

TRUCK, SURVEILLANCE, LIGHTWEIGHT, W/WINCH, W/SIDE STOWAGE, W/REAR SEAT, MC2 – LANDROVER 110 4X4

SAFETY IMPROVEMENT KIT

INSPECTION FOR USEABILITY

This instruction is authorised for use by command of the Chief of Army. It provides direction, mandatory controls and procedures for the operation, maintenance and support of equipment. Personnel are to carry out any action required by this instruction in accordance with EMEI General A 001.

GENERAL

Introduction

1. This EMEI details all criteria for and data necessary to inspect the safety improvement kit fitted to the Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2 – Landrover 110 4x4 to establish its:
 - a. completeness,
 - b. operability, and
 - c. functionality.
2. The safety improvement kit consists of a Rollover Protection Structure (ROPS), Personnel Restraint System (PRS) and a Cargo Restraint System (CRS).
3. The ROPS, PRS and CRS are designed to provide a safer operating environment for the personnel by way of enhancing the roll over strength of the vehicle and providing a secure stowage system for equipment.
4. This instruction only covers the inspection of the ROPS, PRS and CRS. For the rest of the vehicle refer to EMEI Vehicle G 188.

Associated Publications

5. Reference may be necessary to the latest issue of the following documents:
 - a. Defence Safety Manual (SAFETYMAN);
 - b. [EMEI Vehicle A 548-1](#) – Vehicle Seat Belts – Inspection for Useability;
 - c. [EMEI Vehicle G 090](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Data Summary;
 - d. [EMEI Vehicle G 092](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Technical Description;
 - e. [EMEI Vehicle G 093](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Light Grade Repair;
 - f. [EMEI Vehicle G 094](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Medium and Heavy Grade Repair;
 - g. [EMEI Vehicle G 103](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility, Lightweight, W/Winch, MC2, Land Rover 110 – Light Grade Repair;
 - h. [EMEI Vehicle G 104-1](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility Lightweight, W/Winch, MC2, Land Rover 110 – Medium Grade Repair;
 - i. [EMEI Vehicle G 104-2](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility Lightweight, W/Winch, MC2, Land Rover 110 – Heavy Grade Repair;
 - j. [EMEI Vehicle G 109](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility Lightweight, W/Winch, MC2, Land Rover 110 – Servicing Instruction;

- k. [EMEI Vehicle G 188](#) – Truck, Lightweight and Truck Light – All Types – Landrover 110 4X4 and 6X6 – Inspection Guide;
- l. [EMEI Workshop D 701](#) – Repair Policy for Equipment Painted in Polyurethane Paint;
- m. [EMEI Workshop E 404](#) – Hazardous Substances – Chemical (HAZCHEM);
- n. [EMEI Workshop E 410](#) – Occupational Health and Safety – Asbestos – General Instruction;
- o. GM 120 – Record Book for Service Equipment – Army;
- p. Material Safety Data Sheets (MSDS);
- q. Repair Parts Scale (RPS) 02290; and
- r. Technical Regulation of ADF Materiel Manual - Land (TRAMM-L) (available from DTR-A website <http://intranet.defence.gov.au/armyweb/Sites/DTRA>).

DETAIL

Safety Precautions

WARNING

Precautions should be taken prior to carrying out repairs which include painting, sanding, scraping or welding. Refer to EMEI Workshop D 701 – Repair Policy for Equipment Painted in Polyurethane Paint.

The handling, storage, use and disposal of chemical substances, fuels and lubricants are to be in accordance with Safetyman, MSDS and EMEI Workshop E series requirements.

General

- 6. Inspection shall be carried out on the ROPS, PRS and CRS annually or when the vehicle is involved in an accident.
- 7. Levels of repair are in accordance with EMEI Vehicle G 093, G 094, G 103 and G 104.
- 8. Isolated minor indentations to all items, except upper ROPS, are not considered to significantly degrade the performance of the Lower ROPS, PRS and CRS and therefore can be tolerated. An isolated minor indentation is defined as a crease, dimple, dent, depression or notch that is less than 2 mm deep and less than 40 mm² in area that does not encroach on fastening points.

Authorised Personnel

- 9. Inspections and repairs are to be carried out by the following technical tradespersons:
 - a. Vehicle Mechanic ECN 229-2;
 - b. Metalsmith ECN 235-2; or
 - c. civil equivalents qualified in accordance with the requirements of the TRAMM.
- 10. All welding is to comply with AS 1554.1 (General Purposed) Structural Steel Welding Code. All welding tasks are to be carried out by a Metalsmith ECN 235-2 or civilian equivalent holding an AS1796 Certificate.

Safety Improvement Kit Description

- 11. The integration of ROPS, PRS and CRS aim to provide a safer operating environment for the personnel operating the vehicle. A brief description of each system is provided below:
 - a. **ROPS.** This is a system designed to enhance the rollover strength of the vehicle by the addition of a crash safe rollover protection structure. The ROPS consists of two main components:
 - (1) a tubular rollover protection structure referred to as upper ROPS (Figure 1); and

- (2) considerable cargo tray strengthening reinforcement referred to as lower ROPS (Figure 2).

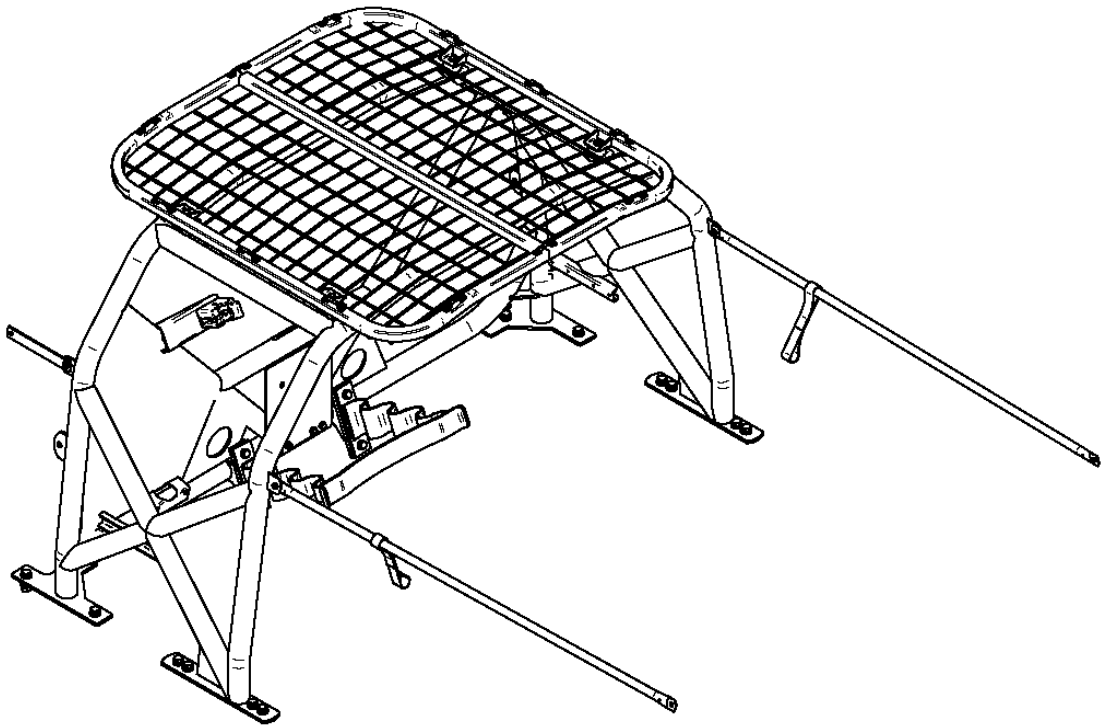


Figure 1 Upper ROPS

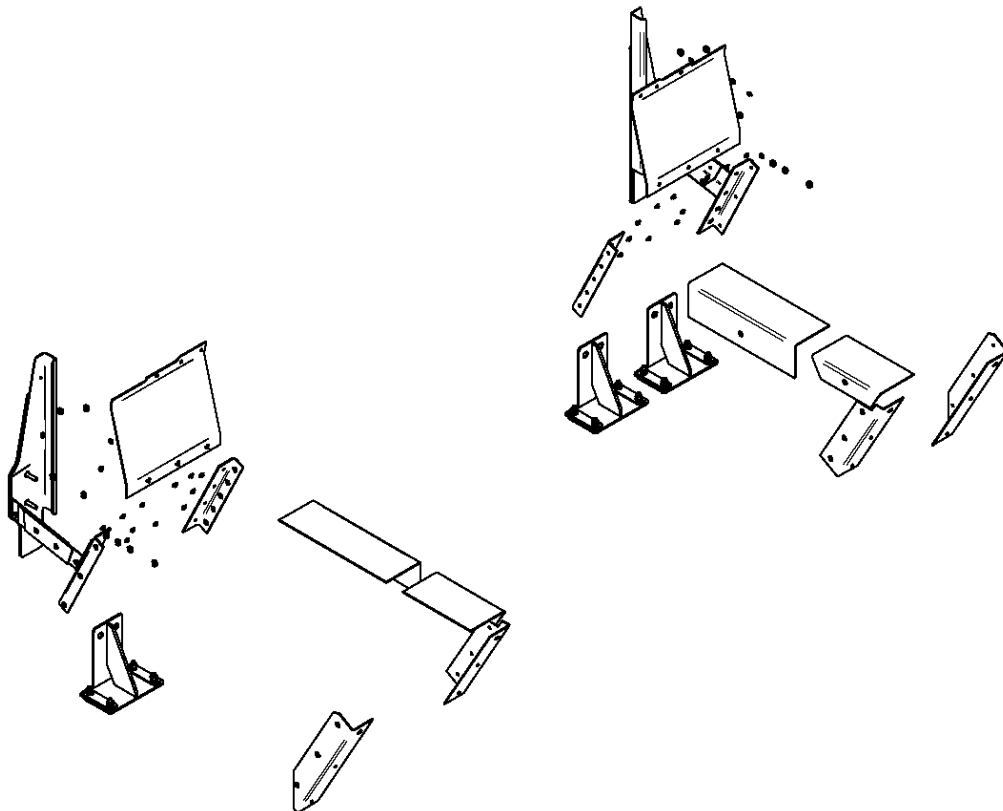
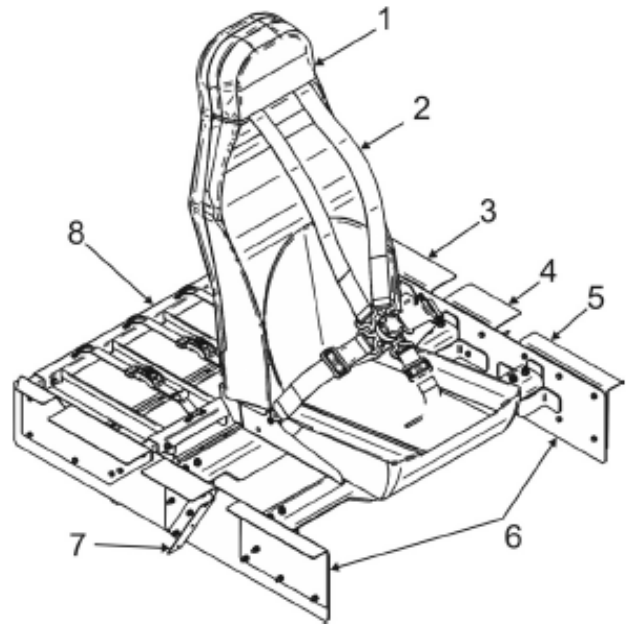


Figure 2 Lower ROPS

- b. **PRS.** This is a system designed to provide a crash safe working environment for the rear operator by the addition of a suitable rear facing seat. The PRS consists of a rear, rear-facing seat (Figure 3) and seat belt system.

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- | | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Jany seat | 5 | Rear reinforcement plate |
| 2 | Five-point harness | 6 | Support assembly |
| 3 | Front reinforcement plate | 7 | Wheel well/mud deflector support |
| 4 | Mid front reinforcement plate | 8 | Ammunition storage assembly |

Figure 3 PRS Seat

- c. **CRS.** This is a system designed to provide a crash safe storage system, to safely restrain load list items inside the shared space of the vehicle to minimise the risk of death or injury to the rear occupant of the vehicle in the event of a vehicle accident including vehicle rollover. The CRS consists of four main components; the CRS cargo tray bins, the individual load list item restraints external to the bins including the CRS straps and webbing, the under tray stowage and the camouflage net carrier above the ROPS assembly.

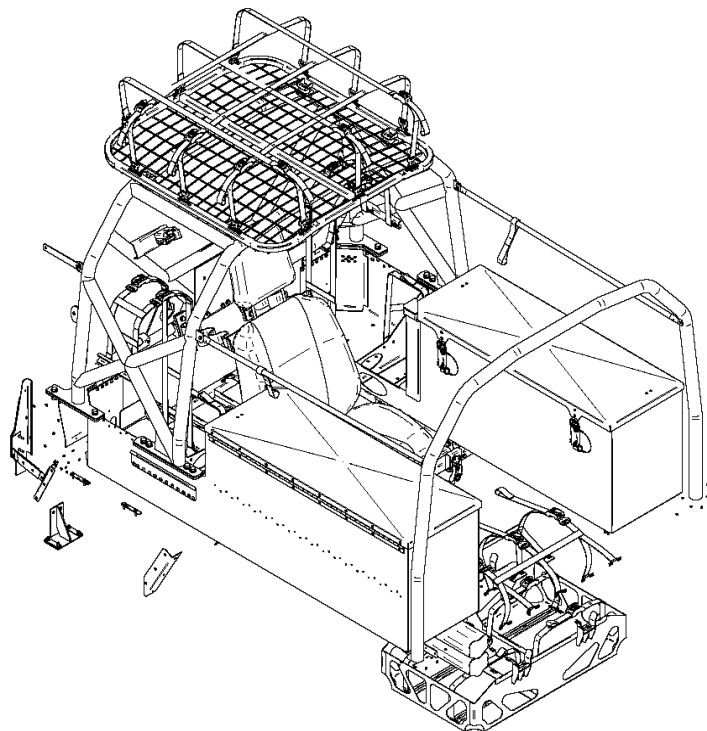
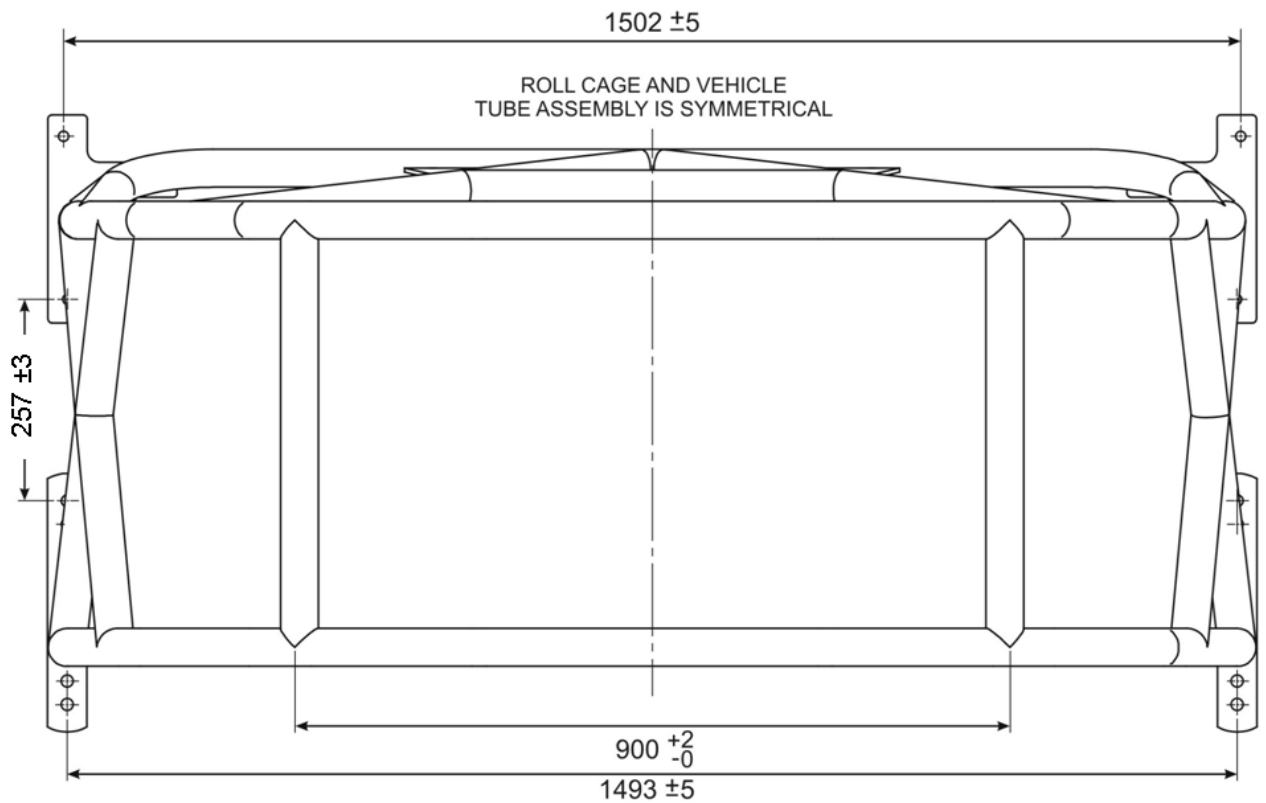


Figure 4 CRS

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ROPS

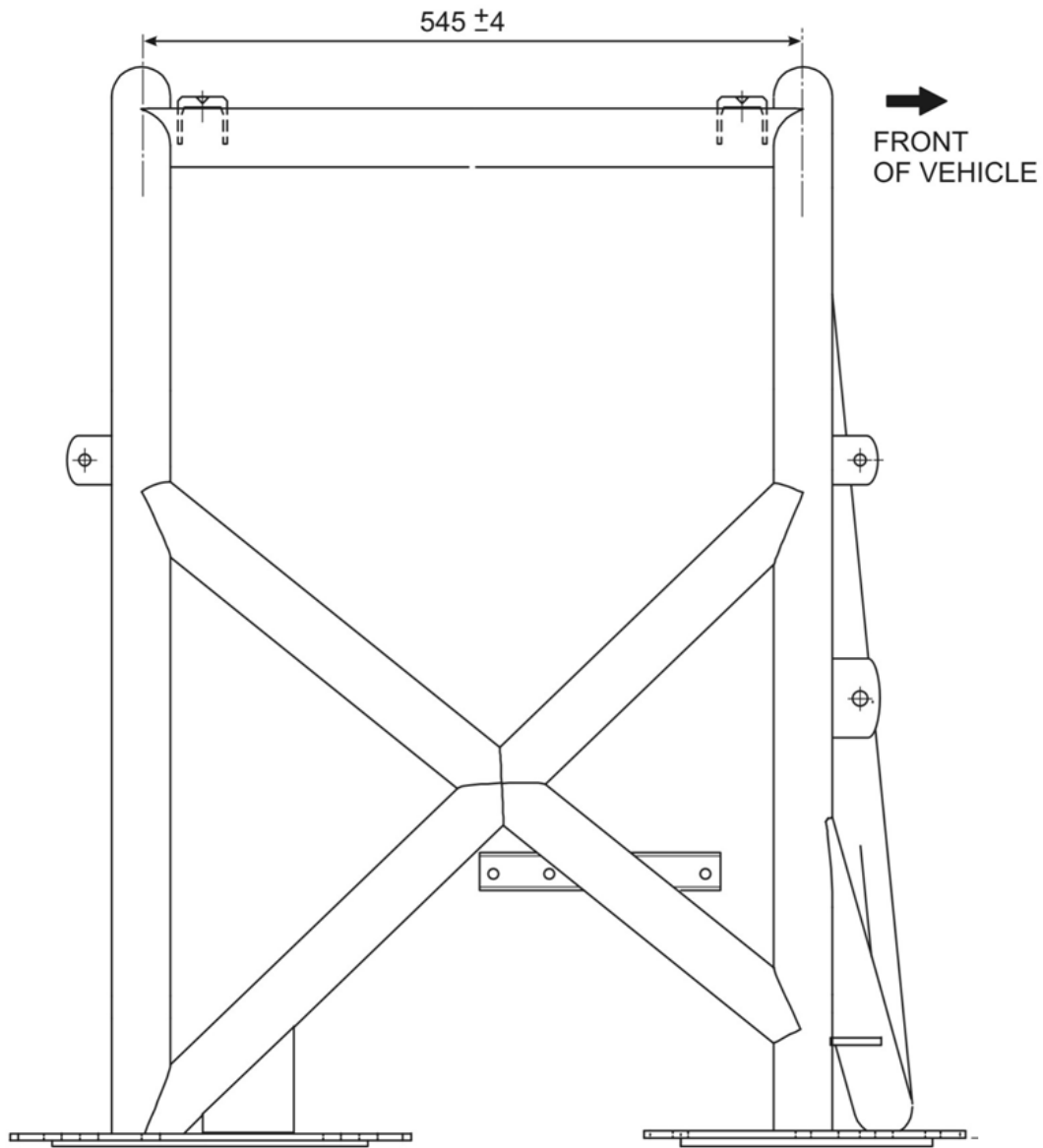
12. **Upper ROPS Inspection.** The upper ROPS is to be replaced should any of the following occur:
- a. the vehicle is involved in a rollover accident;
 - b. where distortion has occurred to the upper ROPS tubular structure;
 - c. the upper ROPS has an unauthorised modification;
 - d. a crack in a weld, or a crack originating from a weld;
 - e. severe corrosion;
 - f. indentation, punctures, cracks and/or tears;
 - g. the upper ROPS dimensions do not match Figure 5 and Figure 6; or



All dimensions are in mm

Figure 5 Upper ROPS – Top View

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All dimensions are in mm

Figure 6 Upper ROPS – Side View

- h.** Punctures, cracks, and/or indentations deeper than 10 mm to the left and/or right Clip Outer Panel (Figure 7).

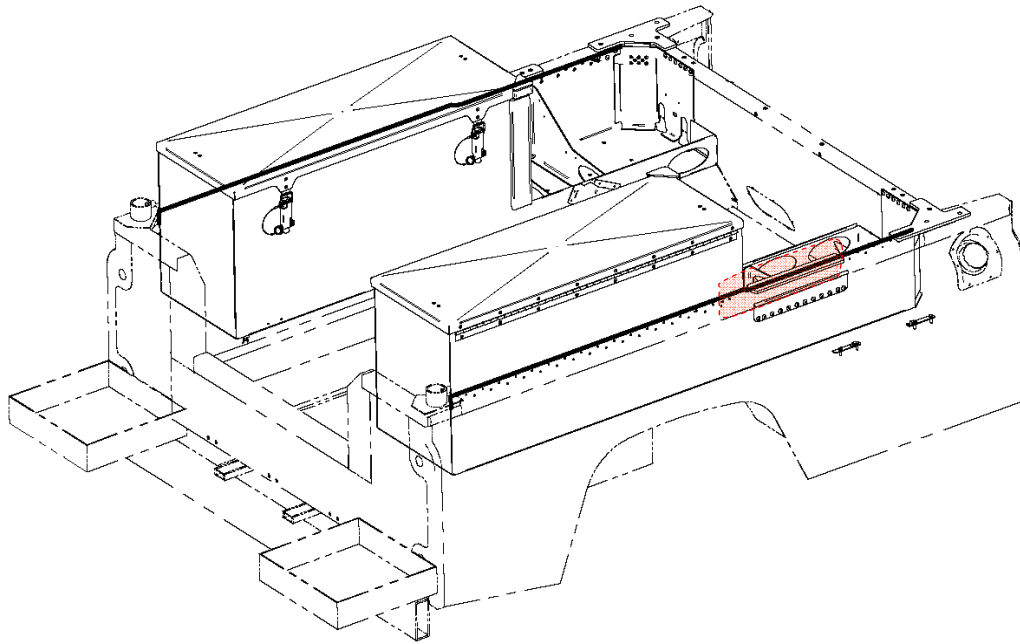


Figure 7 Clip, Outer Panel

- 13. Inspect for paint damage and surface rust.
- 14. **Upper ROPS Repairs.**

WARNING

The ROPS is not to be modified or repaired. Drilling, grinding and welding is not permitted.

- 15. Paint repair is the only acceptable repair for the upper ROPS and is to be carried out by preparing the area and patch painting it.
- 16. When a vehicle has been in an accident that affects the ROPS, all ROPS mounting fasteners are to be replaced.
- 17. **Lower ROPS.** The lower ROPS is to be inspected and repaired as follows:
 - a. Distortion of a lower ROPS component requires replacement of the component.
 - b. Indentations deeper than 4 mm require repair or replacement of the component.
 - c. Punctures, cracks, splits and/or tears require component replacement.
 - d. Missing brackets and support plates are to be replaced.
 - e. Missing or damaged fasteners require replacement.
 - f. Severe corrosion to material and associated fasteners requires lower ROPS component replacement. Surface corrosion is repaired by preparing the area and patch painting.

PRS

- 18. The PRS is to be inspected and repaired as follows:
 - a. **Seat.** The seat is to be inspected and repaired as follows:
 - (1) Punctures, cracks or tears to the seat base require seat base replacement.
 - (2) Visual gross deformation to the seat base requires the seat base to be replaced.
 - (3) Missing or damaged fasteners are to be replaced.
 - (4) Seat upholstery with punctures, cracks or tears is to be replaced.

- (5) Severe corrosion to material and fasteners requires component replacement. Surface corrosion is repaired by preparing the area and patch painting.
- (6) Unauthorized modifications to the seat and base are to be removed and any damaged components are to be replaced.
- b. **Seat Mounting Rail.** The seat mounting rail is to be inspected and repaired as follows:
 - (1) Seat mounting rails with punctures, cracks or tears are to be replaced.
 - (2) Seat mounting rails with visual gross deformation are to be replaced.
 - (3) Missing or damaged fasteners are to be replaced.
 - (4) Severe corrosion to material and fasteners requires component replacement. Surface corrosion is to be repaired by preparing the area and patch painting.
 - (5) Unauthorized modifications to the seat mounting rail are to be removed and any damaged components are to be replaced.
- c. **Seat Belt.** Seat belts are to be inspected in accordance with EMEI Vehicle A 548-1 – Vehicle Seat Belts – Inspection for Useability.
- d. **Seat Belt Anchorages.** The seat belt anchorages are to be inspected and repaired as follows:
 - (1) Seat belt anchorages with punctures, cracks or tears are to be replaced.
 - (2) Seat belt anchorages with visual gross deformation are to be replaced.
 - (3) Missing or damaged fasteners are to be replaced.
 - (4) Severe corrosion to material and fasteners requires component replacement. Surface corrosion is to be repaired by preparing the area and patch painting.
 - (5) Unauthorized modifications to the anchorage brackets or points are to be removed and any damaged components are to be replaced.

CRS

19. **Restraint Straps.** The restraint straps (Figure 8) are inspected as follows:

- a. All straps and webbing are to be inspected against the standards contained in EMEI Vehicle A 548-1 – Vehicle Seat Belts – Inspection for Useability.
- b. Buckles shall be operational and secure.

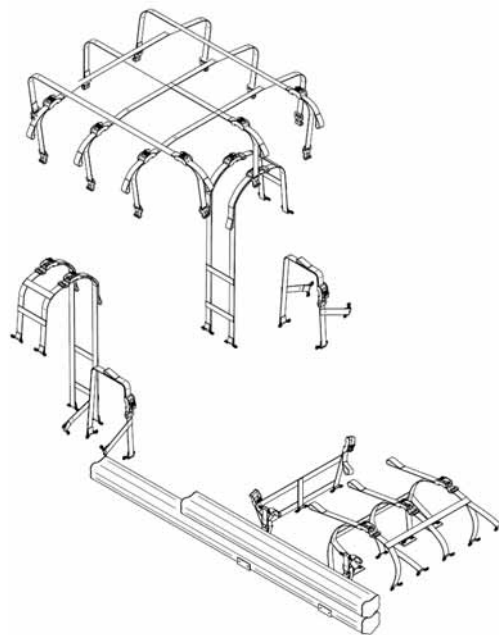


Figure 8 Restraint Straps

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20. Restraint straps, not meeting the inspection criteria, are to be replaced with new strap assemblies and new associated fasteners.
21. **Under Tray Stowage.** The under tray stowage is to be inspected and repaired as follows:
- Deformation, punctures, cracks and indentations deeper than 20 mm require repair.
 - Missing or damaged fasteners are to be replaced.
 - Severe corrosion requires component replacement.
22. **Camouflage Net Carrier.** The camouflage net carrier (Figures 9 and 10) is to be inspected and repaired as follows:
- Deformation, punctures, cracks and indentations deeper than 10 mm require repair.
 - Missing or damaged fasteners are to be replaced.
 - Severe corrosion to material and fasteners requires component replacement. Surface corrosion is to be repaired by preparing the area and patch painting.

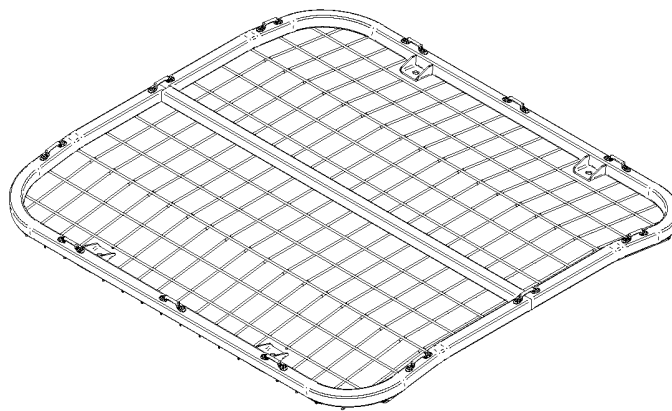


Figure 9 Net Cargo Carrier

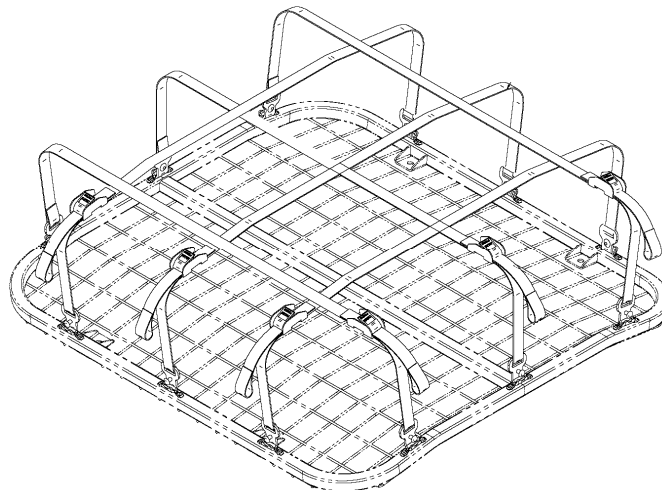


Figure 10 Net Cargo Carrier with Restraint Straps Fitted

Cargo Tray Bin

23. The cargo tray bins (Figure 11) are inspected and repaired as follows:
- Punctures, cracks or tears require repair or replacement of the bin.
 - Missing or damaged fasteners shall be replaced.
 - Severe corrosion to material and fasteners require bin replacement. Surface corrosion is to be repaired by preparing the area and patch painting.

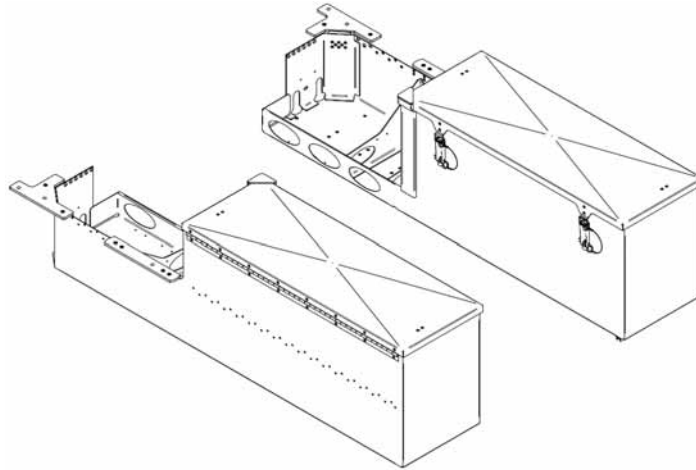


Figure 11 Left- and Right-hand Cargo Tray Bin

- d. Unauthorized modifications to the bins are to be removed and any damaged components are to be replaced.

24. **Cargo Tray Bin Lids.** The cargo tray bin lids (Figure 12) are inspected and repaired as follows:

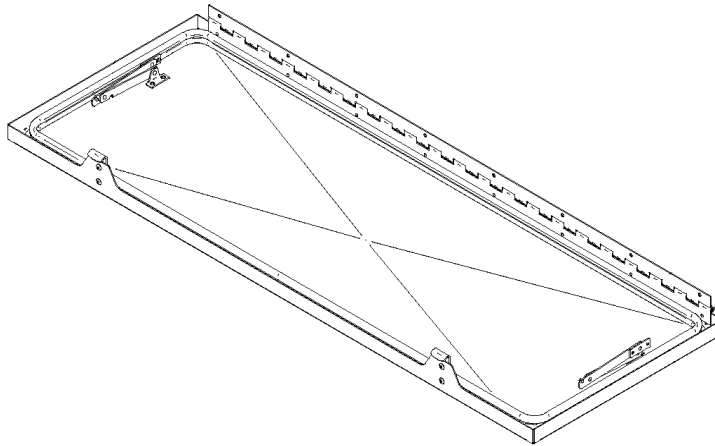


Figure 12 Bid Lid Assembly

- a. Punctures, cracks, or splits require lid repair or replacement.
- b. The lids shall be able to be opened and locked without the use of excessive force.
- c. The lids shall remain open via the stay (Figure 13) when the canopy is not fitted. Faulty stays are to be replaced.

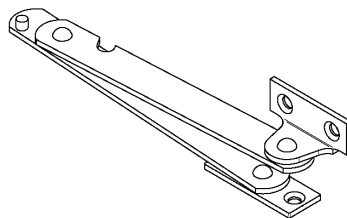


Figure 13 Bin Lid Stay

- d. Severe corrosion to material and fasteners requires component replacement. Surface corrosion is to be repaired by preparing the area and patch painting.

25. **Lid Catch.** Inspect and repair the lid catch as follows:

- a. Catches that require undue force to open and close are to be replaced.
- b. Catches that have punctures, cracks or tears are to be replaced.

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- c.** Missing or damaged fasteners are to be replaced.
- d.** Severe corrosion to material and associated fasteners requires component replacement. Surface corrosion is repaired by preparing the area and patch painting.

26. L-shaped Reinforcement. The left-hand (Figure 14) and right-hand (Figure 15) L-shaped reinforcement is to be inspected and repaired as follows:

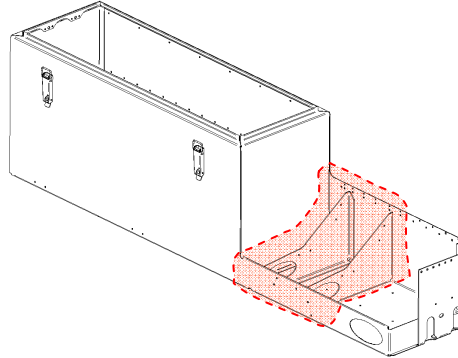


Figure 14 Left-hand Bin L-shaped Reinforcement

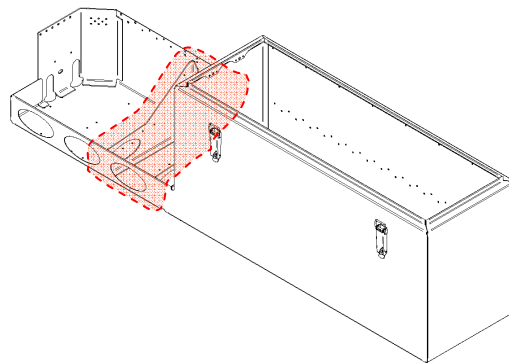


Figure 15 Right-hand Bin L-Shaped Reinforcement

- a.** Indentations deeper than 10 mm affecting material under fixing heads (rivet, bolt or pin) require cargo tray bin replacement.
- b.** Punctures, cracks, splits, tears, and/or weld failures require CRS replacement.
- c.** Unauthorized modifications to the reinforcement are to be removed and any damaged components are to be replaced.
- d.** Severe corrosion to material and fasteners requires component replacement. Surface corrosion is to be repaired by preparing the area and patch painting.

27. The L-shaped reinforcement is not to be repaired. If the L-shaped reinforcement is damaged, the CRS stowage bin and L-shaped reinforcement are to be removed and a new L-shaped reinforcement and CRS stowage bin installed.

Footman Loop

28. Inspect and repair the footman loops as follows:

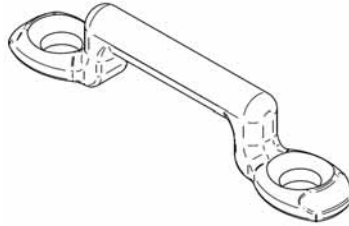


Figure 16 Footman Loop

- a. Loops that have punctures, cracks, tears or previous repairs are to be replaced.
- b. Missing or damaged loops and fasteners are to be replaced.
- c. Footman loops or fasteners with severe corrosion are to be replaced.
- d. Unauthorized modifications or attachments to the footman loops are to be removed and any damaged components are to be replaced.

Rear Tray

29. **Tray Floor.** Inspect and repair the tray floor as follows:

- a. Replace or repair any floor with cracks, splits or indents unable to be contained within a 250 mm diameter circle.
- b. Worn areas of the anti-slip surface are to be repaired.

30. **Tray Coaming Rail.** Inspect and repair the tray coaming rail as follows:

- a. Coaming rails with cracks, splits or tears are to be replaced.
- b. Replace any punctured coaming rail.
- c. Coaming rails with indents (in any direction) deeper than 10 mm are to be replaced.
- d. Coaming rails and fasteners with severe corrosion are to be replaced. Surface corrosion is repaired by preparing the area and patch painting.

31. **Tray Outer Panel.** Inspect and repair the outer panel (Figure 17) as follows:

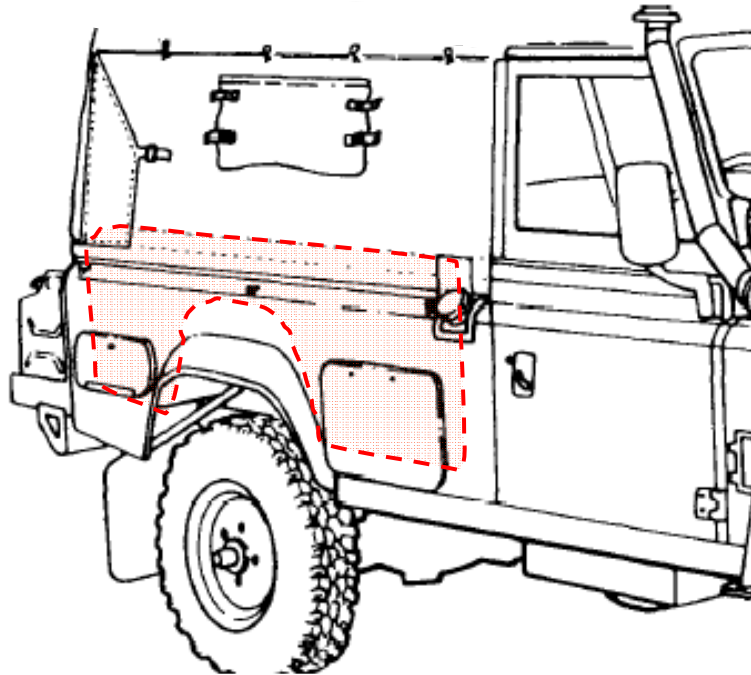


Figure 17 Tray Outer Panel Body Work

- a. Panels that are cracked, split, punctured or torn are to be replaced.
- b. Panels with indents deeper than 10 mm are to be repaired or replaced.
- c. Panels and fasteners that are severely corroded are to be replaced. Surface corrosion is repaired by preparing the area and patch painting.

Front Doors

32. **Door Panels.** The front door panels are to be inspected and repaired as follows:
- a. Door panel skins or frames that are cracked, split, punctured or torn are to be replaced.
 - b. Replace door panels with indents deeper than 10 mm or within 50 mm of the hinge and latch mounting.
 - c. Door panels and fasteners that are severely corroded are to be replaced. Surface corrosion is to be repaired by preparing the area and patch painting.
33. **Door Latches.** Inspect and repair the door latches as follows:
- a. Replace any latches with cracks, splits, tears or dents.
 - b. Door latches that do not lock or open freely are to be replaced.
 - c. Replace door latches or fasteners with severe corrosion.
34. **Door Hinges.** Inspect and repair the door hinges as follows:
- a. Replace door hinges that are cracked, split, torn or have dents.
 - b. Door hinges or fasteners with severe corrosion are to be replaced.
35. **Upper Door/Window Frame.** Ensure the upper door/window frame is correctly fitted and the securing bolts are tight.

Classification

36. If any defect that affects the integrity of the ROPS, PRS or CRS is found, the vehicle is to be classified 'Do Not Use - XX'.

Recording Action.

37. Details of this inspection, when completed, are to be entered in Section 2 of the Record Book for Service Equipment (GM 120).

Defects

38. All defects identified as a result of the inspection are to be reported by RODUM in accordance with the TRAMM-L.

Disposal

39. ROPS, PRS and CRS items that are replaced are to be destroyed so that they cannot be re-used. This may include cutting by oxygen/acetylene.

40. Items that are related to RODUM investigations are to be held by the unit until they are no longer required by the investigating officer and then destroyed.

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END

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