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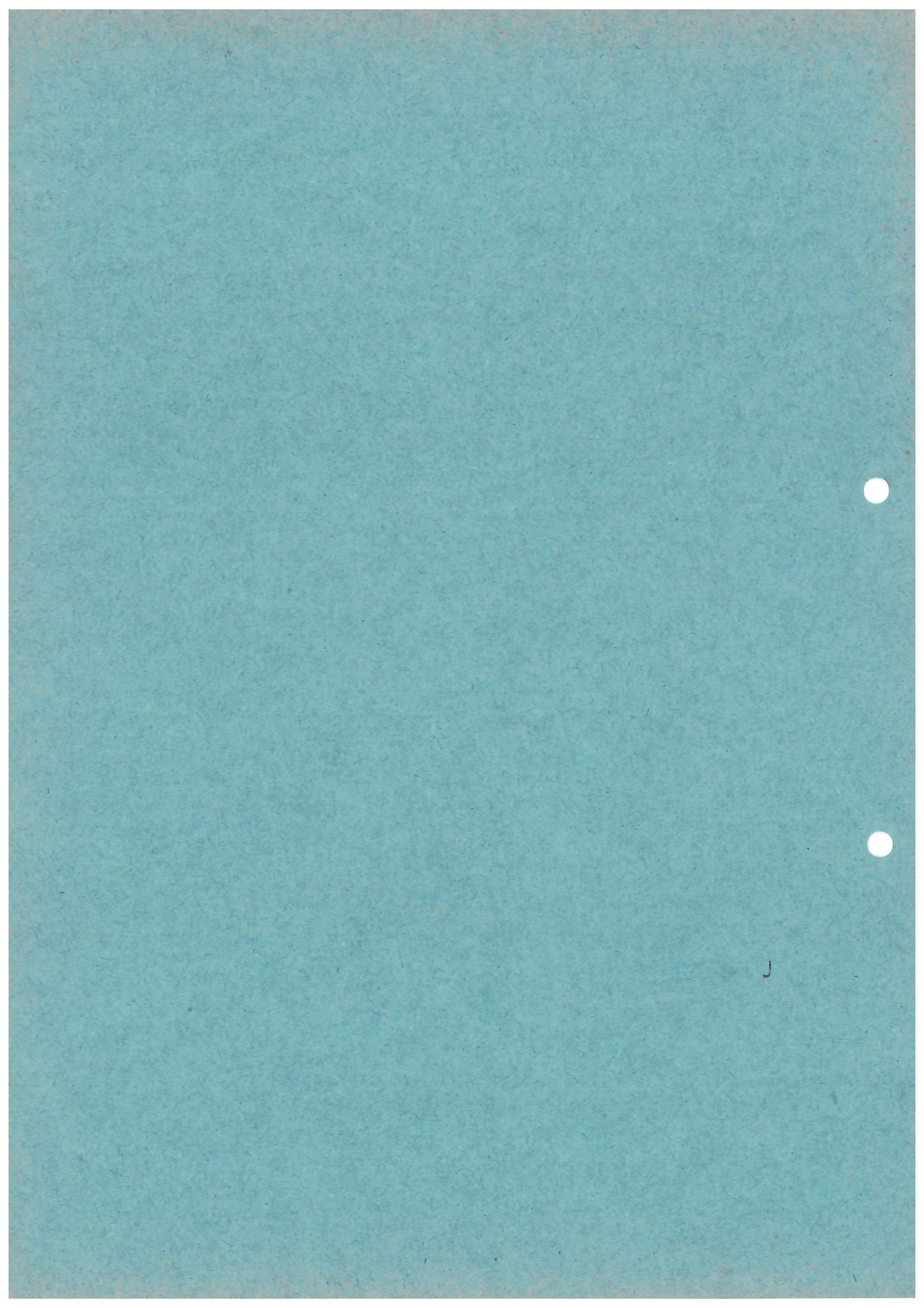
# British Railways Board

Mechanical & Electrical Engineer's Department

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## OVERHAUL OF RADIATOR FAN UNITS DMU WITH MECHANICAL OR HYDRAULIC TRANSMISSION





DESCRIPTION	STAG	POSITION

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PROCESS SPECIFICATION

C.E.P.S.1046

OVERHAUL OF RADIATOR FAN UNITS  
DMU WITH MECHANICAL OR HYDRAULIC TRANSMISSION

JULY 1980

Issued by:-

CM & EE BRB  
Railway Technical Centre  
DERBY



PROCESS SPECIFICATION NO CEPS1046Overhaul of radiator and fan units(DMU with mechanical or hydraulic transmission)GENERAL

This specification details the method of overhaul of radiator and fan units removed from vehicles undergoing workshop repairs or returned from a depot.

PROCEDURE

1. Radiator and fan unit 150 hp Leyland, AEC and Albion 901 Engines.
2. Serck type Albion 902/903 Engines (Classes 115 and 128).
3. Coventry type unit Rolls Royce 6 cyl Engines (Classes 110 and 111).
1. RADIATOR AND FAN UNIT (150 hp LEYLAND AND AEC ENGINES) BOTH WITHNELL TUBE AND A3X TYPES
  - (a) Dismantle, clean and examine.
  - (b) Renew fan bearings, ensuring that they are a tight fit in the fan housing. Examine fan spindle for concentricity and renew as necessary.
  - (c) Repair or renew other fan components as necessary. TRUFLO nylon bladed fans must be secured to the shaft on assembly using LOCTITE 641, BR Cat No 7/60416 and a set bolt with plain washer. Check security of balance weights on TRUFLO nylon bladed fans, re-secure with "pop" rivets where necessary.
  - (d) Check all fans for balance before refitting (1.1/2 oz.in.maximum).
  - (e) Fit reconditioned drain cock and repair or renew cock removed as necessary.
  - (f) Check clearance between fan hub and casing, this must be not less than 0.010 ins. Clearance between fan blade tips and housing must be not less than 0.020 ins or more than 0.125 ins.
  - (g) Clean and examine radiator elements and ensure that they are not blocked, renew as necessary. Where gilling is damaged it must be straightened using a knife like tool or comb.
  - (h) Renew seals, and polish and roll ends of elements of Withnell Tube radiators.
  - (i) Remove and clean upper and lower tanks, repair or renew as necessary.
  - (j) Renew all joints.
  - (k) Hydraulically pressure test at 10 psi. Check for leaks; repair or seal off elements of A3X type as necessary (3% of total number is the maximum that can be sealed). If leaks occur on Withnell Tube type, replace seals/tubes as necessary.

## NOTE:

Withnell radiator tubes are now supplied with the 'gilling' reduced in width from 1.1/8 in to 1 in and their hardness has been increased. The old and current types of tube are completely interchangeable (BR Cat No 15/84196). When a mixture of old and new tubes are built into a radiator, the new narrower 'gilled' tubes must be fitted in the outer row to take advantage of their construction.

2. SERCK TYPE (CLASSES 115 AND 128)

- (a) Dismantle, clean and examine. Ensure that air passages are clear.
- (b) Renew fan bearings, ensuring that they are tight fit in fan housing. Examine fan spindle for concentricity and renew as necessary.
- (c) Renew defective fan blade rivets.
- (d) Repair or renew other fan components as necessary.
- (e) Check fan for balance before refitting (1.1/2 oz in maximum).
- (f) Check clearance between fan hub and casing; this must be not less than 0.010 ins. Clearance between fan blade tips and housing must be not less than 0.020 ins or more than 0.125 ins.
- (g) Clean and examine radiator element group and ensure that no elements are blocked.

Examine internal faces of radiator top and bottom tanks. If erosion damage is evident then repair to the following procedure.

Grit blast internal surfaces and sealing flange face with chilled iron angular shot G24 size. The average profile finish should be between 75 micron and 100 micron.

Preheat tanks to 120°C.

Blank off all boltholes in sealing flanges. Flame spray Nylon 11 over internal surfaces and sealing flanges to obtain a minimum even thickness of .020".

- (h) Pressure test at 10 psi radiator elements for leaks; repair or seal off elements as necessary (3% of total number is the maximum that may be sealed).

3. COVENTRY TYPE (CLASSES 110 AND 111)

- (a) Remove from vehicle, strip, clean and examine. Ensure that air passages are clear.
- (b) Renew fan bearings, ensuring that they are a tight fit in fan housing. Examine fan spindle for concentricity and renew as necessary.
- (c) Renew defective fan blade rivets.
- (d) Repair or renew other fan components as necessary. Check security of balance weights on TRUFLO nylon bladed fans re-secure with "pop" rivets where necessary.
- (e) Check all fans for balance before refitting (1.1/2 oz in maximum).
- (f) Check clearance between fan and casing this must be not less than 0.020 ins or more than 0.125 ins.
- (g) Clean and examine radiator element group and ensure that no elements are blocked.
- (h) Pressure test radiator elements at 10 psi for leaks; repair or seal off elements as necessary (3% of total number is the maximum that can be sealed).

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OVERHAUL OF RADIATOR AND FAN UNITS  
DMU WITH MECHANICAL OR HYDRAULIC TRANSMISSION  
BR PUBLICATION NO C.E.P.S. 1046  
REVISION LETTER NO 2

<u>LOCATION</u>	<u>ACTION</u>	<u>REASON FOR CHANGE</u>
Page 1 and Page 2 Issue 2	Replace with Issues 2 and 3 of these pages	Information revised
Page 3	Remove and destroy	No longer applicable

After incorporating the above, endorse the "Revision Record" at the front of the manual accordingly.

When this Revision letter has been actioned, it is to be stored at the back of the publication (capacity permitting) for easy future reference.

DATE : SEPTEMBER 1983

REF : SSS 220-6-2

TEL : 056-3582

Issued by:

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Railway Technical Centre  
Derby





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OVERHAUL OF RADIATOR FAN UNITS  
DMU WITH MECHANICAL OR HYDRAULIC TRANSMISSION  
B.R. PUBLICATION NO. C.E.P.S. 1046  
REVISION LETTER NO. 1

<u>LOCATION</u>	<u>ACTION</u>	<u>REASON FOR CHANGE</u>
Pages 2 and 3	Replace with Issue 2 of these pages	Page 2 : Paragraph 2(g) revised Page 3 Paragraph 5 heading amended.

After incorporating the above, endorse the "Revision Record" at the *front* of the manual accordingly.

When this Revision letter has been actioned, it is to be stored at the back of the publication (capacity permitting), for easy future reference.

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SECTION 101

THE BOARD OF DIRECTORS

OF THE COMPANY

RESOLVED THAT

BEING THE WILLING

SECTION 102

SECTION 103

SECTION 104

AND THAT THE BOARD OF DIRECTORS

DO HEREBY CERTIFY

THAT THE

STATE OF CALIFORNIA

COUNTY OF

DATE

BY

SECRETARY

