IMIVCR04

Repair non-structural automotive body panels

Overview

This standard 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 regain panel contour.

Performance criteria

You must be able to:

P1. wear suitable personal protective equipment and use vehicle coverings throughout all vehicle body panel repair activities (where appropriate)
P2. assess the extent of the damage and verify it is a cosmetic repair
P3. identify component materials involved in the construction of the vehicle in the areas that will be worked prior to work commencing
P4. inspect, prepare and use all the tools and equipment required following manufacturer's instructions prior to use
P5. ensure your methods of preparation leave structural body panels:
P5.1. clean and free from contamination
P5.2. free from materials likely to hinder repair
P5.3. free of surface finishes when required
P6. prepare and reinstate vehicle body panels using the equipment recommended and following:
P6.1. the manufacturer’s methods/instructions
P6.2. recognised researched repair methods
P6.3. your workplace procedures
P6.4. health, safety and legal requirements
P7. promptly seek guidance from the relevant person(s) where there is the potential for your work to disturb other vehicle systems
P8. ensure all repaired body panels are reinstated to their original specified shape and dimensions
P9. complete repaired components to a condition ready for the refinishing processes
P10. complete all repair activities within the agreed timescale
P11. promptly report any anticipated delays in completion to the relevant person(s)

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

K1 the health and safety legislation, environmental requirements and workplace procedures relevant to workshop practices and personal and vehicle protection when repairing vehicle body panels

K2 the requirements of manufacturer's warranty agreements

K3 the vehicle work specification agreed

K4 your workplace procedures for:

K4.1 the referral of problems

K4.2 reporting of delays to the completion of work

K4.3 personal protection

K5 the requirements for protecting the vehicle and contents from damage before, during and after repairing vehicle body panels

K6 the importance of working to agreed timescales and keeping others informed of progress

K7 the relationship between time, cost and profitability

K8 your workplace procedures for the referral of problems

K9 the importance of reporting anticipated delays to the relevant persons(s) promptly

Tools and equipment

K10 the principles governing the selection and use of hand tools for metal finishing and plastic filling repairs

K11 the factors governing the selection and use of panel beating and hydraulic reforming equipment, including specialist pulling systems

K12 how to prepare, test, use and maintain the tools and equipment required to repair vehicle body panels

K13 how to adapt hydraulic push equipment to perform pulling operations

K14 the properties of component materials involved in the construction of the vehicle in the areas that will be worked on during repair

K15 the types and selection of filling materials, their preparation and application

K16 the properties, types, grades and use of abrasives used in the vehicle body panel repair process

K17 the implications of not following the correct abrasive process and its effect on the overall quality process

K18 the implications of static when working with plastic components
K19 the properties and safe use of types of filling materials used to repair panels
K20 how to mix and apply plastic fillers

Repairing vehicle body panels

K21 how to appraise a vehicle for unseen damage such as pedestrian zones
K22 the consequences of not identifying unseen damage during the appraisal
K23 how to prepare the vehicle to avoid contamination
K24 how to assess the extent of damage, including corrosion damage
K25 the principles of chassis, frame and monocoque vehicle construction
K26 the principles of resistance spot welding, gas shielded plug welding and gas shielded brazing
K27 how body panel and component damage can affect other panels and the operation of vehicle systems
K28 the factors determining the use of specific preparation and repair methods
K29 the repair and joining technique implications of working with mild, high and ultra high strength steels, aluminium alloys, galvanised coatings
K30 the consequences of using inappropriate repair methods
K31 the principles associated with hot and cold shrinking of stretched areas
K32 how heat can be used to assist reforming
K33 how heating can affect the properties of steels
K34 the techniques for identifying the type of plastics used for manufactured components
K35 the procedures for reinstating anti-corrosion, sealant and sound deadening materials
K36 the causes and rectification of distortion resulting from welding
K37 the manufacturer's approved methods of working for the preparation and repair of vehicle body panels and components
K38 the specification for panel shapes, dimensions and tolerances for the vehicles worked upon
K39 the type of quality control checks that can be used to ensure the correct contour and standard of finish
K40 how to interpret and use sources of information relevant to the repair of vehicle body panels and components
K41 how to prepare damaged areas to facilitate repairs
K42 how to prepare the panel substrate prior to filling

K43 how to repair corrosion damage
K44 how to remove protective materials
K45 how to repair and reinstate vehicle body panel contours and components using all the reinstatement methods listed in the Scoping Statement below
K46 the techniques for reshaping damaged vehicle body panels using hand and specialist tools
K47 how to check the accuracy of reinstated vehicle body panel shape
K48 how to finish repairs to a suitable condition for handing on to the painting stage
K49 how to work safely avoiding damage to the vehicle and its systems
K50 how pedestrian safety aspects affect the repairability of vehicles
K51 understand what can/can't be repaired for safety reasons (ADAS for example), manufacturer and industry agreed standards for these and why these standards must be adhered to

Scope/range

1. **Repair activities** are:
1.1. correction of severely distorted panels
1.2. difficult to access panel damage
1.3. fractures to plastic panels

2. **Vehicle body panels** are:
2.1. non-welded non-structural
2.2. welded non-structural
2.3. welded structural panels
2.4. bonded panels

3. **Reinstatement methods** are:
3.1. panel beating
3.2. panel shrinking
3.3. hydraulic reforming
3.4. body filling operations
3.5. metal finishing
3.6. plastic repair
3.7. specialist dent removal methods

4. **Substrates** are:
4.1. electro-coated panels
4.2. repaired panels
4.3. original manufacturer's finish
4.4. plastic components
4.5. zinc coated panels
4.6. steel panels
4.7. aluminium panels
4.8. composite panels
4.9. previously primed panel

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