

Assessment Requirements

Unit BP14K – Knowledge of Motor Vehicle Body Panel Major Repairs

Content:

Selection and use of tools and equipment

- a. The principle governing the selection and use of hand tools for metal finishing and plastic repairs.
- b. The factors governing the selection and use of panel beating and hydraulic reforming equipment, including specialist pulling systems.
- c. How to prepare, test, use and maintain the tools and equipment required to repair vehicle body panels.
- d. How to adapt hydraulic push equipment to perform pulling operations.

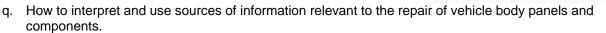
Selection and use of materials

- a. The types and selection of filling materials, their preparation and application:
- b. The properties, types, grades and use of abrasives used in vehicle body panel repair process
- c. The properties and safe use of types of filling materials used to repair panels including:
 - i. plastic fillers
 - ii. body solder
- d. How to mix and apply plastic fillers.

Repairing vehicle bodies

- a. How to prepare the vehicle to avoid contamination.
- b. How to assess the extent of damage, including corrosion damage.
- c. How unitary vehicle bodies and cabs are constructed.
- d. The principles of resistance spot welding, gas shielded arc plug welding and gas shielded arc brazing.
- e. How body panels and component damage can affect other panels and the operation of vehicle systems.
- f. The factors determining the use of specific preparation and repair methods.
- g. The repair and welding implications of working with:
 - i. high strength steels (HSS)
 - ii. low carbon steels (LCS)
 - iii. aluminium alloys
 - iv. galvanized coatings
 - v. Boron steels.
 - i. TRIP
 - ii. TWIP
 - iii. Laminated
- h. The consequences of using inappropriate repair methods.
- i. How heat can be used to assist reforming.
- j. How heating can affect the properties of steels.
- k. The techniques for identifying the type of plastics used for manufactured components.
- I. The procedures for reinstating anti-corrosion, sealant and sound deadening materials.
- m. The causes and rectification and distortion resulting from welding.
- n. The manufacturers approved methods of working for the preparation and repair of vehicle body panels.
- o. The specification of panel shapes, dimensions and tolerances for the vehicle worked on.
- p. The type of quality control checks that can be used to ensure the correct contour and standard of finish.

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- r. How to prepare damaged areas to facilitate repairs.
- s. How to repair corrosion damaged panels.
- t. How to remove protective materials.
- u. How to repair and reinstate vehicle body panel contours and components using:
 - i. body filling operations
 - ii. metal finishing
 - iii. plastic filling
 - iv. panel beating
 - v. panel shrinking
 - vi. hydraulic reforming
 - vii. specialist dent removal tools
 - viii. spot welding
 - ix. gas shielded arc welding
 - x. gas shielded arc brazing.
- v. The techniques of reshaping damaged vehicle body panels using hand and specialist tools.
- w. How to check the accuracy of reinstated vehicle body panel shapes.
- x. How to finish repairs to a suitable condition for handing on to the painting stage.
- y. How to work safely avoiding damage to the vehicle and its systems.

Additional Content

Repairs are: -

- a. correction of severely distorted panels
- b. assessing panel damage
- c. splits on metal panels, using relevant joining techniques
- d. fractures on plastic panels

Vehicle panels are: -

- a. non-permanently fixed exterior panels
- b. permanently fixed exterior panels
- c. sub-structure components
 - i. bonded panel
 - ii. TRIP
 - iii. TWI
 - iv. Laminated