

**WOSS 710/1**

---

**British Railways Board**

Director of Mechanical and Electrical Engineering

---

**Track Circuit  
Shorting Bond**

**WORKSHOP OVERHAUL STANDARD SPECIFICATION**



REVISION RECORD

This Specification will be updated when necessary by the issue of amended pages accompanied by revision letters. The amended or additional part of re-issued pages will be marked with a vertical black line.

If you consider that an amendment is necessary, complete BR Form 14298 and pass it to the local BRB Resident Engineer or Area Quality Engineer. Submission of a form does not authorise the proposed amendments.

Revision No.	Re-issued Page Nos	Date	Inserted by
1	Rev.rec.	Sep 84	
2	contents	Jul 86	
3	contents	Jul 89	

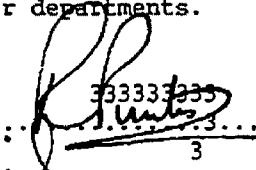
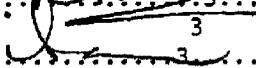
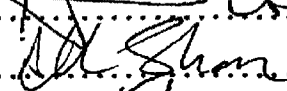

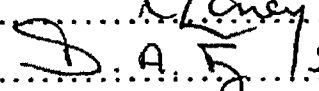
Revision No.	Re-issued Page Nos	Date	Inserted by

© Director of Mechanical & Electrical Engineering  
 British Railway Board  
 The Railway Technical Centre  
 London Road  
 Derby  
 DE2 8UP

First published – April 1984

I authorise the work content of the publication shown above and its distribution to user departments.

Signed:


  
 .....<sup>33333333</sup>.....InterCity Engineer  

  
 .....<sup>3</sup>.....Freight Engineer  

  
 .....<sup>3</sup>.....Network SE Engineer  

  
 .....<sup>3</sup>.....Parcels Engineer  

  
 .....<sup>3</sup>.....Provincial Engineer  
 .....<sup>33333333</sup>.....<sup>T.O.3</sup> Markhouse

This is a proprietary specification of the Director of Mechanical & Electrical Engineering, British Railways Board. The specification (including the data and information relating thereto) is not to be used, disseminated, reproduced, copied or adapted, either in whole or in part, without the express written approval of the electrical equipment engineer at the above address.

Should any technical query arise regarding the contents of this document, telephone 0332 42442 Ext 3516, BR 056-3516 or write to the above address.

This specification applies to equipment fitted to the vehicles indicated 'X' below, but it is only to be implemented when authorised by an appropriate maintenance /overhaul document.

LOCOMOTIVES

03	X
08	X
09	X
20	X
26	X
31	X
33	X
37	X
43	X
47	X
50	X
56	X
58	X
60	X

73	X
81	X
85	X
86	X
87	X
88	X
89	X
90	X
91	X
92	X

101	X
104	X
107	X
108	X
110	X
111	X
114	X
115	X
116	X
117	X
118	X
119	X
120	X
121	X
122	X
128	X

DMU's

140	X
141	X
142	X
143	X
144	X
150	X
151	X
154	X
155	X
156	X
158	X

EMU's

302	X
303	X
304	X
305	X
307	X
308	X
309	X
310	X
311	X
312	X
313	X
314	X
315	X
317	X
318	X
319	X
320	X
321	X
322	X
504	X
507	X
508	X

411	X
412	X
413	X
414	X
415	X
416	X
419	X
421	X
422	X
423	X
432	X
438	X
442	X
455	X
456	X
485	X
486	X
487	X
488	X
489	X

COACHING STOCK

Mk 1	X
Mk 1, Catering	
Mk 2z,2a-c	X
Mk 2d-e	X
Mk 2f	X
Mk 2 DBSO	X
Mk 3a	X
Mk 3b	X
Mk 3 Catering	
Mk 3 (HST)	X
Mk 3 (HST) Catering	
Mk 3 SLE and SLEP	X
Mk 4	X
DVT IC225	X
DVT IC125	X
Non Passenger	X

DEMU's

204	X
205	X
207	X

WAGONS


COMPONENTS




WOSS 710/1

WORKSHOP OVERHAUL STANDARD SPECIFICATION 710/1

TRACK CIRCUIT SHORTING BOND

CONTENTS

Reference Documents  
Tools and Materials  
Section 1 Repair Procedure  
    Figure 1 Track Circuit Shorting Bond Assembly  
    Figure 2 Arrangement of Bond on Mounting Blocks  
Section 2 N/A  
Section 3 Technical Data  
    Table 1 Vehicle Classes and Bond Assemblies  
Section 4 Additional Procedures  
    A.P.1 Dismantling and Reassembly

REFERENCE DOCUMENTS

WOSS 501/1 Hot Water/Detergent Cleaning  
WOSS 560/4 Crimped Joints for Cables

TOOLS AND MATERIALS

BR Cat No

Grease, Lithium based, No.3.

27/1350

SECTION 1 REPAIR PROCEDURE

NOTES:

Where an item is first mentioned in the text it is followed by a number in brackets. The first part of the number, before the full stop, refers to the figure on which the item is identified. The second part of the number, after the full stop, is the number of the item as it appears on the figure. Items lists associated with figures use the full number. If an item is identified on more than one figure then the items list for each figure will give the alternative number.

The following procedure is to be implemented if a bond is found which does not have its cable secured with strapping (2.3), indicating that it has been disturbed since the last examination.

- 1 Discard any cable strapping (2.3) and extend the connecting cable (1.9).
- 2 Check the connecting cable (1.9) for damage or kinking. Pull the cable to ensure that the terminations are sound. Check that the cable length is 1465 -1495 mm between crimp hole centres.
- 3 Check that the four M6 bolts (1.5, 1.7) are tight.
- 4 Check that the curved end of each contact spring (1.2) has two sharp corners to ensure good electrical connection.
- 5 Examine each top contact clip (1.1) and bottom contact clip (1.3) for fractures and damage to the sheradized coating.
- 6 Measure the gap "A" (Figure 1) on each clip. This is to be 33mm minimum.
- 7 Pinch the bottom contact clip together at "X" (Figure 1) and measure the gap 'W' on each clip. This is to be 40 - 46 mm.
- 8 If any defects are found in paragraphs 1-7 the bond is to be dismantled and the defective items renewed in accordance with Section 4 Additional Procedure 1.
- 9 Clean the bond with a cloth. If heavily contaminated clean in accordance with WOSS 501/1.

10. Apply a smear of grease at point X on each bottom contact clip.

11. Vehicles with wide mounting blocks (See Section 3 Table 1).

11.1 Coil the connecting cable and secure with two straps as shown in Figure 2A.

12. Vehicles with narrow mounting blocks (See Section 3 Table 1)

12.1 Place the two clips side by side and fasten with a strap round the bottom contact clip. Coil the cable into two double coils. Fasten the coils to the handles with one strap. (See Figure 2B.)

## WOSS 710/1

## Items List for Figure 1

Item No	Description	Drg No.	BR Cat No
1. 1	Top contact clip	BRS-SE 89/1	55/ 26669
1. 2	Contact spring	BRS-SE 89/3	55/ 17686
1. 3	Bottom contact clip	BRS-SE 98/2	55/ 26668
1. 4	Nut M6 Steel EZP	BRS-SE 89	3/175112
1. 5	Screw M6 x 12 Hx M	BRS-SE 89	35/100492
1. 6	Spring washer M6 Double coil phos bronze	BRS-SE 89	3/195802
1. 7	Screw M6 x 16 hx EZP	BRS-SE 89	35/100502
1. 8	Washer M6 brass EP	BRS-SE 89	3/191001
1. 9	Connecting cable	BRS-SE 89/4	55/ 26140
	Comprising:		
	Crimp terminal AMP 33461 (2 off)		54/119420
	Cable 80/0.4mm, 19/3300V		6/111000

- Connecting cable crimps to be applied in accordance with WOSS 560/4. Distance between crimp hole centres 1480 + 15mm.

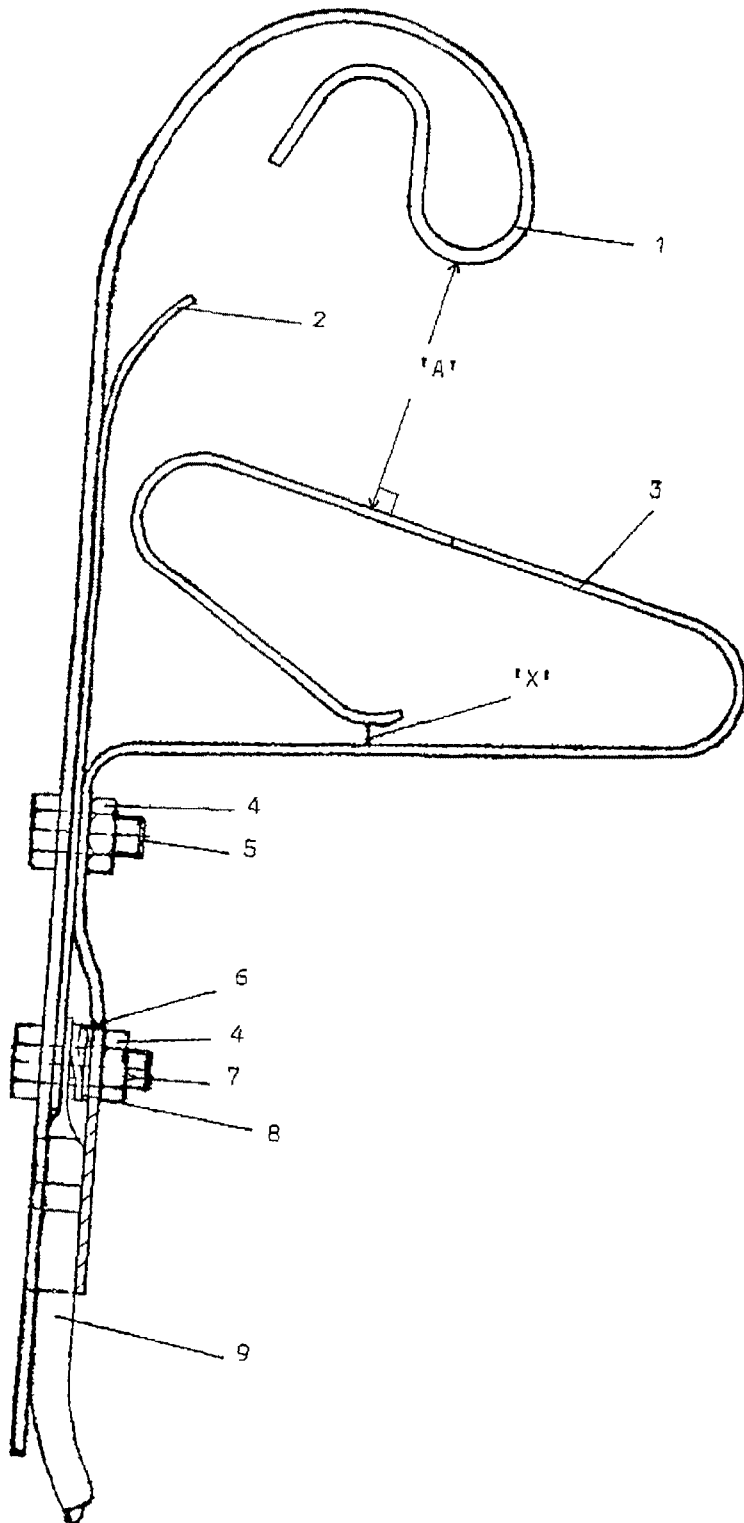
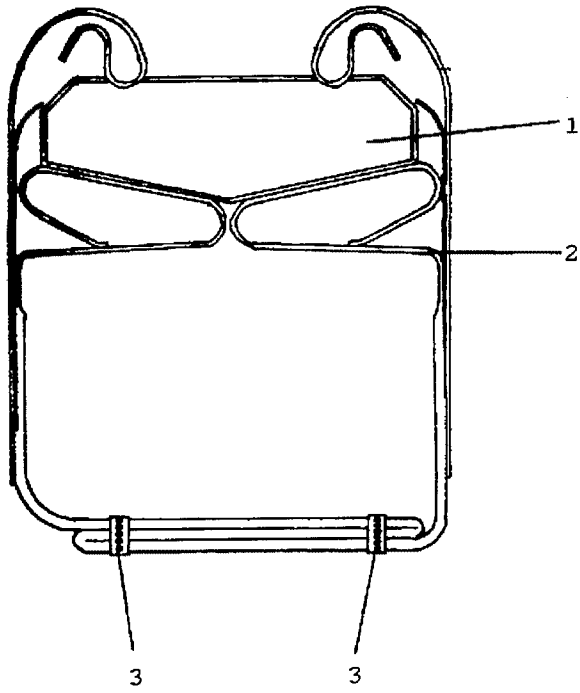


figure 1 Track Circuit Shorting Bond

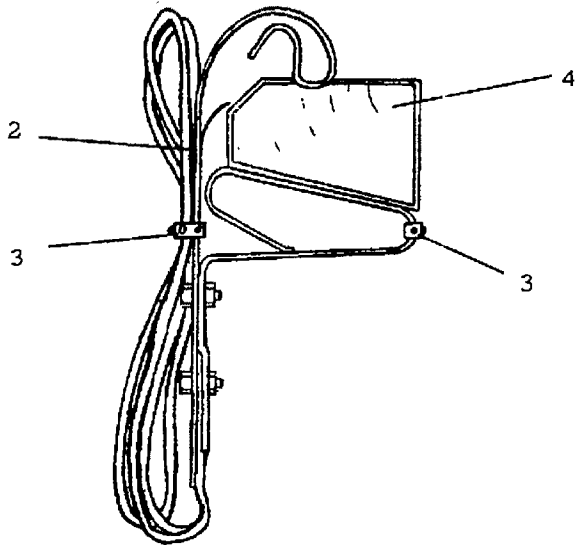


## Items List for Figure 2

Item No	Description	Drg No.	BR Cat No.
2. 1	Mounting block 35mm thick	B1-A1-9007643/01	41/115401
	Mounting block 64mm thick	B1-A1-9007643/02	41/115402
2. 2	Track Circuit Shorting Bond complete	BRS-SE 89	55/ 26656
2.2A	Track Circuit Shorting Bond assembly	B1-A1-8700234/01	870/023401
2.2B	Track Circuit Shorting Bond assembly	B1-A1-8700234/02	870/023402
2. 3	Cable strapping 5/16" PVC Hellerman HV3254 with nylon stud HV3255	B1-A1-9007643	54/ 19080
2. 4	Mounting block 110mm thick	b1-A3-9018558/01	71/3146
	Mounting block 64mm thick	B1-A3-9018558/02	



A



B

Figure 2 Arrangement of Bonds on Mounting Blocks

SECTION 3 TECHNICAL DATA

Table 1 Vehicle Classes and Bond Assemblies

Class	Mounting	Bond Assembly BR Cat. No.
03-09 20 26 31 37 47 50 56 58 60 81 92 101 123 302-312 504-508 488-489 Mk 1 - 3 DBSO SLE, SLEP Non-Pass	Figure 2A	870/023401
33 43 73 141-158 204-207 313-322 411-489	Figure 2B	870/023402

SECTION 4 ADDITIONAL PROCEDURES

A.P.1 Dismantling and Reassembly

Tools and Materials	BR Cat No.
Loctite 242	7/ 60353
Milliohmmeter	

- 1.1 Remove the four M6 nuts (1.4) and bolts (1.5 and 1.7).
- 1.2 Remove the bottom contact clips (1.3), plain washers (1.8), spring washers (1.6), connecting cable (1.9) and contact spring (1.2) from both clips. Discard the plain and spring washers.
- 1.3 Discard the connecting cable(1.9)if it is of the obsolescent type (red insulation).
- 1.4 Discard defective components.
- 1.5 Clean all components in accordance with WOSS 501/1.
- 1.6 Use new items for those discarded.
- 1.7 Remove any burrs from the contact spring holes.
- 1.8 Reassemble the bond with the connecting cable crimps next to the contact springs, followed by the new spring washers, then new plain washers. Apply Loctite 242 to the four bolts before fitting and fully tightening the nuts.
- 1.9 Check the gap tolerances on each clip in accordance with Section 1 paras 6 and 7.
- 1.10 Measure the resistance between the contact springs of the two clips. If this is more than 0.02 ohm the assembly is to be dismantled, all contact surfaces checked for cleanliness, reassembled and retested.