

## TRUCK, GENERAL MAINTENANCE, LIGHT, WINCH, MC2 – LAND ROVER 110 6X6

### REPLACEMENT OF MAIN SWITCHBOARD (CIRCUIT BREAKER PANEL) EARTH TERMINAL SCREW

## MODIFICATION INSTRUCTION

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.

#### Introduction

1. This instruction details the steps required to replace the non-compliant main earth terminal screw in the electrical switchboards (circuit breaker panel) of the Land Rover 110 6x6 General Maintenance Vehicles.
2. Various types of main earth terminal screws are fitted to these vehicles and, generally, they are self-tapping type of screws screwed into the rear metal cover plate of the switchboard (see Figure 1). This self-tapping screw is also used as the main earth terminal for a number earth wires entering the switchboard.
3. This self-tapping screw method of earthing multiple earth wires is not compliant with the requirements of AS/NZS 3000 and does not provide a reliable common earth point.
4. **Associated Publications.** Reference may be necessary to the latest issue of the following documents:
  - a. TRAMM – Technical Regulation of Army Material Manual;
  - b. TRAMM, Volume 3, Section 2, Chapter 2, Fleet Engineering Change Management Process;
  - c. MEMA, Volume 1, Chapter 9 – Army Unit Stores Accounts;
  - d. MEMA, Volume 2, Chapter 20 – Accounting for Repair Parts;
  - e. EMEI Workshop E 544 – Safety Inspections and Testing of Electrical Equipment;
  - f. EMEI Vehicle G 243 – Truck, Light, General Maintenance Vehicle, Winch, MC2 – Land Rover 110 6x6 – Unit Repair; and
  - g. EMEI Electrical A 409 – Termination of 5-Pin Military Connectors and Receptacles.
5. **Authority.** Engineering Change Order (ECO) LT B 003/04 – GMV/ERV Switchboard Earth Wiring Termination Method, is the authority to conduct this modification.

#### General

6. **Modification Application.** This modification is to be applied to all Land Rover 110 6x6 General Maintenance Vehicles.
7. **Items Affected.** This modification alters the following assemblies:
  - a. Electrical switchboard (circuit breaker panel).
8. **Priority – Group 1.** All applicable equipment is to be modified prior to connecting a 240/415 V power source.

### WARNING

**OPERATION OF THE ELECTRICAL SWITCHBOARD (CIRCUIT BREAKER PANEL) PRIOR TO MODIFICATION MAY CAUSE INJURY OR DEATH.**

9. **Action Required.** Actions detailed in this instruction are to be performed by RAEME workshops authorised to carry out Light, Medium, or Heavy Grade Repairs. Modification is only to be conducted by the following tradespeople:
  - a. Technician Electrical – ECN 418; or
  - b. Appropriately licensed civilian equivalent competent in 240 V wiring.

#### NOTE

**On receipt of this instruction, enter all relevant information other than date completed in Part 3 (Record of Modifications) of the Vehicle Record Book for Service Equipment (GM 120).**

10. **Estimated Workhours.** For initial planning purposes only, it is estimated that this modification will take 2.0 workhours to perform.
11. **Stores Required.** The stores required are listed in Table 1. All stores are to be demanded through normal supply channels.

12. **Items to be Discarded.** The items to be removed are listed in Table 2. All crimp lugs removed can be discarded.

13. **Pre-Modification Testing.**

- a. Ensure that the correct Connector, Receptacle, Electrical, 5 Contacts, Male (Table 1, Item 1) is fitted to the vehicle module external power supply panel in accordance with Para 4.g.
- b. Perform a pre-modification test in accordance with EMEI Workshop E 544. Any electrical faults detected shall be repaired before proceeding with the modification.

**Detail**

14. **Modification of Electrical Switchboard (circuit breaker panel).** The procedure is as follows:

**WARNING**

**DISCONNECT EXTERNAL SUPPLY OF ELECTRICAL POWER TO THE VEHICLE REPAIR MODULE PRIOR TO PROCEEDING WITH THIS MODIFICATION.**

- a. Disconnect batteries and external power supply cables.
- b. Remove the circuit breaker panel cover (refer to EMEI Vehicle G 243).
- c. Remove self-tapping main earth screw from switchboard rear metal panel and remove and discard crimp lugs from the earth wires.
- d. Make an earth lead using 100 mm length of 2.5 sq mm green yellow/wire (Table 3, Item 1) and crimp lug (Table 3, Item 2). Using the self-tapping earth screw, connect this

earth lead to the switchboard rear metal panel.

- e. Strip insulation from all earth wires, twist them together and terminate them into the tunnel lug (Table 3, Item 3).
- f. Using wire ties (Table 3, Item 4), tie and secure the earth wires into the switchboard wiring loom.
- g. Replace the circuit breaker panel cover (refer to EMEI Vehicle G 243).

15. **Post Modification Testing.**

- a. Perform a post modification test in accordance with EMEI Workshop E 544.
- b. Reconnect batteries.

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

- a. Deface number 32 on the vehicle modification record plate.
- b. Complete the modification details in Part 3 (Record of Modifications) of the Record Book for Service Equipment (GM 120).
- c. Complete the modification details on SDSS, Equipment Register – Modification screen.

17. **Reporting Action.** Owner unit is to submit a GM 119 (Advice of Change in Build State) in accordance with the TRAMM, Vol 3, Sect 2, Chap 2, Annex D, Para 1e. A list of the vehicles modified by ARN may be attached to a single GM119.

18. The GM 119 is to be forwarded to:

National Fleet Manager  
Light B and D Vehicles  
Mobility SPO  
VBM D1-55-24  
Victoria Barracks, St Kilda Road  
SOUTHBANK VIC 3006  
Tel: (03) 9282 5977

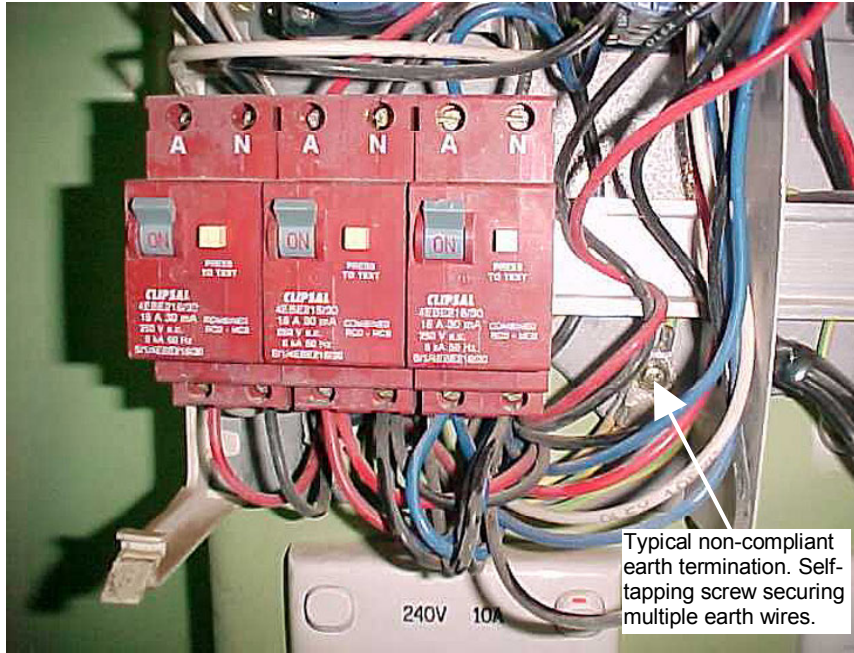


Figure 1 – Earth Terminal Screw

Table 1 – Stores Required

Item	NSN	Mfr Part No	Designation or Description	Unit of Issue	Qty per Equip
1	5935-66-147-0144	MG00R 28L-50P-SPL-AA-3999	Connector, Receptacle, Electrical, 5 Contacts, Male	ea	1
2	5935-66-152-1789	CYG9084	Kit, Earth Terminal Modification – GMV & ERV	kt	1

Table 2 – Items to be Removed

Item	NSN	Mfr Part No	Designation or Description	Qty per Equip
1	N/A	N/A	Crimp Lug	3

Table 3 – Items Contained in Modification Kit (Table 1, Item 2)

Item	NSN	Mfr Part No	Designation or Description	Unit of Issue	Qty per Kit
1	N/A	N/A	Wire, electrical, flexible, 2.5 sq mm, PVC 90HT, green/yellow insulation	ea	100 mm
2	N/A	Utilux H4227	Crimp lug, blue, 6 mm stud size	ea	1
3	N/A	HPM402	Tunnel connector	ea	1
4	N/A	Farnell 268-501	Wire Tie, 197 long x 2.4 wide	ea	3

END

Distribution List: **VEH G 20.3 – Code 2 (Maint Level)**  
(Sponsor: MOB SPO, Lt B Veh Sect)  
(MEADData Job No 200001400)

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