TRUCK, GENERAL MAINTENANCE, LIGHT, WINCH, MC2—LAND ROVER 110 6 X 6

LIGHT GRADE REPAIR

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.

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INTRODUCTION

1. This EMEI contains procedures for removing, dismantling, repairing, assembling and installing various components of the Truck, General Maintenance, Winch, MC2 models. Where applicable, instructions for the adjustment, lubrication and minor servicing of these items are included.

Do not use adhesive tapes to seal fuel or oil openings. The adhesive tape is soluble in fuel or oil and can cause contamination. Remove temporary covers before assembling.

2. Prevent dirt and foreign objects from entering any component by placing clean temporary coverings over all exposed openings, including hoses, tubes and lines.

Before removing any electrical system components, disconnect the battery leads and the 415/240-Volt power outlet input cables.

3. When disconnecting electrical connectors, hoses and fittings, remove clamps, as required, to gain slack and avoid damage to connectors and fittings.

4. Discard all used gaskets, seals, cotter pins, tab washers, lock pins, key washers and lock washers. Discard all contaminated fuel and lubricants drained from the truck.

5. Use only those fuels and lubricants specified in the Servicing Instruction, EMEI Vehicle G 209, the User Handbook and this EMEI when replenishing fuel or lubricants.

6. Any fastenings or fittings being tightened to prescribed torques are to have dry, clean threads unless otherwise specified. When specified, thread sealants are to be applied to dry, clean, oil free threads.

7. The engine cooling system contains Nalcool corrosion inhibitor in water at a ratio of 1:12.

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.

8. This vehicle is painted in polyurethane paint.

Associated Publications

9. Reference may be necessary to the latest issue of the following documents:
   a. Defence Road Traffic Instructions;
   b. CES 12107 – Truck, General Maintenance, Land Rover 110, W/Winch, Turbocharged, 6X6, MC2;
   c. Block Scale 2406/31 Special Tools for RAEME – B Vehicles – Truck, Utility and Truck, Light, MC2 (Land Rover Model 110);
   d. EMEI Electrical P 413 – Generator, Engine Accessory, 28-V, 100 A – Light Grade Repair;
   e. EMEI Electrical Q 017-1 – B and C Vehicle/Trailer, Semi-Trailer and Towed Equipment Electrical Connections – Fitting of 12 Pin NATO Plugs and Sockets;
   f. EMEI Vehicle A 029 – Servicing of B Vehicles, Trailers, Motorcycles, Stationary Equipment, Auxiliary and Small Engines;
   g. EMEI Vehicle A 291-5 – General Service B Vehicles Tyre Guide – Operating Instructions;
   h. EMEI Vehicle A 459-2 – Hydraulic Brake Fluid Deterioration, Miscellaneous Instruction;
i. EMEI Vehicle G 203 – Truck, Cargo, Light, MC2, Landrover 110 6X6, All Types – Light Grade Repair;

j. EMEI Vehicle G 240 – Truck, General Maintenance, Light, Winch, MC2 – Land Rover 110 6X6 – Data Summary;

k. EMEI Vehicle G 242 – Truck, General Maintenance, Light, Winch, MC2 – Land Rover 110 6X6 – Technical Description;

l. EMEI Vehicle G 244-1 – Truck, General Maintenance, Light, Winch, MC2 – Land Rover 110 6X6 – Medium and Heavy Grade Repair;

m. EMEI Workshop D 210 – The Use of Fibreglass Reinforced Plastics for the Repair of Equipment;

n. EMEI Workshop D 701 – Repair Policy for Equipment Painted in Polyurethane Paint; and

o. RPS 02209.

10. A number of modifications and improvements have been made during the service life of the vehicle. Reference to the following publications may be required during repair activities:

**NOTE**

Any effect of these publications pertaining to the technical content of this document has been included in the text.

a. EMEI Vehicle G 247-1 – Truck, General Maintenance, Light, Winch, MC2 – Land Rover 110 6X6 – Fitment of Engine Driven Air Compressor;

b. EMEI Vehicle G 247-2 – Truck, General Maintenance, Light, Winch, MC2 – Land Rover 110 6X6 – Replacement of Main Switchboard (Circuit Breaker Panel) Earth Terminal Screw;

c. EMEI Vehicle G 297-7 – Truck, General Maintenance, Light, Winch, MC2 – Land Rover 110 6X6 – Fitment of a Heavy Duty Indicator Flasher Unit; and


**WARNING**

All industrial safety work practices and equipment operating and maintenance instructions pertaining to this EMEI are to be adhered to.

The handling, storage and use of chemical substances are to be in accordance with MOHS, MSDS and EMEI Workshop series requirements.

**Identification Numbers**

11. The location of identification numbers on components of the vehicle are described in Table 1.

<table>
<thead>
<tr>
<th>Serial</th>
<th>Identification Number</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chassis number</td>
<td>Right hand side of the chassis, forward of the spring mounting turret</td>
</tr>
<tr>
<td>2</td>
<td>Chassis nameplate</td>
<td>Left hand seat box, in the cab</td>
</tr>
<tr>
<td>3</td>
<td>Engine number</td>
<td>Left hand side of the engine block</td>
</tr>
<tr>
<td>4</td>
<td>Injection pump identification</td>
<td>Side of the pump</td>
</tr>
<tr>
<td>5</td>
<td>Transmission and transfer case</td>
<td>Rear of the transfer case</td>
</tr>
<tr>
<td>6</td>
<td>Maintenance module</td>
<td>Right hand rear</td>
</tr>
</tbody>
</table>

**Lubricants**

12. The lubricants used with the vehicle are identified in Table 2.
<table>
<thead>
<tr>
<th>Serial</th>
<th>Equipment</th>
<th>Lubricant</th>
<th>Capacity (Litres)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Engine (including filters)</td>
<td>OMD-115</td>
<td>8.5</td>
</tr>
<tr>
<td>2</td>
<td>Transmission</td>
<td>OMD-115</td>
<td>2.7</td>
</tr>
<tr>
<td>3</td>
<td>Transfer case (with PTO)</td>
<td>OMD-115</td>
<td>5.8</td>
</tr>
<tr>
<td>4</td>
<td>Front axle</td>
<td>OEP-220</td>
<td>1.7</td>
</tr>
<tr>
<td>5</td>
<td>Intermediate axle</td>
<td>OEP-220</td>
<td>2.6</td>
</tr>
<tr>
<td>6</td>
<td>Rear axle</td>
<td>OEP-220</td>
<td>2.3</td>
</tr>
<tr>
<td>7</td>
<td>Swivel pin housings</td>
<td>Molytex Grease</td>
<td>EP00 Sachet</td>
</tr>
<tr>
<td>8</td>
<td>Brake master cylinder</td>
<td>OX (Aust) 8</td>
<td>Fill to level</td>
</tr>
<tr>
<td>9</td>
<td>Clutch master cylinder</td>
<td>OX (Aust) 8</td>
<td>Fill to level</td>
</tr>
<tr>
<td>10</td>
<td>Power steering system reservoir</td>
<td>OX-46</td>
<td>1.25</td>
</tr>
<tr>
<td>11</td>
<td>Fanbelt jockey pulley</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>12</td>
<td>Wheel bearings</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>13</td>
<td>Winch cable</td>
<td>Rocol wire rope lube</td>
<td>As required</td>
</tr>
<tr>
<td>14</td>
<td>Radiator inhibitor</td>
<td>Nalcool</td>
<td>As required (1:12 ratio)</td>
</tr>
<tr>
<td>15</td>
<td>Clutch pedal trunnion</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>16</td>
<td>Speedometer cable</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>17</td>
<td>Propeller shaft</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>18</td>
<td>Winch drive line</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>19</td>
<td>Parking brake adjuster</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>20</td>
<td>Windscreen wiper drive cable</td>
<td>XG-274</td>
<td>As required</td>
</tr>
<tr>
<td>21</td>
<td>Winch</td>
<td>OEP-220</td>
<td>2.1</td>
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**ENGINE – GROUP 1**

**Jockey Pulley**

**13. Removal.** Remove the jockey pulley as follows:

- **a.** Slacken the adjusting bolt on the pulley arm (refer Figure 1).
- **b.** Detach the two fanbelts from the pulley.
- **c.** Remove the adjusting bolt from the pulley arm and mounting.
- **d.** Remove the pulley arm and pulley from the engine.
14. **Disassembly.** Disassemble the jockey pulley as follows:
   a. Remove the grease nipple from the pulley bolt.
   b. Secure the pulley arm in a vice.
   c. Remove and discard the lock nut securing the pulley bolt.
   d. Remove the pulley bolt and pulley.
   e. Remove the internal circlip retaining the bearing in the pulley.
   f. Remove the bearing from the pulley.
   g. Clean and degrease the pulley.

15. **Reassembly.** Reassemble the jockey pulley as follows:
   a. Install the bearing in the pulley.

   **NOTE**
   Ensure that the chamfered face is installed first.

   b. Insert the circlip into the pulley.
   c. Install the pulley on the pulley arm with the circlip facing the arm boss.
   d. Insert the pulley bolt and a new lock nut.
   e. Install the grease nipple and lubricate with XG-274.

16. **Installation.** Install the jockey pulley as follows:
   a. Align the pulley arm bolt hole with the mounting hole.
   b. Insert the adjusting bolt.
   c. Fit the two fanbelts in the pulley grooves.
   d. Position the pulley arm to allow a deflection of 5–10 mm on the longest span of the belts.
   e. Tighten the adjusting bolt securely.
COOLING SYSTEM – GROUP 2

Fanbelts

17. **Replacement.** Replace the fanbelts as follows:
   a. Slacken the adjusting bolt on the pulley arm (refer Figure 1).
   b. Rotate the pulley away from the drivebelt.
   c. Loosen the adjusting bolt on the jockey pulley arm.
   d. Detach the drivebelt from the 28-volt alternator and crankshaft pulley.
   e. Loosen the 12-volt alternator mounting bolts and adjusting bolt (refer Figure 2).
   
   ![Figure 2 Fanbelt Replacement](image)

   f. Detach the fanbelt from the crankshaft and water pump drive pulleys.
   g. Remove all three fanbelts from the engine.
   h. Install the inner fanbelt.

   **NOTE**

   Ensure that all three drive pulleys are correctly located.

   i. Swing the 12-volt alternator away from the engine.
   j. Check the tension of the belt by applying moderate thumb pressure to the longest span of the belt.
   k. When a belt deflection of 10–15 mm has been obtained, tighten the adjusting bolt.
   l. Tighten the mounting bolts.
   m. Install the remaining two fanbelts and ensure that the belts are correctly located on the pulleys.
   n. Position the pulley arm to allow a deflection of 5–10 mm on the longest span of the belts.
   o. Tighten the adjusting bolt securely.

**Engine and Cooling Group Specifications**

18. The engine and cooling specifications are detailed in Table 3.

<table>
<thead>
<tr>
<th>Serial</th>
<th>Description</th>
<th>Item</th>
<th>Specification</th>
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<tbody>
<tr>
<td>1</td>
<td>Fanbelt deflection</td>
<td>12-volt alternator</td>
<td>10–15 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28-volt alternator</td>
<td>5–10 mm</td>
</tr>
</tbody>
</table>
ELECTRICAL – GROUP 15

Alternator (28-Volt)

19. **Removal.** Remove the alternator as follows:
   a. Disconnect the batteries.
   b. Slacken the adjusting bolt on the pulley arm (refer Figure 3).
   c. Detach the drivebelt from the alternator pulley.
   d. Tag and disconnect the wiring harness from the alternator.
   e. Remove the two bolts, washers and nuts retaining the alternator to the engine mounting bracket and upper link.

![Figure 3 Alternator (28-Volt) Removal](image)

**WARNING**

The 28-volt alternator is heavy. Care must be taken when removing the alternator or personal injury may result.

f. Remove the alternator.

**NOTE**

Repair procedures for the 28-volt alternator are detailed in EMEI Electrical P 410 series.

20. **Installation.** Install the alternator as follows:
   a. Position the alternator on the engine mounting bracket and insert the long bolt through the bracket and alternator mounting lugs.
   b. Raise the alternator and insert the bolt through the upper link.
   c. Tighten the bolts securely.
   d. Fit the drivebelt around the drive pulley and rotate the jockey pulley arm.
   e. Check the tension of the belt by applying moderate thumb pressure to the longest span of the belt.
   f. When a belt deflection of 5-10 mm has been obtained, tighten the pulley arm retaining bolt securely.
   g. Connect the wiring harness to the alternator and connect the battery.
Wiring Harness

21. **General Precautions.** Exercise the following precautions when working on the wiring harness:

   **CAUTION**

   Arcing wires to earth, to determine if the wire is live, will destroy solid state components.

   a. Use suitable testing meters or circuit testers to trace or locate faults and check circuits.

   b. After tracing electrical faults, before carrying out any electrical repairs, disconnect the batteries, negative terminals first.

   **CAUTION**

   Failure to disconnect the alternators will cause the transistors and diodes to fail as a result of current flow throughout the chassis when arc welding.

   c. Before carrying out any electrical arc welding on the vehicle, disconnect the batteries and both alternators.

   d. Prior to using the drop down side bench on electric arc welding repair tasks ensure the 12/24-volt isolator switch located in the engine compartment is turned OFF and remove the key.

   **CAUTION**

   Reversing battery polarity will cause serious damage.

   e. When installing the batteries, ensure that the terminals are connected to the correct posts.

22. **Replacement.** Replace the wiring harness as follows:

   a. Disconnect the batteries, negative terminals first.

   **NOTE**

   All electrical wiring in the vehicle is colour coded for identification and reference. If necessary, refer to the wiring diagram in EMEI Vehicle G 203, in conjunction with the relevant illustration, when replacing a wiring harness.

   b. Determine which harness is to be replaced and ensure that the replacement harness is of the correct capacity and that the wires are correctly colour coded.

   c. Using the old harness and tags as a guide, connect the wires to the appropriate terminals.

   d. Reconnect the batteries.

   e. Test the function of the components associated with the wiring harness that has been replaced to ensure correct function.

Batteries (24-Volt Installation)

23. **Replacement.** Replace the batteries as follows:

   a. Remove the security clip and pin from the left hand battery carrier (refer Figure 4).

   b. Slide the batteries and carrier clear of the vehicle body until the bridging cable is exposed.

   c. Remove the two wing nuts with flat and spring washers.

   d. Remove the battery box cover.
e. Disconnect the bridging cable from both the positive and negative terminals on the batteries.

f. Remove the cable.

g. Disconnect the remaining cables from the batteries.

h. Remove the nuts and washers securing the battery retaining bracket and remove the bracket.

i. Lift the batteries out of the battery carrier.

j. Install the new batteries in the battery carrier, ensuring that the batteries are installed correctly (refer Figure 5), and secure them with the retaining bracket.

k. Connect the battery cables and refit the battery box cover using the two wing nuts and washers.

l. Slide the battery carrier into the stowed position and secure the carrier with the security clip and pin.

Voltmeter (24-Volt) Vehicle Dashboard

24. **Bulb Replacement.** Replace the bulb as follows:

a. Disconnect the batteries for both the 12-volt and 24-volt systems.

b. Remove the four screws retaining the instrument panel (refer Figure 6).

c. Carefully ease the panel away from the surround.
NOTE

Disconnect the speedometer cable if necessary to allow easier access.

Figure 6 Instrument Panel Light Bulb Replacement

d. Remove the bulb holder from the voltmeter gauge.
e. Tag and disconnect the electrical connections.
f. Remove the nuts securing the gauge to the instrument panel.
g. Remove the gauge.
h. Insert the gauge into the panel and secure with the nuts.
i. Connect the electrical connections, as tagged.
j. Install the bulb holder on the voltmeter gauge.

NOTE

Ensure that the speedometer cable is connected.
k. Install the instrument panel and secure it with the four screws.
l. Connect the batteries.

Transformer (240-Volt to 24-Volt)

25. **Replacement.** Replace the transformer as follows:

a. Open the left hand lift up door of the module.
b. Remove the vice from the stowage bracket located beneath the left side workbench.
c. Disconnect the batteries and any external power supply cables (if connected).
d. Tag and disconnect the wiring harnesses connecting the transformer to the module electrics (refer Figure 7).
**Figure 7  Transformer Removal**

- **e.** Support the weight of the transformer, then remove the wing nuts from the clamping bracket and remove the bracket.
- **f.** Lower and remove the transformer.
- **g.** Install the new transformer and secure it with the clamping bracket and wing nuts.
- **h.** Connect the wiring harnesses to the positions, as tagged, on the transformer.
- **i.** Connect the batteries and external power supply and check operation of the transformer.
- **j.** Position and secure the vice in the stowage bracket, then close the door.

**Power Input Sockets (415 and 240-Volt)**

**26. Removal.** Remove the power socket as follows:

- **a.** Disconnect the batteries and any external power supply cables (if connected).
- **b.** Loosen the bin pack frame mounting bolts.
- **c.** Slide the bin pack mounting frames (installed on the right side of the module) sideways to allow access to the cover panel.
- **d.** Remove the six screws retaining the cover panel to the module wall (refer Figure 8).
- **e.** Remove the panel.

**Figure 8  Power Input Socket Cover Panel Removal**
f. Tag and disconnect the wiring harness from the power inlet socket that is to be removed.
g. Remove the screws, nuts and washers that secure the socket to the module (refer Figure 9).
h. Remove the socket.

![Figure 9 Power Input Socket Removal](image)

27. **Installation.** Install the power socket as follows:
   
a. Apply a bead of sealant to the mating face of the socket.
b. Install the socket in the recess and secure with the screws, nuts and washers.
c. Connect the wiring harness to the socket.
d. Position the cover panel on the wall and secure it with the six screws.
e. Reposition the bin packing frames and ensure that the retaining bolts are tightened securely.
f. Connect the batteries.

**Fluorescent Lighting**

28. **Tube Replacement.** Replace the tubes as follows:
   
a. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.
b. Remove the ten screws retaining the diffuser and remove the diffuser.
c. Slide the fluorescent tube toward the spring loaded tube holder and manipulate the other end of the tube from the light unit.
d. Install the new tube ensuring that the terminal pins are located and the tube is secure (refer Figure 10).
e. Select the correct input voltages on the power distribution switches and check the serviceability of the tube.
f. Position the diffuser on the light unit and secure it with the ten screws.

![Figure 10 Fluorescent Lighting Tube Replacement](image)
29. **Light Unit Replacement.** Replace the light unit as follows:
   a. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.
   b. Remove the ten screws retaining the diffuser and remove the diffuser.
   c. Remove the fluorescent tubes from the light unit.
   d. Tag and disconnect the wiring harness from the block connectors.
   e. Remove the four screws securing the light unit to the roof panel.
   f. Lower the light unit ensuring that the wiring harness is fed through the base.
   g. Remove the light unit.
   h. Feed the wiring harness through the new light unit base.
   i. Position the light unit in the roof panel.
   j. Secure the light unit with the four screws.
   k. Connect the wiring harness to the block connectors.
   l. Install the fluorescent tubes.
   m. Select the correct input voltage on the power distribution switches and check that the lights function.
   n. Position the diffuser on the light unit and secure it with the ten screws.

**Module 24-Volt Work Lights**

30. **Fluorescent Tube Replacement.** Replace the tube as follows:
   a. Remove the four mounting screws securing the lens on the light unit.
   b. Remove the lens.
   c. Remove the fluorescent tube retaining bracket mounting screw (refer Figure 11).
   d. Slide the bracket out of the retaining clip and remove the fluorescent tube.
   e. Install a replacement tube and secure it with the bracket retaining screw.
   f. Install the lens and secure it with the four mounting screws.

31. **Light Unit Replacement.** Replace the light unit as follows:
   a. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.
   b. Remove the four mounting screws securing the lens to the light unit.
   c. Remove the fluorescent tube from the light unit.
d. Tag the wiring harness.

e. Loosen the two harness retaining screws at the connection block and remove the wires from the block (refer Figure 11).

f. Remove the two remaining mounting screws securing the light unit to the panel.

g. Remove the light unit.

h. Position the new light unit near the panel.

i. Feed the electrical wires through the drillings in the base of the light unit and secure the wires to the connection block.

j. Position the light unit on the panel.

k. Fit and secure the two outer light unit mounting screws.

l. Install the fluorescent tube.

m. Secure the tube with the bracket retaining screw.

n. Select the correct input voltage on the power distribution switches and check the operation of the light.

o. Install the lens and secure it with the four mounting screws.

**Module Interior Blackout Lights**

**32. Bulb Replacement.** Replace the bulbs as follows:

a. Remove the screws securing the lens on the light unit.

b. Remove the lens (refer Figure 12).

c. Remove the bulb from the light unit.

d. Install a replacement bulb.

e. Fit and secure the lens with the screws.

**33. Light Unit Replacement.** Replace the light unit as follows:

a. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.

b. Remove the screws securing the lens on the light unit, then remove the lens (refer Figure 12).

c. Tag and disconnect the wiring harness from the light unit.

d. Remove the screws securing the light unit to the panel.
e. Remove the light unit.
f. Position the new light unit on the panel, ensuring that the wiring harness is not trapped.
g. Secure the light unit with the screws.
h. Connect the wiring harness.
i. Select the correct input voltage on the power distribution switches and check the operation of the light.
j. Install and secure the lens with the screws.

**High Level Lights (Rear Door)**

34. **Bulb Replacement.** Replace the bulbs as follows:

   **NOTE**
   
   The module rear lights utilize an identical base and festoon type bulb fitting. Therefore the replacement procedure is identical for each light unit.

   a. Remove the three screws securing the lens to the base of the light unit (refer Figure 13).
   b. Remove the lens.
   c. Replace the bulb.
   d. Install and secure the lens with the three screws.

   ![Figure 13 High Level Lights Bulb Replacement](image)

35. **Light Unit Replacement.** Replace the light unit as follows:

   a. Disconnect the batteries.
   b. Remove the three screws securing the lens to the base of the light unit (refer Figure 13).
   c. Remove the lens.
   d. Tag and disconnect the wiring harness from the light unit base.
   e. Remove the two screws securing the base to the rear door.
   f. Remove the light unit.
   g. Insert the wiring harness through the light unit base.
   h. Secure the base to the rear door with the two screws.
   i. Connect the wiring harness and ensure that the terminals are secure.
   j. Install the bulb and the lens, then secure the lens with the three screws.
   k. Connect the batteries and check the operation of the light.
Switches

36. **Replacement.** Replace the switches as follows:
   a. Disconnect the batteries and any external power cables (if connected).
   b. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.
   c. Remove the two screws securing the switch to the panel.
   d. Tag and disconnect the wiring harness from the light switch.
   e. Connect the wiring harness to the new switch.
   f. Position the switch in the panel.
   g. Secure the switch with the two screws.
   h. Connect the batteries and external power cables (if required).
   i. Select the correct input voltage on the power distribution switches and check the operation of the light.

Circuit Breaker and Power Selection Panel

37. **Circuit Breaker Removal.** Remove the circuit breaker as follows:
   a. Disconnect the batteries and any external power source.
   b. Insert a suitable screwdriver into the upper right hand access slot of the circuit breaker panel cover to engage the locking mechanism.
   c. Lift the screwdriver handle and simultaneously pull the upper right hand part of the cover free of the locking lug (refer Figure 14).
   d. Insert the screwdriver into the lower left hand access slot to engage the locking mechanism.
   e. Push the screwdriver handle down, then pull the left hand corner of the cover free of the locking lug and remove the cover.
   f. Tag and disconnect the wiring from the circuit breaker to be removed.
   g. Insert the screwdriver into the locking bar slot at the base of the circuit breaker.
   h. Lever the locking bar away from the circuit breaker body to disengage the locking lug from the mounting rail.
   i. Remove the circuit breaker.

38. **Circuit Breaker Installation.** Install the circuit breaker as follows:
   a. Position the circuit breaker on the mounting rail and snap it into position, ensuring the locking lugs engage the mounting rail.
   b. Connect the wiring to the circuit breaker.
c. Position the circuit breaker panel cover over the four corner posts and press the cover into its locked position.

d. Connect the batteries and the external power source and test the operation of the circuit breaker.

Heater (Late Type and Early Type)

39. **Late Type Removal.** Remove the heater as follows:

   a. Disconnect the batteries and any external power supply cables (if connected).
   b. Remove the battery charger power point from the mounting block (refer to paragraph 45).
   c. Tag and disconnect the power supply wires (blue and brown) from the insulated connectors and the earth wire (green) from the earth terminal on the rear of the power point.
   d. Loosen the gland nut on the power point housing and withdraw the cable from the power point.
   e. Pull the spring loaded retaining lugs clear of the heater.
   f. Remove the heater from the bracket (refer Figure 15).

![Figure 15 Late Type Heater Assembly Removal](image)

40. **Installation.** Install the heater as follows:

   a. Locate the heater centrally in the mounting bracket, ensuring that the locating lugs are correctly positioned on the heater.
   b. Reposition the spring loaded retaining lugs over the heater.
   c. Pass the heater cable through the gland nut.
   d. Reconnect the previously tagged wires to the insulated terminal and the earth terminal.
   e. Tighten the gland nut.
   f. Install the power point (refer to paragraph 45).
   g. Test the operation of the heater.

41. **Early Type Removal.** Remove the heater as follows:

   a. Disconnect the batteries and any external power supply cables (if connected).
   b. Remove the battery charger power point from the mounting block (refer to paragraph 45).
c. Tag and disconnect the power supply wires (blue and brown) from the insulated connectors and the earth wire (green) from the earth terminal on the rear of the power point.
d. Loosen the gland nut on the power point housing and withdraw the cable from the power point.
e. Remove the two mounting bolts securing the end plate to the heater mounting bracket then lift the plate out of the locating slots in the heater.
f. Remove the heater from the bracket (refer Figure 16).

![Early Type Heater Assembly Removal](image.png)

**Figure 16** Early Type Heater Assembly Removal

42. **Installation.** Install the heater as follows:
   a. Locate the heater centrally in the mounting bracket.
   b. Engage the end plate angle piece in the heater locating slot.
   c. Align the end plate mounting holes with the heater bracket root nuts.
   d. Fit the two mounting bolts and tighten them securely.
   e. Pass the heater cable through the gland nut.
   f. Reconnect the previously tagged wires to the insulated terminal and the earth terminal.
   g. Tighten the gland nut.
   h. Install the power point (refer to paragraph 45).
   i. Test the operation of the heater.

**Battery Charger**

43. **Removal.** Remove the battery charger as follows:
   a. Disconnect the batteries and external power supply cables (if connected).
   b. Open the left hand lift up door of the module.
   c. Remove the vice from the stowage bracket (located beneath the left side workbench).
   d. Remove the circuit breaker and power selection panel cover (refer to paragraph 37).
   e. Tag and disconnect the battery charger output leads at the selection panel.
   f. Whilst supporting the battery charger, remove the two wing nuts and washers from the supporting clamp then remove the clamp.
   g. Carefully lower and remove the battery charger.
44. **Installation.** Install the battery charger as follows:
   a. Place the battery charger in the stowage area beneath the left workbench.
   b. Feed the battery charger output leads to the circuit breaker and power selection panel.
   c. Align the battery charger in its mountings.
   d. Fit the supporting clamp and secure it with two wing nuts and washers.
   e. Connect the battery charger power lead to the power outlet.
   f. Connect the battery charger output leads at the circuit breaker and power selection panel.
   g. Replace the panel cover (refer to paragraph 38).
   h. Connect the batteries and an external power supply cables (as necessary) and test the operation of the battery charger.

**Power Points (240-Volt)**

45. **Replacement.** Replace the power points as follows:
   a. Disconnect the batteries and external power supply cables (if fitted).
   b. Remove the two plastic plugs to gain access to the screws securing the power point to the wall socket.
   c. Remove the screws.
   d. Carefully remove the socket.
   e. Tag the wiring harness and disconnect the wires.
   f. Remove the power point.
   g. Connect the wiring harness to the new power point terminals and tighten the screws securely.
   h. Position the power point in the wall socket and secure it with the two screws.
   i. Replace the two plastic plugs.
   j. Connect the batteries and external power supply cables.
   k. Test the operation of the power point.

**Isolator Switch**

46. **Removal.** Remove the isolator switch as follows:
   a. Disconnect the batteries.
   b. From under the bonnet remove the bolts and lock nuts securing the isolator switch mounting bracket to the left hand mudguard (refer Figure 17).
   c. Discard the lock nuts.
   d. Turn the switch and bracket assembly to one side to access the terminal protection plate retaining bolts.
   e. Remove the bolts and the protection plate.
   f. Invert the assembly and tag and disconnect the wiring from the terminals on the bottom of the switch (refer to Figure 17 for wiring diagram).
   g. Remove the assembly from the engine compartment.
   h. Remove the key from the switch socket (if installed).
   i. Remove the switch retaining bolts and nuts.
   j. Separate the switch from the mounting bracket.
47. **Installation.** Install the isolator switch as follows:
   a. Position the isolator switch on the mounting bracket.
   b. Install the retaining bolts and nuts and tighten them securely.
   c. Position the switch and bracket assembly (inverted) in the engine compartment.
   d. Connect the wiring to the terminals and tighten the nuts securely.
   e. Position the terminal protection plate on the bracket.
   f. Install the two retaining bolts and tighten them securely.
   g. Turn the assembly over (terminals down) and place the mounting bracket against the suspension support plate and mudguard (on the left hand side of the engine compartment).
   h. Align the bolt holes, then install the mounting bolts, together with new lock nuts.
   i. Tighten the bolts and nuts securely.
   j. Connect the batteries and check that the isolator switch functions correctly.

**Wiring Diagram**

48. The electrical schematic wiring diagram is shown in Figure 30.

**Electrical Specifications**

49. The electrical specifications are detailed in Table 4.

<table>
<thead>
<tr>
<th>Serial</th>
<th>Description</th>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drive belt deflection</td>
<td>28-volt alternator</td>
<td>5–10 mm</td>
</tr>
</tbody>
</table>

**Electrical-Alternator Fault Finding**

50. The electrical-alternator fault finding is detailed in Table 5.
Table 5  Electrical-Alternator Fault Finding

<table>
<thead>
<tr>
<th>Serial</th>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alternator not charging.</td>
<td>Worn or slack belt.</td>
<td>Tighten or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worn or dirty brushes.</td>
<td>Clean or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotor faulty.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor connection in charging circuit.</td>
<td>Rectify.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open circuit or faulty field diode.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Defective regulator.</td>
<td>Replace regulator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rectifier diode(s) defective.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td>2</td>
<td>Irregular charging.</td>
<td>Worn or slack belt.</td>
<td>Tighten or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worn or dirty brushes.</td>
<td>Clean or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rectifier diode(s) defective.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open or short-circuited stator.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Defective regulator.</td>
<td>Replace regulator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor connection in charging circuit.</td>
<td>Rectify.</td>
</tr>
<tr>
<td>3</td>
<td>Over charging.</td>
<td>Defective regulator.</td>
<td>Replace regulator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High resistance or poor connection</td>
<td>Rectify.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in regulator sensing line.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose battery terminals.</td>
<td>Rectify.</td>
</tr>
<tr>
<td>4</td>
<td>Alternator noisy.</td>
<td>Defective bearings.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose fan or pulley.</td>
<td>Rectify.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loose alternator mountings.</td>
<td>Rectify.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Defective rectifier.</td>
<td>Replace alternator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short circuited stator.</td>
<td>Replace alternator.</td>
</tr>
</tbody>
</table>

BODY – GROUP 17
Side Door

51. **Removal.** Remove the side door as follows:
   a. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.
   b. Open the side door fully, allowing the supports to be utilized.
   c. Remove the plate (adjacent to the forward mounted light unit) to gain access to the wiring harness.
   d. Tag and disconnect the wiring harness from the door.
   e. Remove the rivets securing the weather strip to the module (refer Figure 18).
   f. Support the door on suitable stands.
   g. Disconnect the two gas struts by removing the wire clips.
   h. The struts can now be detached from the ball joint and placed to one side.
   i. Remove the stands and lower the door.
   j. With the aid of an assistant, remove the nine bolts securing the hinges to the door.
   k. Remove the door.
Figure 18  Door Weather Strip Removal

52. **Installation.** Install the side door as follows:
   a. Position the door on the module.
   b. Install the nine bolts that retain the hinges.
   c. Tighten the bolts securely, ensuring that the door closes correctly.
   d. If the door fails to close correctly, slacken the bolts and reposition the door on the hinges, then retighten the bolts.
   e. Raise the door and support it on suitable stands.
   f. Connect both gas struts to the ball joints.
   g. Secure the ball joints with the wire clips.
   h. Remove the stands.
   i. Connect the wiring harness to the door in the positions as tagged.
   j. Install the cover plate.
   k. Position the weather strip, then rivet the strip to the module.
   l. Select the correct input voltage on the power distribution switches and check the operation of the lights on the door.
   m. Close the door and connect the batteries.

**Side Door Locking Mechanism**

53. **Removal.** Remove the locking mechanism as follows:

   ![Warning Icon]

   **WARNING**

   Do not carry out repairs/adjustments to the module side doors without them being fully supported and locked

   a. Open the side door fully allowing the supports to be fully utilized and locked.
   b. With the locking handle in the open (raised) position, mark the position of the operating rod cranks (located at the outer ends of the operating rod) on the side door.
   c. Loosen the four grub screws clamping the operating rods to the handle mechanism.
   d. Slide the operating rods clear of the handle body.
e. Remove the four-cheese head screws, nuts and washers securing the pull down handle to the inside of the door.
f. Remove the pull down handle and plate.
g. Remove the remaining six Phillips-head mounting screws.
h. Lift the handle mechanism out of the door.

54. Installation. Install the locking mechanism as follows:
   a. Position the handle mechanism in the door and secure it with the six Phillips-head mounting screws.
   b. Insert the four cheese-head mounting screws through the handle mechanism and door.
   c. Fit the pull down handle with the mounting plate and secure it with the four mounting nuts and washers.
   d. Slide one operating rod into the handle mechanism.
   e. Match up the alignment marks at the operating rod crank end.
   f. Clamp the rod at the handle mechanism with the two grub screws.
   g. Repeat steps d to f, for the adjoining operating rod.

Prior to closing the door ensure the locking handle is in the raised position

h. Close the side door under control. Check that both the operating rod cranks engage the body lock plates smoothly.
i. Close the locking handle; checking that the operating rod crank ends are located fully home in the body lock plates and the rods are not under tension preventing the locking handle from fully closing.
j. Adjust the rods individually (as required), by loosening the rod clamping screws at the handle mechanism and turning the rods.
k. On completion of the adjustments repeat steps h and j.

Rear Door Window

55. Window Replacement. Replace the window as follows:

   NOTE

   It will be necessary to utilize a second person to assist in the replacement of the rear door window.

   a. With an assistant supporting the rear window (refer Figure 19) insert a screwdriver into the extrusion seal channel and lever a section of the seal free of the extrusion.
   b. Pull the remainder of the seal out of the extrusion then remove the window.
   c. Remove all trace of hardened sealer from the window frame and window.
d. Apply a bead of sealant to the seal channel in the frame (refer Figure 20).

NOTE
The inside face of the acrylic plastic can be determined by the etched motif on its surface.

e. Position the window in the frame.

f. With an assistant maintaining the window in position, fit the seal into the extrusion seal channel with the join of the seal at the bottom of the frame (refer Figure 20).

Front Window

56. Replacement. Replace the window as follows:

NOTE
It will be necessary to utilize a second person to assist in the replacement of the front window.

a. Remove the cabin rear window (refer to EMEI Vehicle G 203 – GROUP 17).

b. With an assistant supporting the front window (refer Figure 21) insert a screwdriver into the extrusion seal channel and lever a section of the seal free of the extrusion.

c. Pull the remainder of the seal out of the extrusion.
d. Remove the window.
e. Remove all trace of hardened sealer from the window frame and window.

**Figure 21** Module Front Window Removal

f. Apply a bead of sealant to the seal channel in the frame (refer Figure 22).

**NOTE**

The inside face of the acrylic plastic can be determined by the etched motif on its surface.

g. Position the window in the frame.
h. With an assistant maintaining the window in position, fit the joint of the seal at the bottom of the frame (refer Figure 22).
i. Replace the cabin rear window (refer to EMEI Vehicle G 203 – GROUP 17).

**Figure 22** Front Window Frame - Applying Sealant

**Rear Door**

57. **Removal.** Remove the door as follows:

**WARNING**

This door is heavy. Ensure door is suitably supported while removing gas struts and hinges.

a. Position the rear door in the fully opened position.
b. Place suitable supports beneath the door to support the weight.
c. Remove the screws securing the wiring conduit mounting plate to the door.
d. Move the plate to one side to gain access to the wiring harness connector.
e. Tag and disconnect the rear door electrical wiring from the connector.
f. Loosen the upper gas strut ball lock nut and unscrew the ball from the rear door frame.
g. Repeat the procedure for the opposite side (refer Figure 23).

h. Lay the gas struts to one side.

![Figure 23 Upper Gas Strut Mounting Removal](image)

i. Remove the sixteen screws and lock washers securing the four hinges to the upper door opening (refer Figure 24).

j. Discard the lock washers.

k. With the aid of an assistant, carefully remove the supporting stands.

l. Remove the rear door.

![Figure 24 Rear Door Hinge Removal](image)

58. **Installation.** Install the door as follows:

a. With the aid of an assistant, align the rear door hinges with the mounting points on the upper door opening and support on suitable stands (refer Figure 24).

b. Install the sixteen screws and tighten them securely.

c. Screw the upper gas strut and ball into the door opening frame and tighten the lock nut (refer Figure 23).

d. Repeat the procedure for the opposite side.
e. Connect the rear door electrical wiring to the connector.
f. Position and secure the conduit mounting plate to the door.
g. Check the operation of the rear door lights.

**Door Gas Struts**

59. **Removal.** Remove the gas struts as follows:
   a. Position the rear door in the fully opened position.
   b. Place suitable supports beneath the door to support the weight.

   **NOTE**
   
   It is advisable to remove one strut at a time; this allows the door to be partially
   supported.

   c. Remove the two spring clips locking the ball joint cup on the ball.
   d. Remove the gas strut.
   e. Unscrew the shaft ball end and remove the spring, flat washer and locking sleeve.

60. **Inspection.** Inspect the gas struts as follows:
   a. Check the compression pressure of the strut, and replace it if the operation is not smooth.
   b. Replace the strut if oil leaks are present.

61. **Installation.** Install the gas struts as follows:
   a. Fit the locking sleeve, flat washer and spring on to the gas strut shaft and install the ball end.
   b. Install the strut on the two ball ends and secure it with the spring clips.
   c. Remove the supports and lower the door.

**Rear Door Locking Mechanism**

62. **Removal.** Remove the locking mechanism as follows:

   **WARNING**

   Do not carry out repairs/adjustments to the module rear door without it being
   fully supported and locked.

   a. Open the rear door fully allowing the supports to be fully utilized and locked.
   b. Remove the centre inner lock plate mounting screws.
   c. Remove the plate complete with the inner door locking handle.
   d. Remove the two screws securing the exterior rear door handle and extract the handle from the drive.
   e. Remove the left and right hand door catch cover mounting bolts.
   f. Lift the operating rods complete with door catch assemblies out of the rod retaining clips.
   g. Drill out the four rivets retaining the drive and rod assembly to the door mounting bracket.
   h. Remove the assembly from the door.
   i. Remove the left and right hand door catch assembly mounting bolts (one per side) and separate the
      catches from their covers.
   j. Disconnect the operating rods from the door catch operating arms.
63. **Installation.** Install the locking mechanism as follows:

   a. Connect the operating rods to the left and right hand door catch operating arms.
   b. Secure the left and right door catch covers to their respective door catch with the mounting bolts (one per side).
   c. Fit the drive and rod assembly to the door mounting bracket and secure it with four rivets.
   d. Fit the operating rods into their retaining clips on the door and position the door catch covers on the door.
   e. Secure each cover with four mounting bolts.
   f. Insert the exterior door handle into the drive assembly and secure it to the mounting plate with two screws.
   g. Insert the inner door lock handle hollow shaft into the drive and align the lock mounting plate.
   h. Install the six mounting screws and tighten them securely.
   i. Close the door under control and check that each striker engages the door catches smoothly and the catches lock.
   j. To adjust the strikers loosen the striker plate bracket mounting screws and reposition the striker as required.
   k. Tighten the mounting screws securely after each adjustment.

Rear Step

64. **Removal.** Remove the step as follows:

   **NOTE**
   
   Ensure that the step assembly is in the up position (closed) to allow access to the eight screws securing the step hinges to the rear cross-member.

   a. Support the step assembly with a suitable jack or similar device.
   b. Remove the eight hexagon-headed screws and the two lower bolts securing the step assembly to the rear crossmember (refer Figure 25).

   ![Figure 25 Rear Step Removal](image)

   c. With the aid of an assistant carefully manipulate the step assembly over the pintle hook.
   d. Lower the jack and remove the step.
65. **Disassembly.** Disassemble the step as follows:
   a. Using a suitable drift, from the left side of the step, drive the hinge pin through the hinges (refer Figure 26).
   b. Using a suitable drift, drive the hinge pin through the hinges securing the kick plate to the tread step.
   c. Separate the step and the kick plate.
   d. Using a suitable drift, drive the roll pin from the catch retainer.
   e. Remove the washers and the spring from the step.
   f. Discard the roll pin.

66. **Inspection.** Inspect the hinge pins for wear or distortion and the eye of the hinges for ovality, replace as necessary.

67. **Reassembly.** Reassemble the rear step as follows:
   a. Position the spring, the washer and the catch retainer in the tread step.
   b. Install a new roll pin.
   c. Align the mounting points of the tread step and the kick plate.
   d. Using a suitable drift, drive the pin into position from the right side.
   e. Position the hinges on the kick plate.
   f. Drive the hinge pin through the hinges and the kick plate tunnel.

68. **Installation.** Install the rear step as follows:
   a. Ensure that the step assembly is in a closed position.
   b. Using a suitable jack, lift the step into position until the hinge holes align with the mounting points.
   c. Install the eight hexagon-headed screws and the two lower bolts securing the step to the rear crossmember and tighten them securely.
   d. Check the fold out/fold in functions of the step assembly for satisfactory operation.

**Bin Pack Mounting Frame**

69. **Removal.** Remove the frame as follows:
   a. Remove the fire extinguisher (located in the rear corner of the module).
   b. Remove all equipment that may be stowed inside the bins.
   c. Remove the bins from the frame to allow access to the four mounting bolts (refer Figure 27).
   d. Remove the four bolts, then remove the frame from the module.
70. **Installation.** Install the frame as follows:
   a. Position the frame on the Unistrut tracks.
   b. Insert the four bolts into the retaining plates and tighten the bolts securely.
   c. Install the bins into the frame and stow the equipment.
   d. Install the fire extinguisher.

**Side Bench**

71. **Removal.** Remove the bench as follows:
   a. Remove the four bolts retaining the oxy-acetylene equipment basket to the Unistrut tracks.
   b. Using suitable lifting equipment, remove the basket.
   c. Open the left side door and lower the fold down bench on to a suitable support.
   d. Remove the drawers from the bench.
   e. Remove the eight bolts securing the bench to the Unistrut tracks.
   f. Remove the bench from the module.

72. **Installation.** Install the bench as follows:
   a. Install the bench on to the Unistrut tracks, ensuring that the bench abuts the battery charger and transformer bench.
   b. Secure the bench to the Unistrut tracks with the eight bolts and tighten the bolts securely.
   c. Raise the fold down bench to the stowed position and connect the safety chain.
   d. Check that the locking mechanism functions correctly.
   e. Adjust the mechanism as necessary.
   f. Close the side door.
   g. Install the drawers in the bench.
   h. Position the oxy-acetylene equipment basket on the Unistrut tracks and secure with it the four bolts.

**Fold Down Bench**

73. **Removal.** Remove the bench as follows:
   a. Open the side door and lower the fold down bench on to a suitable support.
   b. Remove the nuts from the bench pivot bolts and remove the bolts.
   c. Remove the bench from the vehicle.
Remove the two bolts securing each of the bench supports to the Unistrut tracks and remove the supports together with the insulators.

74. Installation. Install the bench as follows:
   a. Position the fold down bench supports and insulators on the Unistrut tracks.
   b. Install the retaining bolts, but do not tighten them.
   c. Support the bench and align the pivot bolt holes in the support arms with those in the supports.
   d. Install the pivot bolts and nuts, but do not tighten them.
   e. Raise the bench to the stowed position and check that the bench moves freely up and down within the side door opening, without fouling.
   f. Tighten the support retaining bolts securely.
   g. Raise the fold down bench to the stowed position and connect the safety chain.
   h. Check that the locking mechanism functions correctly and adjust the mechanism as necessary.
   i. Close the side door.

Front Benches

75. Removal. Remove the benches as follows:
   a. Remove the side bench (refer to paragraph 71).
   b. Remove the battery charger (refer to GROUP 15).
   c. Remove the transformer (refer to GROUP 15).
   d. Remove the six bolts securing the centre front bench section to the left and right hand front sections.
   e. Remove the centre section of the front bench.
   f. Remove the eight bolts securing the front left and right hand bench sections to the Unistrut tracks.
   g. Remove the bench sections.

Installation. Install the benches as follows:
   a. Install the left and right hand front bench sections on to the Unistrut tracks.
   b. Slide the sections into position and install the eight mounting bolts, but do not tighten them at this stage.
   c. Install the centre section of the front bench and secure it to the left and right hand bench sections with the six mounting bolts.
   d. Tighten the eight mounting bolts securing the benches to the Unistrut tracks.
   e. Install the transformer (refer to GROUP 15).
   f. Install the battery charger (refer to GROUP 15).
   g. Install the side bench (refer to paragraph 72).

Publications Locker Door

77. Replacement. Replace the locker door as follows:
   a. Open the door on the locker.
   b. Remove the rivets securing the door hinge to the locker (refer Figure 28).
   c. Transfer the locker door to a work bench.
   d. Remove the rivets securing the hinge to the door.
   e. Align the door hinge on the plastic door mounting holes.
   f. Secure the hinge with new rivets.
   g. Position the door and hinge on to the locker and secure it with new rivets.
Rear Mudguard

78. **Replacement.** Replace the mudguard as follows:
   a. Remove the bolts washers and nuts securing the mudguard assembly to the module frame and body.
   b. Manoeuvre the mudguard over the rear wheels.
   
   **NOTE**
   To provide easier access to the retaining bolts, the rear wheels could be removed.
   c. Position the new mudguard on the frame and module body.
   d. Secure the mudguard with the bolts, washers and nuts.

Fibreglass Damage

79. All fibreglass damage repairs are to be carried out in accordance with EMEI Workshop D 210.
MODULE COOLING – GROUP 18

Electric Fan

80. Removal. Remove the fan as follows:
   a. Turn OFF the power distribution switches located above the circuit breaker and power selection panel.
   b. Tag and disconnect the wiring harness from the fan (refer Figure 32).
   c. Remove the two bolts that secure the fan to the mounting bracket.
   d. Remove the fan.

81. Installation. Install the fan as follows:
   a. Fit the fan assembly to the mounting bracket and secure it with the two bolts.
   b. Connect the wiring harness.
   c. Select the correct input voltage on the power distribution switches and check the operation of the fan.
Figure 30 Wiring Diagram

END

Distribution List: VEH G 20.3 – Code 2 (Maint Level)
(Sponsor: LV SPO, Light B Vehicles)
(Authority TRAMM)