

TRUCK, TRANSPORTER, FLOATING BRIDGE, MC3, W/WINCH, MACK LAUNCH AND RECOVERY VEHICLE (LRV)

LIFT FRAME CUT-OUT SWITCH

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 GENERAL A 001.

Introduction

1. This instruction details a modification to the lift frame cut-out switch. The current switch is wired to a normally closed solenoid valve that diverts flow from the main lift cylinders when the switch is tripped. This means that if the switch is smashed (a common occurrence on the LRV) there is no fail-safe method of stopping the locked lift frame from being raised too far. The result of the lift frame being raised too far is that it stops against the rear of the chassis, the rams continue forcing the frame up, which causes the lift frame to bend.

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. Engineering Change Order (ECO) No AEM 5004;
- d. EMEI General P Section - Stores Procedure; and
- e. Technical Manual. User Handbook Floating Support Bridge (FSB) and Launch and Recovery Vehicle (LRV), 1992.

3. **Authority.** ECO AEM 5004 is the authority to carry out this modification.

General

4. **Modification Application.** This modification is applicable to all Launch and Recovery Vehicles.

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

- a. the rear lift frame cut-out switch is changed to a magnetic proximity actuator type and relocated to the position shown in Figure 1;

- b. the solenoid bypass valve is changed from a normally closed to a normally opened type; and
- c. a push button type over-ride switch is fitted inside the cab so that, should the switch or wiring fail, the operator can still move the lift frame.

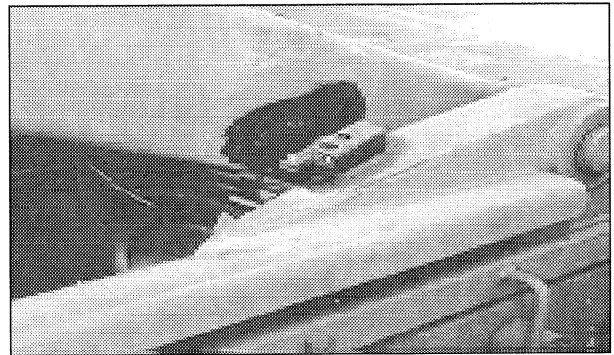


Figure 1 - Lift Frame Cut-Out Switch

6. **Priority - Group 2.** All applicable equipment is to be modified:

- a. when next in a medium or heavy repair facility, or
- b. prior to issue from depot or pool stock.

NOTE

Where modification would delay priority issues of depot stock, equipment may be issued unmodified provided the equipment record book is endorsed appropriately and the depot ensures that the existing cut-out switch is serviceable.

7. **Action Required.** Actions detailed in this instruction are to be performed by RAEME workshops authorised to carry out repairs.

8. **Estimated Manhours.** For initial planning purposes only, it is estimated that this modification will take 4 manhours to perform.

9. **Stores Required.** The stores required are listed in Table 1. All stores are to be demanded through normal supply channels.

10. **Items to be Removed.** The items to be removed are listed in Table 2. All stores removed are to be processed in accordance with the EMEI General P section.

Detail

11. Remove the existing hydraulic valve cartridge, and replace with the new hydraulic valve cartridge (refer to RPS 02216, Group WBG, for assembly details).

12. Drill and fit push-button switch to the hour meter bracket as shown in Figure 2.

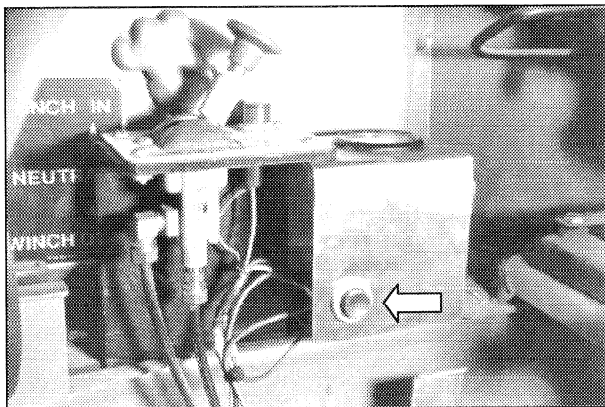


Figure 2 - Location of Push-Button Switch

13. Wire switch to the solenoid and to the PTO warning lamp (as detailed in the circuit diagram at Figure 7), using the insulation sleeving and electrical wires as required. The push button switch is the over-ride, should the wiring or switch at the rear of the lift frame fail. Ensure the wiring is positioned in a protected place and enters the cabin through a grommet.

14. Manufacture Mounting Bracket, Switch and Mounting Bracket, Sensor (as detailed in Figures 3 and 4).

15. Remove existing limit switch from its position below the rear lift frame. Dispose of in accordance with EMEI General P Section.

16. Position and weld the Mounting Bracket, Sensor to the chassis (as detailed in Figure 5) and mount the actuator magnet.

17. Mount the proximity switch on the Mounting Bracket, Switch. Position the bracket (as detailed in Figure 5), and tack weld the bracket. Remove the switch prior to completing the weld on the bracket.

18. Remove the magnet and paint the brackets.

19. Position actuator magnet and proximity switch (as detailed in Figures 5 and 6). The wires from the switch should be positioned under the rear of the lift frame and cross at the pivot to meet up with the wiring to the original switch.

20. Wire in the switch (as detailed in Figure 7). This will entail:

- a. Installing a single wire to the rear of the lift frame from the PTO pressure switch to the proximity switch.
- b. Wiring the magnetic proximity switch so that power is on whenever the lift frame is moving up and down, and that power is off to the solenoid when the lift frame reaches its highest allowable position. This will only require two wires in the switch - the blue common wire and the brown normally closed contact (test that these wires are correct before assembly). One will be connected to the original micro-switch wire by crimp connector and the other to the wire from the PTO pressure switch.
- c. All connections are covered with heat shrink material and wires are secured to the frame by cable ties where required.

21. **Post Modification Testing.** The locked lift frame is to be tested to ensure that it operates as required. When the lift frame cut-out has operated, the over-ride switch should be activated to ensure that the lift frame can continue to be raised.



CARE SHOULD BE TAKEN TO ENSURE THAT THE LIFT FRAME IS NOT RAISED TO THE EXTENT THAT IT COMES INTO CONTACT WITH THE MACK CHASSIS RAIL, AS THIS MAY CAUSE THE LIFT FRAME TO BEND.

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

- a. deface the number '8' on the modification record plate, located on the angled kick plate beneath the hydraulic control levers on the LRV operator station;
- b. complete the modification details in the Record Book for Service Equipment (GM 120); and

c. forward the modification completion details to:

Fleet Manager Bridging
AMMA
GPO Box 480J
MELBOURNE VIC 3001

d. with an information copy to:

SO3 Engineer Equipment
DME(A)
GPO Box 4955WW
MELBOURNE VIC 3001

e. the return should include the following information:

- (1) Modification No: EMEI Vehicle G 787-8.
- (2) Unit: eg 1 BASB.
- (3) Major Equip Ser No:
- (4) Sub-System Ser No:
- (5) Completion Date:

Table 1 - Stores Required

| Item | Mfr Part No | Designation or Description | Qty per Equip |
|------|--------------------------|--|---------------|
| 1 | OD15-06-04 | Hydraulic Valve Cartridge | 1 |
| 2 | RS Components 339-752 | Proximity Switch (Changeover-Type C) | 1 |
| 3 | RS Components 339-768 | Actuator Magnet | 1 |
| 4 | Hella 4501 | Push Button, Switch | 1 |
| 5 | | Mild Steel, Angle Section 40 x 40 x 5 mm thick | 100 mm |
| 6 | | Mild Steel, Flat 150 mm x 5 mm | 150 mm |
| 7 | | Bolt M4, 25 mm long | 4 |
| 8 | | Spring Washer M4 | 4 |
| 9 | | Insulation Sleeving, Electrical, Flexible Plastic, 12 mm ID Black | AR |
| 10 | | Wire, Electrical, Insulated, 16/0.30 mm, Copper, 3 mm, various colours | AR |
| 11 | | Utilux Crimp Connectors, 3 mm | AR |
| 12 | | Insulation Sleeving, Electrical Heat Shrinkable, 6 mm ID | AR |
| 13 | | Cable Ties, Black Plastic 150 mm long | AR |

Table 2 - Items to be Removed

| Item | Mfr Part No | Designation or Description | Qty per Equip |
|------|-------------|----------------------------|---------------|
| 1 | OD15-05-04 | Hydraulic Valve Cartridge | 1 |
| 2 | Z4VH335-11Z | Limit Switch | 1 |

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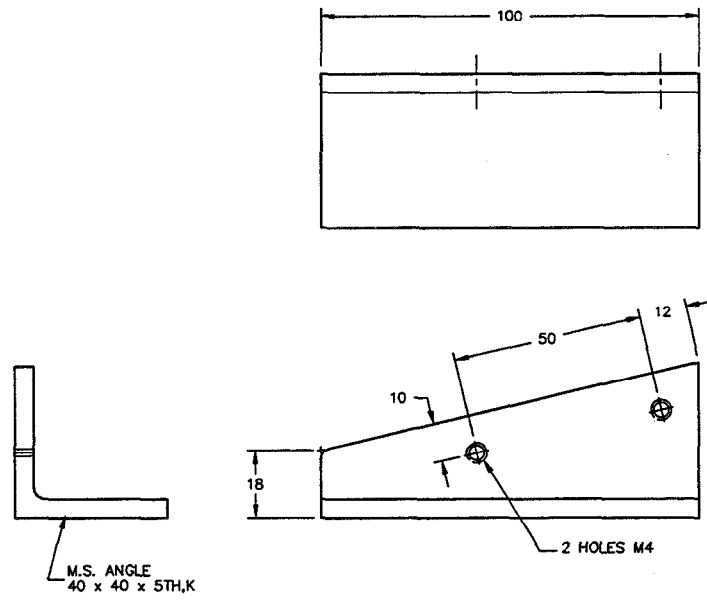


Figure 3 - Mounting Bracket, Switch

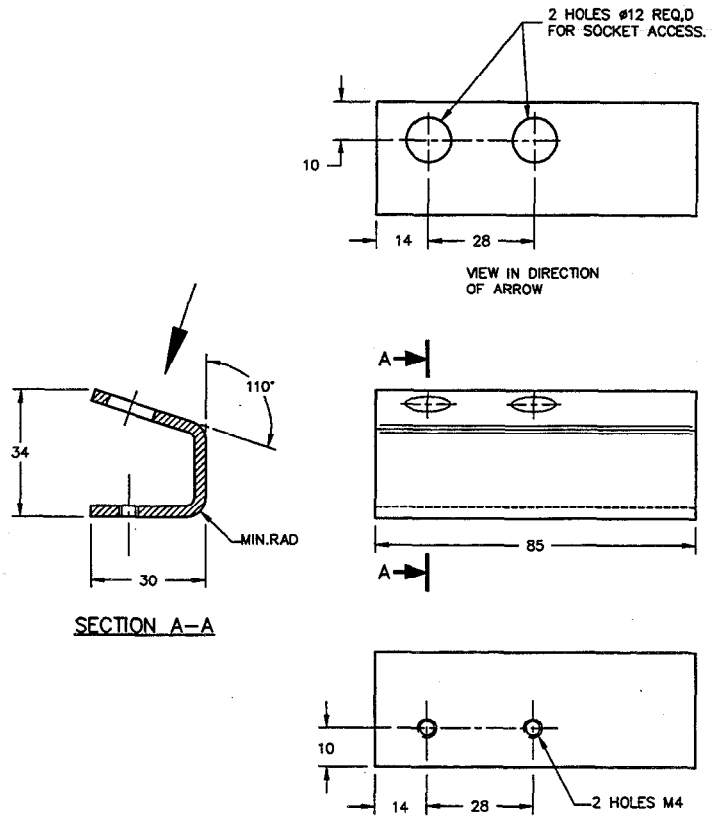


Figure 4 - Mounting Bracket, Sensor

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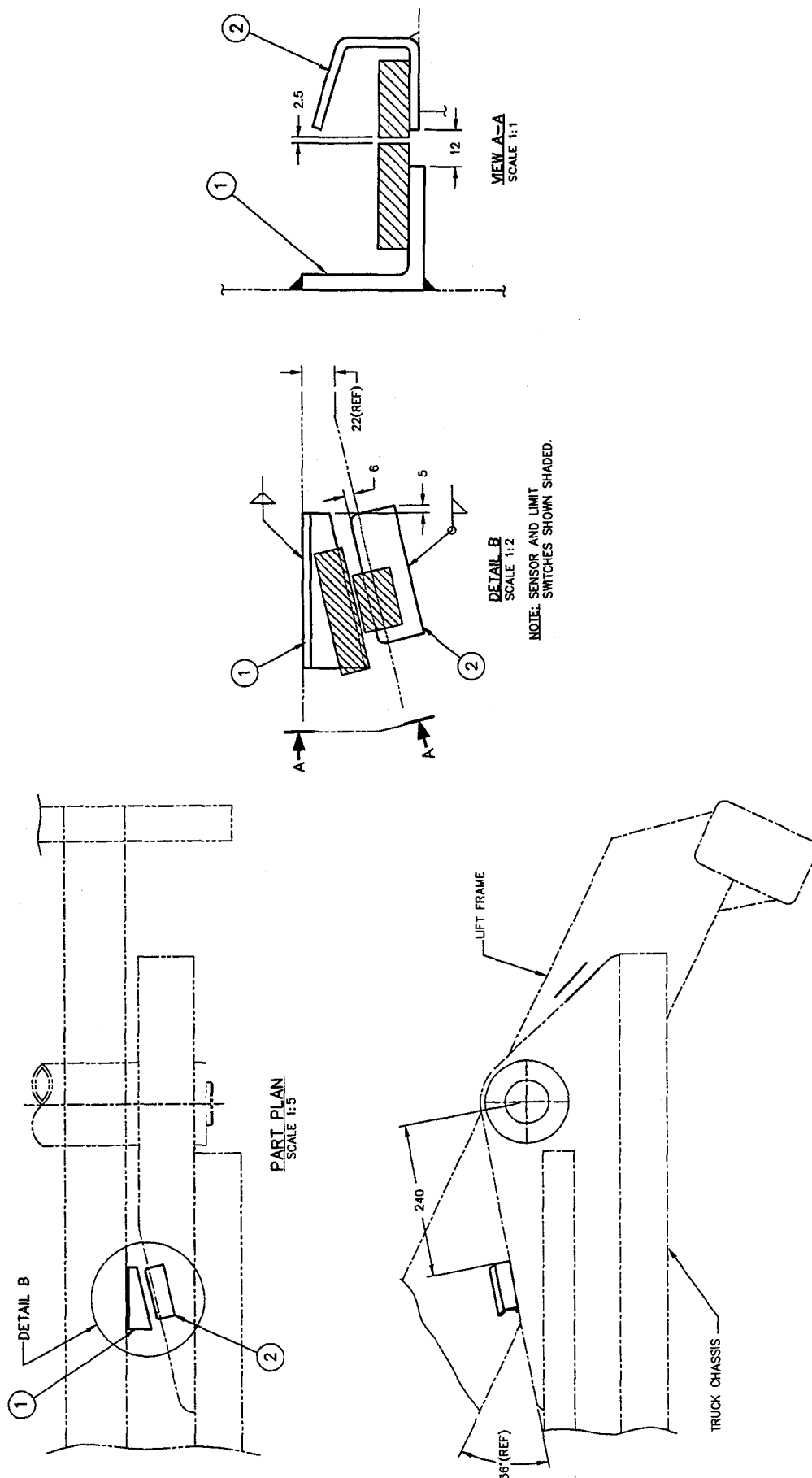


Figure 5 - Lift Frame Switch and Bracket Locations

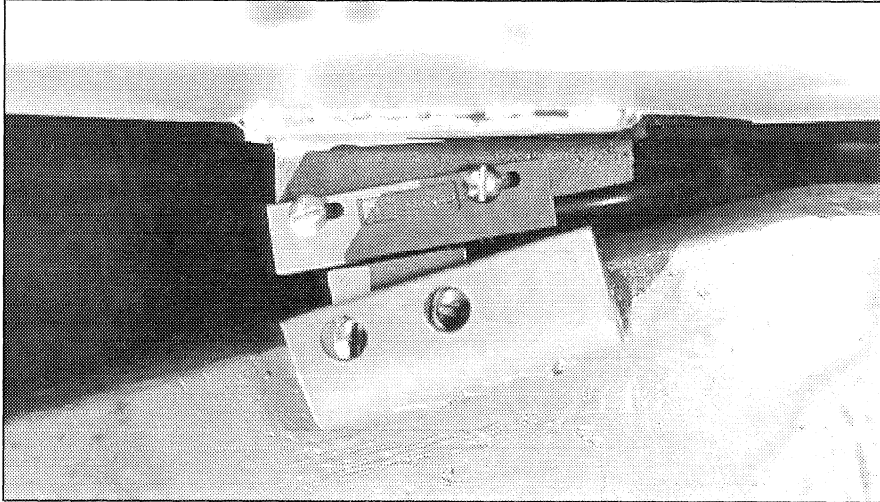
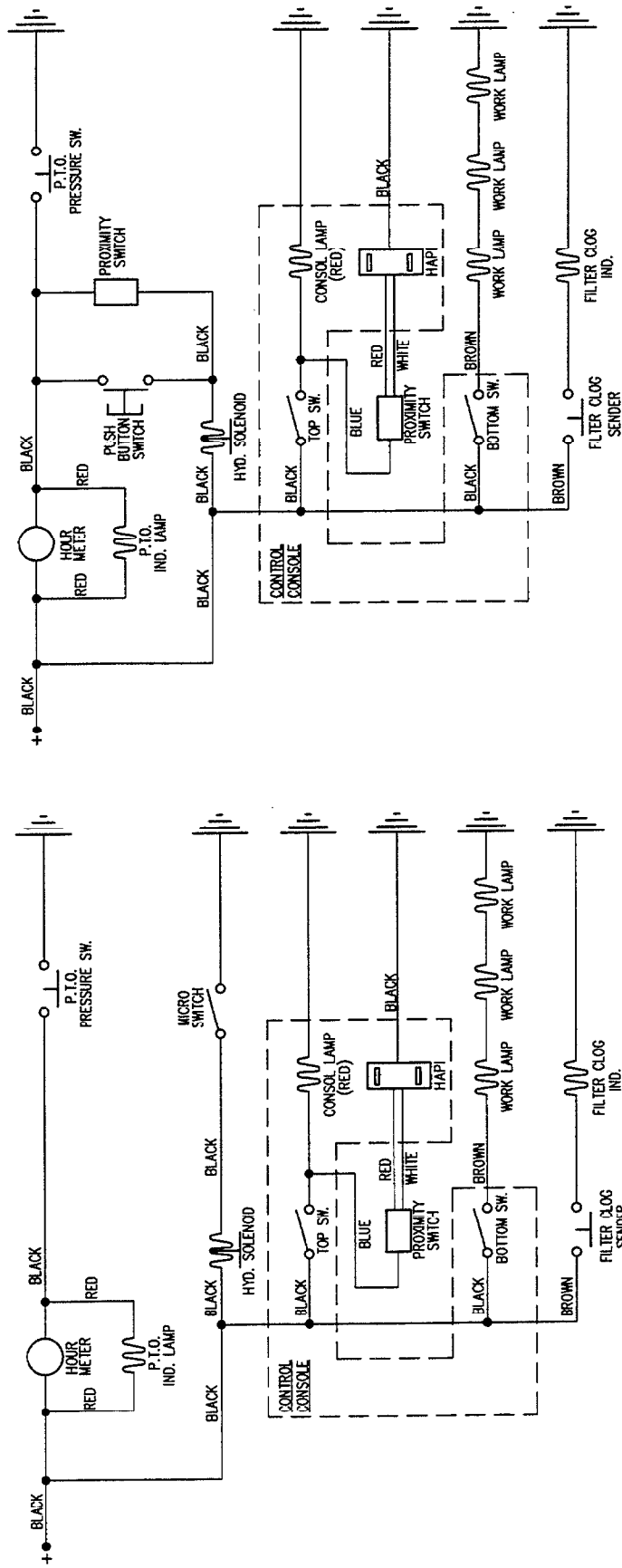


Figure 6 - Gap - Actuator Magnet, Proximity Switch

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AFTER MODIFICATION
(EME1) VEHICLE G 787-8

BEFORE

Figure 7 – Wiring Diagram of Proposed Modification

END

List VEH G 59.0 – Code 2 (Job No 9500283)