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 modification of the winch drum by the addition of a groove filler and the replacement of the existing winch ropes and 7.1 mm winch chain assemblies fitted to Land Rover 110 4x4 and 6x6. The new winch rope has a swivel latchlock hook fitted to the end and the rope has been increased from 1770 grade to 2070 grade. The rope diameters remain the same but the capacity of the rope now exceeds the bare drum capacity of the winch.

2. The CES chains have been upgraded in some cases and can be either stowed with other CES items or remain attached to the swivel latchlock hook on the end of the rope. A 10 mm diameter chain single leg has now been specified for all variants and the applicable CES have been amended to reflect the new chain. Variants with an existing CES chain equal to or exceeding 10 mm diameter will retain that chain until a replacement item is required. Table 4 shows the various CES chains currently in service and details whether a new chain will be provided as part of this modification, in accordance with HQ Log Comd EMP 19/93.

General

3. Associated Publications. The latest issue of the following references should be read in conjunction with this instruction:
   a. EMEI Workshop A 850 - Modifications, Trial Modifications and Local Modifications to Equipment;
   b. EMEI Workshop A 851 - Modifications to Equipment - Use of Modification Record Plates and Documentary Requirements;
   c. HQ Log Comd EMP 19/93 - Winch Chain and Rope Replacement; and
   d. EMEI Vehicle G 297-9 - Truck, Light, MC2, Land Rover 110 6x6 - Rework of the Winch Driveshaft.


5. Modification Application. All Land Rover 110 4x4 and 6x6 fitted with winch.


7. Priority - Group 1 - This priority only limits winch operation. Continued operation of the winch is authorised provided that:
   a. the winch drum has a complete bottom layer of rope on the drum during winching operations, and
   b. the modification is completed within 20 working days of receipt of stores in the owner unit.

8. Action Required. The modification to the winch drum may be carried out by RAEME tradesmen in units or sub units authorised to carry out unit, field or base repairs. The later type winch rope (see Fig 1) may have already been supplied and fitted to some vehicles and those vehicles will only require the winch drum grooves to be filled as detailed in Para 12. The replacement of the rope may be carried out by unit operators under supervision by RAEME tradesman. The recording action detailed in Para 14 is the responsibility of the supervising tradesman.

9. Estimated Manhours to Perform. For initial planning purposes only, it is estimated that this modification will take 2.0 manhours to perform.

10. Items to be Removed. The items detailed in Table 1 are to be disposed in accordance with instructions detailed in GENERAL P series.
VEHICLE G 187-8  
Issue 1, Dec 93  

11. **Stores Required.** The stores required are listed in Tables 2 and 3. The stores detailed in Table 2 are to be ordered from Brisbane Log Gp after establishing the requirement for ropes and chains, as detailed in Paras 12 and 13 and HQ Log Comd EMP 19/93. Issue of stores will be conducted in stages and stores enquiries are to be directed to the Regional Fleet Manager at supporting Logistic Complexes or the Fleet Manager at HQ Log Comd on (03) 282 5436. Unit representatives should conduct follow up action through Regional Fleet Managers if stores have not been received within three months of the issue date of this instruction. The stores detailed in Table 3 are to be demanded through normal supply channels on a required basis.

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**Table 1 - Stores to be Disposed of IAW General P Series**

<table>
<thead>
<tr>
<th>Item</th>
<th>NSN</th>
<th>Mfr Part No</th>
<th>Description</th>
<th>Unit of Issue</th>
<th>Qty per Equp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4010-66-130-4828</td>
<td>HYL8780</td>
<td>Wire Rope Assembly 10 mm dia, 1770 grade, 48 m lg, with attachments, for Land Rover 110 4x4</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4010-66-128-5833</td>
<td>HYL8881</td>
<td>Wire Rope Assembly 11 mm dia, 1770 grade, 45 m lg, with attachments for Land Rover 110 6x6</td>
<td>ea</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 2 - Stores Required to Replace Winch Rope and Chain Assembly Land Rover 110 4x4 and 6x6 (To be provided through normal supply channels from Brisbane Log Gp as detailed in HQ Log Comd EMP 19/93).**

<table>
<thead>
<tr>
<th>Item</th>
<th>NSN</th>
<th>Mfr Part No</th>
<th>Description</th>
<th>Unit of Issue</th>
<th>Qty per Equp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4010-66-128-6448</td>
<td>AYG 8207</td>
<td>Rope and Hook Assembly, Grade 2070, 10 mm dia, fitted with swivel latchlock hook, for Land Rover 110 4x4</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4010-66-128-6449</td>
<td>AYG 8208</td>
<td>Rope and Hook Assembly, Grade 2070, 11 mm dia, fitted with swivel latchlock hook, for Land Rover 110 6x6</td>
<td>ea</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>4010-66-128-0450</td>
<td>AYG 8200</td>
<td>Chain, Single Leg, 10 mm, 3.2 m long</td>
<td>ea</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 3 - Stores Required to Modify Winch Drum (To be demanded through normal supply channels)**

<table>
<thead>
<tr>
<th>Item</th>
<th>NSN</th>
<th>Description</th>
<th>Unit of Issue</th>
<th>Qty per Winch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9510-66-097-0649</td>
<td>Metal Bar, Carbon Steel, Cold Rolled, Hound, 10 mm dia</td>
<td>mr</td>
<td>0.5 m</td>
</tr>
<tr>
<td>2</td>
<td>8010-66-025-5001</td>
<td>Enamel, Olive Drab</td>
<td>As required</td>
<td>As required</td>
</tr>
<tr>
<td></td>
<td>8010-66-025-5002</td>
<td>1 Litre Container</td>
<td>As required</td>
<td>As required</td>
</tr>
<tr>
<td>3</td>
<td>8010-66-010-4687</td>
<td>Primer, Coating, Metal, Red oxide</td>
<td>As required</td>
<td>As required</td>
</tr>
<tr>
<td></td>
<td>8010-66-011-0476</td>
<td>1 Litre container</td>
<td>As required</td>
<td>As required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Litre container</td>
<td>As required</td>
<td>As required</td>
</tr>
</tbody>
</table>
Early Winch Rope and 7.1 mm Chain

Later Winch Rope with Swivel Latchlock Hook

Figure 1 - Early and Later Style Winch Rope Configurations

Filler Rod at Start Point

Filler Rod in Position at First Groove

Filler Rod adjacent to Grub Screw

Figure 2 - Winch Drum Groove Filler Rod Installation
Winch Drum Modification and Rope Replacement

12. Figure 1 shows the early and later style winch rope configurations. Vehicles with the later style winch rope already fitted should only require the modification to the winch drum, however the rope should be inspected for serviceability. Land Rover 110 6x6 should be checked to ensure that the winch driveshaft has been modified as detailed in VEHICLE G 297-9. On receipt of stores carry out modification as follows:

a. Remove the winch rope from the winch drum.

b. Remove the winch fairlead plate (place a container under the gear housing to catch oil).

c. Grind the end of the groove filler rod (Item 1, Table 3) to allow an easy fit between the first drum groove and the winch drum end flange adjacent to the rope securing point (see Fig 2).

d. Tack weld the filler rod in place.

e. Rotate the winch drum anti-clockwise, bending the filler rod around the drum to follow and fit into the winch drum groove (see Fig 2). Tack weld the filler in place at 60 degree intervals.

f. Continue bending the rod until the grub screw position is reached.

g. Cut off the excess filler rod leaving a gap of approximately 5 mm between the end of the filler rod and the grub screw access hole (see Fig 2).

h. Weld a small filler section (approximately 2 cm) between the grub screw and the winch rope access hole (see Fig 2).

i. Paint damaged areas.

NOTE
The start point of the groove filler rod will vary from vehicle to vehicle depending on the location of the rope securing point.

d. Tack weld the filler rod in place.

e. Rotate the winch drum anti-clockwise, bending the filler rod around the drum to follow and fit into the winch drum groove (see Fig 2). Tack weld the filler in place at 60 degree intervals.

f. Continue bending the rod until the grub screw position is reached.

g. Cut off the excess filler rod leaving a gap of approximately 5 mm between the end of the filler rod and the grub screw access hole (see Fig 2).

h. Weld a small filler section (approximately 2 cm) between the grub screw and the winch rope access hole (see Fig 2).

i. Paint damaged areas.

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j. Refit the winch fairlead plate.

k. Top up the winch oil with OEP 220 and install the filler plug.

l. Fit a serviceable later type winch rope and swivel latchlock hook assembly (Item 1 or 2, Table 2 as applicable) to the winch drum.

m. Lubricate the rope with ZX-8 grease and wind the rope onto the drum.

n. Install the chain assembly (see Para 13 and Table 4 for applicable vehicles) on the vehicle.

NOTE
The chain may be stored as a CES item or remain fitted to the winch rope.

13. Table 4 details existing CES chains and shows those variants that will require new chains, as detailed in HQ Log Comd EMP 19/93. The review of CES has resulted in the Chain Single Leg, 10 mm diameter, 3.5 m long, NSN 4010-66-128-6450 becoming the CES chain for all individual CES and chains being removed from Equipment Kit CES. Variants with an existing CES chain equal to or exceeding 10 mm diameter will retain that chain until a replacement item is required.

14. Recording Action. On completion of the modification:

a. deface the number on the modification plate located on the drivers seat base as follows:

(1) Land Rover 110 4x4, All Types - deface number 24; and

(2) Land Rover 110 6x6, All Types - deface number 25;

b. enter the details of the modification in Part 3 of the GM 120, Record Book for Service Equipment, for the subject vehicles; and

c. report completion of the modification to HQ Log Comd as detailed in EMP 19/93.
### Table 4 - Land Rover 110 CES Chains

<table>
<thead>
<tr>
<th>LAND ROVER 110 VARIANT</th>
<th>INDIVIDUAL CES NUMBER AND CHAIN DIMENSIONS CURRENTLY FITTED</th>
<th>EQUIPMENT KIT CES NUMBER AND CHAIN DIMENSIONS CURRENTLY FITTED</th>
<th>NEW CHAIN TO BE ORDERED EMP 19/93</th>
<th>CES TO BE AMENDED TO SHOW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4X4 CARGO WINCH</strong></td>
<td>CES 12037 4010-66-021-7290 3/8 in dia, 5 ft 3 in lg</td>
<td>12036 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>NO</td>
<td>CES 12037 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12036 to have chain deleted</td>
</tr>
<tr>
<td><strong>4X4 FFR WINCH</strong></td>
<td>CES 12039 4010-66-021-7290 3/8 in dia, 5 ft 3 in lg</td>
<td>12036 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>NO</td>
<td>CES 12039 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12036 to have chain deleted</td>
</tr>
<tr>
<td><strong>4X4 SURVEY WINCH</strong></td>
<td>CES 12040 4010-66-021-7290 3/8 in dia, 5 ft 3 in lg</td>
<td>12036 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>NO</td>
<td>CES 12040 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12036 to have chain deleted</td>
</tr>
<tr>
<td><strong>4X4 SNR COMD WINCH</strong></td>
<td>CES 12042 4010-66-021-7290 3/8 in dia, 5 ft 3 in lg</td>
<td>12036 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>NO</td>
<td>CES 12042 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12036 to have chain deleted</td>
</tr>
<tr>
<td><strong>4X4 RFSV WINCH</strong></td>
<td>CES 12109 4010-66-128-6247 10 mm dia, 3.5 m lg</td>
<td>12036 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>NO</td>
<td>CES 12109 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12036 to have chain deleted</td>
</tr>
<tr>
<td><strong>6X6 CARGO WINCH</strong></td>
<td>CES 12046 No chain specified</td>
<td>12045 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>YES</td>
<td>CES 12046 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12045 to have chain deleted</td>
</tr>
<tr>
<td><strong>6X6 AIR DEFENCE WINCH</strong></td>
<td>CES 12107 No chain specified</td>
<td>12045 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>YES</td>
<td>CES 12107 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12045 to have chain deleted</td>
</tr>
<tr>
<td><strong>6X6 AMBULANCE WINCH</strong></td>
<td>CES 12100 No chain specified</td>
<td>12045 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>YES</td>
<td>CES 12100 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12045 to have chain deleted</td>
</tr>
<tr>
<td><strong>6X6 CREW CAB WINCH</strong></td>
<td>CES 12143 No chain specified</td>
<td>12045 4010-66-086-8463 0.280 in dia, 3.7 m lg</td>
<td>YES</td>
<td>CES 12143 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12045 to have chain deleted</td>
</tr>
<tr>
<td><strong>6X6 GMV WINCH</strong></td>
<td>CES 12127 No chain specified</td>
<td>12127 4010-66-086-8464 0.5 in dia, 4 m lg</td>
<td>YES</td>
<td>CES 12037 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12123 to have chain deleted</td>
</tr>
<tr>
<td><strong>6X6 LRPV WINCH</strong></td>
<td>CES 12125 No chain specified</td>
<td>12147 4010-66-086-8463 0.280 in dia, 3.7 m lg, 4010-66-086-8464 0.5 in dia, 4 m lg</td>
<td>YES</td>
<td>CES 12125 to be amended to show 4010-66-128-6450, Chain, Single Leg, 10 mm dia, 3.2 m lg CES 12147 to have chain deleted</td>
</tr>
</tbody>
</table>

END

List VEH G 01.0 - Code 1 (MEA 900264)