WOSS 190/1

BRITISH RAILWAYS BOARD

DIRECTOR OF MECHANICAL AND ELECTRICAL ENGINEERING

LOCOMOTIVES & D.M.M.U.

AWS EQUIPMENT

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	Contents	Apr 84	
2	Contents	Mar 86	
3	Contents	Jun 87	
4	8	Jan 89	

Revision	Re-issued Page Nos	Date	Inserted by

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London Road
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First published - October 1983

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

Signed:

Should any query arise regarding the contents of this document telephone 0332 42442 Ext. 3516, BR Code is 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	
08	
09	
20	X
26	X
31	X
33	X
37	X
43	X
47	X
50	X
56	X
58	X

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

DMU's

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
127	X
128	X
140	X
141	X
142	X
143	X
144	X
150	X
151	X
154	X
155	X
156	X

EMU's

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

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

COACHING STOCK

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

DEMU's

204	
205	
207	
210	

WAGONS

PRIVATE OWNER VEHICLES

DEPARTMENTAL VEHICLES

COMPONENTS

WORKSHOP OVERHAUL STANDARD SPECIFICATION 390/1

AWS EQUIPMENT

CONTENTS

REFERENCE DOCUMENTS

MT 169 Automatic Warning System Manual.
BR 13436 AWS Test Instructions.
Drg. C-A0-9003218 Suspension Details for BR AWS Receiver.
Engineering Instruction G/655 Date-Coding of AWS Equipment

TOOLS & MATERIALS	BR Cat No.
Silicon RTV sealant	7/60116

SECTION 1 REPAIR PROCEDURE

1. Remove the receiver cable.

2. Check the date code on the following components in accordance with G/655. Remove any which is out of date.

Item	BR Cat No
Receiver	62/10233
Relay unit	62/14607, 62/14612
EP Repeat relay unit	62/14609, 62/14611
Brake and horn relay unit	62/14603
EP valve	62/14602, 62/14733, 62/14737
Indicator	62/6580, 62/6610
Bell	62/280
Alarm and indicator unit	

3. See WOSS 563/1 for details of attention to conduit, connection and terminal boxes.

4. Clear the drain hole in the receiver junction box of and obstruction. Remove the cover. Rectify any defective terminations in accordance with WOSS 560/4. Tighten any loose connections. Refit the cover sealing with silicon RTV sealant.

5. Change any of the following items if damaged.

   5.1 Voltage converter and base (see para 13.1).

   5.2 Voltage dropper unit (see para 13.1) if fitted.

   5.3 Relay unit base

   5.4 EP repeat relay unit base

   5.5 Brake and horn relay unit base.

   5.6 Indicator base.

   5.7 Bell plug.

6. Remove the change end isolating switch cover (if fitted). Check that connections are tight and that the cables are not damaged and do not foul the moving parts. Rectify any defective items and refit cover.

7. Vehicles fitted with vacuum brakes.

   7.1 Remove the top cap of the vacuum brake valve. Clean any dirt or oil from the disc valve and seating. Renew the diaphragm and refit the top cap.

8. Disconnect the pipe to the horn. Remove any obstruction in the horn aperture and clean any dirt or oil from the filter. Check that if the horn is marked with a yellow disc a 1mm choke is fitted above the filter. Reconnect the pipe.

9. Remove the ball valve top of each non-return valve. Clean if dirty or oily and check that the valve moves freely. Refit the ball valve top.

10. Measure the insulation resistance of all cables to frame using a 100V megger. Minimum acceptable reading 10M Ω.

11. Renew any damaged rubber pads, rubber bushes, bolts, nuts or spacers on the receiver suspension bolt assemblies (Figure 1). Discard all split pins.

12. Fit components in place of those removed in para. 2. The date code on the components must exceed that of the next scheduled repair.

13. Test the system in accordance with Section 2.

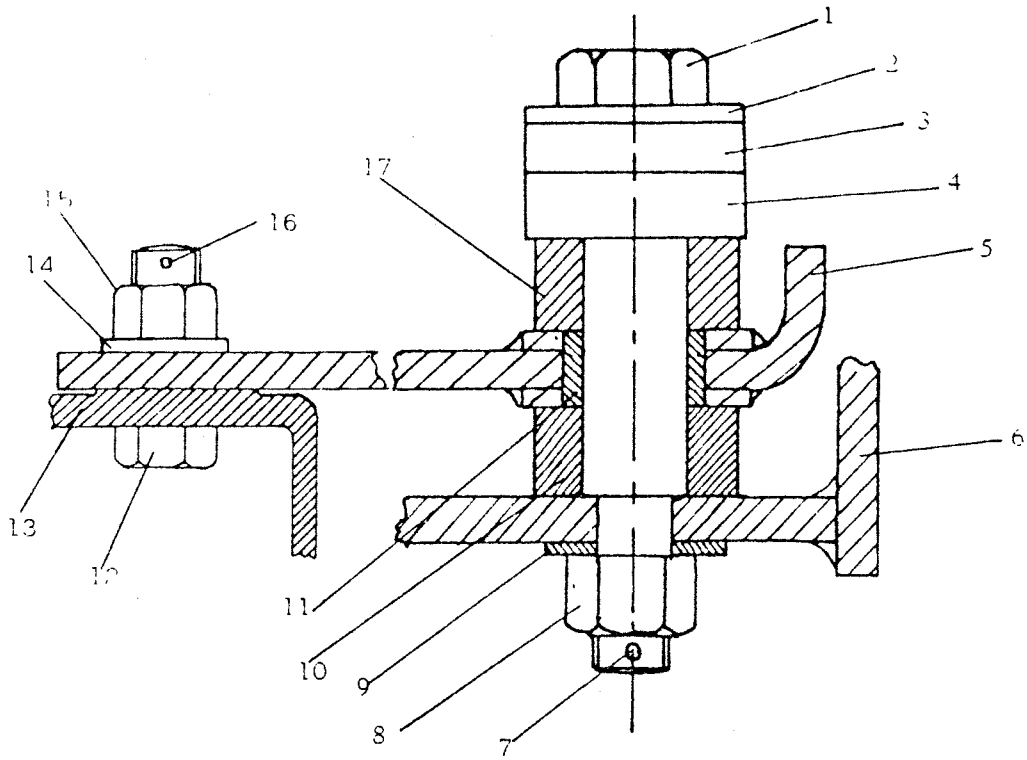
14. Class 43, 56 fitted with 24V (green) AWS converters.

   14.1 If the converter or voltage dropper unit is found to be defective, proceed in accordance with Section 4 Additional Procedure 1.

15. Fit a new seal to the AWS isolating switch handles.

Items List for Figure 1

Item	Description	BR Drg. No.	BR Cat No.
1.1	Special bolt	C1-A0-9003218/2	71/260
1.2	Steel washer	C1-A0-9003218/4	71/262
1.3	Spacer 13mm	C1-A0-9003218/9	71/3430
1.4	Spacer 19mm	C1-A0-9003218/10	71/3431
1.5	Bridge Piece (no dowels)	C1-A0-9003218/1	71/259
1.5	Bridge Piece (dowelled- hi-speed)	C1-A0-9003218/2	71/260
1.6	Suspension bracket		
1.7	Split pin 4ϕ x 28		29/127138
1.8	Nut M20		3/175026
1.9	Steel washer, hardened		71/3432
1.10	Rubber pad		62/9218
1.11	Rubber bush		62/1206
1.12	Bolt M16		3/117211
1.13	Receiver bridle		
1.14	Washer M16		3/175022
1.15	Nut M16		3/175022
1.16	Split pin 4ϕ x 25		29/127340
1.17	Rubber pad		62/9218



Section of Suspension Bolt Assy
Showing Minimum Lift Arrangement

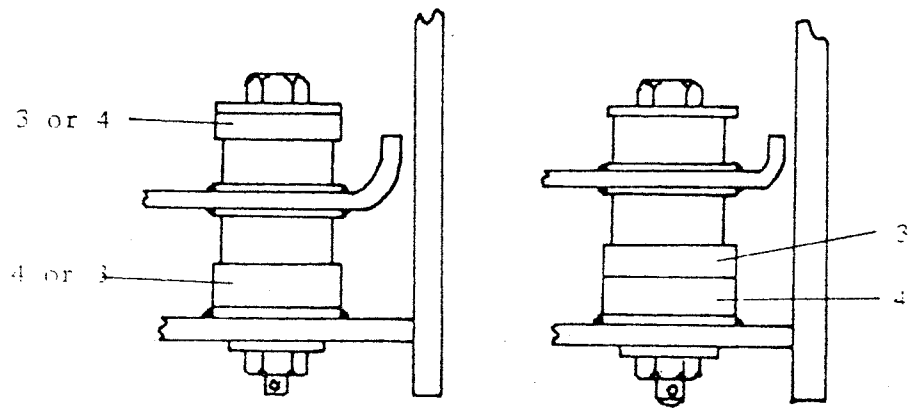


Figure 1 Receiver Suspension

SECTION 2 TEST SPECIFICATION

1. Equipment

	BR Cat No.
Hand test magnet	62/8833
Handle for magnet	62/5840

2. Introduction

2.1 If any rewiring was undertaken during the repair, or if equipment was changed other than that specified in Section 1 para.2, this Section is to be disregarded and the system tested in accordance with the relevant section of BR 13436.

2.2 The following tests are to be conducted after all air and electrical work on the vehicle has been complated and all covers fitted. The air/vacuum brake system is to be charged and the wheels chocked. Ensure all AWS and isolating switches are closed and all MCB's are set.

2.3 Note: If any of the following tests do not give the indicated result, the defect is to be investigated and rectified and the test repeated. See MT 169 for faults analysis.

3. Testing

3.1 Check that the height of the receiver is in accordance with MT 169 Appendix C. After checking/adjustment torque tighten the nuts in accordance with drg L-A0-2391 and fit new split pins

3.2 Select cab to be tested via the change end switch (if fitted).On classes 43, 56, 58 AWS lamp shows red.

3.3 Move the Direction Handle away from the Off position. Alarm sounds. On classes 43, 56 the AWS lamp changes to blue (yellow on 58).

3.4 Press and release the AWS reset button. Alarm should silence.

3.5 Put the Brake Controller to Release.

3.6 Pass the South (blue) pole of the hand test magnet under the receiver. Alarm should sound.

3.7 Immediately press and release the AWS reset button. Aspect Indicator shows yellow and black. No brake application should occur.

3.8 Pass the South (blue) pole of the hand test magnet under the receiver. Alarm should sound.

3.9 After approximately 3 seconds from the initial sounding of the alarm, brake air pressure or vacuum begins to fall and brakes are applied.

3.10 Press and release the reset button. Alarm should silence. Brakes should release. There is a delay before release on the following classes:

Class	Delay (secs)
43	60
56 58	105

3.11 Pass the south (blue) pole of the hand test magnet under the receiver, followed by the north (red) end within 1 second. Check that the alarm is silent, bell rings, the aspect indicator shows black and the brake does not apply.

3.12 Apply the brakes and put the change-end switch (if fitted) to Off.

3.13 Classes 43, 56, 58:

3.13.1 Open the AWS Isolating Switch. AWS lamp shows red regardless of Direction Handle position.

3.14 Put the Direction Handle to OFF. Shut down cab.

3.15 On vehicles fitted with two cabs, repeat para 3.4 - 3.16 from the other cab.

SECTION 3 TECHNICAL DATA

Table 1 Drawings List

Class	BR Drg. No.	Title
20	SL-DE-24913	Carriers for AWS Receiver and Junction Box
26	A 14908	Bogie Ironwork
33, 86	W 13317	Receiver Carrier, BR AWS
31	4002393/220	AWS Receiver Brackets
31	4002400/222	Arrgt. of AWS Receiver Suspension
33	W 13978	Arrgt. of AWS Receiver, BR AWS
43	L-A0-7540	Arrgt. & Details of AWS Receiver
37, 50	SL-DN-E-1769	Mounting of AWS Equipment on Bogie
47, 56	A 4003734	Details of AWS Receiver Suspension
47, 56	A 4004315	Arrgt. of AWS Receiver Suspension
47, 56	SL-DE-32542	Details of AWS Receiver Suspension
47, 56	SL-DE-32744	Arrgt. of AWS Receiver Suspension
47,58,86, 87,90	C1-A0-9003218	Suspension Details for BR AWS Receiver
56	B-A0-2081	Arrgt. of AWS Receiver Suspension
56	C1-A0-9006741	Arrgt. of AWS Receiver Suspension
37, 50	P3210-119 sh 1	AWS Receiver Suspension Bar
73	W13312	Details of Receiver Suspension Carrier
73	W13311	Arrgt. of Receiver Suspension
81	SL-DE-27645	Details of AWS and APC Fixing etc.
81	SL-DE-27640	Arrgt. of AWS Equipment on Bogie & Underframe
85	SL-DN-E-1369	Arrgt. & Details of AWS Receiver Suspension
86	SL-DN-E-1799	Arrgt. & Details of AWS Receiver Suspension
86,87,90	B2-A0-9011356	Arrgt. & Details of Suspension of BR AWS
DBSO	B-A0-1449	Arrgt. of AWS Receiver Suspension
141	C1-A0-9016073	Suspension Arrgt. of AWS Receiver & Jct Box
141-2	C1-A1-24478	Support Bracket for AWS Receiver
142,144	BRE-A0-8290525	Suspension Arrgt. of AWS Receiver & Jct Box
150/0	A1-A1-9022098	Mounting Plate for AWS Receiver
150/1-2	BRE-A0-8290009	AWS Receiver & Junction Box Arrgt.
143/1	RB1/24/9	AWS Equipment
143/1-2	78065	AWS Equipment
143/1-2	78121	Details of AWS Receiver
144/1-2	RB2/24/7	AWS Equipment
313-5, 507-8	C-A1-12908	Arrgt. of Support Bracket for AWS Receiver
314-5	B1-A0-9013782	Arrgt. of AWS Receiver and Junction Box
317	B1-A0-8300008	AWS Receiver and Junction Box Arrgt.
318	B1-A0-8301188	AWS Receiver and Junction Box Arrgt.
319	BRE-A0-8373385	AWS Receiver Installation (leading transom)
319	BRE-A0-8373403	AWS Receiver Installation (trailing transom)
455	B1-A0-9012693	AWS Receiver and Junction Box Arrgt.
150,455	B1-A1-9012694	AWS Receiver Details
321,455	B1-A1-9012695	AWS Receiver and Mounting Bracket Assy.

SECTION 4 ADDITIONAL PROCEDURES

A.P.1 Classes 43 and 56: Removal of Defective Voltage Dropper Unit

1.1 Remove the voltage dropper unit.

1.2 Fit a terminal assembly as detailed in Figure 2 between the lower two dropper unit mounting holes.

1.3 Connect the cables disconnected from the dropper unit as follows:

Terminal	43	56
LH (+ve)	521, 522	8604, 8606
RH (-ve)	27/7, 27/8	2713 (2 cables) 8607

1.4 Remove the 24V AWS converter (green) and return to S & T Works, Crewe. Fit a 110V converter to BR Cat 62/14624 (grey with white stripe) or 62/14626 (grey with white square).

AP2 Classes 314, 507, 508: Removal of Defective Voltage Dropper Unit

2.1 Remove ceiling access panel in vestibule.

2.2 Disconnect and remove voltage dropper unit.

2.3 Fit two terminal blocks (54/101401) on the partition in place of the dropper unit.

2.4 Connect the cables removed from the dropper unit as follows.

Terminal	314	507, 508
Top (+ve)	16, 9925	16, 9925
Bottom (-ve)	1832, 9924	1876, 9924

2.5 Remove the 24V AWS converter (green) and return to S & T Works, Crewe. Fit a 110V converter to BR Cat 62/14624 (grey with white stripe) or 62/14626 (grey with white square).

2.6 Fit the ceiling access panel.