

**TRUCK, LIGHTWEIGHT, MC2, LAND ROVER 110 4X4 - ALL TYPES WITH WINCH  
TRUCK, LIGHT, MC2, LAND ROVER 10 6X6 - ALL TYPES WITH WINCH**

**REWORK OF THE WINCH DRUM GROOVES AND  
REPLACEMENT OF THE WINCH ROPE AND CHAIN**

**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.

4. **Authority.** Land Rover Engineering Change 2206.

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

6. **Items Affected.** Winch, winch rope and CES chains.

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.

UNCONTROLLED WHEN PRINTED

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.

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

Item	NSN	Mfr Part No	Description	Unit of Issue	Qty per Equip
1.	4010-66-130-4828	HYL8780	Wire Rope Assembly 10 mm dia, 1770 grade, 48 m lg, with attachments, for Land Rover 110 4x4	ea	1
2.	4010-66-128-5833	HYL8881	Wire Rope Assembly 11 mm dia, 1770 grade, 45 m lg, with attachments for Land Rover 110 6x6	ea	1

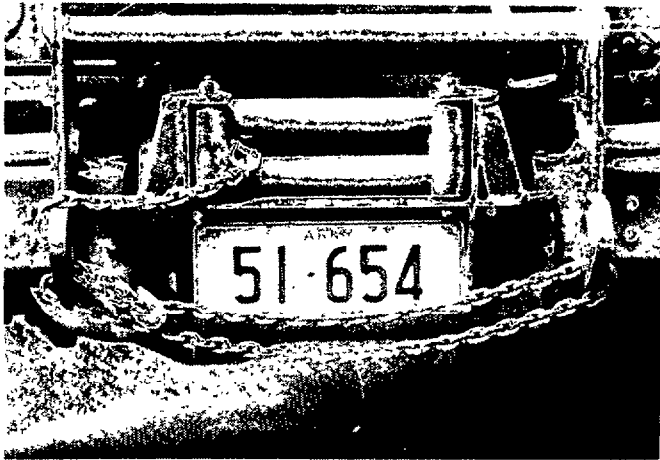
Table 2 - Stores Required to Replace Winch Rope and Chain Assembly Land Rover 110 4x4 and 6x6 (To be provided through normal supply channels from Brisbane Log Gp as detailed in HQ Log Comd EMP 19/93).

Item	NSN	Mfr Part No	Description	Unit of Issue	Qty per Equip
1.	4010-66-128-6448	AYG 8207	Rope and Hook Assembly, Grade 2070, 10 mm dia, fitted with swivel latchlock hook, for Land Rover 110 4x4	ea	1
2.	4010-66-128-6449	AYG 8208	Rope and Hook Assembly, Grade 2070, 11 mm dia, fitted with swivel latchlock hook, for Land Rover 110 6x6	ea	1
3.	4010-66-128-6450	AYG 8206	Chain, Single Leg, 10 mm, 3.2 m long	ea	1

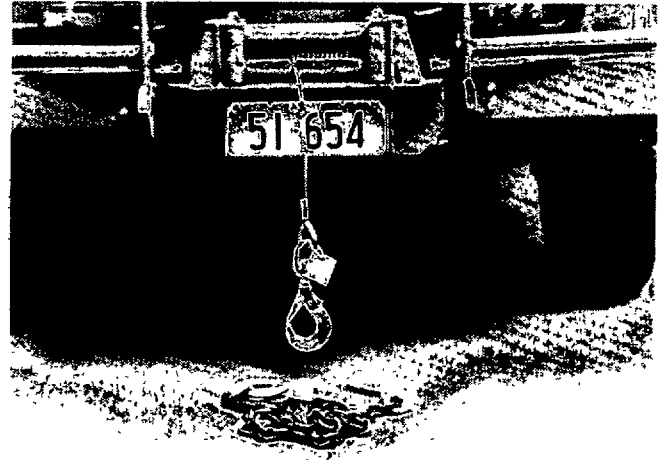
Table 3 - Stores Required to Modify Winch Drum (To be demanded through normal supply channels)

Item	NSN	Description	Unit of Issue	Qty per Winch
1	9510-66-097-0649	Metal Bar, Carbon Steel, Cold Rolled, Round, 10 mm dia	mr	0.5 m
2	8010-66-025-5001	Enamel, Olive Drab 1 Litre Container		As required
	8010-66-025-5002	4 Litre Container		As required
3	8010-66-010-4687	Primer, Coating, Metal, Red oxide 1 Litre container		As required
	8010-66-011-0476	4 Litre container		As required

UNCONTROLLED WHEN PRINTED



**Early Winch Rope and 7.1 mm Chain**

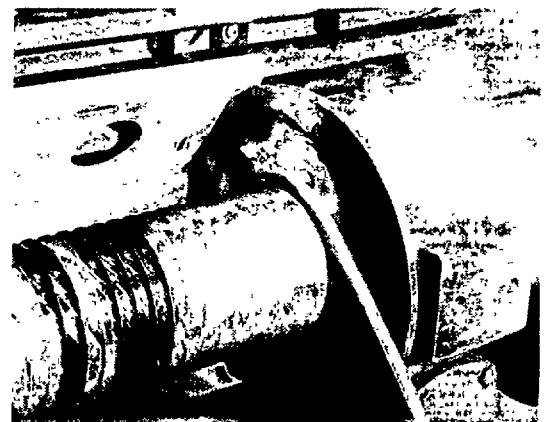


**Later Winch Rope with Swivel Latchlock Hook**

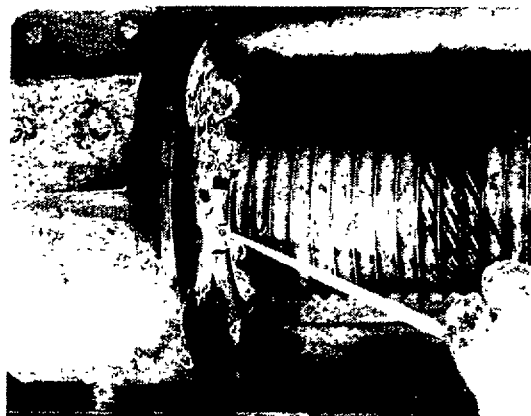
**Figure 1 - Early and Later Style Winch Rope Configurations**



**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**

UNCONTROLLED WHEN PRINTED

### 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).

#### 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.

- j. Refit the winch fairlead plate.
- k. Top up the winch oil with OEP 220 and install the filter 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**

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

**END**

List VEH G 01.0 - Code 1 (MEA 900264)

UNCONTROLLED WHEN PRINTED