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TRUCK, LIGHT, MC2 LAND ROVER 110 - ALL TYPES

FITTING OF IMPROVED CHASSIS LONGITUDINAL RAILS

MODIFICATION INSTRUCTION

This instruction is authorised for use by command of the Chief of the General Staff. 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 GENERAL A 001.

Introduction

1. This instruction details the fitting of improved longitudinal chassis rails to all Land Rover 110 6x6 module variants. The purpose of the modification is to improve durability by upgrading the rail and reducing the possibility of the rail cracking, particularly during cross country operation.

2. **Associated Publications.** Reference may be necessary to the latest issue of the following documents:

- a. EMEI Workshop A 850 - Modifications, Trial Modifications and Local Modifications to Equipment;
- b. EMEI Workshop A 851 - Recording Modifications to Equipment - Use of Modification Record Plates and Documentary Requirements;
- c. EMEI Workshop E 406 - Material Safety Data Sheets;
- d. EMEI Vehicle G 227-1 - Relocation of the Seven Pin Auxiliary Plug and Harness Assembly;
- e. EMEI Vehicle G 224-1 - Truck, Ambulance, Light, 4 Litter, FFR, winch, MC2- Land Rover 6x6, Field and Base Repair;
- f. EMEI Vehicle G 244-1 - Truck, General Maintenance, Light, Winch, MC2- Land Rover 110 6x6, Field and Base Repair;
- g. EMEI Vehicle G 254-1 - Truck, Electronic, Repair, Light, MC2-Land Rover 110 6x6, Field and Base Repair;
- h. EMEI Workshop J 002-1 - The Procedure Handbook of Arc Welding; and
- i. EMP 3/96, Log Comd.

3. **Authority.** Log Comd EMP 3/96 is the authority to carry out this modification.

General

4. **Modification Application.** This modification is applicable to all Land Rover 110 6x6 Module variants produced, with the exception of the Module Vehicles manufactured as part of Project Bushranger.

5. **Items Affected.** This modification alters the following assemblies:

- a. longitudinal chassis rails, and
- b. rear module wiring connection.

6. **Priority - Group 1.** All applicable equipment is to be modified prior to further use.

NOTE

Continued use of vehicles is authorised provided that any vehicle with cracks in the longitudinal chassis rails have been notified by the owner unit to the Fleet Manager of the supporting Log Complex for priority repair. Vehicles with cracks in the longitudinal chassis rails are to be welded (without removing the module) as a temporary repair.

7. **Action Required.** Actions detailed in this instruction are to be performed by units authorised to carry out field (medium) and base (heavy) repairs in accordance with EMEI Workshop A 850. All welding is to be carried out by qualified metalsmith ECN 235-2 or civilian equivalent and carried out in the sequence detailed in Para 12.

NOTE

On receipt of this instruction enter all relevant information other than date completed in the modifications section of the Vehicles Record Book for Service Equipment (GM 120).

8. **Estimated Manhours.** For initial planning purposes only, it is estimated that this modification will take 24 manhours to perform.

9. **Stores Required.** The stores required are listed in Tables 1 and 2. The modification kit is detailed in Table 1. Table 1 and 2 are to be ordered by the supporting workshop. Individual units are not to order kits. Workshops are to demand for the kit, on an as required basis. Distribution of kits are detailed in EMP 3/96 instructions. Table 3 shows a breakdown of the modification kit in Table 1. Workshops may order parts from Table 3 to replace items damaged during fitting. Workshops are to carrying out modification, as detailed in EMP 3/96.

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10. **Items to be Removed.** All stores removed are to be processed in accordance with the EMEI General P section.

11. **Special Tools.** Spreader and chains are required to remove the fibreglass module (refer to associated publications).

NOTE

Lifting eyes for modules are located above the battery box on the module variants. Two thread lengths are available, the long threaded eyes are screwed in the front lifting points.

12. **Safety Precautions.** Each of the hazardous substances referred to in this EMEI are to be used, handled, stored and disposed of in accordance with the safety requirements given in their Material Safety Data Sheets (MSDS). Refer to EMEI Workshop E 406 for further details on MSDS requirements.

DETAIL

13. **Modification of Longitudinal Chassis Rails.** The procedure is as follows:

- a. Remove mudguards.
- b. Remove module from the vehicle, as detailed in the relevant variant EMEI (see Para 2).
- c. Remove rear tool boxes, jerry can holder and battery carrier.
- d. Steam clean the underside of vehicle and rear chassis area.
- e. Measure and note distance A, shown in Figure 1, between rear of cab and front of longitudinal chassis rails for ease of refitting new rails.
- f. Using an angle grinder, remove the welds securing the two longitudinal chassis rails and remove the rails.

NOTE

Care is to be taken when cutting welds, not to cut the upright post.

- g. Clean the top of the support posts with an angle grinder to remove all weld and zinc coating.
- h. Place a string line between the top of mounting post 1 and mounting post 6 on both sides. Cut mounting posts 2, 3, 4, and 5 to the height of the string line. Posts lower than string line are not to be altered.
- i. Chamfer the edges of the support posts to allow new rails to sit flush with top of post.
- j. Remove the 7-pin auxiliary plug and harness assembly from the right-hand rear chassis upright.

- k. Rework the right-hand rear chassis upright by lowering the plug position 50 mm, on the inboard side, as shown in Figure 2.

NOTE

EMEI Vehicle G 227-1 shows the relocation of the 7-pin auxiliary plug to the inboard position. The plug is lowered a further 50 mm by this action.

- l. Position the new longitudinal rails (Item 1 from Table 3) in place. Pay particular attention to the hole to hole transverse dimensions and front and rear locations.
- m. Check to ensure diagonal relationships between rail holes are within +/- 1.5 mm, as shown in Figure 3.
- n. Tack weld the rails to the uprights, using low hydrogen welding rods (Item 1 from Table 2).

NOTE

Ensure rails are sitting flush with the top of the upright post.

- o. Recheck dimensions and alignment.
- p. Weld rails, as shown in Figure 4, pay particular attention to ending of welds (to minimise weld undercuts).
- q. Clean all welds, and the area around the module wiring plug.
- r. Paint all ground and weld affected areas with Corium 709 (Item 2 from Table 2).
- s. Refit the 7-pin auxiliary plug and harness assembly.
- t. Refit the tool boxes, battery box.
- u. Position jerrycan holder, do not bolt jerrycan holder to chassis.
- v. Fit the mudguards and use them as a template to mark new mounting hole position in the new longitudinal rails.
- w. Remove the mudguards and drill 6 mm holes in marked positions on the longitudinal rails.
- x. Refit module as detailed in relevant EMEI (Para 2).
- y. Using Items 2 to 7 listed in Table 3, secure the module using mounting fixtures, as shown in Figure 5.

NOTE

Filing of the mounting holes may be required to align the mounting holes in the rail to the module.

NOTE

The six 'D' shaped cup washers (Item 5 from Table 3) are fitted at stations where the mounting bolt is close to the upright posts, usually posts 1, 2 and 6, as shown in Figures 3 and 5.

Normal cupped washers (Item 4 from Table 3) are fitted, as shown in Fig 5. Some of the polyurethane mounts may require modifications to be fitted on mounting bolts close to upright posts.

Use the appropriate combination of aluminium spacers supplied (Item 8 and 9 from Table 3) to pack between the chassis rail and the module if a gap exists before tensioning.

- z. Tension module or tray mounting bolts to 25 N.m.
- aa. Refit jerry can bolts and tighten.
- bb. Refit mudguards and reconnect all wiring and test the operation of all lights.

14. **Recording Action.** On completion of the modification the following action is to be taken:

- a. deface the number 30 on the modification record plate, located on the driver's seat base,
- b. complete the modification details in Part 3 of Record Book for Service Equipment (GM 120); and
- c. forward the modification completion details to Regional Fleet Manager.

Table 1 - Modification Kit to be Ordered
(as detailed in HQ Log Comd EMP 3/96)

Item	NSN	Description	UOI	Qty per Equip
1	2510-66-141-4432	Kit chassis rail	ea	1

Table 2 - Stores Required
(to be demanded through normal supply channels)

Item	NSN	Description	UOI	Qty per Equip
1	NIC	Low Hydrogen welding rods		qty
2	8010-66-112-9000	Corium 709, 4 litres	Tn	1

Table 3 - Stores Contained in Modification Kit
(to assist in parts identification and are not to be ordered to complete modification as stated in Para 11)

Item	NSN	Description	UOI	Qty per Kit
1	BYG 5532	Longitudinal rails	ea	2
2	BH 112131	Bolt	ea	12
3	NY 112041	Nut, self-locking	ea	12
4	MYH 3703	Washer, cupped	ea	18
5	MYH 3706	Washer, cupped 'D'	ea	6
6	MYH 3705	Polyurethane mount, large	ea	12
7	MYH 3701	Polyurethane mount, small	ea	12
8	BYG 5537	Spacer, Aluminium, 2 mm	ea	6
9	BYG 5538	Spacer, Aluminium, 1 mm	ea	2

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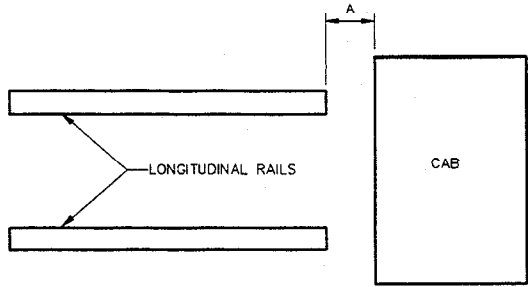


Figure 1 - Longitudinal Rail Position

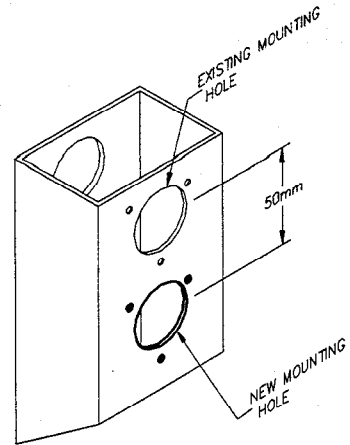


Figure 2 - Relocation of Module Wiring Plug Position

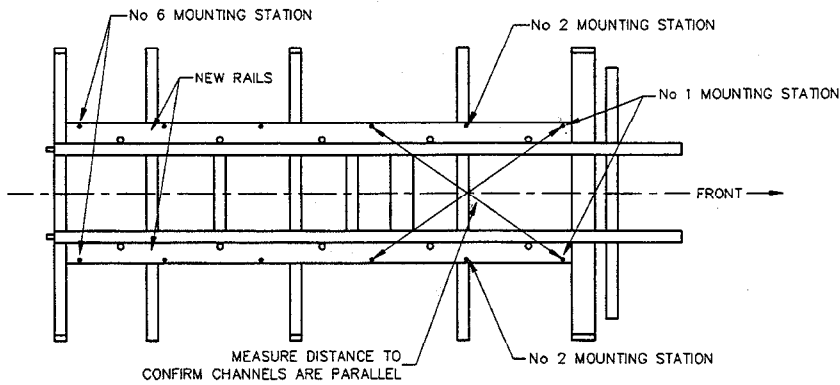


Figure 3 - Position of Channels

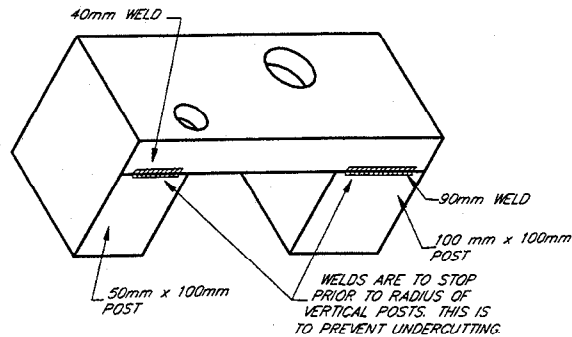


Figure 4 - Position of Welds

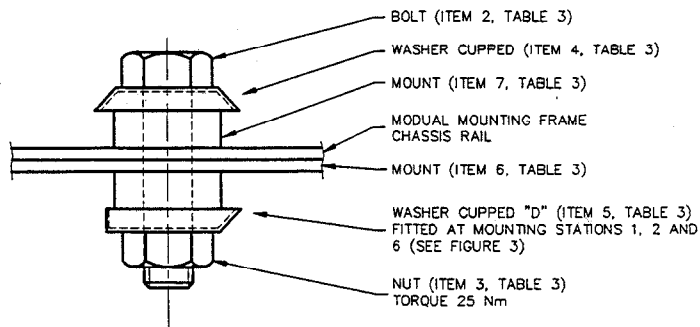


Figure 5 - Mounting Fixtures

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