

National Occupational Standards

Sector	Transport
Job Family	Motor Vehicle Repairs
Job Title	Panel Beater
MQF	Level 3

SCOPE

This standard emerges from the need to ensure that motor vehicle panel beating is to be carried out with a harmonized level of competence irrespective of the panel beater carrying out the survey.

Continued competence of the panel beater is paramount to ensure that the vehicle is restored to its original state according to what the client specifies and according to the safety specifications for the vehicle. This standard helps in achieving and maintaining proof of such competence.

This standard shall serve as a basis for the panel beater to work according to what is highlighted in this standard to ensure safety for the person working on the vehicle as well as to enhance customer satisfaction.

PB OS 01: Contribute to Housekeeping in Motor Vehicle Environments

<p>Description of Unit</p>	<p>This unit is about the need to carry out routine maintenance of the workplace, basic, non-specialist checks of work tools and equipment, cleaning the work area and using resources economically.</p>
<p>Performance Criteria</p>	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Carry out routine checks and cleaning on work tools and equipment. 2. Replace minor parts and perform visual inspection of electrical, mechanical, pneumatic and hydraulic equipment. 3. Carry out the day to day work area cleaning and clearing away unwanted material. 4. Clean up spillages 5. Adequately dispose waste, used materials and debris.
<p>Required Knowledge</p>	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The workplace policies and schedules for housekeeping activities and equipment maintenance. 2. The manufacturer's requirements for the cleaning and general, non-specialist maintenance of the tools and equipment for which the panel beater is responsible. 3. The regulations and information sources applicable to workshop cleaning and maintenance activities for which the panel beater is responsible. 4. The importance of reporting faults quickly to the relevant person. 5. The importance of reporting anticipated delays to interested parties. 6. How to select and use equipment used for basic hand tool maintenance activities. 7. How to store hand tools safely and accessibly. 8. How to report faulty or damaged work tools and equipment. 9. How to work safely when cleaning and maintaining work tools and equipment. 10. How to select and use cleaning equipment. 11. How to use resources economically. 12. How to use work area cleaning materials and agents. 13. How to clean and maintain the work tools and equipment and work areas which fall under the panel beater's responsibility. 14. How to properly dispose of unused cleaning agents, materials and debris.

	<p>15. The properties and hazards associated with the use of cleaning agents and other materials.</p> <p>16. The importance of wearing personal protective equipment.</p> <p>17. The importance of using resources economically and for their intended purpose only.</p>
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Wear suitable personal protective equipment throughout all housekeeping and equipment maintenance activities. 2. Select and use cleaning equipment which is adequate and suitable for the task in hand. 3. Use resources economically and for their intended purpose only, following manufacturers' instructions and workplace approved procedures. 4. Follow workplace policies, schedules and manufacturers' instructions when cleaning and maintaining hand tools and equipment. 5. Clean the work area(s), for which the panel beater is responsible, at the specified time and frequency. 6. Carry out housekeeping activities safely and in a way which minimizes inconvenience to customers and staff. 7. Follow the manufacturer's instructions when using cleaning and sanitizing agents. 8. Ensure that housekeeping activities are under taken so that the work area is clean and free from debris and waste materials. 9. Ensure equipment maintenance activities allow the work tools and equipment to remain fit for the intended purpose. 10. Adequately dispose of used cleaning agents, materials and debris to comply with legal and workplace requirements. 11. Store the work tools and equipment in a safe manner which permits ease of access and identification for use. 12. Report any faulty or damaged tools and equipment to the relevant person(s) clearly and promptly. 13. Report any anticipated delays in completion to the relevant person(s) promptly.
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PB OS 02: Reduce Risks to Health and Safety in the Motor Vehicle Environment

<p>Description of Unit</p>	<p>This unit covers the basic, legally required health and safety duties of all parties in the workplace. It describes the competence required to ensure that:</p> <ul style="list-style-type: none"> • no action creates any unnecessary health and safety risks, • significant risks at the workplace are not ignored, and • sensible action is taken to eliminate or mitigate the risks involved, including reporting situations, which pose a danger to people in the workplace, and seeking advice from others
<p>Performance Criteria</p>	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. The use and maintenance of machinery and equipment. 2. The use of material and substances. 3. The working practices which do not conform to laid down policies 4. Unsafe behaviour and accidental breakages and spillages 5. Environmental factors 6. Working at height and lifting operations and manual handling 7. Incorrect use of personal protective equipment
<p>Required Knowledge</p>	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The legal duties for health and safety in the workplace as required by the Health and Safety at Work Act 1974, and any other policies or procedures that govern the working practices. 2. The health and safety duties as defined by any specific legislation covering the job role. 3. Agreed workplace policies relating to controlling risks to health and safety. 4. The responsibilities for health and safety in the job description and the responsible persons to whom one is to report health and safety matters. 5. What hazards may exist in the workplace (eg. Slips, trips and falls).

	<ol style="list-style-type: none"> 6. The health and safety risks which may be present with regards to the job role and precautions that must be taken. 7. The importance of remaining alert to the presence of hazards in the whole workplace and how to deal with and report risk. 8. The requirements and guidance on the precautions. 9. The specific workplace policies covering the job role. 10. The suppliers' and manufacturers' instructions for the safe use of equipment, materials and products. 11. The safe working practices for the job role and the importance of personal presentation in maintaining health and safety in the workplace. 12. The importance of personal conduct in maintaining the health and safety of oneself and others and the importance of personal protective equipment, when and where it should be used. 13. The importance of maintaining such equipment correctly. 14. The workplace procedures for handling risks.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Carry out working practices in accordance with legal requirements. 2. Identify the correct personal and vehicle protective equipment required to correctly carry out good workplace practices. 3. Carry out workplace practices using the correct personal protective equipment. 4. Follow the most recent workplace policies for the job role. 5. Rectify health and safety risks that are within the capability and scope of the job responsibilities. 6. Pass on any suggestions for reducing risks to health and safety within the job role to the responsible persons. 7. Ensure that personal conduct in the workplace does not endanger the health and safety of oneself or other persons. 8. Follow the workplace policies and suppliers' or manufacturers' instructions for the safe use of equipment, materials and products. 9. Report any differences between workplace policies and suppliers' or manufacturers' instructions as appropriate. 10. Ensure personal presentation at work by ensuring the health and safety of oneself and others, by meeting any legal duties, and always in accordance with workplace policies.
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PB OS 03: Maintain Working Relationships in the Motor Vehicle Environment

<p>Description of Unit</p>	<p>This unit is about maintaining good working relationships with all colleagues in the working environment by using effective communication and support skills.</p>
<p>Performance Criteria</p>	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Maintain good relationships both horizontally (immediate work colleagues) and vertically (Supervisors and managers). 2. Respond to requests for assistance covering technical assistance and personal assistance.
<p>Required Knowledge</p>	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. Own and colleague's job role and limits of responsibility for giving advice and support. 2. The operational constraints which may affect interaction with colleagues. 3. The lines of communication within the workplace. 4. How to use suitable and effective spoken communication skills when responding to and interacting with others. 5. How to adapt written and spoken communication methods to satisfy the needs of colleagues. 6. How to report problems using written and spoken methods of communication. 7. The importance of developing positive working relationships with colleagues – the effect on morale, productivity, and company image. 8. The importance of accepting other peoples' views and opinions. 9. The importance of making and honouring realistic commitments to colleagues.

Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none">1. Actively contribute to team work by initiating ideas and co-operating with colleagues.2. Respond promptly and willingly to requests for assistance from colleagues provided such requests fall within the limits of the job responsibilities and capabilities.3. Refer colleagues to relevant persons in case of requests which fall outside of the job responsibility and capability.4. Give colleagues sufficient, accurate information and support to meet their work needs.5. Make requests for assistance to colleagues clearly and courteously.6. Use methods of communication which meet the needs of colleagues.7. Treat colleagues in a way which shows respect for their views and opinions and promotes goodwill.8. Make and keep achievable commitments to colleagues.9. Inform colleagues promptly of any problems or information likely to affect their own work.
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PB OS 04: Remove and Fit Mechanical, Electrical and Trim (MET) Components to Vehicles

<p>Description of Unit</p>	<p>This unit is about removing and fitting non- permanently fixed panels such as wings, doors, bonnets, boot lids, painted sun roof panels, hardtop panel sections and tailgates on vehicles. These panels contain safety related components.</p>
<p>Performance Criteria</p>	<p>The candidate must have the necessary knowledge and skills to remove and fit panels covered in this standard which are vehicle:</p> <ul style="list-style-type: none"> a) wings b) doors c) bonnets d) boot lids and tailgates e) bumpers f) sun roof panels g) hard top panel sections h) glass screens and windows
<p>Required Knowledge</p>	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health and safety relevant to Mechanical, Electrical and Trim (MET) components. 2. The safety aspects relating to removing/replacing/storing pyrotechnic devices such as air bags, seat belt tensioners, head restraints and the bonnet pedestrian protection systems. 3. The workplace procedures for the referral of problems, reporting of delays to the completion of work and notification of the end of the project, legal requirements relating to the removal and fitting of mechanical parts, work records, the work that needs to be done and the standard required the requirements for protecting the vehicle and contents from damage before, during and after removing and fitting activities. 4. The importance of selecting, using and maintaining the appropriate Personal Protective Equipment (PPE) when removing and fitting Mechanical, Electrical and Trim (MET) components. 5. How to find, interpret and use sources of information applicable to

	<p>the removal and fitting of Mechanical, Electrical and Trim (MET) components.</p> <ol style="list-style-type: none"> 6. How to select, check and use all the tools and equipment required to remove and fit Mechanical, Electrical and Trim (MET) components. 7. The procedures for removing and fitting Mechanical, Electrical and Trim (MET) components. 8. The methods of storing removed parts and the importance of storing them correctly. 9. The different types of fastenings and the reasons for their use. 10. The need for correct alignment of components and the methods used to achieve this. 11. The types of quality checks that can be used to ensure correct alignment and operation of components to manufacturer's specification and their purpose.
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<p>Required Skills</p>	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate Personal Protective Equipment (PPE) when removing and fitting Mechanical, Electrical and Trim (MET) components. 2. Protect the vehicle and its contents effectively when removing and fitting Mechanical, Electrical and Trim (MET) components. 3. Select and use the correct tools and equipment for the components that are going to be removed or fitted. 4. Ensure that the tools and equipment that are required are in a safe working condition. 5. Remove and fit Mechanical, Electrical and Trim (MET) components following removal and fitting procedures, manufacturers' instructions workplace procedures as well as health, safety and legal requirements. 6. Avoid damaging other components and standards on the vehicle. 7. Store all removed components safely in the correct location and ensure that no further damage occurs. 8. Check that the components that the fitted components operate correctly following the manufacturer's specification. 9. Report any additional faults or further damage that are found during the course of work to the relevant stakeholders. 10. Promptly report any delays in completing the work to the relevant stakeholders.
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| | <ol style="list-style-type: none">11. Remove and fit Mechanical, Electrical and Trim (MET) components within the agreed timescale.12. Complete work records accurately, in the format required and pass them to the relevant stakeholders promptly. |
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PB OS 05: Identify and Rectify Minor Repairs to Motor Vehicle Body Panels

Description of Unit	<p>This unit is about repairing body panels using a variety of techniques.</p>
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Identify and rectify the listed repairs : <ol style="list-style-type: none"> a. body filling and finishing of flat areas of a panel b. repairs to dents that are over 70 mm in diameter in body panels, including curvature panels and swage lines c. repairs to splits and scuffs on plastic components d. Repair to fiberglass and any other composite material 2. Perform the repairs on both non-permanently fixed panels and also on permanently fixed components, 3. Use techniques and processes of repair that includes: <ul style="list-style-type: none"> - plastic repairs - composite material repair - panel pulling, - plastic filling, - panel beating including metal finishing, filing, and shrinking - hammering, including direct, indirect and spring hammering, - application of body filling/stopper.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when repairing body panels. 2. The vehicle work specification that was agreed upon. 3. The importance of working to agreed timescales and keeping other parties informed of progress. 4. The relationship between time, cost and profitability. 5. The workplace procedures for the referral of problems. 6. The importance of reporting anticipated delays to the relevant stakeholders promptly. 7. The requirements for protecting the vehicle and contents from damage before, during and after repair activities. 8. The principles of the selection and use of hand tools for metal finishing and plastic filling repairs. 9. How to select the correct tools and equipment to carry out reshaping

	<p>work, including specialist dent removal tools.</p> <ol style="list-style-type: none"> 10. How to prepare, test, use and maintain the hand and power tools required to prepare damage and reshape damaged areas. 11. The properties of component materials involved in the construction of the vehicle in the areas that will be worked on during repair. 12. How to mix and apply Auto body filler. 13. The properties and use of metals used to manufacture body panels. 14. The properties and safe use of types of filling materials used to repair panels. 15. The different types and grades of abrasive and their use. 16. The techniques for identifying the type of plastics used for manufactured components. 17. How to interpret and use sources of information relevant to the removal of body components. 18. How to prepare the vehicle to avoid contamination. 19. How to prepare damaged areas to facilitate repairs. 20. How to repair plastic components using thermal and adhesive techniques. 21. How to rough out and metal finish body panels. 22. How to reshape filling materials to match the original panel contour. 23. How to finish repairs to a suitable agreed condition for refinishing. 24. How to work safely avoiding damage to the vehicle and its systems. 25. The techniques for reshaping damaged body panels by hand and the procedures for reinstating anti-corrosion, sealant and sound deadening materials. 26. The procedures for repairing damage to plastic and composite material components. 27. The techniques and processes for plastic repairs, shrinking, panel pulling, metal finishing, plastic filling, indirect hammering, direct hammering, spring hammering, body filing and application of body filler/stopper. 28. The techniques used to regain the contours of repaired plastic/ composite material components. 29. Methods of checking reshaped panel contours for accuracy. 30. Standards of finish required to enable the next stage of repairs to proceed. 31. The manufacturer's approved methods of working for the preparation and repair of (non-structural) body panels. 32. The effect on the pedestrian safety aspects of the vehicle repairs in hand.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Identify component materials involved in the construction of the
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- vehicle in the areas that will be worked on during repair, prior to working on the vehicle.
2. Use the appropriate personal protective equipment when carrying out repairs to exterior body panels.
 3. Protect the vehicle and its contents effectively when carrying out repairs to exterior body panels.
 4. Inspect, prepare and use all the tools and equipment required following manufacturers' instructions.
 5. Carry out repairs to non-structural body panels following manufacturers' methods/instructions, recognised researched repair methods, the workplace procedures as well as health, safety and legal requirements.
 6. Use specialist dent removal tools effectively to reform all damaged panels.
 7. Complete repairs to exterior body panels so they are restored to their original contour using hand tools and filling materials effectively.
 8. Avoid damaging other components, standards and panels on the vehicle.
 9. Replace correctly any sealer, anti-corrosion and sound deadening materials which were removed prior to the repair.
 10. Ensure all plastic repairs regain the strength of the original part.
 11. Complete repaired components to an agreed condition ready for refinishing processes.
 12. Complete all activities within the agreed timescale.
 13. Report any anticipated delays in completion to the relevant stakeholders promptly.

PB OS 06 - Remove, Replace and/or Refit Motor Vehicle Body Panels

Description of Unit	This unit is about removing, replacing and/or refitting body panels using mechanical fastening.
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Remove, replace and/ or refit body panels including combinations of 3 or more adjacent panels (Examples of this include: two doors and a wing; two wings and a bonnet; bonnet, wing and door on the same side; bumper, wing and bonnet; bonnet, wing and bolted on front panel). 2. Use right materials including all component materials in the repair area. 3. Use the fitting methods including mechanical fastening. 4. Make use of generic tools and workshop equipment and also vehicle manufacturer's specified and specialist tools.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health and safety legislation and workplace procedures relevant to workshop practices and Personal Protective Equipment (PPE). 2. The agreed vehicle work specification. 3. The importance of working to agreed timescales as well as 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. The workplace procedures for the referral of problems and reporting delays to the completion of work. 7. The importance of reporting anticipated delays to the relevant stakeholders promptly. 8. How to prepare, test and use the tools and equipment required for the removal, replacement and/or refitting of body panels and ancillary fittings. 9. The properties of component materials involved in the construction of the vehicle in the areas that will be worked on during repair. 10. The properties and safe use of body component sealants, adhesives

	<p>and anti-corrosion materials.</p> <ol style="list-style-type: none"> 11. The type of sealants and anti-corrosion materials to use and the manufacturer's recommended methods for their application and thickness. 12. How to apply sealants and anti-corrosion materials. 13. How to interpret and use sources of information relevant to the removal and refitting of body panels. 14. The need for correct alignment of panels and the methods used so that correct alignment is achieved. 15. 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. 16. How to work safely avoiding damage to the vehicle and its systems. 17. The methods of storing removed components and the importance of storing them correctly and in accordance with legal requirements. 18. The removal and replacement procedures for body panels using mechanical fastening techniques. 19. How panel removal and refitting affects the overall body structure of the vehicle. 20. The manufacturer's approved methods of working for the removal and replacement of body panels.
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<p>Required Skills</p>	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Identify component materials involved in the construction of the vehicle in the areas that will be worked on during repair, prior to working on the vehicle. 2. Use the appropriate Personal Protective Equipment (PPE) when removing and replacing body panels. 3. Protect the vehicle, its contents and systems effectively when removing and replacing body panels. 4. Inspect, prepare and use all the tools and equipment required following manufacturers' instructions. 5. Remove, replace and/or refit all necessary body panels and components following the manufacturer's methods/instructions, recognised researched repair methods, the workplace procedures, the vehicle work specification as well as health, safety and legal requirements. 6. Seek assistance from the relevant stakeholders promptly where there is the potential that the work being done will disturb other vehicle systems. 7. Store all removed components safely in the correct location and in accordance with relevant legislation. 8. Use replacement body panels and components which conform to the vehicle specifications for dimensions, materials and functional
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	<p>capability.</p> <ol style="list-style-type: none">9. Use and apply sealants and anti corrosion materials conforming to the manufacturer's specification.10. Ensure panels are removed and replaced minimising damage to mating surfaces (any damage caused should be correctly reinstated).11. Ensure panels are replaced without incurring damage to the vehicle systems.12. Ensure all refitted body panels and components are aligned correctly with adjacent panels and fittings.13. Complete all activities within the agreed timescale.14. Report any anticipated delays in completion to the relevant stakeholders promptly.
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PB OS 07 - Remove and Replace Motor Vehicle Body Panels Including Permanently Fixed Panels

Description of Unit	This unit is about removing a variety of exterior and sub-structure body panels and panel sections, including permanently fixed panels, where these are damaged and replaced with new or repaired replacements. The ability to weld vehicle panels is required.
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Remove, repair and fix different body panels namely: <ol style="list-style-type: none"> a) non-permanently fixed body panels, b) welded exterior panels, c) welded sub-structure panels (e.g. rear quarter panel, rear panel, roof, chassis legs, inner wheel housing, boot floors, complete sill, A post, B post, C post, D post and cross members), and d) bonded panels (e.g. any panel that is fixed by adhesive bonding as part of the original manufacturer's process or approved repair process). 2. Use types of fitting methods such as welding, mechanical fastening and adhesive bonding. 3. Make use of generic tools and workshop equipment as well as vehicle manufacturer's specified and specialist tools.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when removing and replacing vehicle body panels. 2. The dangers of cross contamination of material such as aluminium and steel. 3. The requirements of manufacturer's warranty agreements. 4. The vehicle work specification agreed. 5. The workplace procedures for the referral of problems, reporting of delays to the completion of work and personal protection. 6. The requirements for protecting the vehicle and contents from damage before, during and after removing and replacing vehicle body panels. 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 prompt reporting of anticipated delays to the relevant stakeholders.
10. How to prepare, test and use the tools and equipment required for the removal and replacement of vehicle body panels and ancillary fittings.
11. How to operate resistance spot welding and Metal Inert Gas (MIG)/Metal Active Gas (MAG) welding equipment to achieve welds to meet manufacture's Standard.
12. How to test Resistance Spot weld strength.
13. How to carry out bonding/riveting cold repairs.
14. The properties of component materials involved in the construction of the vehicle in the areas that will be worked on during repair.
15. The properties of sealants, adhesives and anti corrosion materials and the requirements for their safe use.
16. The type of sealants and anti-corrosion materials to use and the manufacturer's recommended methods for their application and thickness.
17. How to use adhesive bonding materials.
18. How to select and apply sealants and anti-corrosion materials.
19. The principles of chassis frame and monocoque vehicle construction.
20. How to remove vehicle manufacturers' original joining techniques.
21. How to identify manufacturer's joining techniques and how they may differ to the repair method.
22. The principles of thermal and non-thermal joining techniques that is Spot welding, Metal Inert Gas (MIG)/Metal Active Gas (MAG), Bonding etc.
23. The different types of mechanical fixings for vehicle body panels and when and why they should be used.
24. The repair and welding implications of working with galvanised coatings, mild steels, HSS, UHSS and aluminium alloys.
25. How panel removal and refitting affects the overall body structure of the vehicle.
26. The causes and rectification of distortion resulting from welding.
27. How to find, interpret and use sources of information relevant to the removal and replacement of vehicle body panels and assemblies.
28. How to remove and replace vehicle body panels and assemblies.
29. How to remove and replace door skins.
30. How to establish cut lines for partial panel replacement.
31. How to prepare all edges to be joined.

	<p>32. How to select the correct joints and joining processes to match the repair area.</p> <p>33. The importance and implications of panel clamping and alignment to match existing contours and gaps.</p> <p>34. How to work safely avoiding damage to the vehicle and its systems.</p> <p>35. The importance and implications of checking the accuracy of repair work.</p> <p>36. 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.</p> <p>37. The methods of storing removed components and the importance of storing them correctly and in accordance with legal requirements.</p>
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<p>Required Skills</p>	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Identify component materials involved in the construction of the vehicle in the areas that will be worked on during repair, prior to working on the vehicle. 2. Wear suitable Personal Protective Equipment (PPE) throughout all vehicle body panel removal and replacement activities. 3. Inspect, prepare and use all the tools and equipment required, following manufacturers' instructions prior to use. 4. Remove replace and/or refit all necessary vehicle body panels and assemblies following the manufacturer's methods/instructions, recognised researched repair methods, the workplace procedures as well as health, safety and legal requirements. 5. Seek guidance from the relevant stakeholders promptly where there is the potential that the work being done will disturb other vehicle systems. 6. Use replacement body panels and assemblies which conform to the vehicle specifications for dimensions, materials and functional capability. 7. Use and apply sealants and weld primers and anti-corrosion treatments conforming to the material or vehicle manufacturer's specification. 8. Ensure all test weld pieces conform to the manufacturer's Standard for appearance and penetration. 9. Ensure permanently fixed panels are replaced without incurring damage to the vehicle systems. 10. Ensure all refitted body panels are aligned correctly with adjacent panels and fittings to manufacturers tolerances (panel gaps). 11. Complete all removal and replacement activities within the agreed
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	<p>timescale.</p> <p>12. Report any anticipated delays in completion to the relevant stakeholders promptly.</p>
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PB OS 08 - Identify and Rectify Major Repairs to Motor Vehicle Body Panels

<p>Description of Unit</p>	<p>This unit is about repairing complex and difficult-to-access damage to a range of body panel types using a variety of preparation and reinstatement techniques, including hydraulic reforming and panel beating to retain panel contour and structural integrity.</p>
<p>Performance Criteria</p>	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these repair activities: <ol style="list-style-type: none"> a) correction of distorted panels, b) on too difficult to access panel damage, and c) on plastic panels and composite material 2. Perform the mentioned repair activities on different vehicle body panels namely: <ol style="list-style-type: none"> a) non-permanently fixed panels, b) permanently fixed component, c) sub-structure component, and d) bonded panels. 3. Make use of these reinstatement methods: <ol style="list-style-type: none"> a) panel beating, b) panel shrinking, c) hydraulic reforming, d) body filling operations, e) metal finishing, f) plastic and composite material repair, g) specialist dent removal methods. 4. Make use of generic tools and workshop equipment as well as vehicle manufacturer's specified and specialist tools.
<p>Required Knowledge</p>	<p>The candidate must know:</p> <ol style="list-style-type: none"> 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. The workplace procedures for the referral of problems, reporting of

- delays to the completion of work and 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 communication with other parties about the progress of works.
 7. The relationship between time, cost and profitability.
 8. The workplace procedures for the referral of problems.
 9. The importance of prompt reporting of anticipated delays to the relevant persons(s).
 10. The principles governing the selection and use of hand tools for metal finishing and plastic filling repairs.
 11. 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.
 14. The properties of component materials involved in the construction of the vehicle in the areas that will be worked on during repair.
 15. The types and selection of filling materials, their preparation and application.
 16. The properties, types, grades and use of abrasives used in the vehicle body panel repair process.
 17. The properties and safe use of types of filling materials used to repair panels.
 18. How to mix and apply fillers used in repair.
 19. How to prepare the vehicle to avoid contamination.
 20. How to assess the extent of damage, including corrosion damage.
 21. The principles of chassis frame and monocoque vehicle construction.
 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 joining technique implications of working with mild, high and ultra high strength steels, aluminium alloys, galvanised coatings.
 25. The consequences of using inappropriate repair methods.
 26. The principles associated with hot and cold shrinking.
 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 and composite material used for manufacture components.
 30. The procedures for reinstating anti-corrosion, sealant and sound deadening materials.
 31. The causes and rectification of distortion resulting from welding.

	<ol style="list-style-type: none"> 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 that are being 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 retain structural integrity to components using body filling operations, metal, finishing, plastic filling, panel beating, panel shrinking, hydraulic reforming, specialist dent removal tools. 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 complete repair according to the agreed condition ready for refinishing process. 44. How to work safely avoiding damage to the vehicle and its systems. 45. How the repairs of the vehicle in hand would affect pedestrian safety aspects.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Identify component materials involved in the construction of the vehicle in the areas that will be worked on during repair, prior to working on the vehicle. 2. Select suitable personal protective equipment to wear and use vehicle coverings throughout all vehicle body panel repair activities. 3. Inspect, prepare and use the tools and equipment required following manufacturers' instructions prior to use. 4. Ensure that methods of preparation leave sub-structure body panels clean, free from materials likely to hinder repair and free of surface finishes when required. 5. Prepare and reinstate vehicle body panels using the equipment recommended and following the equipment manufacturer's methods/instructions, recognised researched repair methods, the workplace procedure as well as health, safety and legal requirements. 6. Seek guidance from the relevant stakeholders promptly where there is the potential that the work being done will disturb other vehicle systems. 7. Ensure all repaired body panels are reinstated to their original
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	<p>specified shape, strength and dimensions.</p> <ol style="list-style-type: none">8. Complete repaired components to the agreed condition ready for refinishing processes.9. Complete all repair activities within the agreed timescale.10. Promptly report any anticipated delays in completion to the relevant stakeholders.
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PB OS 09 - Identify and Rectify Motor Vehicle Body Misalignment

Description of Unit	<p>This unit is about the identification and realignment of vehicle distortion using body alignment jigs.</p>
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these rectification activities: <ol style="list-style-type: none"> a) visual examination, b) setting up, c) measurement in conjunction with alignment measuring equipment, and d) realignment using pulling equipment. 2. Make use of generic tools, workshop equipment and vehicle manufacturer's specified and specialist tools, and 3. Assess and make use of adequate personal protective equipment.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The safety requirements specific to vehicle misalignment rectification, the health and safety legislation, workplace procedures relevant to workshop practices and personal and vehicle protection. 2. The vehicle work specification agreed. 3. The requirements of manufacturers' warranty agreements. 4. The workplace procedures for the referral of problems, reporting of delays to the completion of the work and personal protection. 5. The importance of working according to agreed timescales and communication with other parties about the progress of works. 6. The relationship between time, cost and profitability. 7. The workplace procedures for the referral of problems. 8. The workplace requirements for record keeping. 9. The importance of prompt reporting of anticipated delays to the relevant stakeholders. 10. The constraints of the type of materials used in vehicle construction places and on the choice of repair equipment. 11. How to prepare, test and setup all equipment required for misalignment rectification. 12. How to install vehicles on misalignment rectification equipment,

	<p>including the use of lifting equipment.</p> <ol style="list-style-type: none"> 13. How to use rectification equipment including hand and powered tools, safety chains (safety measure), hydraulic push and pull, and body alignment jigs (bracket system and/or measuring system). 14. The correct use of clamps, restraints and supports to minimise additional damage during repair. 15. The principles of chassis frame and monocoque vehicle construction. 16. The principles of damage assessment and identification of direct and indirect damage. 17. The function of the pulling system and the criteria for selection – vector, pull arm, and tower systems, both floor mounted and bench mounted. 18. How to use geometric principles of alignment in the absence of a data sheet. 19. The properties of vehicle body construction materials. 20. How to find, interpret and use sources of information relevant to the rectification of vehicle misalignment. 21. How to establish the extent of misalignment using measuring equipment and/or measuring system. 22. How to realign vehicles to the manufacturer's original specification. 23. How to work safely avoiding damage to vehicles, personal injury and injury to colleagues. 24. The importance of following manufacturers' and/or approved research repair methods (including use of materials and equipment). 25. The consequences of failing to follow manufacturers' and/or research repair methods or instructions and data sheets.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate personal protective equipment when carrying out all rectification activities. 2. Protect the vehicle, its contents and systems effectively when carrying out all rectification activities. 3. Support vehicle misalignment rectification activities by reviewing vehicle data from manufacturers and technical data specific to the vehicle. 4. Prepare, test and setup all the tools and equipment required, following equipment manufacturers' instructions, prior to use. 5. Load and secure the vehicle to the body jig correctly following the equipment manufacturer's instructions and health and safety requirements. 6. 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. 7. Attach the pulling system securely to the damaged components and
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- operate it correctly to achieve the realignment required.
8. Operate the pulling system in a way that minimises the risk of injury to oneself and others.
 9. Ensure that the rectification activities restore the vehicle to the correct specification and tolerances.
 10. Complete all rectification activities within the agreed timescale.
 11. Promptly report any anticipated delays in completion to the relevant stakeholders.

PB OS 10 - Motor vehicle body Metal Inert Gas (MIG) and Metal Active Gas (MAG) welding operations.

Description of Unit	This unit is about joining different metallic materials correctly and effectively using MIG/MAG welding techniques and procedures.
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these welding activities according to established standards and according to manufacturers' processes, methods and procedures. 2. Take all precautions re Health & Safety issues and appropriate vehicle protection,
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health, safety and legal requirements relating to the joining of materials using MIG/MAG welding techniques. 2. The workplace procedures for the referral of problems, reporting of delays to the completion of work and the completion of work records. 3. The work that needs to be done and the standard that should be met. 4. The requirements for protecting the vehicle and contents from damage before, during and after the joining of materials using MIG/MAG welding techniques. 5. The importance of selecting, using and maintaining the appropriate personal protective equipment when the joining of materials using MIG/MAG welding techniques. 6. How to find, interpret and use sources of information applicable to the joining of materials using MIG/MAG welding techniques. 7. How to select, check, maintain and set up all of the tools and equipment required to correctly join materials using MIG/MAG welding techniques. 8. The different types of welding processes, techniques and joints used for the joining of materials when using MIG/MAG welding techniques. 9. The correct surface preparation methods to ensure a good MIG/MAG weld is achieved and the reasons why surface preparation is important. 10. The faults and defects that can occur when carrying out MIG/MAG welding and the common causes of these faults. 11. The need for correct alignment of materials and the methods used to achieve this.

	<p>12. The types of quality control checks that can be used to ensure correct joining of materials.</p> <p>13. How to inspect and assess MIG/MAG welding in accordance to manufacturers' specification.</p> <p>14. When MIG/MAG welding should be used to join materials, Note: Types of jointing may include Lap Plug and Seam, Butt, Brace and Fillet Joints.</p> <p>15. The advantages of MIG/MAG (copper/steel/aluminium) welding techniques over other welding methods,</p>
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate personal protective equipment when carrying out MIG/MAG welding operations. 2. Protect the vehicle and its contents effectively when carrying out MIG/MAG welding operations. 3. Prepare material and appropriately align the components to enable suitable joint to be achieved. 4. Treat meeting flanges according to manufacturers procedures before joining. 5. Select, set up and use the correct tools and equipment for carrying out MIG/MAG welding operations. 6. Ensure that the tools, equipment and PPE required are in a safe working condition. 7. Set up the equipment to carry out MIG/MAG welding operations. 8. Check suitability of gas / filler wire and size for material to be joined, check that parameters feed rollers and the welding tip are set correctly. 9. Carry out MIG/MAG welding operations following recognised researched repair methods. 10. Work according to manufacturers processes, methods and procedures, the workplace procedures and health, safety and legal requirements 11. Avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. 12. Recognise when the weld is not forming correctly and what corrective action needs to be taken. 13. Inspect and assess MIG/MAG weld quality in accordance with manufacturers' specification. 14. Check integrity of weld and record the type of weld achieved on the appropriate paper work, 15. Record and store test pieces. 16. Dress the joint area without reducing material thickness and protect the repaired area to inhibit corrosion where applicable, 17. Clean and store PPE and equipment in appropriate manner.
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| | <ol style="list-style-type: none">18. Promptly report any additional faults that are noticed during the course of work to the relevant stakeholders.19. Promptly report any delays in completing the work to the relevant stakeholders.20. Carry out MIG/MAG welding operations within the agreed timescale.21. Complete work records accurately, in the format required and pass them on to the relevant stakeholders promptly. |
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PB OS 11 - Carry Out Motor Vehicle Body Resistance Spot Welding Operations

Description of Unit	This unit is about joining materials correctly and effectively using resistance spot welding techniques.
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these welding activities according to established standards and according to manufacturers' processes, methods and procedures. 2. Take all precautions regarding Health & Safety issues and appropriate vehicle protection.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health, safety and legal requirements relating to the joining of materials using Resistance Spot welding techniques. 2. The workplace procedures for carrying out appropriate risk assessment(s), the referral of problems, reporting of delays to the completion of work and completion of work records. 3. The constraints of the type of materials used in vehicle construction places on the choice of repair equipment. 4. How to prepare, test and adjust all equipment required for Resistance Spot welding techniques. 5. The work that needs to be done and the standard required. 6. The requirements for protecting the vehicle and contents from damage before, during and after the joining of materials using Resistance Spot welding techniques. 7. The importance of selecting, using and maintaining the appropriate Personal Protective Equipment (PPE) when the joining of materials using Resistance Spot welding techniques. 8. How to find, interpret and use sources of information (including repair methods) applicable to the joining of materials using Resistance Spot welding techniques. 9. How to select, check, maintain and set up all of the tools and equipment required to correctly join materials using Resistance Spot welding techniques. 10. The different types of welding processes, techniques and joints used for the joining of materials when using Resistance Spot welding techniques. 11. The correct surface preparation methods to ensure the correct

	<p>Resistance spot weld is achieved and the reasons why surface preparation is important.</p> <ol style="list-style-type: none"> 12. The faults and defects that can occur when carrying out Resistance Spot welding and the common causes of these faults. 13. The need for correct alignment of materials and the methods used to achieve this. 14. The types of quality control checks that can be used to ensure correct joining of materials e.g. test coupons. 15. How to inspect and assess resistance weld quality in accordance to manufacturer's specifications including weld pitch, indentation/weld profile, heat zone, nugget size, peel and shear test. 16. The correct use of adhesives with Resistance Spot welding techniques.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate Personal Protective Equipment (PPE) and check it is fit for purpose before carrying out Resistance Spot welding operations. 2. Protect the vehicle, its systems and its contents effectively when carrying out Resistance Spot welding operations. 3. Prepare material and align to enable suitable join to be achieved (mating flanges must be treated following manufacturers procedures before joining). 4. Select, set up and use the correct tools and equipment in order to correctly carry out Resistance Spot welding operations. 5. Ensure that the tools, equipment and Personal Protective Equipment (PPE) required are in a safe working condition and are correct for the joining operation that is to be completed. 6. Set up the equipment to carry out Spot welding operations checking suitability of the air supply and pressure, the current supply, the consumables are correct and the suitability/serviceability of electrodes and tips. 7. Carry out Spot welding operations following recognised researched repair methods, (peel/sheer/nugget size), manufacturer's processes, methods and procedures, the workplace processes, methods and procedures as well as health, safety and legal requirements. 8. Avoid damaging other components, standards, panels and surfaces on the vehicle and the surrounding work area. 9. Recognise when the weld is not forming correctly and what corrective action needs to be taken. 10. Inspect and assess Resistance Spot weld quality in accordance to manufacturer's specifications, including weld pitch, indentation/weld profile, heat zone, nugget size and peel and shear test. 11. Check integrity of weld and record the type of weld achieved on the appropriate paper work.
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12. Record and store test pieces.
13. Dress and protect the repaired area to inhibit corrosion where applicable clean and store personal protective equipment and equipment in appropriate manner.
14. Promptly report any additional faults that are noticed during the course of work to the relevant stakeholders.
15. Promptly report any delays in completing the work to the relevant stakeholders.
16. Carry out Resistance Spot welding operations within the agreed timescale.
17. Complete work records accurately, in the format required and pass them to the relevant stakeholders promptly.

PB OS 12 - Carry Out Motor Vehicle Body Metal Inert Gas (MIG) Brazing Operations

Description of Unit	This unit is about joining materials correctly and effectively using Metal Inert Gas (MIG) brazing and welding techniques and procedures.
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these welding activities according to established standards and according to manufacturers' processes, methods and procedures. 2. Take all precautions re Health & Safety issues and appropriate vehicle protection.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health, safety and legal requirements relating to the cosmetic welding of materials using cosmetic aluminium welding operations. 2. The workplace procedures for carrying out appropriate risk assessment(s), the referral of problems, reporting of delays to the completion of work and 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 the joining of materials using cosmetic aluminium welding operations. 5. The importance of selecting, using and maintaining the appropriate personal protective equipment when the joining of materials using cosmetic aluminium welding operations. 6. How to find, interpret and use sources of information applicable to the cosmetic welding of materials using cosmetic aluminium welding operations. 7. How to select, check, maintain and set up all of the tools and equipment required to correctly join materials using cosmetic aluminium welding operations. 8. The different types of welding processes, techniques, materials and joints used for the joining of materials when using cosmetic aluminium welding operations. 9. The correct surface preparation methods to ensure a good cosmetic

	<p>aluminium weld is achieved and the reasons why surface preparation is important.</p> <ol style="list-style-type: none"> 10. The faults and defects that can occur when carrying out cosmetic aluminium welding and the common causes of these faults. 11. The need for correct alignment of materials and the methods used to achieve this. 12. When cosmetic aluminium welding operations should be used. 13. How to ensure cross contamination does not occur and the effect of cross contamination on cosmetic aluminium.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate personal protective equipment and check that it is fit for purpose before carrying out MIG Brazing operations. 2. Protect the vehicle and its contents effectively when carrying out MIG Brazing operations. 3. Prepare material and align to enable suitable joint to be achieved. Mating flanges must be treated following manufacturers procedures before joining. 4. Select, set up and use the correct tools and equipment for carrying out MIG brazing operations. 5. Ensure that the tools, equipment and personal protective equipment that are required are in a safe working condition. 6. Set up the equipment to carry out MIG Brazing operations checking suitability of gas/filler wire and size for material to be joined, parameters are set correctly, consumables are correct, feed rollers and welding tips. 7. Carry out MIG Brazing operations following recognised researched repair methods(see guidance document), test procedures and provide test coupons on equivalent material in accordance with recognised standards, manufacturers processes, methods and procedures, the workplace procedures as well as health, safety and legal requirements. 8. Avoid damaging other components, standards, panels and surfaces on the vehicle and the surrounding work area. 9. Recognise when the braze is not forming correctly and what corrective action needs to be taken. 10. Inspect and assess MIG Braze weld quality in accordance to recognised standards. 11. Check integrity of braze and record the type of joint achieved by filling in the appropriate paper work. 12. Make sure that test pieces are recorded and stored.
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13. Dress the joint area without reducing material thickness and protect the repaired area to inhibit corrosion where applicable.
14. Clean and store personal protective equipment and equipment in appropriate manner.
15. Report any additional faults noticed during the course of work to the relevant stakeholders.
16. Promptly report any delays in completing the work to the relevant stakeholders.
17. Carry out (MIG) brazing operations within the agreed timescale.
18. Complete work records accurately, in the format required and pass them to the relevant stakeholders promptly.

PB OS 13 - Carry Out Motor Vehicle Body Cosmetic Aluminium Panel Welding Operations

Description of Unit	<p>This unit is about repairing cosmetic aluminium panels correctly and effectively using appropriate welding techniques, materials and procedures.</p>
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these welding activities according to established standards and according to manufacturers' processes, methods and procedures. 2. Take all necessary precautions regarding Health & Safety issues and appropriate vehicle protection.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health, safety and legal requirements relating to the joining of materials using Metal Inert Gas (MIG) Brazing techniques. 2. The workplace procedures for carrying out appropriate risk assessment(s), the referral of problems, reporting of delays to the completion of work and completion of work records. 3. The work that needs to be done and the standard required the requirements for protecting the vehicle and contents from damage before, during and after the joining of materials using Metal Inert Gas (MIG) Brazing techniques. 4. The importance of selecting, using and maintaining the appropriate Personal Protective Equipment (PPE) when the joining of materials using Metal Inert Gas (MIG) Brazing techniques. 5. How to find, interpret and use sources of information and repair methods applicable to the joining of materials using Metal Inert Gas (MIG) Brazing techniques. 6. How to select, check, maintain and set up all of the tools and equipment required to correctly join materials using Metal Inert Gas (MIG) Brazing techniques. 7. The different types of processes, techniques and joints used for the joining of materials when using Metal Inert Gas (MIG) Brazing techniques. 8. The correct surface preparation methods to ensure a good Metal Inert

	<p>Gas (MIG) Braze joint is achieved.</p> <ol style="list-style-type: none"> 9. The faults and defects that can occur when carrying out Metal Inert Gas (MIG) Brazing and the common causes of these faults. 10. The need for correct alignment of materials and the methods used to achieve this. 11. The types of quality control checks that can be used to ensure correct joining of materials. 12. How to inspect and assess Metal Inert Gas (MIG) Brazing in accordance with recognised standards. 13. When MIG brazing should be used to join materials. 14. The different types of joint that can be used to join materials using MIG Brazing, including Lap Plug, Lap Seam and Butt Joint.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate Personal Protective Equipment (PPE) and check that it is fit for purpose before carrying out cosmetic aluminium welding operations. 2. Protect the vehicle and its contents effectively when carrying out cosmetic aluminium welding operations. 3. Prepare material surfaces and align to enable suitable joint to be achieved making sure mating flanges are treated following manufacturers procedures before joining. 4. Select, set up and use the correct tools and equipment in order to correctly carry out cosmetic aluminium welding operations. 5. Ensure that the tools, equipment and Personal Protective Equipment (PPE) that are required are in a safe working condition and are correct for the joining operation that is to be completed. 6. Set up the equipment to carry out cosmetic aluminium welding operations checking the suitability of gas/filler wire, the size for material to be joined, the parameters are set correctly, the consumables are correct, the feed rollers, the welding tip and the test kit. 7. Carry out cosmetic aluminium welding operations following recognised researched repair methods. 8. Carry out cosmetic aluminium welding operations following test procedures and provide test coupons on equivalent material in accordance with recognised standards. 9. Carry out cosmetic aluminium welding operations following the manufacturers' processes, methods and procedures, the workplace procedures as well as the relevant health, safety and legal requirements. 10. Avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. 11. Recognise when the weld is not forming correctly and what action
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	<p>needs to be taken.</p> <ol style="list-style-type: none">12. Inspect and assess cosmetic aluminium weld quality in accordance to recognised standards.13. Check integrity of the weld and record the type of weld achieved on the appropriate paper work.14. Dress the joint area without reducing material thickness and protect the repaired area to inhibit corrosion where applicable.15. Clean and store Personal Protective Equipment (PPE) and other relevant equipment in the appropriate manner.16. Promptly report any additional faults that are noticed during the course of work to the relevant stakeholders.17. Report any delays in completing the work to the relevant stakeholders promptly.18. Carry out cosmetic aluminium welding operations within the agreed timescale.19. Complete work records accurately, in the format required and pass them to the relevant stakeholders promptly.
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PB OS 14 - Motor vehicle body Tungsten Inert Gas (TIG) welding operations

Description of Unit	This unit is about joining materials correctly and effectively using Tungsten Inert Gas (TIG) welding techniques and procedures
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to:</p> <ol style="list-style-type: none"> 1. Perform these welding activities according to established standards and according to manufacturers' processes, methods and procedures. 2. Take all precautions regarding Health & Safety issues and appropriate vehicle protection.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health, safety and legal requirements relating to the joining of materials using TIG welding operations. 2. The workplace procedures for the referral of problems, the reporting of delays to the completion of work and the 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 the joining of materials using TIG welding operations. 5. The importance of selecting, using and maintaining the appropriate personal protective equipment when the joining of materials using TIG welding operations. 6. How to find, interpret and use sources of information applicable to the joining of materials using TIG welding operations. 7. How to select, check, maintain and set up all of the tools and equipment required to correctly join materials using TIG welding operations. 8. The different types of welding processes, techniques and joints used for the joining of materials when using TIG welding operations 9. The correct surface preparation methods to ensure a good TIG weld is achieved. 10. The faults and defects that can occur when carrying out TIG welding and the common causes of these faults.

	<ol style="list-style-type: none"> 11. The need for correct alignment of materials and the methods used to achieve this 12. The types of quality control checks that can be used to ensure correct joining of materials. 13. How to inspect and assess TIG welding in accordance to manufacturer's specifications. 14. When TIG welding should be used to join materials. 15. The advantages of TIG welding techniques over other welding methods. 16. The different types of joint that can be used to join materials using TIG welding.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate personal protective equipment when carrying out TIG welding operations. 2. Protect the vehicle and its contents effectively when carrying out TIG welding operations. 3. Prepare material and align to enable suitable join to be achieved. 4. Identify that the meeting flanges must be treated following manufacturers procedures before joining. 5. Select, set up and use the correct tools and equipment in order to correctly carry out TIG welding operations. 6. Ensure that the tools, equipment and PPE that are required are in a safe working condition. 7. Set up the equipment to carry out TIG welding operations. 8. Check the suitability of the gas / filler wire and size for material to be joined. 9. Check that the parameters needed are set correctly. 10. Check that the consumables used are the correct ones. 11. Carry out TIG welding operations following: recognised researched repair methods(see guidance document), test procedures and provide test coupons on equivalent material in accordance with Manufacturers processes, methods and procedures, the workplace procedures and health, safety and legal requirements. 12. Avoid damaging other components, units, panels and surfaces on the vehicle and the surrounding work area. 13. Recognise when the weld is not forming correctly and what corrective action needs to be taken. 14. Inspect and assess TIG weld quality in accordance with Manufacturers Specification. 15. Check integrity of the weld and record the type of weld achieved on
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- the appropriate paper work Test pieces must be recorded and stored.
16. Dress the joint area without reducing material thickness and protect the repaired area to inhibit corrosion where applicable.
 17. Clean and store PPE and equipment in appropriate manner.
 18. Promptly report any additional faults that are noticed during the course of work to the relevant stakeholders.
 19. Promptly report any delays in completing the work to the relevant stakeholders.
 20. Carry out TIG welding operations within the agreed timescale.
 21. Complete work records accurately, in the format required and pass them to the relevant stakeholders promptly.

PB OS 15 - Motor vehicle body mechanical fastening operations

Description of Unit	<p>This unit is about joining materials effectively using mechanical joining techniques</p>
Performance Criteria	<p>The candidate must have the necessary knowledge and skills to perform mechanical joining operations, including:</p> <ol style="list-style-type: none"> a. riveting, including single sided, double sided, self piercing, b. clinching, c. bolts and fasteners, d. screwing including self threading and self piercing screws, and e. hybrid joining, including combinations of techniques listed that may also include adhesives.
Required Knowledge	<p>The candidate must know:</p> <ol style="list-style-type: none"> 1. The health, safety and legal requirements relating to the joining of materials using mechanical joining techniques and processes. 2. The workplace procedures for the referral of problems, reporting of delays to the completion of work and the 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 the joining of materials using mechanical joining techniques. 5. The importance of selecting, using and maintaining the appropriate personal protective equipment when joining of materials using mechanical joining techniques. 6. How to find, interpret and use sources of information applicable to the joining of materials using mechanical joining techniques. 7. How to select, check and use all the tools and equipment required to join materials using mechanical joining techniques. 8. How to select and use the correct mechanical fastener considering the materials used, strength required, anticipated loading, grip range, maintenance, appearance and cost. 9. The different types of techniques and joints used for the joining of different types of materials when using mechanical joining techniques. 10. The faults that can occur when mechanical joining and the causes of these faults.

	<ol style="list-style-type: none"> 11. The need for correct alignment of materials and the methods used to achieve this. 12. The types of quality control checks that should be used to ensure correct joining of materials. 13. How to carry out and assess mechanical joining.
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Required Skills	<p>The candidate must be able to:</p> <ol style="list-style-type: none"> 1. Use the appropriate personal protective equipment when carrying out mechanical joining operations. 2. Protect the vehicle and its contents effectively when carrying out mechanical joining operations. 3. Prepare material and align to enable a suitable joint to be achieved (meeting flanges must be treated before joining). 4. Select and use the correct tools and equipment for carrying out mechanical joining operations. 5. Ensure that the tools, equipment and PPE that are required are in a safe working condition. 6. Set up the equipment to carry out mechanical joining operations by checking suitability of joining technique, checking suitability of tooling and checking consumables are correct. 7. Carry out mechanical joining operations following vehicle manufacturers' processes, methods and procedures, the workplace procedures and health, safety and legal requirements. 8. Avoid damaging other components, units and panels on the vehicle. 9. Recognise when the joint is not forming correctly and what corrective action needs to be taken. 10. Check integrity of the joint. 11. Dress and protect the repaired area to inhibit corrosion where applicable. 12. Clean and store PPE and equipment in an appropriate manner. 13. Promptly report any additional faults that are noticed during the course of work to the relevant stakeholders. 14. Promptly report any delays in completing the work to the relevant stakeholders. 15. Carry out mechanical joining operations within the agreed timescale. 16. Complete work records accurately, in the required format and pass them to the relevant stakeholders promptly.
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