance of burnishing the existing paint film
      iii) assessment of the need for fading out
   b) use of colour chips
   c) gradually adding & subtracting tinter
   d) spraying out and complete drying of a test panel
   e) comparison of colour in north daylight
   f) assessment of the number and type of coats required.

4. State the properties of types of refinishing systems and the factors affecting their use
   a) direct gloss
   b) straight colour basecoats (solvent and water based)
   c) metallic basecoats (solvent and water based)
   d) mica pearl basecoats.

5. Interpret and follow manufacturer and workplace approved processes for checking that the repair meets the quality standard
   a) visual methods
      I. colour and texture/appearance
II. recommended light source
   A. natural day light
   B. actinic artificial light

III. colour reference manuals
   b) functional methods
      I. spray out cards
         comparison of
         A. colour
         B. tone
         C. texture.
Outcome 4
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Recognise and interpret national and local legislation and guidance
   a. HASAWA
   b. COSHH
   c. EPA
   d. PPE at work regulations
   e. Health surveillance regulations (lung function test)
   f. Manual handling regulations
   g. Risk assessment
   h. Duty of care regulations (special waste).

2. Demonstrate and undertake manufacturer and workplace approved procedures following health and safety precautions and guidelines
   a) use of PPE
      I. disposable overalls (non-absorbent)
      II. gloves
      III. footwear
      IV. ear protection
      V. eye and face protection
      VI. before and after work skin creams
      VII. respirator face mask (organic vapour and dust types)
      VIII. air fed respiratory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) workplace procedures to control hazards
      I. risk assessment guidelines
      II. control of dusts and fumes.

Assessment

**Essential knowledge assessment**
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
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<tbody>
<tr>
<td>1</td>
<td>5</td>
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<td>2</td>
<td>6</td>
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<td>3</td>
<td>10</td>
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<td>4</td>
<td>4</td>
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<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
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</tbody>
</table>
Further guidance available

Observation of your task/work

Evidence recording

Computer based testing

Verbal Questioning

Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).
To complete this unit you must:
1. Provide performance evidence of rectifying at least one fault or defect from 3 out of the 8 categories of defects and faults listed in the Scope for this unit.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
**Information for N/SVQs**

**General Requirements**

You must:

1. produce evidence to show you meet all of the performance objectives consistently.
2. produce evidence to show that you have covered all the items listed in the scope for this unit.
3. produce evidence to show that you possess all the knowledge required.
4. produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. be observed by a qualified assessor carrying out work in:
   - your normal workplace
   - an approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

**Specific Performance Evidence for this Unit**

7. You must provide performance evidence of rectifying at least one fault or defect from 4 out of the 8* categories of defects and faults listed in the Scope for this unit. Each of these faults must involve the complete rectification process, including the preparation and application of foundation materials and topcoats. Your evidence must include rectification of faults or defects on metallic and non-metallic painted vehicle panels.
8. Your assessor must physically observe you in your normal workplace successfully rectifying paint faults or defects on at least 2 separate occasions.

*However, you must prove to your assessor that you have the necessary knowledge, understanding and skills to be able to perform competently in respect of all the categories of faults listed in the Scope for this Unit.

With your assessor you must complete a suitable **City & Guilds evidence recording form for each task**. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an **apprenticeship** workplace observation will also provide VRQ evidence.
Evidence reference summary

<table>
<thead>
<tr>
<th>City &amp; Guilds</th>
<th>Portfolio reference number (PRN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VRQ</td>
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<tr>
<td></td>
<td>Observed</td>
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<tr>
<td>Assessment</td>
<td>centre or workplace</td>
</tr>
</tbody>
</table>

Rectifying paint faults or defects 1
Rectifying paint faults or defects 2
Rectifying paint faults or defects 3
Rectifying paint faults or defects 4

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

Unit assessment and verification declaration

VRQ Candidate declaration:
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name:...........................................
Candidate enrolment number:..........................
Candidate signature:...................................
Date: ..............................................

VRQ Assessor declaration:
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ......................................
Assessor signature: ..................................
Date: ..............................................
Countersignature: (if relevant)....................
Date: ..............................................

VRQ Internal verifier Declaration:
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
• sampling candidate and assessment evidence
• observation of assessment practice
• discussion with candidate
• other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: .............................
Internal verifier signature: ..........................
Date: ..........................
Countersignature: (if relevant) ...................
Date: ..........................

N/SVQ Candidate declaration:
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name: ..................................
Candidate enrolment number: ..........................
Candidate signature: ..................................
Date: ..............................................

N/SVQ Assessor declaration:
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ......................................
Assessor signature: ..................................
Date: ..............................................
Countersignature: (if relevant) ....................
Date: ..............................................

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Internal verifier name: .............................
Internal verifier signature: ..........................
Date: ..........................
Countersignature: (if relevant) ...................
Date: ..........................
### Performance objective checklist

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the appropriate personal protective equipment when carrying out the repair of paint defects and faults.</td>
<td></td>
</tr>
<tr>
<td>Protect the vehicle and its contents effectively when carrying out the repair of paint defects and faults</td>
<td></td>
</tr>
<tr>
<td>Support your rectification activities by reviewing:</td>
<td></td>
</tr>
<tr>
<td>• product data</td>
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<tr>
<td>• the vehicle manufacturer’s technical data</td>
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<tr>
<td>• colour libraries</td>
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<tr>
<td>• work instructions.</td>
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</tr>
<tr>
<td>Prepare, test and adjust all the tools and equipment required, following manufacturer’s instructions prior to use.</td>
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<tr>
<td>Identify the body panel surfaces accurately prior to undertaking any rectification work.</td>
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<tr>
<td>Correct paint defects and faults effectively using the approved tools and equipment and refinishing systems and materials following</td>
<td></td>
</tr>
<tr>
<td>• manufacturer’s instructions</td>
<td></td>
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<tr>
<td>• the correct methods and techniques</td>
<td></td>
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<tr>
<td>• health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Ensure the finish produced is free from contamination and defects and meets the required work specification.</td>
<td></td>
</tr>
<tr>
<td>Dispose of waste materials to conform with legal and workplace requirements.</td>
<td></td>
</tr>
<tr>
<td>Complete all paint repair activities within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

### Scope of this unit

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Paint defects and faults are those arising from</td>
<td></td>
</tr>
<tr>
<td>a. poor application</td>
<td></td>
</tr>
<tr>
<td>b. environmental conditions</td>
<td></td>
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<tr>
<td>c. contamination</td>
<td></td>
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<tr>
<td>d. corrosion</td>
<td></td>
</tr>
<tr>
<td>e. wear and tear</td>
<td></td>
</tr>
<tr>
<td>f. adverse chemical reactions</td>
<td></td>
</tr>
<tr>
<td>g. panel deformation</td>
<td></td>
</tr>
<tr>
<td>h. poor preparation</td>
<td></td>
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<tr>
<td>2. Methods and techniques are for</td>
<td></td>
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<tr>
<td>a. de-greasing</td>
<td></td>
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<tr>
<td>b. environmental conditions</td>
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<td>f. adverse chemical reactions</td>
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<td>g. panel deformation</td>
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<td>h. poor preparation</td>
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<td>3. Tools and equipment are</td>
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<tr>
<td>a. polishing machines</td>
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<td>b. denibbing blocks</td>
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<td>c. flatting equipment</td>
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<td>d. masking material dispensers</td>
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<td>e. dust extraction</td>
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<td>f. paint mixing and application equipment</td>
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<td>g. viscosity measuring equipment</td>
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<td>h. air supply equipment</td>
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<tr>
<td>i. spray booth</td>
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<td>j. drying equipment</td>
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<td>4. Refinishing systems and materials are</td>
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<tr>
<td>a. compounds</td>
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</table>
b. flatting papers  
c. polishes  
d. etch primers  
e. fillers  
f. surfacers  
g. anti-stone chip treatments  
h. anti-corrosion treatments  
i. cleaning agents  
j. conditioning agents  
k. adhesion promoters  
l. metallic clear over base paints  
m. non-metallic clear over base paints  
n. mica clear over base paints  
o. dilutants  
p. tinters  
q. additives  
r. hardeners.

5. Surfaces are  
  a. electro-coated panels  
  b. repaired panels  
  c. original manufacturer’s finish  
  d. plastic components  
  e. zinc coated panels  
  f. steel panels  
  g. aluminium panels  
  h. previously primed panels.

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
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<td>Date</td>
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### Essential knowledge

**You need to understand:**

#### Legislative and organisational requirements and procedures

1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection.
2. The importance of disposing of waste safely and the consequences of not doing so to others and the environment.
3. The importance of selecting, using and maintaining the appropriate personal protective equipment when repairing paint defects and faults.
4. The vehicle work specification agreed.
5. Your workplace procedures for
   - the referral of problems
   - reporting of delays to the completion of work
   - personal protection
6. The requirements for protecting the vehicle and contents from damage before, during and after repairing paint defects and faults.
7. The importance of working to agreed timescales and keeping others informed of progress.
8. The relationship between time, cost and profitability.
9. The importance of reporting anticipated delays to the relevant person(s) promptly

#### Tools and equipment

10. How to prepare, test, use and adjust all the refinishing tools and equipment required for the repair of paint defects and faults.
11. Spray gun faults, their cause and their rectification.
12. The types of fault that can be caused by faulty and misused refinishing tools and equipment and how to rectify them.

#### Materials

13. How to select, prepare and use refinishing systems and materials.
14. The properties of refinishing systems and materials and the factors affecting their choice and use.

#### Foundation and topcoats preparation

15. How to recognise damage to surfaces and ancillary fittings.
16. How to recognise substrates.
17. How the substrate affects the preparation process.
18. How to interpret manufacturer’s preparation schedules.
19. How to prepare new and repaired panels using feathering out, de- greasing, flattening using guide coats, masking for foundation and topcoats, plastic preparation techniques.
20. How to carry out masking procedures to avoid materials wastage and vehicle contamination for each stage of the preparation process.
21. How to prepare panels and parts adjacent to the area being painted.
22. The factors governing the choice of panel preparation methods for electro-coated panels, repaired panels, original manufacturer’s finish, plastic components, zinc coated panels, steel panels, aluminium panels and previously primed panels.
23. The types and grades of available abrasives and the factors governing their use for different substrates.
24. Methods of protecting panels and parts adjacent to the areas being painted and the circumstances in which they should be used.
25. Methods and techniques of masking (including paper and sheet masking) and the circumstances in which they should be used.
27. How to find, interpret and use sources of information relevant to the mixing and application of foundation coatings.
28. How to condition and clean surfaces prior to the application of foundation coats.
29. How to rectify surface defects.
30. How to apply foundation coatings.
31. How to avoid application defects.
32. How to dispose of waste foundation materials.
33. The importance of viscosity and its effect on the surface finish.
34. The importance of proper cleaning and using the correct foundation material to ensure adequate adhesion of the paint system.
35. The manufacturer’s approved instructions for working when applying foundation materials.

**Applying top coats**

36. How to find, interpret and use sources of information relevant to the refinishing of vehicles.

37. How to apply top coat materials using edge to edge, fade out and blending techniques when undertaking a complete repaint and spot repairs, avoiding contamination and defects.

38. How to dry top coats.

39. How to assess and evaluate colour match, blending and the final finish.

40. How to dispose of waste materials.

41. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues.

42. How to minimise the spray area when carrying out spot repairs.

43. The effect of the spray environment and natural environment on vehicle finishes.

44. How application can affect colour variation and tone.

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

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Syllabus

Identify and Rectify Complex Vehicle Paint Defects and Faults

This unit is about rectifying a range of faults which may often require the removal of materials to a sound substrate in order for rectification to take place. This unit requires the ability to undertake the complete rectification process, including the preparation and application of foundation materials and topcoats.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the candidate must be able to:

1. Identify procedures and interpret sources of information.
2. Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.
3. Identify and follow manufacturer approved procedures to identify and rectify vehicle paint defects and faults.
4. Identify and follow procedures to prepare substrates and materials for the rectification of paint fault defects.
5. Interpret and follow health and safety legislation and regulations in accordance with manufacturer and workplace procedures.
Outcome 1
Identify procedures and interpret sources of information.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret and follow manufacturer technical data
   a) paint data sheets
   b) process charts
   c) colour directories
   d) microfiche
   e) computer software
   f) paint company websites
   g) vehicle refinishing warranty procedures
   h) paint fault guides.

2. State the importance of following manufacturers recommended procedures and the consequences of failing to do so.
   a) poor quality finish
   b) bad colour match
   c) surface defects.

3. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) PPE
   d) protecting the vehicle from damage
   e) quality control procedures
   f) statutory workshop notices
   g) procedures for reporting progress
   h) parts and consumable requests.

4. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

5. Identify and follow workplace procedures for protecting the vehicle and contents from damage during paint fault rectification
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
   e) floor mats.
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify approved tools and equipment
   a) paint mixing equipment
      I. mixing scheme
      II. scales
      III. electronic balance
   b) paint formulation equipment
      I. microfiche reader and slides
      II. computerised smart scales/balance
      III. computer software
   c) viscosity measuring equipment
      I. flow cup
      II. stop watch (timer)
      III. decanting vessels
      IV. stir sticks and agitators
   d) paint application equipment
      I. strainers
      II. mixing vessels
      III. spray guns
      IV. automatic and manual enclosed equipment cleaning systems
   e) air supply equipment
      I. air line
      II. compressor
      III. regulator/transformer
      IV. air duster gun (blower)
   f) general tools and equipment
      I. rubbing blocks
         • rubber
         • micro
         • finger
      II. sundries
         • leathers
         • sponges
         • wipes
      III. sanders
         • pneumatic and electric
         • DA fine finishing sanders (types)
         • orbital sanders
         • backing pads (soft, hard and inter-face types)
      IV. polishers
         • pneumatic
         • electric
         • heads (sponge/foam, lambs wool, synthetic types)
   g) fume extraction equipment

BP12/BP12-V51 Identify and Rectify Vehicle Paint Defects and Faults.doc  Version 1.1
Page 11 of 18
I. mixing room ventilation
II. portable and fixed dust extraction

h) spray booth
   I. separate and combination types

i) drying equipment
   I. infra-red hand held emitter and fitted systems
   II. low bake system
   III. air blower (waterborne basecoats)

j) paint testing (non-destructive)
   I. gloss meter
   II. spectrophotometer
   III. dry film thickness gauge (elcometer)
   IV. magnifier (paint inspection gauge)
   V. porosity tester (holitector)
   VI. adhesion tester (destructive type)

k) health and safety equipment
   I. select and use PPE’s
      • overalls
      • gloves
      • boots
      • ear protection
      • eye and face protection
      • before and after work skin creams
      • air-fed apparatus
   II. legislation requirements
      • visual inspection
      • maintenance record
      • breathable air quality checks.

2. Identify and follow approved routine maintenance activities
   a) visual checks
      I. PAT’s label
      II. damaged air lines and couplers
   b) functional
      I. compressor lubrication
      II. air receiver drainage
      III. spray gun tests
         • fan shape
         • atomisation
         • fluid and air leaks
   c) aural
      I. compressed air leaks
   d) spray booth
      I. filters
      II. door seals
      III. exhaust/intact balance (magnahelic gauge)
      IV. dust control.

3. Identify spray gun faults; state the cause, and method of rectification
   a) poor atomisation
   b) distorted fan pattern
   c) fluid and air leaks
   d) poor fluid flow.

4. Undertake approved storage of tools and equipment
   a) boxes and trays
   b) cupboards and racks
   c) shadow boards
   d) flame proof considerations (paint mixing room).
Outcome 3
Identify and follow manufacturer approved procedures to identify and rectify vehicle paint defects and faults.

Objective
To achieve this outcome the candidate must be able to:

1. Identify and establish the causes of paint defects
   a) application defects
      I. poor application
         A. orange peel
         B. dry spray
         C. over spray
         D. runs and curtains
         E. striping
         F. mottling
         G. floating and flooding
         H. popping or boiling
         I. cracking
         J. featheredge splitting
         K. dissolution
      II. poor preparation
         A. fish eyes (sissing)
         B. bleeding
         C. flacking or peeling
         D. scratch opening
         E. pinholing
         F. lifting or shrivelling
         G. contour mapping
         H. sinkage
      III. contamination
         A. dirt (inculsions)
         B. cosmetic corrosion
         C. perforation corrosion
         D. blistering
         E. micro blistering
         F. water spotting
   b) ageing defects
      I. wear and tear
         A. scratches
         B. chipping
      II. panel deformation
         A. cracks
         B. splits
      III. adverse chemical reaction
         A. acid rain
         B. bird droppings
         C. traffic film
      IV. environmental conditions
         A. bleaching
         B. metamerism
         C. blushing and blooming.
2. Identify procedures and methods for the rectification of paint defects
   a) identification of substrates
      I. electro-coated panels
      II. repaired panels
         A. after market foundation coatings
         B. after market finishes
      III. original manufacturers finish
b) methods and techniques
   I. sanding and flattening (hand and machine)
      A. wet and dry processes
      B. de-nib
      C. feathering
   II. stripping
      A. chemical process
      B. mechanical process
   III. recoating
      A. spot repair
      B. edge to edge repair
      C. blend and fade out repair
      D. colour adjustment (mis-match colour)
   IV. polishing and burnishing
      A. hand and machine processes
      B. localised nib removal
      C. complete panel compounding and polishing

c) systems and materials
   I. abrasives
      A. papers and pastes
      B. hand and machine types
      C. wet and dry types
   II. foundation coatings
      A. cleaning agents
      B. etch primers
      C. fillers
      D. primers and surfacers
      E. sealers and isolators
      F. anti-stone chip paints
      G. anti-corrosion paints
      H. conditioning agents
      I. adhesion promoters
      J. solvents and additives
   III. top coats
      A. COB metallics and mica finishes
      B. COB solid colours
      C. direct gloss finishes
      D. textured finishes
   IV. compounds and polishes
      A. coarse, medium and fine grades
      B. waxes and glazes
   V. masking techniques and materials
      A. papers and plastics
      B. general tapes
      C. fine line tapes
      D. soft edge tape
      E. edge to edge procedure
      F. spot and local masking procedures
      G. components masking techniques
      H. door and panel aperture techniques.
3. Identify and follow procedures for substrate identification
   a) solvent test
   b) use of liquid abrasive.
Outcome 4
Identify and follow procedures to prepare substrates and apply materials for the rectification of paint fault defects.

Objective
To achieve this outcome the candidate must be able to:

1. Identify types of substrates prior to refinishing activities
   I. electro-coated panels
   II. repaired panels
   III. original manufacturer’s finish
   IV. plastic components
   V. zinc coated panels
   VI. steel panels
   VII. aluminium panels
   VIII. previously primed panels.

2. State how the type of substrate affects the preparation process
   a) preparation method
   b) choice of primer
   c) choice of topcoat.

3. Identify the factors governing the choice of preparation method
   a) type of substrate
   b) type and extent of damage
   c) type and depth of existing paint film
   d) colour.

4. Identify substrate preparation methods and techniques
   a) chemical paint stripping
   b) wet hand and machine flattening
   c) dry hand and machine flattening (dust free)
   d) feather edging
   e) preparation of panels adjacent to the repair
      I. scotchbrite
      II. compound.

5. Identify the factors affecting the quality of the surface finish
   a) viscosity
   b) temperature
   c) humidity
   d) airflow
   e) mixing ratio
   f) method of drying
      i) chemical reaction
         ii) solvent evaporation
         iii) oxidation.
Outcome 5
Interpret and follow health and safety legislation and regulations in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret and follow national and local legislation and guidance
   a. HASAWA
   b. COSHH
   c. EPA
   d. PPE’s at work regulations
   e. Health surveillance regulations (lung function test)
   f. Manual handling regulations
   g. Risk assessment
   h. Duty of care regulations (special waste)
   i. Conformance to BS14001.

2. Identify and follow manufacturer and workplace approved health and safety precautions and guidelines
   a) use of PPE
      I. disposable overalls (non-absorbant)
      II. gloves
      III. footwear
      IV. ear protection
      V. eye and face protection
      VI. before and after work skin creams
      VII. respirator face mask (organic vapour and dust types)
      VIII. air fed respiritory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) workplace procedures to control hazards
      I. risk assessment guidelines
      II. control of dusts and fumes
      iii. breathable air quality checks.
Assessment

**Essential knowledge assessment**

Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

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Remove and Replace Vehicle Body Panels

Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).
To complete this unit you must:
Remove and replace the following types of vehicle body panels:

1. Welded non-structural panels.
2. Welded structural panels.
3. Non-welded non-structural panel.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
**Information for N/SVQs**

**General Requirements**

You must:

1. Produce evidence to show you meet all of the performance objectives consistently.

2. Produce evidence to show that you have covered all the items listed in the scope for this unit.

3. Produce evidence to show that you possess all the knowledge required.

4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.

5. Be observed by a qualified assessor carrying out work in
   - your normal workplace
   - and approved centre, or
   - a combination of both.

6. Evidence from simulated activities is not acceptable for this unit.

**Specific Performance Evidence for this Unit**

You must:

7. Produce evidence of removing and replacing the following types of vehicle body panels:
   - welded non-structural panels
   - welded structural panels
   - 1 non-welded non-structural panel.

8. Your assessor must physically observe you on at least 2 separate occasions in your normal workplace successfully removing and replacing welded structural panels.

With your assessor you must complete a suitable **City & Guilds evidence recording form** for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an **apprenticeship** workplace observation will also provide VRQ evidence.
Evidence reference summary

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On line test reference for this unit PRN

Unit assessment and verification declaration

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<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
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<td>Countersignature: (if relevant) ………………………</td>
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</tbody>
</table>
Performance objective checklist

<table>
<thead>
<tr>
<th>To be competent you must ensure that</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear suitable personal protective equipment throughout all vehicle body panel removal and replacement activities.</td>
<td></td>
</tr>
<tr>
<td>Support the removal and replacement of vehicle body panels by reviewing:</td>
<td></td>
</tr>
<tr>
<td>• technical data</td>
<td></td>
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<tr>
<td>• repair procedures</td>
<td></td>
</tr>
<tr>
<td>• manufacturer's specifications.</td>
<td></td>
</tr>
<tr>
<td>Prepare, connect and test all the tools and equipment required, following manufacturers' instructions, prior to use.</td>
<td></td>
</tr>
<tr>
<td>Remove all necessary vehicle body panels and assemblies following:</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer’s approved methods</td>
<td></td>
</tr>
<tr>
<td>• recognised industry codes of practice</td>
<td></td>
</tr>
<tr>
<td>• your workplace procedures</td>
<td></td>
</tr>
<tr>
<td>• the vehicle work specification</td>
<td></td>
</tr>
<tr>
<td>• health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Seek guidance from the relevant person(s) promptly where there is the potential for your work to disturb other vehicle systems.</td>
<td></td>
</tr>
<tr>
<td>Use replacement body panels and assemblies which conform to the vehicle specifications for dimensions, materials and functional capability.</td>
<td></td>
</tr>
<tr>
<td>Refit all replacement structural body panels and assemblies following:</td>
<td></td>
</tr>
<tr>
<td>• the manufacturer's approved fitting methods</td>
<td></td>
</tr>
<tr>
<td>• recognised industry codes of practice</td>
<td></td>
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<tr>
<td>• your workplace procedures</td>
<td></td>
</tr>
<tr>
<td>• the vehicle work specification</td>
<td></td>
</tr>
<tr>
<td>• health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Use and apply sealants and weld primers and anti-corrosion treatments conforming to the manufacturer's specification.</td>
<td></td>
</tr>
<tr>
<td>Ensure all test weld pieces conform to the current British Standard for appearance and penetration.</td>
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</tr>
<tr>
<td>Ensure all refitted panels are aligned correctly with adjacent panels and match the original vehicle specification.</td>
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<tr>
<td>Complete all removal and replacement activities within the agreed timescale.</td>
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<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
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</tbody>
</table>

Scope of this unit

All of the items listed below form part of this National Occupational Standard. PRN

1. Body panels are:
   a. non-welded non-structural
   b. welded non-structural
   c. welded structural panels
   d. bonded panels.

2. Tools and equipment are:
   a. hand tools
   b. power tools
   c. welding equipment (including inert gas, resistance and or spot)
   d. adhesive application tools
   e. special tools for removing welded panels
   f. jigs.

3. Fitting methods are:
   a. welding
   b. mechanical fastening
   c. adhesive bonding.

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

Assessor                                      Date

Candidate                                     Date
### Essential knowledge

You need to understand:

<table>
<thead>
<tr>
<th>PRN</th>
<th>Legislative and organisational requirements and procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The health and safety legislation and workplace procedures relevant to workshop practices, personal and vehicle protection when removing and replacing vehicle body panels.</td>
</tr>
<tr>
<td>2.</td>
<td>The requirements of manufacturer’s warranty agreements.</td>
</tr>
<tr>
<td>3.</td>
<td>The vehicle work specification agreed.</td>
</tr>
<tr>
<td>4.</td>
<td>Your workplace procedures for: the referral of problems, reporting of delays to the completion of work, personal protection.</td>
</tr>
<tr>
<td>5.</td>
<td>The requirements for protecting the vehicle and contents from damage before, during and after removing and replacing vehicle body panels.</td>
</tr>
<tr>
<td>6.</td>
<td>The importance of working to agreed timescales and keeping others informed of progress.</td>
</tr>
<tr>
<td>7.</td>
<td>The relationship between time, cost and profitability.</td>
</tr>
<tr>
<td>8.</td>
<td>The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tools and equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>How to prepare, test and use the tools and equipment required for the removal and replacement of vehicle body panels and ancillary fittings.</td>
</tr>
<tr>
<td>10.</td>
<td>How to operate spot welding and gas shielded arc welding equipment to achieve welds to current BS.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Materials</th>
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</thead>
<tbody>
<tr>
<td>11.</td>
<td>The properties of sealants, adhesives and anti corrosion materials and the requirements for safe use.</td>
</tr>
<tr>
<td>12.</td>
<td>The type of sealants and anti-corrosion materials to use and the manufacturer’s recommended methods for their application and thickness.</td>
</tr>
<tr>
<td>14.</td>
<td>How to select and apply sealants and anti-corrosion materials.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Removing and replacing vehicle body panels</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>The principles governing how unitary and separate chassis vehicle bodies are constructed.</td>
</tr>
<tr>
<td>16.</td>
<td>How to identify and remove spot and gas shielded arc welds to meet manufacturer’s and the current British Standard.</td>
</tr>
<tr>
<td>17.</td>
<td>How to identify the difference between manufacturer’s processes and repair processes.</td>
</tr>
<tr>
<td>18.</td>
<td>The principles of resistance spot welding, gas shielded arc plug welding, gas shielded arc welding and gas shield arc brazing.</td>
</tr>
<tr>
<td>19.</td>
<td>The correct procedures for the removal and replacement of vehicle body panels.</td>
</tr>
<tr>
<td>20.</td>
<td>The manufacturer’s approved methods of working for the removal and replacement of body panels.</td>
</tr>
<tr>
<td>21.</td>
<td>The different types of mechanical fixings for body panels and when and why they should be used.</td>
</tr>
<tr>
<td>22.</td>
<td>The repair and welding implications of working with high strength steels (hss), low carbon steels (lcs), aluminium alloys, galvanised coatings and Boron.</td>
</tr>
<tr>
<td>23.</td>
<td>How panel removal and refitting affects the overall body structure of the vehicle.</td>
</tr>
<tr>
<td>24.</td>
<td>The causes and rectification of distortion resulting from welding.</td>
</tr>
<tr>
<td>25.</td>
<td>How to find, interpret and use sources of information relevant to the removal and replacement of vehicle body panels and assemblies.</td>
</tr>
<tr>
<td>26.</td>
<td>How to remove and replace vehicle body panels and assemblies.</td>
</tr>
<tr>
<td>27.</td>
<td>How to remove and replace door skins.</td>
</tr>
<tr>
<td>28.</td>
<td>How to establish cut lines for partial panel replacement.</td>
</tr>
<tr>
<td>29.</td>
<td>How to prepare all edges to be joined.</td>
</tr>
<tr>
<td>30.</td>
<td>How to select the correct joints and joining processes to match the repair area.</td>
</tr>
<tr>
<td>31.</td>
<td>The importance and implications of panel clamping and alignment to match existing contours and gaps.</td>
</tr>
<tr>
<td>32.</td>
<td>How to test spot weld strength.</td>
</tr>
<tr>
<td>33.</td>
<td>How to load a vehicle onto a jig system to ensure correct alignment and positioning of new panels.</td>
</tr>
<tr>
<td>34.</td>
<td>How to remove and replace safety restraint systems (SRS) using the manufacturer’s approved method.</td>
</tr>
<tr>
<td>35.</td>
<td>How to work safely avoiding damage to the vehicle and its systems.</td>
</tr>
<tr>
<td>36.</td>
<td>The importance and implications of checking the accuracy of repair work.</td>
</tr>
<tr>
<td>37.</td>
<td>The types of quality control checks that can be used to ensure correct alignment and contour of panels and the operation of components to manufacturer’s specification.</td>
</tr>
<tr>
<td>38.</td>
<td>The methods of storing removed panels and the importance of storing them correctly.</td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th></th>
<th>Assessor</th>
<th>Date</th>
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<tbody>
<tr>
<td></td>
<td>Candidate</td>
<td>Date</td>
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## Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
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<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2</td>
<td>Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
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<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong></td>
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<tr>
<td>N2.1; N2.2; N2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td><strong>Information Technology:</strong></td>
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<tr>
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<td>Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong></td>
</tr>
<tr>
<td>WO2.1; WO2.2; WO2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 3</td>
</tr>
<tr>
<td>**Improving Own Learning and</td>
<td><strong>No parallel unit.</strong></td>
</tr>
<tr>
<td>Performance:**</td>
<td></td>
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<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong></td>
</tr>
<tr>
<td>PS3.1; PS3.2; PS3.3</td>
<td>Intermediate 2, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Remove and Replace Vehicle Body Panels
This unit is about removing a variety of structural and non-structural body panels and panel sections and refitting new or repaired replacements to damaged vehicles. The ability to weld vehicle panels is required.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.
Reference should also be made to the National Standards.

Outcomes
On completion of this unit, the candidate must be able to:
1. Identify and interpret sources of workplace and technical information.
2. Identify and undertake procedures relevant to the selection, checking and storing of approved tools and equipment.
3. Identify and follow manufacturer approved procedures for the removal and replacement of vehicle body panels.
4. Identify and follow approved procedures for bonding and welding vehicle panels.
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of workplace and technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) quality control procedures
   d) statutory workshop notices
   e) procedures for reporting progress.

2. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

3. Identify and follow workplace procedures for protecting the vehicle and contents from damage
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
      e) floor mats
      f) protection of vehicle systems.

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and select manufacturer approved hand tools
   a) panel tools
      I. hammers
      II. dollies
      III. spoons
      IV. door skinning tool
   b) general tools
      I. engineers hammers
      II. chisels
      III. adhesive applicators
      IV. clamps
      V. rigs
      VI. supports.

2. Identify and select manufacturer approved power tools and equipment
   a) pneumatic and electric types
      I. drills
      II. sanders (disc and belt)
      III. grinders
      IV. cutters
      V. saws
      VI. shears
      VII. nibbler
      VIII. spot weld removers (spotle)
      IX. adhesive guns
      X. alignment jigs
   b) welding plant
      I. MIG / TIG
      II. spot (resistance systems)
      III. brazing equipment
      IV. oxy acetylene.

3. Identify and carry out manufacturer approved routine checks on hand, power and testing tools and equipment
   a) safety checks
      I. visual
      II. aural
   b) functional checks
      I. manufacturer specification.

4. Identify and follow manufacturer approved procedures for the storage of tools and equipment
   a) advantages and disadvantages of
      I. secure boxes
      II. trays
      III. shadow boards and racks
      IV. store rooms and cupboards.
Outcome 3
Identify and follow manufacturer approved procedures for the removal and replacement of vehicle body panels.

Objective
To achieve this outcome the candidate must be able to:

1. Identify types and principles of vehicle body construction
   a) monocoque / unitary chassis
   b) composite / separate chassis.

2. Identify vehicle body panels
   a) non-structural panels
      I. bolt on wings
      II. doors
      III. tailgate and boot lid
      IV. bonnet
      V. welded rear and front panel
      VI. section of sills and ‘A’ ‘B’ posts
      VII. door skins
   b) structural panels
      I. quarter panel
      II. rear wing
      III. roof
      IV. chassis legs
      V. inner wheel housing
      VI. boot floor
      VII. complete sill
      VIII. complete ‘A’ ‘B’ post
      IX. cross member
      X. flitch panels
   c) state how the removal of the panels listed above affects the integrity of the body structure.

3. Identify and follow manufacturer approved procedures for the removal and replacement of the vehicle body panels listed above
   a) identify substrates
      I. low carbon steel (lcs)
      II. high strength steel (hss)
      III. aluminium alloys
      IV. galvanised steels and boron
      V. GRP / FRP
   b) identify removal methods
      I. spot welds
      II. plug and MIG welds
      III. mechanical fasteners
      IV. bonded panels
      V. door skinning processes
   d) identify accurate alignment methods
      i) use chassis alignment jigs
         I. accurately establish cut line for partial panel replacement
      ii) even gaps
   d) identify clamping methods
      I. mole / vice grips
      II. pop rivets
      III. elimination of damage during clamping
   e) identify replacement methods
      I. spot welds
      II. plug and MIG welds
III. mechanical fasteners
IV. bonded panels
V. door skin replacement

f) identify application methods
   I. adhesives
   II. sealants
   III. anti-corrosive materials.

4. Identify and state the purpose of types of mechanical fixings.
   a) nuts & bolts
   b) captive nuts
   c) rivets
   d) pozidrive & Philips screws
   e) plastic & metal clips.

5. Identify the properties and state the purpose of types of adhesives and sealers
   a) single pack
   b) 2k
   c) under body coatings
   d) polyurethane spray sealers.
Outcome 4
Identify and follow approved procedures for bonding and welding vehicle panels.

Objectives
To achieve this outcome the candidate must be able to:

1. State the principles of welding processes
   a) gas welding
   b) spot welding
   c) MIG welding
   d) TIG welding
   e) plug welding
   f) brazing.

2. State the effects of the welding process on the properties of metals
   a) low carbon mild steel
   b) high strength light alloy steel
   c) aluminium alloys
   d) boron steel
   e) zinc coated / galvanised steel.

3. Identify and follow procedures for the preparation of substrates prior to welding and bonding of vehicle panels.
   a) removal of surface coatings
   b) application of weld through primers
   c) cleaning of plastic substrates.

4. State the effects of the welding process on the integrity of the structure of vehicle bodies.
   a) causes and rectification of heat distortion
   b) choice of joining process
   c) integrity of crumple zones.

5. Identify, follow and state the importance of workplace quality control procedures
   a) alignment checks
   b) functional checks
   c) road testing.
Outcome 5
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret and follow national and local legislation and guidance
   a. HASAWA
   b. COSHH
   c. EPA
   d. PPE at work regulations
   e. Manual handling regulations
   f. Risk assessment
   g. Duty of care regulations (special waste).

2. Demonstrate and undertake manufacturer and workplace approved procedures following health and safety precautions and guidelines
   a) use of PPE
      i. overalls
      ii. gloves
      iii. footwear
      iv. eye and face protection
      v. before and after skin creams
      vi. respiratory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) safe use of chemicals
   f) workplace procedures
      i. risk assessment guidelines
      ii. control hazardous substances.

3. Identify and follow procedures for the safe removal, storage and replacement of safety restraint systems.

4. Identify and state the importance of safety checks on vehicle systems upon completion of panel replacement.

Assessment

Essential knowledge assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
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<td>4</td>
<td>5</td>
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<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests. For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Repair vehicle body panels, comprising of:
1. Repair of metal panel splits using welding.
2. Repair of a fracture to a plastic panel.
3. Hot shrinking of a flat metal panel.
4. Severely distorted panel.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements

You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in
   - your normal workplace
   - and approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit

You must:

7. Produce evidence of carrying out 7 repairs to vehicle body panels, comprising of:
   - 2 repairs of severely distorted panels using specialist equipment or hydraulic push/pull equipment
   - 2 repairs to panels that are difficult to access
   - 1 repair of metal panel splits using welding
   - 1 repair of a fracture to a plastic panel
   - 1 hot shrinking of a flat metal panel.
8. Your assessor must physically observe you in your workplace successfully repairing:
   - 2 severely distorted panels on at least 1 occasion
   - 1 difficult to access panel damage on at least 1 occasion.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing. If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
Evidence reference summary

| Note: Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit. | Portfolio reference number (PRN) |
|---|---|---|---|
| VRQ | N/SVQ | N/SVQ |
| Observed assessment | Approved centre or workplace | Observed assessment |

| Difficult to access panel damage occasion 1 | | |
| Difficult to access panel damage occasion 2 | | |
| Repair of metal panel splits using welding | | |
| Repair of a fracture to a plastic panel | | |
| Hot shrinking of a flat metal panel | | |
| Severely distorted panel occasion 1 | | |
| Severely distorted panel occasion 2 | | |

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

Unit assessment and verification declaration

<table>
<thead>
<tr>
<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work</td>
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</tr>
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<td>Candidate name:…………………………………</td>
<td>Candidate name:…………………………………</td>
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<thead>
<tr>
<th>VRQ Assessor declaration:</th>
<th>N/SVQ Assessor declaration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
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<th>N/SVQ Internal verifier Declaration:</th>
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<td>(Leave blank if sampling of this unit did not take place.)</td>
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<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
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<tr>
<td>• sampling candidate and assessment evidence</td>
<td>• sampling candidate and assessment evidence</td>
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<tr>
<td>• observation of assessment practice</td>
<td>• observation of assessment practice</td>
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<td>• discussion with candidate</td>
<td>• discussion with candidate</td>
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<td>other – please state:</td>
<td>other – please state:</td>
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<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
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</table>
Performance objective checklist

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear suitable personal protective equipment and use vehicle coverings throughout all vehicle body panel repair activities.</td>
<td></td>
</tr>
<tr>
<td>Support the preparation and repair of <strong>vehicle body panels</strong> and components you review:</td>
<td></td>
</tr>
<tr>
<td>• technical data</td>
<td></td>
</tr>
<tr>
<td>• repair procedures</td>
<td></td>
</tr>
<tr>
<td>• manufacturer’s specifications.</td>
<td></td>
</tr>
<tr>
<td>You prepare, connect and test all the <strong>tools and equipment</strong> required, following manufacturers’ instructions, prior to use.</td>
<td></td>
</tr>
<tr>
<td>Ensure your methods of preparation leave structural body panels:</td>
<td></td>
</tr>
<tr>
<td>• clean</td>
<td></td>
</tr>
<tr>
<td>• free from materials likely to hinder repair</td>
<td></td>
</tr>
<tr>
<td>• free of surface finishes when required.</td>
<td></td>
</tr>
<tr>
<td>Prepare and reinstate <strong>vehicle body panels</strong> following health and safety requirements and using:</td>
<td></td>
</tr>
<tr>
<td>• approved preparation methods</td>
<td></td>
</tr>
<tr>
<td>• approved <strong>reinstatement methods</strong></td>
<td></td>
</tr>
<tr>
<td>• the equipment recommended.</td>
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</tr>
</tbody>
</table>

Seek guidance from the relevant person(s) promptly where there is the potential for your work to disturb other vehicle systems.

Ensure all test weld pieces conform to the current British Standard for appearance and penetration.

Ensure all repaired structural body panels conform to their originally specified shape and dimensions.

Ensure the completed repairs are in a suitable condition for the next stage of the process.

You complete all repair activities within the agreed timescale.

Report any anticipated delays in completion to the relevant person(s) promptly.
Scope of this unit

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Repair activities are</strong></td>
</tr>
<tr>
<td>Correction of severely distorted panels</td>
</tr>
<tr>
<td>to difficult to access panel damage</td>
</tr>
<tr>
<td>to splits on metal panels</td>
</tr>
<tr>
<td>to fractures to plastic panels.</td>
</tr>
<tr>
<td><strong>2. Vehicle body panels are</strong></td>
</tr>
<tr>
<td>non-welded non-structural</td>
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<tr>
<td>welded non-structural</td>
</tr>
<tr>
<td>welded structural panels</td>
</tr>
<tr>
<td>bonded panels.</td>
</tr>
<tr>
<td><strong>3. Tools and equipment are</strong></td>
</tr>
<tr>
<td>hand tools</td>
</tr>
<tr>
<td>power tools</td>
</tr>
<tr>
<td>heating</td>
</tr>
<tr>
<td>hydraulic push/pull</td>
</tr>
<tr>
<td>welding equipment (including inert gas, resistance and or spot)</td>
</tr>
<tr>
<td>adhesive application tools</td>
</tr>
<tr>
<td>specialist dent removal tools.</td>
</tr>
<tr>
<td><strong>4. Reinstatement methods are</strong></td>
</tr>
<tr>
<td>panel beating</td>
</tr>
<tr>
<td>panel skrinking</td>
</tr>
<tr>
<td>hydraulic reforming</td>
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<tr>
<td>spot welding</td>
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<tr>
<td>shielded gas arc welding</td>
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<tr>
<td>shielded gas arc brazing</td>
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<tr>
<td>body filling operations</td>
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<tr>
<td>metal finishing</td>
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<tr>
<td>plastic filling</td>
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<tr>
<td>specialist dent removal methods.</td>
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</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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<table>
<thead>
<tr>
<th>Candidate</th>
<th>Date</th>
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</tbody>
</table>
## Essential knowledge

### You need to understand:

#### Legislative and organisational requirements and procedures

1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when repairing vehicle body panels.
2. The requirements of manufacturer’s warranty agreements.
3. The vehicle work specification agreed.
4. Your workplace procedures for
   - the referral of problems
   - reporting of delays to the completion of work
   - personal protection
5. The requirements for protecting the vehicle and contents from damage before, during and after repairing vehicle body panels
6. The importance of working to agreed timescales and keeping others informed of progress.
7. The relationship between time, cost and profitability.
8. Your workplace procedures for the referral of problems.
9. The importance of reporting anticipated delays to the relevant persons(s) promptly.

#### Tools and equipment

10. The principles governing the selection and use of hand tools for metal finishing and plastic filling repairs.
11. The factors governing the selection and use of panel beating and hydraulic reforming equipment, including specialist pulling systems.
12. How to prepare, test, use and maintain the tools and equipment required to repair vehicle body panels.
13. How to adapt hydraulic push equipment to perform pulling operations.

#### Materials

14. The types and selection of filling materials, their preparation and application.
15. The properties, types, grades and use of abrasives used in the vehicle body panel repair process.
16. The properties and safe use of types of filling materials used to repair panels.
17. How to mix and apply plastic fillers.

#### Repairing vehicle body panels

18. How to prepare the vehicle to avoid contamination.
19. How to assess the extent of damage, including corrosion damage.
20. How unitary vehicle bodies and cabs are constructed.
21. The principles of resistance spot welding, gas shielded arc plug welding and gas shielded arc brazing.
22. How body panel and component damage can affect other panels and the operation of vehicle systems.
23. The factors determining the use of specific preparation and repair methods.
24. The repair and welding implications of working with high strength steels (hss), low carbon steels (lcs), aluminium alloys, galvanised coatings and Boron.
25. The consequences of using inappropriate repair methods.
26. The principles associated with hot and cold shrinking of stretched areas.
27. How heat can be used to assist reforming.
28. How heating can affect the properties of steels.
29. The techniques for identifying the type of plastics used for manufactured components.
30. The procedures for reinstating anti-corrosion, sealant and sound deadening materials.
31. The causes and rectification of distortion resulting from welding.
32. The manufacturer’s approved methods of working for the preparation and repair of vehicle body panels and components.
33. The specification for panel shapes, dimensions and tolerances for the vehicles worked upon.
34. The type of quality control checks that can be used to ensure the correct contour and standard of finish.
35. How to interpret and use sources of information relevant to the repair of vehicle body panels and components.
36. How to prepare damaged areas to facilitate repairs.
37. How to prepare the panel surface prior to filling.
38. How to repair corrosion damage.
39. How to remove protective materials.
40. How to repair and reinstate vehicle body panel contours and components using body filling operations, metal finishing, plastic filling, panel beating, panel shrinking, hydraulic reforming, specialist dent removal tools and spot, gas shielded arc welding and gas shielded arc brazing methods.
41. The techniques for reshaping damaged vehicle body panels using hand and specialist tools.
42. How to check the accuracy of reinstated vehicle body panel shape.
43. How to finish repairs to a suitable condition for handing on to the painting stage.
44. How to work safely avoiding damage to the vehicle and its systems.

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

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<thead>
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<th>Assessor</th>
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Key and core skills signposting

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<td>Numeracy:</td>
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<td>N2.1; N2.2; N2.3</td>
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<tr>
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<td>Intermediate 2, Outcomes 1, 2 and 3</td>
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Syllabus

**Repair Vehicle Body Panels**
This unit is about repairing serious and hard to access damage to a range of body panel types using a variety of preparation and reinstatement techniques, including hydraulic reforming, welding and panel beating to regain panel contour.

**Course Outline**
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

**Outcomes**
On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of workplace and technical information.
2. Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.
3. Identify and follow approved procedures for the preparation of substrates prior to the repair of vehicle body panels.
4. Identify and follow approved procedures for the repair of vehicle body panels.
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of workplace and technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) quality control procedures
   d) statutory workshop notices
   e) procedures for reporting progress.

2. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

3. Identify and follow workplace procedures for protecting the vehicle and contents from damage
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
       e) floor mats
   f) protection of vehicle systems.

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.

5. Identify and follow workplace quality control procedures
   a) visual checks
       i) swage lines
       ii) panel alignment
   b) operational checks
       i) fitting panels to check gaps
       ii) fitting of locks & strikers
       iii) fitting trim / mouldings.
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and state the purpose of approved hand tools
   a) panel beating tools
      i. hammers
      ii. dollies
      iii. spoons
      iv. body files
      v. smoothing blades
   b) general tools
      i. engineers hammers
      ii. chisels
      iii. metal files
      iv. clamps
      v. rigs
      vi. supports
      vii. body filler mixing boards and applicators
      viii. rubbing and shaping blocks.

2. Identify and state the purpose of approved power tools and equipment
   a) pneumatic, electric and hydraulic types
      i. drills
      ii. sanders (disc and belt)
      iii. grinders
      iv. cutters
      v. saws
      vi. shears
      vii. nibbler
      viii. panel shrinking tools (hot)
      ix. specialist dent removal tools
      x. hydraulic reforming equipment
      xi. portable and fixed extraction systems.

3. Identify and carry out manufacturer approved routine checks on hand, power tools and equipment
   a) safety checks
      i. visual
      ii. aural
   b) functional checks
      i. manufacturer specification.

4. Identify and follow procedures for the adaptation and use of hydraulic rams
   a) pushing operations
   b) pulling operations.

5. Identify and follow manufacturer approved procedures for the storage of tools and equipment
   a) advantages and disadvantages of
      i. secure boxes
      ii. trays
      iii. shadow boards and racks
      iv. store rooms and cupboards.
**Outcome 3**
Identify and follow approved procedures for the preparation of substrates prior to the repair of vehicle body panels.

**Objective**
To achieve this outcome the candidate must be able to:

1. Identify types and principles of vehicle body construction
   a) monocoque / unitary chassis
   b) composite / separate chassis.

2. Identify and state the properties of materials used for vehicle body panels
   a) low carbon mild steel
   b) high strength steel
   c) aluminium alloys
   d) boron steel
   e) zinc coated / galvanised steel
   f) types of plastic
   g) GRP / FRP.

3. State the effects of the application of heat for the repair of vehicle body panels
   a) hot / cold shrinking
   b) to assist reforming
   c) the properties of steel
   d) causes and rectification of heat distortion.

4. State the properties and purpose of types of body filling material
   a) 2K plastic body fillers
      i) preparation
      ii) application
   b) lead solders
      i) preparation
      ii) application.

5. State the types, properties and grades of abrasives used for the repair of vehicle body panels
   a) aluminium oxide
   b) silicon carbide
   c) tungsten carbide.
Outcome 4
Identify and follow approved procedures for the repair of vehicle body panels.

Objective
To achieve this outcome the candidate must be able to:

1. Identify and follow manufacturer approved schedules and agreed timescales
   a) replacement parts lists
      I. supplier manuals
      II. electronic systems
   b) work progress documentation
      I. job cards
      II. additional parts requests
   c) customer contract.
2. Identify the factors affecting the choice of type of repair method
   a) type of substrate
   b) extent of damage
   c) location
   d) ease of access
   e) cost
   f) corrosion.
3. State the principles of welding processes used for the repair of vehicle body panels.
   a) resistance spot welding
   b) plug welding
   c) brazing
   d) shielded arc welding.
4. Identify and follow procedures for reinstating the shape of vehicle body panels
   a) repair methods
      I. panel beating
      II. panel shrinking (hot and cold processes)
      III. hydraulic reforming (push pull processes)
      IV. spot welding
      V. shielded arc welding
      VI. shielded arc brazing
      VII. plastic body filling operations (body solder)
      VIII. metal finishing
      IX. specialist dent removal methods
      X. plastic repair (thermal and chemical processes)
   b) vehicle body panels are
      I. non-welded non-structural
      II. welded non-structural
      III. welded structural panels
      IV. bonded panels.
5. Identify and follow procedures for the preparation of substrates prior to the repair of vehicle body panels
   a) removal of paint films
   b) removal of protective materials
   c) removal / repair of corrosion.
6. Identify and follow procedures for finishing repair work prior to the painting of vehicle body panels
   a) reinstatement of anti corrosion, sealant and sound deadening materials
   b) finishing with specified grade of abrasive.
Outcome 5
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret and follow national and local legislation and guidance
   a. HASAWA
   b. COSHH
   c. EPA
   d. PPE at work regulations
   e. Manual handling regulations
   f. Risk assessment
   g. Duty of care regulations (special waste).

2. Identify and follow manufacturer and workplace approved procedures following health and safety precautions and guidelines
   a) use of PPE
      I. overalls
      II. gloves
      III. footwear
      IV. eye and face protection
      V. before and after skin creams
      VI. respiratory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) safe use of chemicals
   f) workplace procedures to control hazardous substances
   g) risk assessment guidelines.

Assessment

Essential knowledge assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
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<tr>
<th>Outcome</th>
<th>Number of questions</th>
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<tbody>
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<td>2</td>
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<td>5</td>
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<td>5</td>
<td>4</td>
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<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
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</table>
Remove and Reinstall Vehicle Mechanical and Electrical Systems and Assemblies following Accident Damage

Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Successfully reinstating mechanical and electrical systems following a front and or side impact.

1. Removing a front suspension assembly from a damaged vehicle, stripping, rebuilding and replacing a front suspension assembly in a repaired vehicle.

2. Conducting a full geometry check on a repaired vehicle.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements. You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in
   - your normal workplace
   - and approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit. You must:

7. Produce evidence of successfully reinstating mechanical and electrical systems on 3 different vehicles following a front and or side impact.
8. Your assessor must physically observe you:
   - removing an engine from a damaged vehicle and replacing an engine in a repaired vehicle
   - removing a front suspension assembly from a damaged vehicle, stripping, rebuilding and replacing a front suspension assembly in a repaired vehicle
   - conducting a full geometry check on a repaired vehicle
   - removing a safety restraint system (SRS) from a damaged vehicle and replacing a SRS in a repaired vehicle.

Your assessor must physically observe you successfully carrying out 2 of the above operations in your normal workplace.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing. If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
## Evidence reference summary

<table>
<thead>
<tr>
<th>Note: Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.</th>
<th>Portfolio reference number (PRN)</th>
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<tr>
<td>VRQ</td>
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<td>Observed assessment</td>
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<table>
<thead>
<tr>
<th>Activity</th>
<th>Observed</th>
<th>Approved</th>
<th>Observed</th>
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<tbody>
<tr>
<td>Removing an engine from a damaged vehicle and replacing an engine in a repaired vehicle</td>
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<tr>
<td>Removing a front suspension assembly from a damaged vehicle, stripping, rebuilding and replacing a front suspension assembly in a repaired vehicle</td>
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<tr>
<td>Conducting a full geometry check on a repaired vehicle</td>
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<tr>
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* Any two observations required

Supplementary evidence (if used) PRN

On line test reference for this unit PRN
## Unit assessment and verification declaration

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<th>VRQ Candidate declaration:</th>
<th>N/SVQ Candidate declaration:</th>
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<tr>
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<td>I have internally verified the assessment work on this unit in the following ways (please tick):</td>
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</tr>
<tr>
<td>• sampling candidate and assessment evidence</td>
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</tr>
<tr>
<td>• observation of assessment practice</td>
<td>• observation of assessment practice</td>
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<td>• discussion with candidate</td>
<td>• discussion with candidate</td>
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<tr>
<td>• other – please state:</td>
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<td>I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.</td>
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</table>
### Performance objective checklist

**To be competent you must ensure that:**

<table>
<thead>
<tr>
<th>PRN</th>
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<tbody>
<tr>
<td>Use the appropriate personal protective equipment when removing, renewing and fitting mechanical and electrical systems and assemblies.</td>
<td></td>
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<tr>
<td>Protect the vehicle and its contents effectively when removing, renewing and fitting mechanical and electrical systems and assemblies.</td>
<td></td>
</tr>
</tbody>
</table>
| Support your removal and replacement activities by referring to:  
  - vehicle technical data  
  - removal and replacement procedures  
  - legal requirements. |  |
| Prepare, test and use all the equipment required following manufacturers’ instructions. |  |
| Carry out all removal, renewal and refitting activities following:  
  - manufacturers’ instructions  
  - your workplace procedures  
  - health and safety requirements. |  |
| Work in a way which minimises the risk of:  
  - damage to other vehicle systems  
  - damage to other components and units  
  - leakage  
  - contact with hazardous substances. |  |
| Store all removed mechanical and electrical units and components safely in the correct location. |  |
| Ensure all renewed mechanical and electrical units and components conform to the vehicle operating specification and any legal requirements. |  |
| Record and report any additional faults you find during the course of your work promptly. |  |
| Use suitable testing methods to evaluate the performance of the reinstated system accurately. |  |
| Ensure the reinstated mechanical and electrical systems perform to the vehicle operating specification and meet any legal requirements prior to return to the customer. |  |
| Ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required. |  |
| Complete all removal and reinstatement activities within the agreed timescale. |  |
| Report any expected delays in completion to the relevant person(s) promptly. |  |
### Scope of this unit

All of the items listed below form part of this National Occupational Standard.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>hand tools</td>
<td></td>
</tr>
<tr>
<td>special purpose tools</td>
<td></td>
</tr>
<tr>
<td>general workshop equipment</td>
<td></td>
</tr>
<tr>
<td>electrical meters</td>
<td></td>
</tr>
<tr>
<td>steering geometry.</td>
<td></td>
</tr>
</tbody>
</table>

**Testing methods are**

- visual
- aural
- use of diagnostic testing and measuring equipment.

**Mechanical systems are**

- engines
- cooling
- exhaust
- fuel
- drivelines and hubs
- final drive assemblies
- steering
- suspension
- Braking.

**Electrical systems are**

- lighting systems
- wiper systems
- security systems
- comfort and convenience systems
- safety restraint systems
- electric window systems
- sun roof systems
- audio systems
- visual systems

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
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</tr>
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<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
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</tbody>
</table>
**Essential knowledge**

You need to understand:

<table>
<thead>
<tr>
<th>Legislative and organisational requirements and procedures</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The legal requirements relating to the vehicle (including road safety and refrigerant handling requirements).</td>
<td></td>
</tr>
<tr>
<td>2. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when removing and reinstating vehicle mechanical and electrical systems and assemblies.</td>
<td></td>
</tr>
<tr>
<td>3. Requirements of manufacturer’s warranty agreements.</td>
<td></td>
</tr>
<tr>
<td>4. The vehicle work specification.</td>
<td></td>
</tr>
<tr>
<td>5. Your workplace procedures for: the referral of problems, reporting of delays to the completion of the work, personal protection.</td>
<td></td>
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<tr>
<td>6. The health and safety risks associated with safety restraint systems and the implications for work practices.</td>
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<tr>
<td>7. The legal requirements for the storage of safety restraint systems.</td>
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<tr>
<td>8. The importance of working to agreed timescales and keeping others informed of progress.</td>
<td></td>
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<tr>
<td>10. The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
<td></td>
</tr>
<tr>
<td>11. How to complete records conforming to workplace requirements &amp; importance of doing so.</td>
<td></td>
</tr>
</tbody>
</table>

**Equipment**

|     |     |
| 12. How to prepare, test and use removal and refitting equipment. |     |

**Removal and reinstatement of mechanical and electrical systems and assemblies**

| 13. How vehicle damage can affect the removal and replacement of units and components. |     |
| 14. How to find, interpret and use sources of information applicable to mechanical and electrical unit and component removal, renewal and refitting. |     |
| 15. How mechanical, electrical and electronic vehicle systems are constructed, operate, removed and refitted for the classification of vehicle worked upon. |     |
| 16. How to rebuild mechanical and electrical systems and assemblies to meet the manufacturer’s original specification. |     |
| 17. Use of engineering techniques necessary to carry out non-standard repairs to vehicles following accidents. |     |
| 18. The repair techniques for plastic components, using welding and adhesives. |     |
| 19. How to work in a logical sequence to remove damaged units and components within the mechanical and electrical systems listed in the Scoping Statement for this unit. |     |
| 20. The logical sequence of work for complete body changes. |     |
| 21. The implications of and incorrect vehicle body structure on steering geometry. |     |
| 22. How to refit mechanical and electrical systems to a repaired vehicle. |     |
| 23. How to select, reinstate and check fluids. |     |
| 24. How to work safely avoiding damage to other vehicle systems, components and units and contact with hazardous substances. |     |
| 25. How and where to store removed items safely, including handling refrigerants, gases and safety restraint system explosives. |     |
| 26. How to test and evaluate the performance of renewed mechanical and electrical units and components and refitted systems against vehicle operating specifications and any legal requirements. |     |
| 27. The manufacturer’s specification for the type and quality of units and components to be used within the vehicle’s systems. |     |
| 28. The relationship between test methods and the unit(s) renewed – the use of appropriate testing methods. |     |

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
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### Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
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<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong> Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2;</td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong> Intermediate 1, Outcomes 1, 2 and 4</td>
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<tr>
<td>N2.1; N2.2; N2.3</td>
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<tr>
<td><strong>Information Technology:</strong></td>
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<td>Not applicable</td>
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<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong> Intermediate 1, Outcomes 1, 2 and 3</td>
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<tr>
<td>WO2.1 WO2.2; WO2.3</td>
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<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
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<tr>
<td>Not applicable</td>
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<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong> Intermediate 2, Outcomes 1, 2 and 3</td>
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<tr>
<td>PS3.1; PS3.2; PS3.3</td>
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</table>
Syllabus

Remove and Reinstate Vehicle Mechanical and Electrical Systems and Assemblies Following Accident Damage

This unit is about the reinstating vehicle mechanical and electrical systems and assemblies where the removal process is complicated as the units and assemblies involved are damaged and within damaged areas of a vehicle. The reinstatement process will involve working within any restrictions caused by the repaired vehicle. Ensuring that renewed and refitted units, assemblies and components operate to manufacturers’ and legal requirements is included.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of workplace and technical information.
2. Undertake and interpret procedures relevant to the selection, checking and storing of manufacturer approved tools and equipment.
3. Interpret and follow manufacturer approved procedures for the removal of vehicle mechanical and electrical systems and assemblies.
4. Interpret and follow manufacturer approved procedures for the repair, replacement and testing of vehicle mechanical and electrical systems and assemblies.
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of workplace and technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) quality control procedures
   d) statutory workshop notices
   e) procedures for reporting progress.

2. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

3. Identify and follow workplace procedures for protecting the vehicle and contents from damage
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
     e) floor mats
     f) protection of vehicle systems.

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and select manufacturer approved hand and power tools and equipment
   a) hand tools
   b) special purpose tools
   c) general workshop equipment
   d) electrical meters
   e) steering geometry.
2. Identify and follow manufacturer approved routine checks on hand, power and testing tools and equipment
   a) visual
   b) functional
   c) safety.
3. Identify and follow manufacturer approved procedures for the safe storage of tools and equipment
   a) mobile tool boxes and trays
   b) fixed storage
   c) specialised storage.
Outcome 3
Interpret and follow manufacturer approved procedures for the removal of vehicle mechanical and electrical systems and assemblies.

Objective
To achieve this outcome the candidate must be able to:

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.

2. State how vehicle damage affects the removal of units and components.
   a) suspension damage
   b) wiring damage
   c) broken / cracked windscreens and body glass
   d) leaking fluids.

3. Identify and follow procedures for the removal of damaged components within mechanical and electrical systems
   a) mechanical systems
      I. engines
      II. cooling
      III. exhaust
      IV. fuel
      V. drivelines and hubs
      VI. final drive assemblies
      VII. steering
      VIII. suspension
      IX. braking
   b) electrical systems
      I. lighting systems
      II. wiper systems
      III. security systems
      IV. comfort and convenience systems
      V. safety restraint systems
      VI. electric window systems
      VII. sun roof systems
      VIII. audio systems
      IX. visual systems
      X. tow bars.

4. Identify and follow the logical procedure for the removal of components and systems to facilitate a complete body shell change
   a) exterior trim and body panels
   b) seats and interior trim
   c) steering & suspension
   d) cooling system
   e) engine and transmission
   f) fuel system
g) electrical
h) wiring loom.

5. Identify and follow engineering techniques to complete standard and non-standard repairs to vehicles

a) techniques
   I. drilling
   II. cutting
   III. filing
   IV. riveting
   V. tapping (internal and external threads)

b) materials
   II. metals (ferrous and non-ferrous)
   III. plastics.
Outcome 4
Interpret and follow manufacturer approved procedures for the repair, replacement and testing of vehicle mechanical and electrical systems and assemblies.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and state the purpose of vehicle systems listed below
   - a) mechanical systems
     i. engines
     ii. cooling
     iii. exhaust
     iv. fuel
     v. drivelines and hubs
     vi. final drive assemblies
     vii. steering
     viii. suspension
     ix. braking
   - b) electrical systems
     i. lighting systems
     ii. wiper systems
     iii. security systems
     iv. comfort and convenience systems
     v. safety restraint systems
     vi. electric window systems
     vii. sun roof systems
     viii. audio systems
     ix. visual systems
     x. tow bars.

2. Identify and follow approved procedures and techniques for the safe reinstatement of the systems listed above to manufacturers original specification.

3. Identify and follow the logical procedure for the replacement of components and systems to facilitate a complete body shell change
   - a) wiring loom
   - b) fuel system
   - c) engine and transmission
   - d) cooling system
   - e) electrical
   - f) steering & suspension
   - g) seats and interior trim
   - h) exterior trim and body panels.

4. Identify and follow procedures for the repair of plastic components.
   - a) welding
   - b) bonding adhesives.

5. Identify and follow approved procedures for the testing and evaluation of mechanical and electrical units, components, systems and assemblies
   - a) aural
   - b) visual
   - c) use of diagnostic testing and measuring equipment.
Outcome 5
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow local and national health and safety legislation
   a) national legislation
      I. HASAWA
      II. COSHH
      III. EPA
      IV. Factories Act
      V. Electrical Appliance Regulations
   b) local regulations
      I. duty of care (waste disposal)
      II. risk assessments
      III. use of PPE.

2. Identify and follow manufacturer and workplace approved health & safety recommendations
   a) identify and follow safe working practices
      I. removal, replacement, storage and testing SRS systems
      II. removal, replacement, storage and testing of climate control systems
      III. fuel systems
      IV. decanting processes (fluids and gases)
      V. ventilation and extraction systems (portable and fixed)
   b) identify and use appropriate personal protective equipment
      I. overalls (fabric types and uses)
      II. gloves
      III. footwear
      IV. eye and face protection
      V. respiratory equipment
      VI. before and after creams.

Assessment

Essential knowledge assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
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<tr>
<td>2</td>
<td>5</td>
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<td>3</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>5</td>
<td>4</td>
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<tr>
<td>Total</td>
<td>25</td>
</tr>
</tbody>
</table>

Test duration 35mins
Remove and Reinstall Vehicle Trim Fitments Following Accident Damage

Further guidance available | Observation of your task/work | Evidence recording | Computer based testing | Verbal Questioning
---|---|---|---|---

Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:
Reinstall exterior and interior trim fitments to vehicles following side and or rear impact.

1. Produce evidence of removing and reinstalling at least 3 types of exterior and interior trim fitments.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs

General Requirements
You must:
2. Produce evidence to show you meet all of the performance objectives consistently.
3. Produce evidence to show that you have covered all the items listed in the scope for this unit.
4. Produce evidence to show that you possess all the knowledge required.
5. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
6. Be observed by a qualified assessor carrying out work in
   - your normal workplace
   - and approved centre, or
   - a combination of both.
7. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:
8. Produce evidence of successfully reinstating exterior and interior trim fitments to vehicles following side and or rear impact.
9. Produce evidence of removing and reinstating at least 4 out of the 8* types of exterior and interior trim fitments listed in the Scoping Statement for this unit.
10. Your assessor must physically observe you removing and reinstating trim fitments in your normal workplace on at least 2 occasions. Each observation must be of a different type of trim.

*However, you must prove to your assessor that you have the necessary knowledge and understanding in order to be able to perform competently in respect of all the types of exterior and interior trim fitments listed in the Scoping Statement for this unit.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
Evidence reference summary

Note: Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit.

<table>
<thead>
<tr>
<th>Portfolio reference number (PRN)</th>
<th>VRQ</th>
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</thead>
<tbody>
<tr>
<td>Observed assessment</td>
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<td>Approved centre or workplace</td>
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<tr>
<td>Observed assessment</td>
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</table>

| Interior or exterior trim 1      |     |       |       |
| Interior or exterior trim 2      |     |       |       |
| Interior or exterior trim 3      |     |       |       |
| Interior or exterior trim 4      | *   |       |       |

* Any two observations required

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

Unit assessment and verification declaration

VRQ Candidate declaration:
I confirm that the evidence listed for this unit is authentic and a true representation of my own work
Candidate name: ........................................
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Candidate signature: ...................................
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Countersignature: (if relevant) ....................
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- discussion with candidate
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N/SVQ Internal verifier Declaration:
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: ..................................
Internal verifier signature: ............................
Date: ........................................
Countersignature: (if relevant) ....................
Date: ........................................
Performance objective checklist

To be competent you must:

- Use the appropriate personal protective equipment when removing, renewing and fitting exterior and interior trim.
- Protect the vehicle and its contents effectively when removing, renewing and fitting exterior and interior trim fitments.
- Support your removal and replacement activities by referring to:
  - vehicle technical data
  - removal and replacement procedures
  - legal requirements.
- Prepare, test and use all the equipment required following manufacturers’ instructions.
- Carry out all removal, renewal and refitting activities following:
  - manufacturers’ instructions
  - your workplace procedures
  - health and safety requirements.
- Work in a way which minimises the risk of:
  - damage to other vehicle systems
  - damage to other components and units
  - contact with leakage
  - soiling and damage to trim fitments.
- Store all removed exterior and interior trim fitments safely in the correct location, when necessary.
- Ensure all renewed exterior and interior trim fitments conform to the vehicle operating specification and any legal requirements.
- Record and report any additional faults you find during the course of your work promptly.
- Use suitable testing methods to evaluate the performance of the reinstated trims accurately.
- Ensure, where relevant, that the reinstated exterior and interior trim fitments perform to the vehicle operating specification and meet any legal requirements prior to return to the customer.
- Ensure your records are accurate, complete and passed to the relevant person(s) promptly in the format required.
- Complete all removal and reinstatement activities within the agreed timescale.
- Report any expected delays in completion to the relevant person(s) promptly.

Scope of this unit

All of the items listed below form part of this National Occupational Standard.

1. Equipment is:
   - trim removal tools
   - glazing tools
   - special purpose tools
   - windscreen removal and fitting tools
   - hand tools
   - general workshop equipment
   - diagnostic equipment.

2. Testing methods are:
   - visual
   - aural
   - use of diagnostic equipment.

3. Exterior and interior trim fitments are:
   - seat recovering
   - carpets
   - direct glazing
   - headlinings
   - convertible roofs
   - dash panels and auxiliary fittings
   - drop glass
   - Spoilers.
### Essential knowledge

**You need to understand:**

<table>
<thead>
<tr>
<th>PRN</th>
<th>Legislative and organisational requirements and procedures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The legal requirements relating to the vehicle (including road safety requirements).</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when removing and reinstating vehicle <strong>exterior and interior trims</strong>.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Requirements of manufacturer’s warranty agreements.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The vehicle work specification.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Your workplace procedures for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• the referral of problems</td>
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<td></td>
<td>• reporting of delays to the completion of the work</td>
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<tr>
<td></td>
<td>• personal protection.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>The health and safety risks associated with safety restraint systems and the implications for work practices.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>The legal requirements for the storage of safety restraint systems.</td>
<td></td>
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<tr>
<td>8.</td>
<td>The importance of working to agreed timescales and keeping others informed of progress.</td>
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<tr>
<td>10.</td>
<td>The importance of reporting anticipated delays to the relevant person(s) promptly.</td>
<td></td>
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<tr>
<td>11.</td>
<td>How to complete records conforming to workplace requirements and the importance of doing so.</td>
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</table>

<table>
<thead>
<tr>
<th>PRN</th>
<th>Equipment</th>
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<tr>
<td>12.</td>
<td>How to prepare, test and use removal and refitting <strong>equipment</strong>.</td>
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<table>
<thead>
<tr>
<th>PRN</th>
<th>Removal and reinstatement of exterior and interior trim</th>
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<tbody>
<tr>
<td>13.</td>
<td>How vehicle damage can affect the removal and replacement of exterior and interior trim fitments.</td>
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<tr>
<td></td>
<td>how to find, interpret and use sources of information applicable to exterior and interior trim fitment removal, renewal and refitting.</td>
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<tr>
<td>15.</td>
<td>How to rebuild exterior and interior trim fitments to meet the manufacturer’s original specification.</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>The repair techniques for plastic components, using welding and adhesives.</td>
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<tr>
<td>17.</td>
<td>How to work in a logical sequence to remove damaged the exterior and interior trim fitments listed in the Scoping Statement for this unit.</td>
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<tr>
<td>18.</td>
<td>The logical sequence of work for complete body changes.</td>
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<tr>
<td>19.</td>
<td>How to refit exterior and interior trim fitments to a repaired vehicle.</td>
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<tr>
<td>20.</td>
<td>How to work safely avoiding damage to other vehicle systems, components and units and contact with hazardous substances.</td>
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</tr>
<tr>
<td>21.</td>
<td>How and where to store removed items safely.</td>
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<tr>
<td>22.</td>
<td>How to test and evaluate the performance of renewed exterior and interior trim fitments against vehicle operating specifications and any legal requirements, if applicable.</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>The manufacturer’s specification for the type and quality of exterior and interior trim fitments for the type of vehicle(s) worked upon.</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>The relationship between test methods and the unit(s) renewed – the use of appropriate testing methods.</td>
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## Key and core skills signposting

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<th>Core Skills</th>
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<tr>
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<tr>
<td></td>
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<td><strong>Numeracy:</strong></td>
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<tr>
<td>N2.1; N2.2; N2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 4</td>
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<td><strong>Information Technology:</strong></td>
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<td>Not applicable</td>
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<td><strong>Working with Others:</strong></td>
</tr>
<tr>
<td>WO2.1 WO2.2 WO2.3</td>
<td>Intermediate 1, Outcomes 1 2 and 3</td>
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<td><strong>Performance:</strong></td>
<td>No parallel unit.</td>
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<tr>
<td>Not applicable</td>
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<td><strong>Problem Solving:</strong></td>
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<tr>
<td>PS3.1; PS3.2; PS3.3</td>
<td>Intermediate 2, Outcomes 1, 2 and 3</td>
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Syllabus

Remove and Reinstall Vehicle Trim Fitments Following Accidental Damage

This unit is about the reinstating vehicle exterior and interior trim fitments where the removal process is complicated because they are damaged and within damaged areas of a vehicle. The reinstatement process will involve working within any restrictions caused by the repaired vehicle. Ensuring that renewed and refitted trim fitments operate to manufacturers’ and legal requirements, where relevant, is included.

Course Outline

To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes

On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of workplace and technical information.
2. Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.
3. Identify and follow manufacturer approved procedures for the removal of exterior and interior trim fitments.
4. Identify and follow manufacturer approved procedures for the replacement and testing of exterior and interior trim fitments.
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of workplace and technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) quality control procedures
   d) statutory workshop notices
   e) procedures for reporting progress.

2. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

3. Identify and follow workplace procedures for protecting the vehicle and contents from damage
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
   e) floor mats
   f) protection of vehicle systems.

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and state the purpose of manufacturer approved hand tools
   a) trim tools
      I. fabric stretcher
      II. magnetic trim hammer
      III. manufacturer specific trim tools
   b) glazing tools
      I. piano wire cutter
      II. hot knife
      III. electric windscreen cutter
      IV. adhesive applicator (hand operated)
      V. suction cups
   c) general workshop equipment
      I. screwdrivers
      II. pliers
      III. spanners
      IV. torque wrench
      V. sockets and attachments
   d) diagnostic and inspection equipment
      I. wind noise detection
      II. water leaks detection (ultrasonic equipment)
      III. illuminated inspection mirrors.

2. Identify and state the purpose of manufacturer approved power tools
   a) power drill (electric and pneumatic)
   b) angle grinder (electric and pneumatic)
   c) infra-red heat lamp
   d) hot air blower
   e) low voltage inspection lamp
   f) pneumatic ratchet
   g) adhesive applicator (pneumatic)
   h) plastic repair equipment.

3. Identify and carry out manufacturer approved routine checks on hand, power and testing tools and equipment
   a) visual safety checks
      I. PAT testing (undertaken by a competent person)
      II. portable electric appliance (damaged or worn cables, plugs etc)
      III. pneumatic tools (air leaks, worn parts, daily lubrication, damaged air lines and couplers)
   b) functional checks
      I. lubrication
      II. operation
      III. calibration
      IV. adjustment.

4. Identify and follow manufacturer approved procedures for the storage of tools and equipment
   a) mobile tool boxes
   b) fixed storage (shadow boards and racks)
   c) store rooms
   d) special storage for glazing units.
Outcome 3
Identify and follow manufacturer approved procedures for the removal of exterior and interior trim fitments.

Objectives
To achieve this outcome the candidate must be able to:

1. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.

2. State how vehicle damage affects the removal of units and components.
   a) wiring damage
   b) broken / cracked windscreen and body glass
   d) leaking fluids.

3. Identify and follow procedures for the removal of exterior and interior trim fitments
   a. exterior systems
      I. convertible roofs
      II. indirect glazing techniques
      III. direct glazing techniques
      IV. plastic repair (thermo and chemical processes)
      V. spoilers
      VI. sun roof systems (manual and electric)
   b. interior trim fitments
      I. carpets
      II. seat covering
      III. headlinings
      IV. dash panels and auxiliary fittings
      V. drop glass
      VI. plastic materials.

4. Identify and follow the logical procedure for the removal of components and systems to facilitate a complete body shell change
   a) exterior trim and body panels
   b) seats and interior trim
   c) steering & suspension
   d) cooling system
   e) engine and transmission
   f) fuel system
   g) electrical
   h) wiring loom.
Outcome 4
Interpret and follow manufacturer approved procedures for the repair, replacement and testing of external and interior trim fitments.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow procedures for the replacement of exterior and interior trim fitments
   a. exterior systems
      VII. convertible roofs
      VIII. indirect glazing techniques
      IX. direct glazing techniques
      X. plastic repair (thermo and chemical processes)
      XI. spoilers
      XII. sun roof systems (manual and electric)
   b. interior trim fitments
      VII. carpets
      VIII. seat covering
      IX. headlinings
      X. dash panels and auxiliary fittings
      XI. drop glass
      XII. plastic materials.
2. Identify and follow approved procedures and techniques for the safe reinstatement of the item listed above to manufacturers original specification.
3. Identify and follow the logical procedure for the replacement of components and systems to facilitate a complete body shell change
   a) wiring loom
   b) fuel system
   c) engine and transmission
   d) cooling system
   e) electrical
   f) steering & suspension
   g) seats and interior trim
   h) exterior trim and body panels.
4. identify and follow procedures for the repair of plastic components.
   a) welding
   b) bonding adhesives
5. Demonstrate and carry out manufacturer approved processes for testing vehicle trim fitments
   a) visual
   b) aural
   c) diagnostic equipment.
Outcome 5
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow local and national health and safety legislation
   a) national legislation
      i. HASAWA
      ii. COSHH
      iii. EPA
      iv. Factories Act
      v. Electrical Appliance Regulations
   b) local regulations
      I. duty of care (waste disposal)
      II. risk assessments
      III. use of PPE.

2. Identify and follow manufacturer and workplace approved health & safety recommendations
   a) identify and follow safe working practices
   a) removal, replacement, storage and testing SRS systems
   b) removal, replacement, storage and testing of climate control systems
   c) fuel systems
   d) decanting processes (fluids and gases)
   e) ventilation and extraction systems (portable and fixed)
   b) identify and use appropriate personal protective equipment
   a) overalls (fabric types and uses)
   b) gloves
   c) footwear
   d) eye and face protection
   e) respiratory equipment
   f) barrier creams.

Assessment

**Essential knowledge assessment**

Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
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<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
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<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Rectify Vehicle Misalignment

Evidence requirements
To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).
To complete this unit you must:
Produce evidence of rectifying vehicle misalignment on working on a separate chassis vehicle or monocoque frame vehicle, or a combination of both.

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
**Information for N/SVQs**

**General Requirements**

You must:

1. Produce evidence to show you meet all of the performance objectives consistently.
2. Produce evidence to show that you have covered all the items listed in the scope for this unit.
3. Produce evidence to show that you possess all the knowledge required.
4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.
5. Be observed by a qualified assessor carrying out work in
   - your normal workplace
   - and approved centre, or
   - a combination of both.
6. Evidence from simulated activities is not acceptable for this unit.

**Specific Performance Evidence for this Unit**

You must:

7. Produce evidence of rectifying vehicle misalignment on 3 occasions from working on separate chassis vehicles or monocoque frame vehicles, or a combination of both.
   - for separate chassis vehicles: realign chassis frames using suitable body jigs and hydraulic realignment equipment. Each chassis frame realigned must have sustained misalignment of at least 2 critical measuring points
   - for monocoque frame vehicles: realign major damage to vehicles using suitable body jigs and hydraulic realignment equipment. Each vehicle realigned must have sustained misalignment of at least 2 critical measuring points.
8. Your assessor must observe you rectifying vehicle misalignment on at least 2 separate occasions, one of which must be in your normal workplace.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
Evidence reference summary

<table>
<thead>
<tr>
<th>Portfolio reference number (PRN)</th>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed assessment</td>
<td>Approved centre or workplace</td>
<td>Observed assessment</td>
</tr>
</tbody>
</table>

Rectifying vehicle misalignment 1
Rectifying vehicle misalignment 2
Rectifying vehicle misalignment 3

*Note specific observed evidence requirements

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

Unit assessment and verification declaration

<table>
<thead>
<tr>
<th>VRQ Candidate declaration:</th>
<th>VRQ Assessor declaration:</th>
</tr>
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<tbody>
<tr>
<td>I confirm that the evidence listed for this unit is authentic and a true representation of my own work</td>
<td>I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.</td>
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</table>
Performance objective checklist

to be competent you must ensure that:

| Wear suitable personal protective equipment and use vehicle coverings throughout all rectification activities. |
| Support vehicle misalignment rectification activities by reviewing: |
| • vehicle data from manufacturers |
| • equipment data specific to the vehicle. |
| Prepare, test and adjust all the tools and equipment required, following manufacturers’ instructions, prior to use. |
| • the manufacturer’s instructions |
| • health and safety requirements. |
| Load and secure the vehicle to the body jig correctly following: |
| • the manufacturer’s instructions |
| • health and safety requirements. |
| Establish the extent of the vehicle misalignment accurately and completely. |
| Align and anchor areas adjacent to the damage correctly, in a way that prevents further damage to the vehicle. |
| Attach the pulling system securely to the damaged sections and operate it correctly to achieve the realignment required. |
| Operate the pulling system in a way that minimises the risk of injury to yourself and others. |
| Ensure your rectification activities restore the vehicle to the manufacturer’s specification and tolerances. |
| Complete all rectification activities within the agreed timescale. |
| Report any anticipated delays in completion to the relevant person(s) promptly. |

Scope of this unit

All of the items listed below form part of this National Occupational Standard. PRN

1. Rectification activities are
   visual examination
   setting up
   calibrating
   measurement in conjunction with alignment measuring equipment
   hydraulic realignment.

2. Sections are
   chassis sections
   structural members
   non-structural members.

3. Tools and equipment are
   hand and powered tools
   measuring systems
   hydraulic push and pull
   body jigs
   safety chains.
### Essential knowledge

#### You need to understand:

<table>
<thead>
<tr>
<th>PRN</th>
<th>Legislative and organisational procedures and requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The safety requirements specific to vehicle misalignment rectification.</td>
</tr>
<tr>
<td>2</td>
<td>The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection.</td>
</tr>
<tr>
<td>3</td>
<td>The vehicle work specification agreed.</td>
</tr>
<tr>
<td>4</td>
<td>The requirements of manufacturers’ warranty agreements.</td>
</tr>
</tbody>
</table>
| 5   | Your workplace procedures for  
- the referral of problems  
- reporting of delays to the completion of the work  
- personal protection |
| 6   | The importance of working to agreed timescales and keeping others informed of progress. |
| 7   | The relationship between time, cost and profitability. |
| 8   | Your workplace procedures for the referral of problems. |
| 9   | Your workplace requirements for keeping records. |
| 10  | The importance of reporting anticipated delays to the relevant person(s) promptly. |

<table>
<thead>
<tr>
<th>Tools and equipment</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>The constraints the type of vehicle construction places on the choice of repair equipment.</td>
</tr>
<tr>
<td>12</td>
<td>How to prepare, test and adjust all equipment required for misalignment rectification.</td>
</tr>
<tr>
<td>13</td>
<td>How to install vehicles on misalignment rectification equipment, including the use of lifting equipment.</td>
</tr>
<tr>
<td>14</td>
<td>How to use rectification equipment including hand and powered tools, safety chains, hydraulic push and pull, and body jigs (bracket system and/or measuring system).</td>
</tr>
<tr>
<td>15</td>
<td>The correct use of clamps, restraints and supports to minimise additional damage during repair</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Realignment of vehicles</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>The principles of chassis frame and monocoque vehicle construction.</td>
</tr>
<tr>
<td>17</td>
<td>The principles of damage assessment and identification of direct and indirect damage.</td>
</tr>
<tr>
<td>18</td>
<td>The function of the pulling system and the criteria for selection – vector, pull arm, and tower systems, both floor mounted and bench mounted.</td>
</tr>
<tr>
<td>19</td>
<td>How to use geometric principles of alignment in the absence of a data sheet.</td>
</tr>
<tr>
<td>20</td>
<td>The properties of vehicle body construction materials.</td>
</tr>
<tr>
<td>21</td>
<td>How to find, interpret and use sources of information relevant to the rectification of vehicle misalignment.</td>
</tr>
<tr>
<td>22</td>
<td>How to establish the extent of misalignment using measuring equipment and/or measuring system.</td>
</tr>
<tr>
<td>23</td>
<td>How to realign vehicles to the manufacturer’s original specification.</td>
</tr>
<tr>
<td>24</td>
<td>How to work safely avoiding damage to vehicles, personal injury and injury to colleagues.</td>
</tr>
<tr>
<td>25</td>
<td>The importance of following manufacturers’ and using their approved methods of working (including use of materials and equipment).</td>
</tr>
<tr>
<td>26</td>
<td>The consequences of failing to follow manufacturers’ instructions and data sheets.</td>
</tr>
</tbody>
</table>
### Key and core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>Core Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication: C1.1; C1.3; C2.2</td>
<td>Communication: Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td>Application of Number: N1.1; N1.2; N1.3</td>
<td>Numeracy: Access 3, Outcomes 2 and 4</td>
</tr>
<tr>
<td>Information Technology: Not applicable</td>
<td>Information Technology: Not applicable</td>
</tr>
<tr>
<td>Working with Others: WO1.1; WO1.2</td>
<td>Working with Others: Access 3, Outcomes 1 and 2</td>
</tr>
<tr>
<td>Improving Own Learning and Performance: Not applicable</td>
<td>No parallel unit.</td>
</tr>
<tr>
<td>Problem Solving: PS2.1</td>
<td>Problem Solving: Intermediate 1, Outcome 1</td>
</tr>
</tbody>
</table>
Syllabus

Rectify Vehicle Misalignment
This unit is about the correction of damaged vehicle misalignment using body jigs.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of workplace and technical information.
2. Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.
3. Identify and follow approved procedures to rectify vehicle body misalignment.
4. Identify and undertake manufacturer and workplace approved quality checks.
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of workplace and technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) quality control procedures
   d) statutory workshop notices
   e) procedures for reporting progress.

2. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

3. Identify and follow workplace procedures for protecting the vehicle and contents from damage
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
      e) floor mats
      f) protection of vehicle systems.

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.

5. Identify and follow workplace quality control procedures
   a) visual checks
      i) panel alignment
   b) operational checks
      i) fitting panels to check gaps
      ii) fitting of locks & strikers
      iii) fitting trim / mouldings.
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and state the purpose of approved hand tools
   a) general hand tools
      I. engineers hammers
      II. chisels
      III. metal files
      IV. hack saw
      V. shears
      VI. spanners sockets
      VII. ratchet
      VIII. clamps
      IX. rigs
      X. supports.

2. Identify and state the purpose of approved power tools and equipment
   a) pneumatic, electric and hydraulic types
      I. drills
      II. sanders (disc and belt)
      III. grinders
      IV. cutters
      V. saws
      VI. shears
      VII. nibbler
      VIII. portable and fixed extraction systems
      IX. trolley, bottle and screw jacks
   b) body measuring and realignment equipment
      I. drop line checks
      II. gun sights
      III. hydraulic push and pull systems
      IV. body jacks
      V. dozer system
      VI. body jigs (mobile and fixed beds)
      VII. measuring systems (bracketless)
      VIII. bracket system
      IX. laser beam system
      X. electronic and computerised systems
      XI. clamps and attachments (mechanical and self tightening types)
      XII. chains
      XIII. hydraulic rams
      XIV. safety devices.

3. Identify and carry out manufacturer approved routine checks on hand, power tools and equipment
   a) safety checks
      I. visual
      II. aural
   b) functional checks
      I. manufacturer specification
      II. calibration (alignment of vehicle to jig)
      III. hydraulic fluid and air leaks.

4. Identify and follow procedures for mounting vehicles on to jig beds
   a) use of static hydraulic lifts
   b) use of mobile hydraulic lifts
   c) mounting brackets onto the vehicle body
   d) use of clamps restraints and supports
   e) use of all the above without causing further damage to the vehicle

5. State how the type of vehicle construction affects the choice of repair equipment.
Outcome 3
Identify and follow approved procedures to rectify vehicle body misalignment.

Objective
To achieve this outcome the candidate must be able to:

1. identify and state the principles of types of vehicle body construction
   a) monocoque / unitary chassis
   b) composite / separate chassis.

2. Identify and state the properties of materials used for vehicle body panels
   a) low carbon mild steel
   b) high strength steel
   c) aluminium alloys
   d) boron steel
   e) zinc coated / galvanised steel
   f) types of plastic
   g) GRP / FRP

3. Identify and follow approved methods of accident damage assessment
   a) principles of geometric alignment
      I. body lines
      II. panel gaps
      III. panel closures
   b) describe types of major damage
      I. parallel side damage
      II. direct side damage
      III. front and rear end damage
      IV. three quarter frontal damage
      V. roll over damage
      VI. total write-off damage
   c) visual assessment
      I. degree of deformation
      II. seam movement
      III. visible and concealed damage
   d) measurement
      I. gauges
      II. trammels
      III. dropline
      IV. tapes and lines.

4. Interpret and follow vehicle manufacturer approved dimension data
   a) workshop manuals
   b) electronic systems
   c) bracket system plan
   d) measuring system plan.

5. Interpret and follow manufacturer and workplace approved procedures to realign vehicles to
   the manufacturers original specification
   a) use of tools and equipment
      I. hand and power tools
      II. measuring systems
      III. hydraulic push and pull
      IV. body jigs
   b) pulling and realignment processes
      I. bracket
      II. measuring (bracketless)
      III. mechanical and electronic measuring
IV. push and pull processes (body jack and dozer)

III. laser beam

IV. electronic and computerised
c) floor and bench mounted systems
   I. direct
   II. vector
   III. pull arm
   IV. tower
   V. simultaneous multipulls
c) realignment of vehicle sections
   I. body chassis
   II. structural members
   III. non-structural members
d) follow recommended procedures
   I. operate within repair tolerances
   II. consequences of failing to follow manufacturer instructions
e) safe systems of work
   I. use of safety restraints
   II. pulling clamps and chain attachments.

6. Demonstrate and carry out manufacturer approved processes for checking quality of alignment
   a) visual
   b) aural
   c) special equipment.
Outcome 4
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Recognise and interpret national and local legislation and guidance
   a. HASAWA
   b. COSHH
   c. EPA
   d. PPE at work regulations
   e. Manual handling regulations
   f. Risk assessment
   g. Duty of care regulations (special waste).

2. Demonstrate and undertake manufacturer and workplace approved procedures following health and safety precautions and guidelines
   a) use of PPE
      I. overalls
      II. gloves
      III. footwear
      IV. eye and face protection
      V. before and after skin creams
      VI. respiratory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) workplace procedures to control hazards
      I. risk assessment guidelines
      II. safety chains and devices.

Assessment

Essential knowledge assessment
Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
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<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
</tr>
</tbody>
</table>
Evidence requirements

To complete this unit you will be required to undertake knowledge and practical tests.

For the knowledge test you must pass the City & Guilds computer based (GOLA) multiple choice knowledge test. This test will be arranged by your tutor or assessor.

If you are completing an apprenticeship which includes both N/SVQ & VRQ (Technical Certificate) you will only take this test once.

The practical tests will depend upon the qualification you are taking and are covered in the VRQ or NVQ information sections.

You must also complete the attached recording forms to the satisfaction of your assessor. These forms, when completed and signed by you and your assessor, provide confirmation that you have met both practical and knowledge requirements.

If you are undertaking an apprenticeship you need only complete one set which combines VRQ (Technical certificate) and N/SVQ evidence.

Your tutor or assessor will be able to offer you further guidance on the evidence you need to provide.

Information for VRQs (Technical Certificates).

To complete this unit you must:

1. Produce evidence of carrying out the following types of GRP repairs:
   a. Repairs to slight impact damage, including holes and fractures
   b. Grafting in new sections to reinstate vehicle contours and strength

Your tutor or assessor will either set and observe a practical assessment task, which has been designed to cover the performance objectives, or you may be observed by your assessor in your workplace. If this qualification forms part of an apprenticeship workplace observation will also provide N/SVQ evidence.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your tutor or assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the practical task you are performing.
Information for N/SVQs
General Requirements
You must:

1. Produce evidence to show you meet all of the performance objectives consistently.

2. Produce evidence to show that you have covered all the items listed in the scope for this unit.

3. Produce evidence to show that you possess all the knowledge required.

4. Produce performance evidence resulting from work you have carried out on real vehicles in your normal workplace or in a realistic working environment (RWE) as managed and organised by an approved centre when naturally occurring performance evidence does not occur at frequent intervals in your normal workplace or when safety is at risk.

5. Be observed by a qualified assessor carrying out work in
   - your normal workplace
   - and approved centre, or
   - a combination of both.

6. Evidence from simulated activities is not acceptable for this unit.

Specific Performance Evidence for this Unit
You must:

7. Produce evidence of carrying out all the types of repairs listed in the Scoping Statement for this unit.

Your assessor must physically observe you carrying out a repair on at least 2 occasions, one of which must be in your normal workplace.

With your assessor you must complete a suitable City & Guilds evidence recording form for each task. Your assessor will advise you on this. Other paperwork such as job cards, inspection sheets, servicing lists and reporting paperwork, appropriate to the task, should also be completed.

All work records/evidence should be numbered (portfolio reference number PRN) and entered where required on the recording forms. This evidence should be collected in a portfolio and may need to be made available to your internal verifier or the City & Guilds external verifier.

Your assessor will ask questions to ensure you understand the task you are performing.

If this qualification forms part of an apprenticeship workplace observation will also provide VRQ evidence.
Evidence reference summary

<p>| Note: | Refer to the General and Specific Performance Evidence requirements for details of locations and types of assessment for this unit. |</p>
<table>
<thead>
<tr>
<th>VRQ</th>
<th>N/SVQ</th>
<th>N/SVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed assessment</td>
<td>Approved centre or workplace</td>
<td>Observed assessment</td>
</tr>
<tr>
<td>Repairs to slight impact damage, including holes and fractures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grafting in new sections to reinstate vehicle contours and strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Replacement of whole panels and or sections of whole panels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Supplementary evidence (if used) PRN

On line test reference for this unit PRN

Unit assessment and verification declaration

**VRQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work.
Candidate name: ____________________________
Candidate enrolment number:__________________
Candidate signature: _________________________
Date: ___________________  

**VRQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ____________________________
Assessor signature: _________________________
Date: ___________________
Countersignature: (if relevant) ________________
Date: ___________________

**VRQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: ____________________________
Internal verifier signature: _________________________
Date: ___________________
Countersignature: (if relevant) ____________________
Date: ___________________

**N/SVQ Candidate declaration:**
I confirm that the evidence listed for this unit is authentic and a true representation of my own work.
Candidate name: ____________________________
Candidate enrolment number:__________________
Candidate signature: _________________________
Date: ___________________

**N/SVQ Assessor declaration:**
I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.
Assessor name: ____________________________
Assessor signature: _________________________
Date: ___________________
Countersignature: (if relevant) ________________
Date: ___________________

**N/SVQ Internal verifier Declaration:**
(Leave blank if sampling of this unit did not take place.)
I have internally verified the assessment work on this unit in the following ways (please tick):
- sampling candidate and assessment evidence
- observation of assessment practice
- discussion with candidate
- other – please state:
I confirm that the candidate’s work meets the standards specified for this unit and may be presented for external verification and/or certification.
Internal verifier name: ____________________________
Internal verifier signature: _________________________
Date: ___________________
Countersignature: (if relevant) ____________________
Date: ___________________
**Performance objective checklist**

<table>
<thead>
<tr>
<th>To be competent you must ensure that:</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear suitable personal protective equipment and use specified environmental safety equipment throughout all repair operations.</td>
<td></td>
</tr>
<tr>
<td>Support the mixing and application of glass reinforced materials by reviewing:</td>
<td></td>
</tr>
<tr>
<td>• technical data</td>
<td></td>
</tr>
<tr>
<td>• repair procedures.</td>
<td></td>
</tr>
<tr>
<td>Prepare and adjust all the tools and equipment required, following manufacturers’ instructions, prior to use.</td>
<td></td>
</tr>
<tr>
<td>Use suitable methods to identify accurately, and record where necessary, the type of fault and the extent of the damage.</td>
<td></td>
</tr>
<tr>
<td>Mix all glass reinforced repair materials following health and safety requirements and using the:</td>
<td></td>
</tr>
<tr>
<td>• approved method</td>
<td></td>
</tr>
<tr>
<td>• correct mixing ratios</td>
<td></td>
</tr>
<tr>
<td>• equipment recommended.</td>
<td></td>
</tr>
<tr>
<td>Prepare all edges, new sections and temporary moulds in a way suitable for the:</td>
<td></td>
</tr>
<tr>
<td>• damage identified</td>
<td></td>
</tr>
<tr>
<td>• type of repair to be undertaken.</td>
<td></td>
</tr>
<tr>
<td>Apply all the repair materials required following health and safety requirements and using:</td>
<td></td>
</tr>
<tr>
<td>• suitable methods for positioning the repair materials within the repair area</td>
<td></td>
</tr>
<tr>
<td>• suitable repair techniques</td>
<td></td>
</tr>
<tr>
<td>• the equipment recommended.</td>
<td></td>
</tr>
<tr>
<td>Carry out all repair activities following:</td>
<td></td>
</tr>
<tr>
<td>• your workplace procedures</td>
<td></td>
</tr>
<tr>
<td>• health and safety requirements.</td>
<td></td>
</tr>
<tr>
<td>Ensure all repaired and replaced panels and sections are realigned correctly and regain the original manufactured contour and strength.</td>
<td></td>
</tr>
<tr>
<td>Ensure the repair is finished to a state suitable for the painting process.</td>
<td></td>
</tr>
<tr>
<td>Dispose of waste materials to conform with legal and workplace requirements.</td>
<td></td>
</tr>
<tr>
<td>Complete all repair activities within the agreed timescale.</td>
<td></td>
</tr>
<tr>
<td>Report any anticipated delays in completion to the relevant person(s) promptly.</td>
<td></td>
</tr>
</tbody>
</table>

**Scope of this unit**

<table>
<thead>
<tr>
<th>All of the items listed below form part of this National Occupational Standard.</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Tools and equipment are</strong></td>
<td></td>
</tr>
<tr>
<td>sanding tools</td>
<td></td>
</tr>
<tr>
<td>laminating tools,</td>
<td></td>
</tr>
<tr>
<td>dust and fume extraction equipment</td>
<td></td>
</tr>
<tr>
<td>hand tools</td>
<td></td>
</tr>
<tr>
<td>cutting tools.</td>
<td></td>
</tr>
<tr>
<td><strong>2. Materials are</strong></td>
<td></td>
</tr>
<tr>
<td>resins</td>
<td></td>
</tr>
<tr>
<td>reinforcements</td>
<td></td>
</tr>
<tr>
<td>cleaning materials</td>
<td></td>
</tr>
<tr>
<td>Fillers.</td>
<td></td>
</tr>
<tr>
<td><strong>3. Repairs are</strong></td>
<td></td>
</tr>
<tr>
<td>repairs to slight impact damage, including holes and fractures</td>
<td></td>
</tr>
<tr>
<td>grafting in new sections to reinstate vehicle contours and strength</td>
<td></td>
</tr>
<tr>
<td>replacement of whole panels and or sections of whole panels.</td>
<td></td>
</tr>
</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the objectives and scope statements were met at least once during the practical assessment tasks by the named candidate and that the safe working practices were observed at all times.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
</tr>
</tbody>
</table>
### Essential knowledge

**You need to understand:**

<table>
<thead>
<tr>
<th>PRN</th>
<th>Legislative and organisational procedures and repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. The health and safety legislation and workplace procedures relevant to workshop practices for personal and vehicle protection when repairing glass reinforced panels</td>
</tr>
<tr>
<td></td>
<td>3. The importance of disposing of waste safely and the consequences of not doing so to others and the environment.</td>
</tr>
<tr>
<td></td>
<td>4. How to dispose of waste materials.</td>
</tr>
<tr>
<td></td>
<td>5. The vehicle work specification agreed.</td>
</tr>
</tbody>
</table>
|     | 6. Your workplace procedures for  
|     |   - The referral of problems  
|     |   - Reporting of delays to the completion of the work  
|     |   - Personal protection  
|     | 7. The importance of working to agreed timescales and keeping others informed of progress. |
|     | 8. The relationship between, time cost and profitability. |
|     | 9. The importance of reporting anticipated delays to the relevant person(s) promptly. |

<table>
<thead>
<tr>
<th>PRN</th>
<th>Tools and equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10. How to prepare, test and use all tools and equipment required to carry out repairs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRN</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11. The properties of repair materials and the factors affecting their use.</td>
</tr>
<tr>
<td></td>
<td>12. The mixing ratios for resins and hardeners.</td>
</tr>
<tr>
<td></td>
<td>13. How to mix and apply all repair materials.</td>
</tr>
<tr>
<td></td>
<td>14. How to estimate the amount of materials to be used.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRN</th>
<th>Repairing glass reinforced panels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15. The procedures for estimating the extent of damage.</td>
</tr>
<tr>
<td></td>
<td>16. The procedures for removing damaged materials.</td>
</tr>
<tr>
<td></td>
<td>17. The procedures for preparing cut edges to accept repairs.</td>
</tr>
<tr>
<td></td>
<td>18. The procedures and limitations of setting up temporary moulds.</td>
</tr>
<tr>
<td></td>
<td>20. The factors which affect drying times.</td>
</tr>
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<td>21. The causes and rectification of faults in glass fibre mouldings (e.g star cracks, cavities, blisters and de-lamination).</td>
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<td>22. The process used to produce glass reinforced panel repairs.</td>
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<td>23. The types of joint which can be used to join new and existing sections</td>
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<td></td>
<td>24. How to find, interpret and use sources of information relevant to the type of repair and materials used.</td>
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<td></td>
<td>25. How to identify the type and extent of the damage.</td>
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<td>26. How to prepare damaged areas to carry out repairs.</td>
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<td>27. How to cut out damaged areas to accept new sections.</td>
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<td>28. How to make suitable joints at section boundaries.</td>
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<td>29. How to align new sections.</td>
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<td>30. How to finish repairs to a suitable condition for handover to the painting stage.</td>
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<td></td>
<td>31. How to work safely avoiding damage to the vehicle and its systems.</td>
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</tbody>
</table>

In signing this sheet the Assessor and Candidate confirm that all the essential knowledge has been met by the named candidate.

<table>
<thead>
<tr>
<th>Assessor</th>
<th>Date</th>
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<tbody>
<tr>
<td>Candidate</td>
<td>Date</td>
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</table>
# Key/Core skills signposting

<table>
<thead>
<tr>
<th>Key Skills</th>
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<tbody>
<tr>
<td><strong>Communication:</strong></td>
<td><strong>Communication:</strong></td>
</tr>
<tr>
<td>C1.1; C1.3; C2.2;</td>
<td>Access 3, Outcomes 2 and 3</td>
</tr>
<tr>
<td></td>
<td>Intermediate 1, Outcome 1</td>
</tr>
<tr>
<td><strong>Application of Number:</strong></td>
<td><strong>Numeracy:</strong></td>
</tr>
<tr>
<td>N2.1; N2.2; N2.3</td>
<td>Intermediate 1, Outcomes 1, 2 and 4</td>
</tr>
<tr>
<td><strong>Information Technology:</strong></td>
<td><strong>Information Technology:</strong></td>
</tr>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Working with Others:</strong></td>
<td><strong>Working with Others:</strong></td>
</tr>
<tr>
<td>WO2.1 WO2.2; WO2.3</td>
<td>Intermediate 1, Outcomes 1 2 and 3</td>
</tr>
<tr>
<td><strong>Improving Own Learning and Performance:</strong></td>
<td><strong>No parallel unit.</strong></td>
</tr>
<tr>
<td>Not applicable</td>
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<tr>
<td><strong>Problem Solving:</strong></td>
<td><strong>Problem Solving:</strong></td>
</tr>
<tr>
<td>PS3.1; PS3.2; PS3.3</td>
<td>Intermediate 2, Outcomes 1, 2 and 3</td>
</tr>
</tbody>
</table>
Syllabus

Repair Glass Reinforced Panels and Vehicle Bodies
This unit is about repairing glass reinforced panels or fitting new glass reinforced sections to vehicles. Identifying damage, preparing the damaged site and carrying out repairs by filling, remoulding or grafting in whole sections is included.

Course Outline
To assist Centres in developing training courses, further guidance is given relating to the NVQ essential knowledge statements. The outline syllabus is a requirement for Technical Certificate courses. This is presented as a number of outcomes that in turn each have a number of objectives and expanded content detail.

Reference should also be made to the National Standards.

Outcomes
On completion of this unit, the candidate must be able to:

1. Identify and interpret sources of workplace and technical information.
2. Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.
3. Identify and follow manufacturer approved procedures to repair glass reinforced vehicle body panels.
4. Identify and undertake manufacturer and workplace approved quality checks
5. Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.
Outcome 1
Identify and interpret sources of workplace and technical information.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and follow workplace documentation and procedures.
   a) job cards
   b) the importance of prompt reporting of problems and delays to a supervisor
   c) quality control procedures
   d) statutory workshop notices
   e) procedures for reporting progress.

2. State the importance of following manufacturer and workplace approved and agreed timescales
   a) recording individual operator efficiency
   b) workforce productivity.

3. Identify and follow workplace procedures for protecting the vehicle and contents from damage
   a) storage of personal items
   b) use of dust covers
   c) masking
   d) seat, steering wheel covers
   e) floor mats
   f) protection of vehicle systems.

4. Interpret and follow sources of manufacturer approved technical data
   a) MIRRC methods manuals
   b) workshop manuals
   c) computer software
   d) manufacturers websites
   e) parts manuals / microfiche
   f) manufacturers warranty procedures.

5. Identify and follow workplace quality control procedures
   a) visual checks
      i) panel alignment
      ii) contour
   b) operational checks
      i) fitting panels to check gaps
      ii) fitting of locks & strikers
      iii) fitting trim / mouldings.
Outcome 2
Identify and follow procedures relevant to the preparation, testing, use and adjustment of approved tools and equipment.

Objectives
To achieve this outcome the candidate must be able to:

1. Identify and state the purpose of approved hand tools
   a) air supply equipment
      I. air line
      II. compressor
      III. regulator/transformer
      IV. air duster gun (blower)
   b) general tools and equipment
      I. hand tools
         A. scrappers
         B. trimming knife
         C. cutters
         D. applicators
         E. brushes
         F. knives
         G. rollers
      II. rubbing blocks
         A. rubber
         B. shaped blocks
      III. sundries
         A. leathers
         B. sponges
         C. wipes
      IV. sanders
         A. pneumatic and electric
         B. DA sanders (types)
         C. long bed sander
         D. orbital sanders
         E. backing pads (soft, hard and inter-face types)
   V. abrasives
      A. wet or dry papers
      B. scotch-brite sheets and pads
      C. stripping discs
      D. hand and machine abrasives
      E. sheets and discs (coarse medium and fine)
      F. hook-it and adhesive types
   c) fume extraction equipment
      I. work bay down draft extraction
      II. portable and fixed dust extraction
   h) drying equipment
      I. infra-red hand held emitter and fitted systems
      II. low bake system
   k) health and safety equipment and PPE
      I. overalls
      II. gloves
      III. boots
      IV. ear protection
      V. eye and face protection
      VI. before and after work skin creams
      VII. air-fed respiratory apparatus.
2. Identify and follow approved routine maintenance activities
   a) visual checks
      I. PAT labelling
      II. damaged air lines and couplers
   b) functional
I. compressor lubrication
II. air receiver drainage
III. sander and grinder
IV. drill and saws
c) aural
   I. compressed air leaks
   II. compressor noise.

3. Undertake approved storage of tools and equipment
   a) boxes and trays
   b) cupboards and racks
   c) shadow boards
   d) flammable store.
Outcome 3
Identify and follow manufacturer approved procedures to repair glass reinforced vehicle body panels.

Objective
To achieve this outcome the candidate must be able to:

1. State the properties of repair materials and identify the factors affecting their use
   materials are;
   
   a) gel coats
   b) fibre matting
   c) resins
   • mixing ratio
   • application
   • curing / drying
   d) fillers
   e) pigment
   f) reinforcements
   g) cleaning materials
   • water miscible agents
   • volatile solvents
   h) hardeners and accelerators
   • types
   • mixing ratios
   i) mould release agents
   • types
   • application
   • removal
   • neutralisation.

2. Identify and follow procedures for the preparation of surfaces prior to the repair of GRP panels and vehicle bodies
   a) removal of damaged materials
   b) removal of paint films
   c) sanding
   c) cleaning.

3. Identify and follow procedures for cutting out and preparing damaged areas
   a) determine the type and extent of the damage
   b) cut out the repair section
   c) determine the location of joints
   d) alignment of new sections.

4. Identify and follow approved procedures for the repair of GRP panels and vehicle bodies
   a) laminating
   b) patching
   c) temporary moulds and templates
   d) butt and lap joints
   e) reinforced sections
   f) blind processes
   g) finish repairs to an acceptable standard for painting.

5. Identify and follow procedures for the identification and rectification of faults and defects
   found in GRP panels and vehicle bodies
   a) application
      I. slow curing
      II. pinholes
III. cavities
IV. fibre pattern
V. leaching

b) contamination
   I. osmosis
   II. blisters
   III. fish eyes

c) ageing
   I. de-lamination
   II. low or poor adhesion (detachment)

a) impact
   I. cracking
   II. stars
   III. splits
   IV. stress fractures
   V. shattering.
Outcome 4
Interpret and follow health and safety regulations and guidelines in accordance with manufacturer and workplace procedures.

Objectives
To achieve this outcome the candidate must be able to:

1. Recognise and interpret national and local legislation and guidance
   a) HASAWA
   b) COSHH
   c) EPA
   d) PPE at work regulations
   e) Health surveillance regulations (lung function test)
   f) Manual handling regulations
   g) Risk assessment
   h) Duty of care regulations (special waste).

2. Demonstrate and undertake manufacturer and workplace approved procedures following health and safety precautions and guidelines
   a) use of PPE
      I. disposable overalls (non-absorbent)
      II. gloves
      III. footwear
      IV. ear protection
      V. eye and face protection
      VI. before and after work skin creams
      VII. respirator face mask (organic vapour and dust types)
      VIII. air fed respiratory equipment
   b) use of portable and fixed ventilation and extraction systems
   c) approved methods of safe disposal of hazardous waste
   d) approved methods of manual handling (lifting and carrying)
   e) workplace procedures to control hazards
      I. risk assessment guidelines
      II. control of dusts and fumes.

Assessment

Essential knowledge assessment

Essential knowledge will be assessed using the GOLA system. The test specification is as follows:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of questions</th>
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<tbody>
<tr>
<td>1</td>
<td>5</td>
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<td>2</td>
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<td>3</td>
<td>12</td>
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<td>5</td>
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<tr>
<td>Test duration 35mins</td>
<td>Total 25</td>
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