

**TRUCK, LIGHTWEIGHT, MC2, ALL TYPES – LAND ROVER 110 4X4  
AND TRUCK, LIGHT, MC2, ALL TYPES – LAND ROVER 110 6X6**

**FITTING OF SPEEDI SLEEVES**

**MISCELLANEOUS 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 fitting of Speedi Sleeves to the existing differential pinion shaft flanges and the transmission output flange when the bearing surfaces are found to be grooved or damaged through wear.

**NOTE**

NSN and Designation used in this instruction were current at the date of issue.  
If 12 months or more have expired since issue, the NSN should be checked for currency.

**Associated Publications**

2. Reference may be necessary to the latest issue of the following documents:
  - a. Material Safety Data Sheets (MSDS) for view or print are now available via the Chem Alert 2 database <http://dsmachem.defence.gov.au/index.jsp>;
  - b. [EMEI Vehicle G 103](#) – Truck, Utility, Lightweight And Truck, Utility, Lightweight, Winch, MC2 – Land Rover 110 4x4 – Light Grade Repair; and
  - c. [EMEI Vehicle G 203](#) – Truck, Cargo, Light and Truck, Cargo, Light, Winch, MC2 – Land Rover 110 6x6 – Light Grade Repair.

**General**

3. **Estimated Reclamation Time.** The estimated reclamation time is as follows:
  - a. Differential Pinion Flange, 1.5 hrs (initial planning only).
  - b. Transmission Output Flanges, 1.5 hrs (initial planning only).
4. **Items Affected.** The following items are affected:
  - a. Differential Pinion Flange; and
  - b. Transmission Output Flanges.
5. **Authority.** Authority to conduct the repair of the differential pinion flanges and the transmission output flange is by RAEME units authorised to carry out Light, Medium and Heavy Grade repairs.
6. **Stores Required.** The stores required are listed in Table 1 and are to be demanded through the normal supply system.

**WARNING**

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

**Table 1 Stores Required**

Item	NSN	Part No.	Designation	Qty per Equip
1	3120-66-128-6395	99172	Speedi Sleeve, Front Differential Flange	1
2	3120-66-128-6396	CR 99187	Speedi Sleeve, Rear/Intermediate Differential Flange	1 (4x4) 2 (6x6)
3	3120-66-128-6446	99175	Speedi Sleeve, 4x4 and 6x6 Front Transfer Case Output Flange and 6x6 Rear Output Flange	1
4	3120-66-128-6447	99177	Speedi Sleeve, 6x6 Intermediate Output Flange and 4x4 Rear Output Flange	1
5	8030-00-180-6222	30015	Retaining Compound 609	As required
6	8030-66-113-3010	242	Loctite 242	As required

7. **Special Tools.** Special tools required are listed in Table 2.

**Table 2 Special Tools**

Item	NSN	Part No.	Designation
1	5120-66-128-4300	205-053	Wrench, Adjustable Face, Pin and Lug, Flange Holding
2	5120-99-735-2537	LRT-54-004	Drift, Pinion Oil Seal Replacer

**DETAIL**

**Front Differential**

8. The front differential pinion flange reclamation is carried out as follows for both 6x6 and 4x4 variants:

**NOTE**

The procedure for dismantling the front differential coupling flange has been revised. Refer to EMEI Vehicle G 103 (4x4) and EMEI Vehicle G 203 (6x6).

- a. Clean the area around the pinion using a recommended cleaning agent and blow dry with compressed air, if available.
- b. Remove and discard the four lock nuts securing the front propeller shaft to the front differential flange.
- c. Remove and discard the flange nut split pin and then remove the nut.
- d. Remove the coupling flange and remove any burrs or rough areas on the bearing surface with a file or emery paper.
- e. Smear a light layer of Retaining Compound 609 (Table 1, Item 5) on the inside surface of the Speedi Sleeve (Table 1, Item 1).
- f. Place the Speedi Sleeve over the coupling flange shaft, then place the installation tool over the Speedi Sleeve.

**NOTE**

The flange side of the sleeve must be placed over the shaft first.

- g. Tap the centre of the tool gently, until the Speedi Sleeve covers the worn surface area of the shaft.
- h. Remove the flange with side cutters by prying it away from the shaft surface along the pre-cut line.

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- i. Examine the shaft and Speedi Sleeve for any rough areas that could damage the seal and smooth them with emery paper.
- j. Smear the outside edge of the oil seal with a suitable sealant and insert the seal, with the seal lip towards the pinion, using special tool (Table 2, Item 2).
- k. Lubricate the seal lip with clean gear oil and install the coupling flange, washer and castellated nut.
- l. Torque the flange nut to 95 – 163 N.m (70 – 120 lbf.ft) and ensure the castellated nut aligns with the split pin hole.
- m. Install the split pin and bend over the tabs.
- n. Install the front propeller shaft on the coupling flange.
- o. Fit four new lock nuts and torque them to 41 – 52 N.m (30 – 38 lbf.ft).
- p. Check the front axle oil level and top up if necessary.

### **Rear and Intermediate Differential**

- 9. The rear and intermediate differential coupling flange reclamation is carried out as follows:
  - a. On 4x4 variants, remove the differential coupling and oil seal as described in EMEI Vehicle G 103.
  - b. On 6x6 variants, remove the differential coupling and oil seal as described in EMEI Vehicle G 203.
  - c. Clean the coupling flange and remove any burrs or rough areas on the bearing surface with a file or emery paper.
  - d. Install the Speedi Sleeve (Table 1, Item 2) over the coupling flange shaft using the same procedures as detailed in Paragraphs 8.e to 8.j.
  - e. To install the new seal and flange coupling on 4x4 variants, refer to EMEI Vehicle G 103 and on 6x6 variants, refer to EMEI Vehicle G 203.
  - f. Check the rear and intermediate axle oil level and top up if necessary.

### **Transmission Output Flange**

- 10. On 4x4 and 6x6 variants, the front output flange reclamation is carried out as follows:
  - a. Clean the area around the front output shaft using a suitable cleaning agent and blow dry with compressed air, if available.
  - b. Remove the four lock nuts securing the front propeller shaft to the front output shaft coupling flange as described in EMEI Vehicle G 103 (for 4x4) or EMEI Vehicle G 203 (for 6x6).
  - c. Remove the lock nut, flat washer and felt oil seal.
  - d. Remove the coupling flange then remove the oil seal using a suitable lever.
  - e. Inspect the front coupling flange and, if it is scored or grooved, fit a new Speedi Sleeve (Table 1, Item 3) using the same procedures as detailed in Paragraphs 8.e to 8.i.
  - f. Press in the new oil seal with the sealing lip towards the bearing.
  - g. Apply a smear of clean gearbox oil around the lip of the seal then install the coupling flange.
  - h. Insert a new felt oil seal into the coupling flange, apply Loctite 242 (Table 1, Item 6) to the shaft thread and install the flat washer and lock nut, ensuring that the nut is torqued to 146 – 180 N.m (108 – 132 lbf.ft).
  - i. Position the front propeller shaft on the coupling flange, then install the four nuts and tighten them securely.
  - j. Check the transmission oil level and top up if necessary.
- 11. On 6x6 variants, the rear output flange reclamation is carried out as follows:
  - a. Clean the area around the rear axle output shaft using a suitable cleaning agent and blow dry with compressed air, if available.

- b. Remove the four nuts securing the rear axle propeller shaft to the rear axle output shaft coupling flange as described in EMEI Vehicle G 203.
- c. Using the special tool (Table 2, Item 1) to prevent the coupling flange rotating, remove the lock nut, flat washer and felt oil seal.
- d. Remove the coupling flange then remove the oil seal using a suitable lever.
- e. Inspect the rear coupling flange and, if it is scored or grooved, fit a new Speedi Sleeve (Table 1, Item 3) using the same procedures as detailed in Paragraphs 8.e to 8.i.
- f. Press in the new seal with the sealing lip towards the bearing.
- g. Apply a smear of clean gearbox oil around the lip of the seal then install the coupling flange.
- h. Insert a new felt oil seal into the coupling flange, apply Loctite 242 (Table 1, Item 6) to the shaft thread and install the flat washer and lock nut. Using the special tool (Table 2, Item 1) to prevent the flange rotating, torque the lock nut to 146 – 180 N.m (108 – 132 lbf.ft).
- i. Position the rear axle propeller shaft on the coupling flange, then install the four nuts and torque to 41 – 52 N.m (30 – 38 lbf.ft).
- j. Check the transmission oil level and top up if necessary.

**12.** On 4x4 variants, the rear output flange reclamation, and, on the 6x6 variants, the intermediate flange reclamation is carried out as follows:

- a. Clean the area around the rear output shaft using a suitable cleaning agent and blow dry with compressed air (if available).
- b. Remove the nuts and bolts securing the rear propeller shaft (4x4 variants) as described in EMEI Vehicle G 103 or intermediate propeller shaft (6x6 variants) as described in EMEI Vehicle G 203, then remove the propeller shaft and discard the lock nuts.
- c. Remove the lock nut, flat washer and felt oil seal.
- d. Remove the brake drum complete with the rear coupling flange.
- e. Remove the two bolts securing the oil catcher, then remove the oil catcher and oil shield.
- f. Remove the oil seal using a suitable lever.

#### NOTE

With the handbrake drum removed separate the handbrake drum from the output flange.

Inspect all the propeller shaft bolts. Replace any unserviceable bolts with new bolts and tack weld the heads of the bolts using an arc welder in accordance with EMEI Vehicle G 103 (4x4) and EMEI Vehicle G 203 (6x6).

- g. Inspect the coupling flange and, if it is grooved or scored, fit a new Speedi Sleeve (Table 1, Item 4) using the same procedures as detailed in Paragraphs 8.e to 8.i.
- h. Press in the new oil seal, sealing lip first, until the seal plain face just clears the chamfer on the seal housing bore.
- i. Install the oil shield, ensuring it is a close fit on the output shaft cover.
- j. Apply a smear of sealing compound to seal the oil catcher against the brake back plate, then install the two bolts. Tighten the bolts securely.
- k. Apply a smear of clean gearbox oil around the lip of the seal then install the brake drum and coupling flange.
- l. Insert a new felt oil seal into the coupling flange and install the flat washer and lock nut. Torque the nut to 146 – 180 N.m (108 – 132 lbf.ft).
- m. Install the propeller shaft, then install new lock nuts and bolts, apply Loctite 242 (Table 1, Item 6) to the securing bolt threads, and tighten them securely.
- n. Check the transmission oil level and top up if necessary.

**Recording Action**

**13.** Details of the repairs are to be entered in the GM 120 – Record Book for Service Equipment, for all the subject vehicles and the Work Order updated on the authorised electronic maintenance recording system referencing the Speedi Sleeves fitted in accordance with EMEI Vehicle G 189-12.

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**END**

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