

WOSS 590/1

British Railways Board

Director of Mechanical and Electrical Engineering

Headlamps

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.

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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		73	
08		85	X
09		86	X
20		87	X
26	X	89	
31	X	90	X
33		91	X
37	X	92	
43	X		
47	X		
50	X		
56	X		
58	X		
60	X		

DMU's

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

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

EMU's

302		411	
303	X	412	
304		413	
305		414	
307		415	
308		416	
309		419	
310	X	421	
311		422	
312	X	423	
313	X	432	
314	X	438	
315	X		
317	X	442	X
318	X		
319	X	455	X
320		456	
321		485	
322		486	
504		487	
507	X	488	
508	X	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	

WAGONS

COMPONENTS

WORKSHOP OVERHAUL STANDARD SPECIFICATION 590/1

HEADLAMPS

Wipac

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AP2 Refurbishment of Combined Unit Front

REFERENCE DOCUMENTS

BR Drawings: TEE-A0-7001932 Head, Tail & Marker Light.
C1-A0-8100023 Mounting of Headlights to Class 86
D2-A0-8100063 Installation of Wipac Headlights - Cl. 85
B1-A0-8303287 Details of Headlamp on Front End - Cl. 310
B1-A0-8303291 Headlamp mounting Bracket Assembly - Cl. 303
B2-A0-9010827 Arrangement & Fitting of BMAC Headlights - Cl. 47
B2-A0-9020466 Arrangement & Fitting of BMAC Headlights - Cl. 31

TOOLS AND MATERIALS

BR Cat. No.

Anti-corrosive jointing compound

028/036805

SECTION 1 REPAIR PROCEDURE

NOTE:

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.

1 Cleaning, Examination & Repair

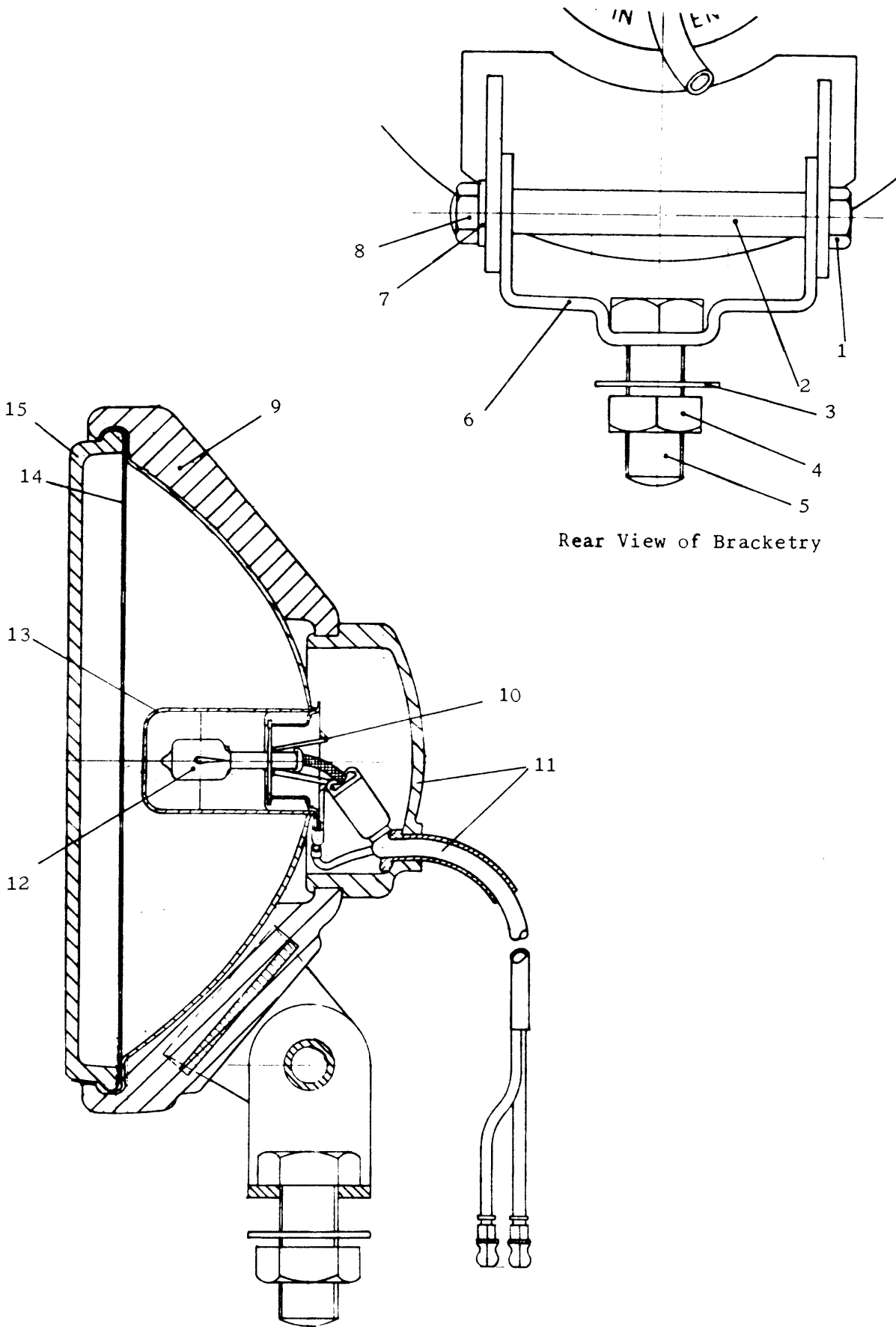
- 1.1 If a defective non-adjustable type is fitted, renew with an adjustable type.
- 1.2 Class 43: remove light shield. Renew if fractured.
- 1.3 Clean the headlamp lens (1.15).
- 1.4 Combined units: clean the marker light window (7.21) and the red lens (7.4).
- 1.5 Renew any defective lamps.
- 1.6 Renew any missing or fractured components and tighten any loose screws and nuts. See AP1 for re-glazing of defective combination unit window(s). If the adaptor (5.4) has to be re-secured to the vehicle body, apply jointing compound between the surfaces.
- 1.7 Class 43: fit light shield.
- 1.8 Test the headlamp in accordance with Section 2.
- 1.9 Repeat for each headlamp on the vehicle.

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Items List for Figure 1

Item	Description	Wipac Part No.	BR Cat No.
1. 1	Bolt	16581	098/005816
1. 2	Fixing bolt sleeve	16579	098/005814
1. 3	Washer	09895	
1. 4	Nut	16583	
1. 5	Bolt	16582	
1. 6	Bracket	16580	098/005815
1. 7	Washer	09995	
1. 8	Nut	20927	
1. 9	Body, rubber	16577	072/006240
1.10	Bulb retaining spring	19788	072/003913
1.11	Lead group	23283	072/004341
	Cover, rubber	16578	072/004340
1.12	Bulb 12V 55W	C8476	072/001867
1.13	Bulb shield		
1.14	Reflector, standard		
	Reflector, spot beam (cl 37)		
1.15	Lens		
Complete Units			
	Standard model	C8719 *	098/001953
	Spot beam (cl 37)	C9072	051/016289
Sub-assemblies			
1.9)	Luminair with rubber body and lead	C9262	061/029814
1.13)			
1.14)			
1.15)			
1.13)	Luminair	C9524	
1.14)			
1.15)			
1.13)	Luminair, standard	C9268	072/006241
1.14)			
1.15)			

* - When stocks exhausted, use 061/029814 (Wipac Part C9262)



Rear View of Bracketry

Figure 1 BMAC Bracket Mounted

Items List for Figure 2

Item	Description	Part No.	BR Cat No.
2.1	Luminair	See Figure 1	
2.2	Screw M4 x 20 ch plated Lockwasher M4 Nut M4 plated		
2.3	Terminal block Termate	15125MBA	
2.4	Nut M5 plated Lockwasher M5 plated Washer M5 plated (2)		
2.5	Locknut Elkay	93	008/112407
2.6	Cable gland Elkay	249	054/109123
2.7	Bracket	L-A1-10688/1	
	Bracket cl 37	BR Drg. G-L-AO-31637	
2.8	Fixing plate	L-A1-10689/3	
2.9	Screw M8 x 20 hex plated Washer M8 plated		
2.10	Friction lug	L-A1-10688/2	
2.11	Rivet $\phi 3$ x 8. 90° csk		
2.12	Nut M8 plated Lockwasher M8 plated		

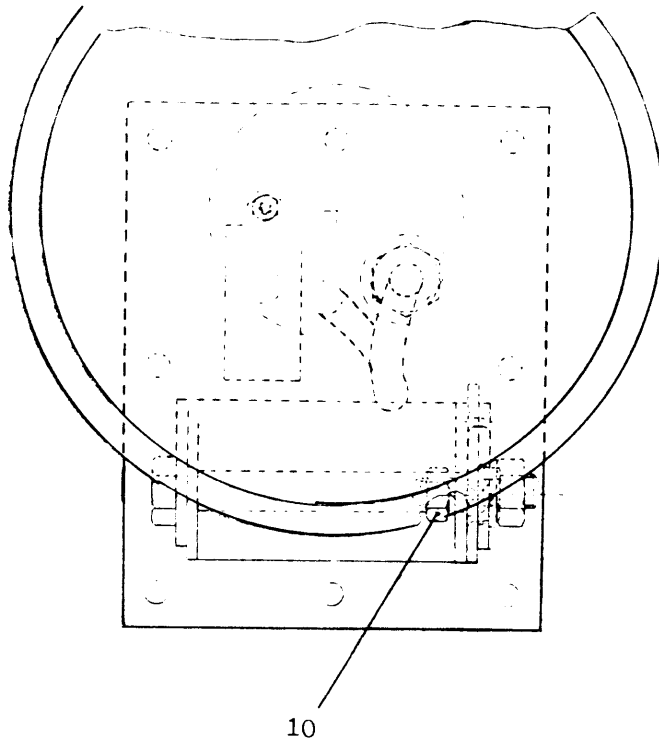
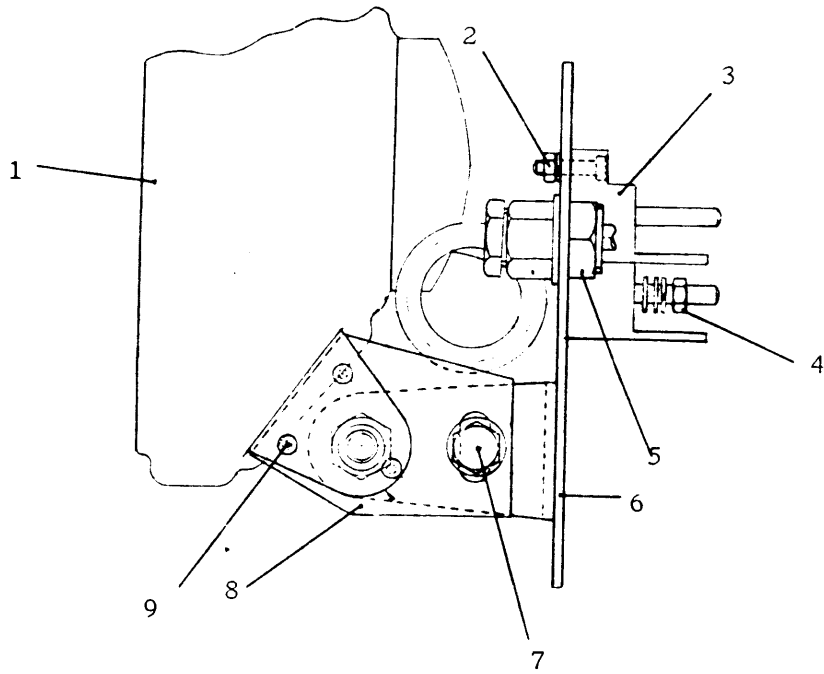
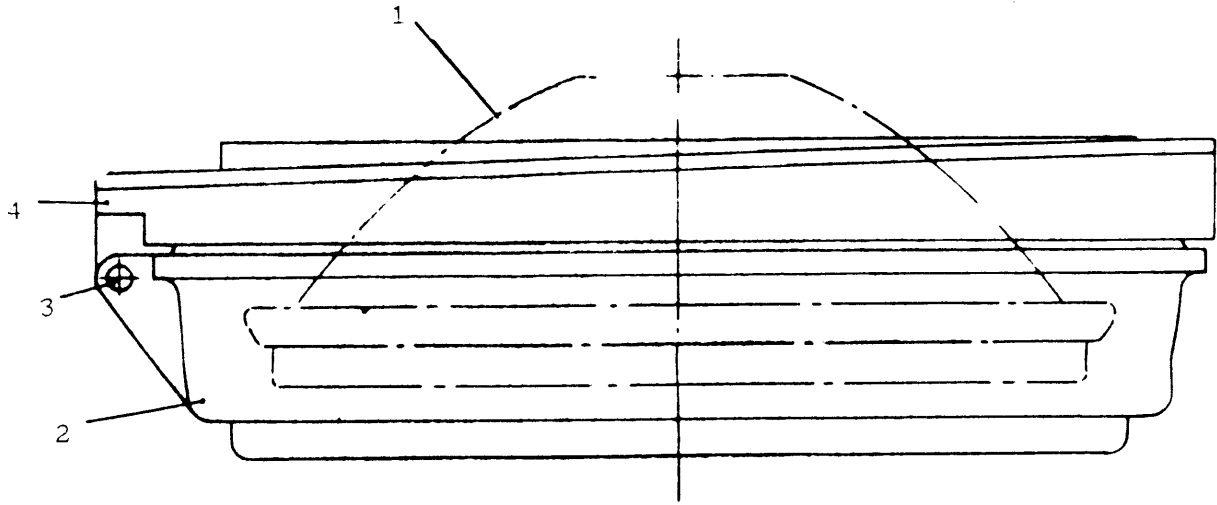


Figure 2 Bracket Details

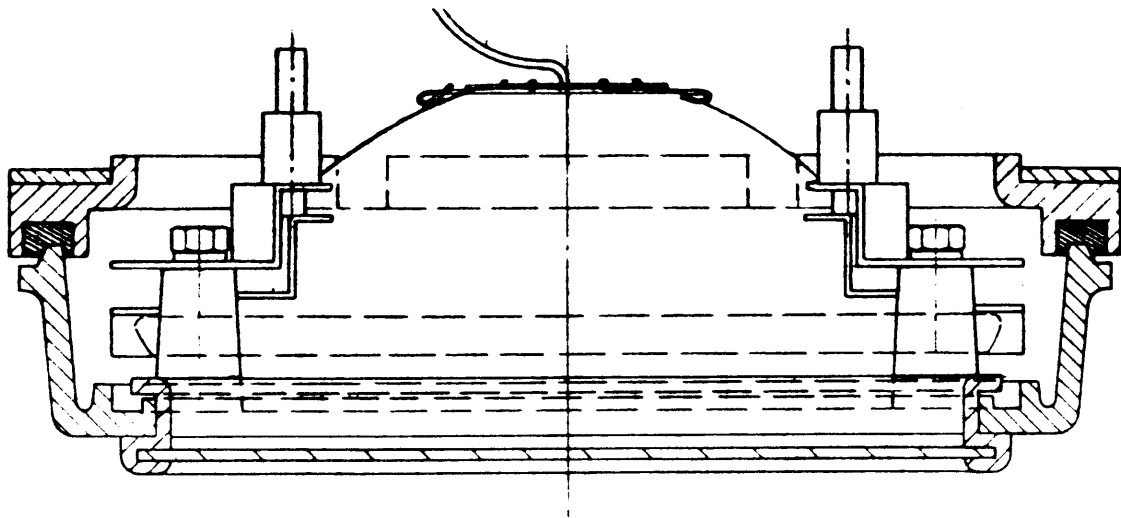
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Items List for Figure 3

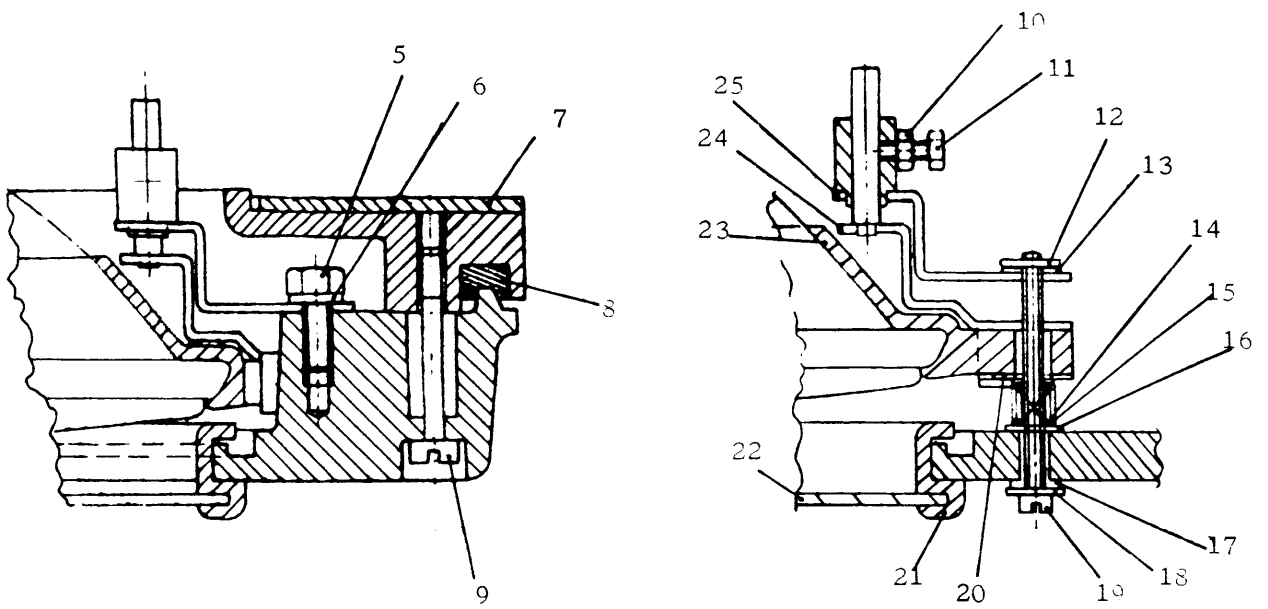
Item	Description	Wipac Part No.	BR Cat No.
3. 1	Luminair	B-C9530	
3. 2	Front	2601Y1P	
3. 3	Hinge pin	2601/4	093/049622
3. 4	Base	2601Y2P	
3. 5	Screw M6 x 16 hex plated		
3. 6	Lockwasher M6 plated		
3. 7	Rear gasket	2601/6	072/007237
3. 8	Base gasket	2601/9	072/007239
3. 9	Front fixing screw	2601/5	093/049625
3.10	Nut M4 plated		
3.11	Screw M4 x 10 hex plated		
3.12	Split pin	100D5P	
3.13	Washer	2652/8	
3.14	Inner spring	2652/10	
3.15	Outer spring	2652/9	
3.16	Washer	2652/8	
3.17	Front seal	2652/16	090/011733
3.18	Washer	2652/8	
3.19	Adjusting screw	2652/6	
3.20	Nyloc nut and plate	2628/9ZP	
3.21	Conversion ring	2601/10	
3.22	Window disc	2601/11	
3.23	Clamping gasket	2652/14	098/009215
3.24	Guide post bracket & post	2628/10ZP	
3.25	Guide bush bracket & bush RH	2628/12ZP	
	Guide bush bracket & bush LH	2628/11ZP	
Complete Fittings			
	Headlamp Unit	2611/12H4	055/011104



Side View



Sectioned View



Part Sectioned Views

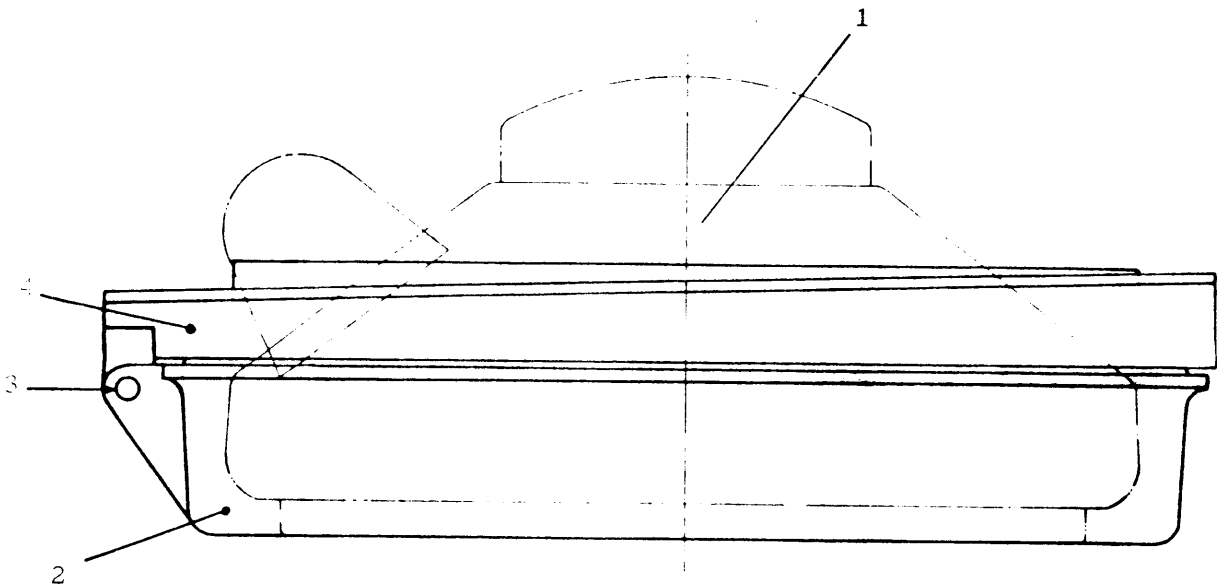
Figure 3 Adjustable Headlamp

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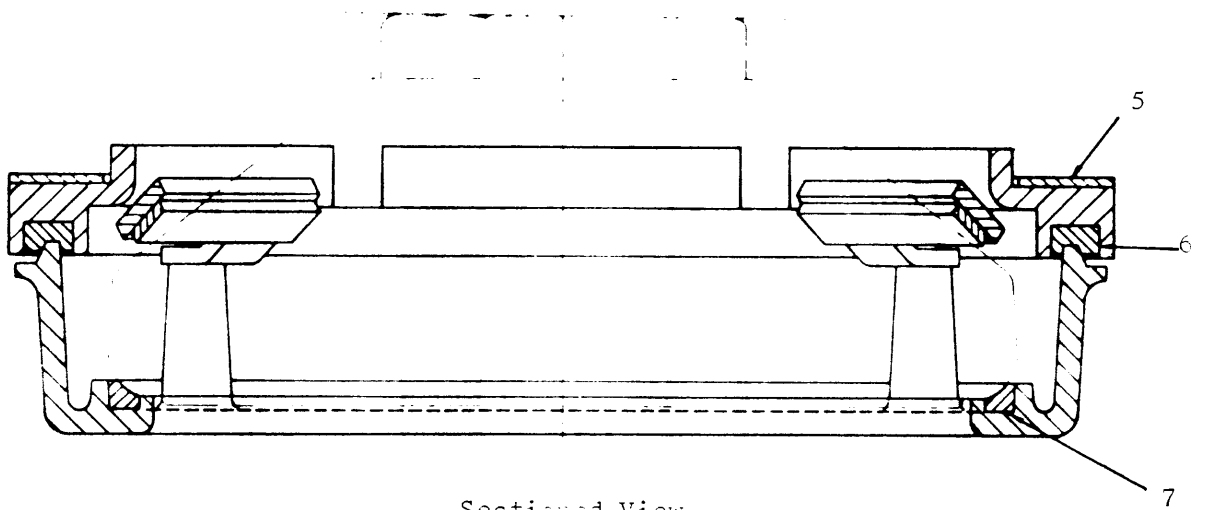
Items List for Figure 4

Item	Description	Wipac Part No.	BR Cat No.
4.0	Headlamp complete less lamp	2601 *	061/029815
4.1	Luminair with rubber body		
	12V 55W	B-C9430	015/082539
	24V 70W	B-C9444	
4.2	Front	2601/1P	
4.3	Hinge pin	2601/4	093/049622
4.4	Base	2610/2P	
4.5	Rear gasket	2601/6	072/007237
4.6	Base gasket	2601/9	072/007239
4.7	Sealing ring	2601/7	098/007155
4.8	Clamping gasket	2601/8	072/007238
4.9	Clamping plate	2601/3	093/049623
4.10	Screw M6 x 16 hex plated		
	Lockwasher M6 plated		
4.11	Front fixing screw	2601/5	093/049625

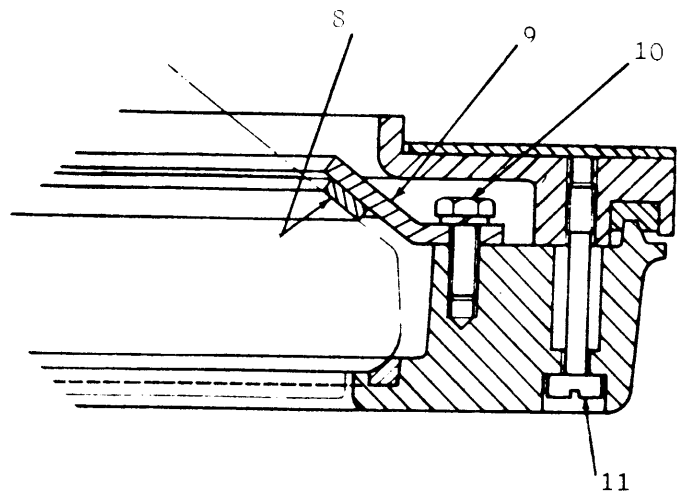
* - When stocks exhausted, use 055/011104



Side View



Sectioned View



Part Sectioned View

Figure 4 Non- Adjustable Headlamp

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Items List for Figure 5

Item	Description	Wipac Part No.	BR Cat No.
5. 1	Stud M6 x 25 plated Lockwasher M6 Nut M6 plated		003/195109 003/175113
5. 2	Grommet W 11/16" Z 1/8" *		
5. 3	Pop rivet ϕ 4.8 AD610		030/100750
5. 4	Adaptor: Class 31 BR Drg.9020466/1 Class 47 BR Drg.9010827/1 Class 85 BR Drg.8100063/02 Class 86 BR Drg.8100023/02 Class 303 BR Drg.8303291/01 Class 310 BR Drg.8303287/01		061/042036
5. 5	Luminaire	See Figure 3 or 4	
5. 6	Headlight mounting	2601	072/004960
Sub assemblies			
1.13)			
1.14)	Headlight fitting† BMAC	102315	061/099815
1.15)			
5. 6)			

Notes:-

* - Not fitted to Cl 86 & 87.

† - When stocks exhausted, use 055/011104

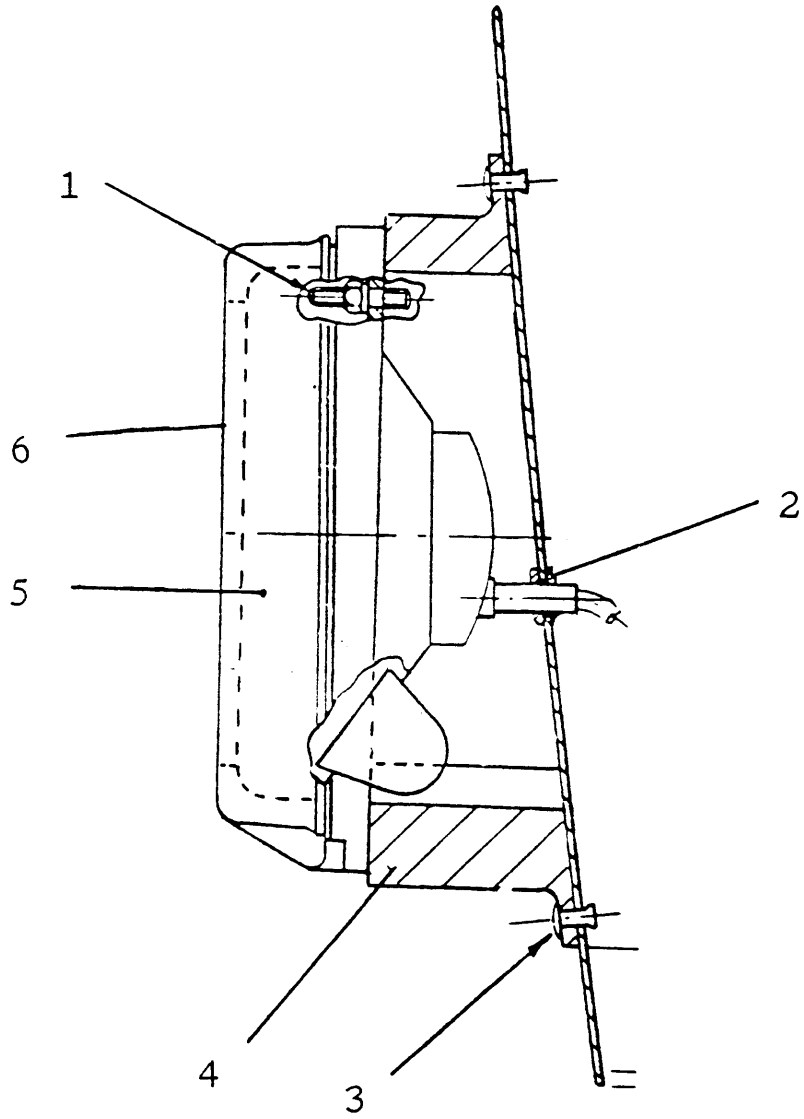


Figure 5 Adaptor Details

Items List for Figure 6

Item	Description	BMAC Part No.	BR Cat No.
6. 1	BC lampholder	L-2622BC	098/007151
6. 2	BC lampholder bracket	645/10P	090/010023
6. 3	Reflector	645/6P	072/004343
6. 4	Terminal block M5		
6. 5	Light shield	2622/9P	090/011731
6. 6	Marker light reflector	2622/11P	098/007154
6. 7	Screw M4 x 10 ch plated Lockwasher M4		
6. 8	Captive screw	645/3	015/002531
6. 9	Body LH Body RH	2622/2P 2622/1P	
6.10	Rear gasket	2622/7	098/007149
6.11	Hinge pin	2622/4	015/082526
6.12	Hinge bracket	2622/3P	015/082525
6.13	Front	2622/1P	015/082524
Complete Fittings			
	RH, less lamps	2623	098/007038
	LH, less lamps	2622	098/007037
	RH, with headlamp C1 155	2627/R12W2	015/079841
	LH, with headlamp C1 155	2626/R12W2	015/079840
	RH, with headlamp	2623	015/078035
	LH, with headlamp	2622	015/078036
	RH, with headlamp	2627/R12/W1	015/079840
	LH, with headlamp	2627/R12/W1	015/079841
	LH, with headlamp C1 318		098/007019
	RH, with headlamp C1 318		098/007020
	LH, with headlamp C1 319	2628Y12H4	098/008774
	RH, with headlamp C1 319	2629Y12H3	098/008775

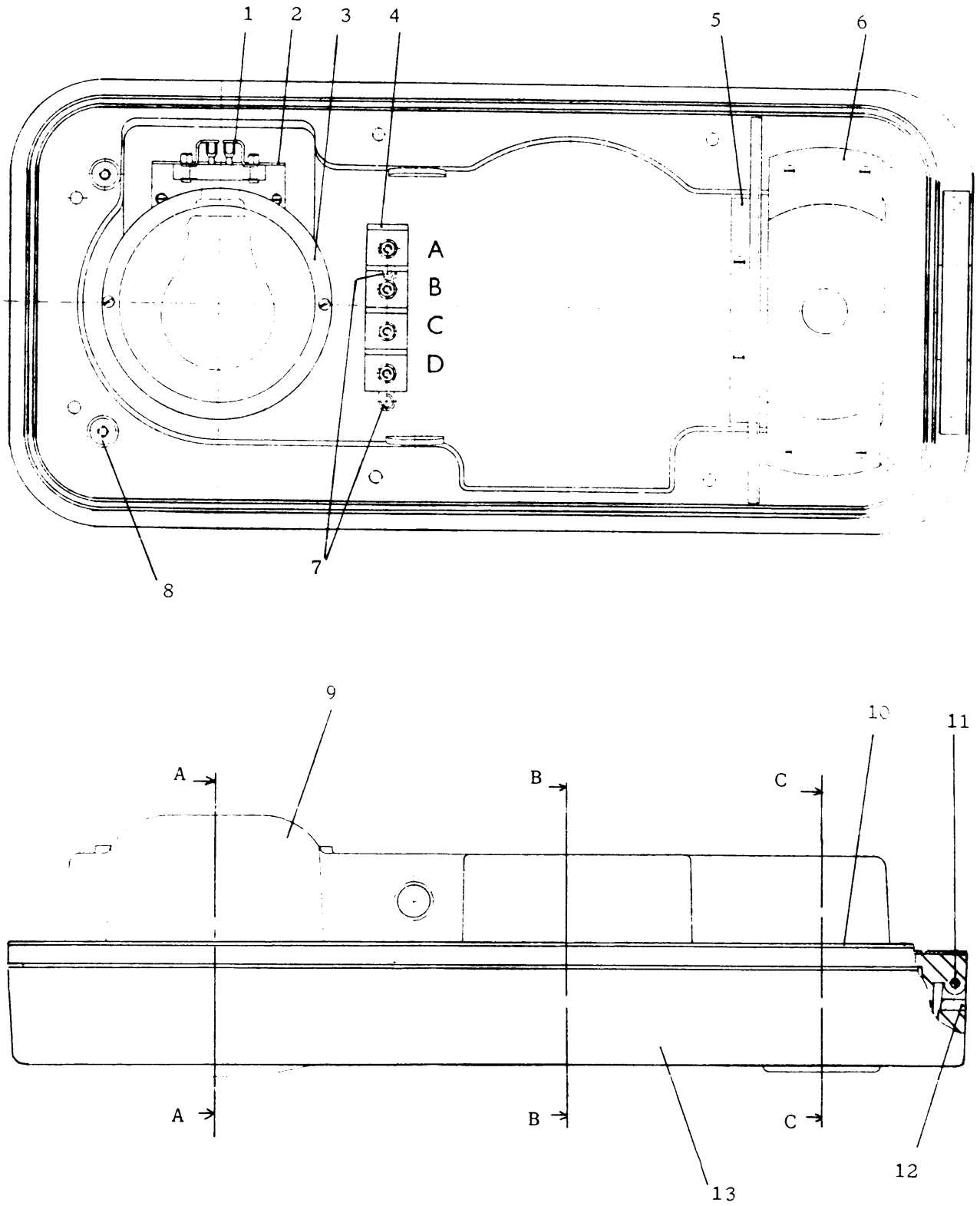


Figure 6 Combined Unit

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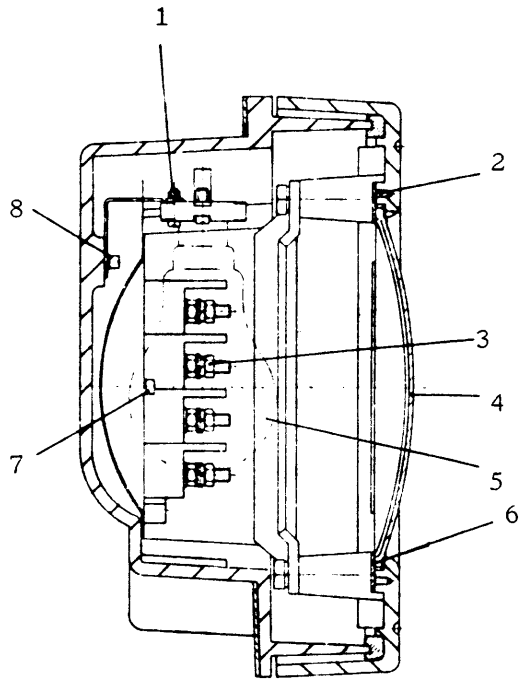
Items List for Figure 7

Item	Description	BMAC Part No.	BR Cat No.
7. 1	Nut M4 Screw M4 x 15 ch plated Lockwasher M4		
7. 2	M3 x 5 csk plated		
7. 3	Nut M5 Lockwasher M5 Washer M5 brass		
7. 4	Red lens	645/7R	098/003789
7. 5	Lamp 28V 25W BC		
7. 6	Lens clamping plate	645/11	051/005593
7. 7	Screw M4 x 8 ch plated Lockwasher M4		
7. 8	Screw M4 x 8 ch plated Lockwasher M4		
7. 9	Clamping plate	2601/3	093/049623
7.10	Clamping gasket	2601/8	072/007238
7.11	Screw M6 x 16 hex plated Lockwasher M6		
7.12	Sealing strip	2622/6	098/007156
7.13	Sealing ring	2601/7	098/007155
7.14	Gasket	2622/12	
7.15	Window, polycarbonate clear	2622/22	098/011199
7.16	Screw M4 x 8 ch plated Lockwasher M4		
7.17	Headlight H3 *	C9262	061/029814
7.18	Screw M6 x 16 hex plated Lockwasher M6		
7.19	Spacing post	2622/10	
7.20	Screw M4 x 25 ch plated Lockwasher M4		
7.21	Marker light window	2622/5	098/007153
7.22	Screw M3 x 6 pan plated Lockwasher M3 plated		
7.23	Marker window clamp	2622/8	
7.24	Lamp 28V 15W SBC		
7.25	Sealing putty		
7.26	SBC lampholder	L-2622SBC	098/007157

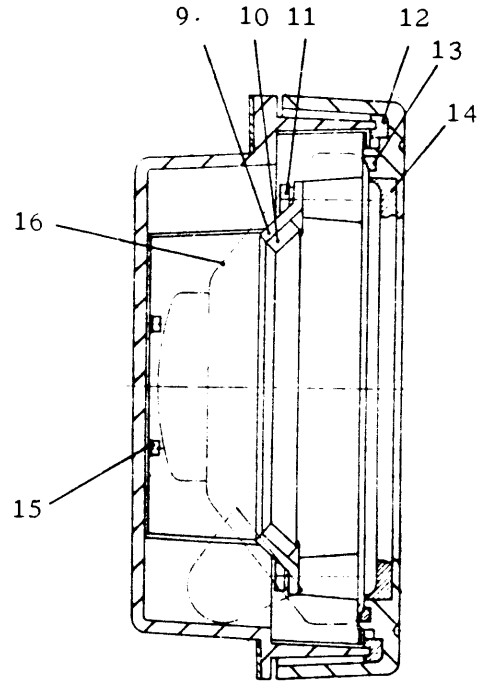
* NOTE

Some combined units are fitted with secondary headlamp adjustment. These are fitted with different bulbs:

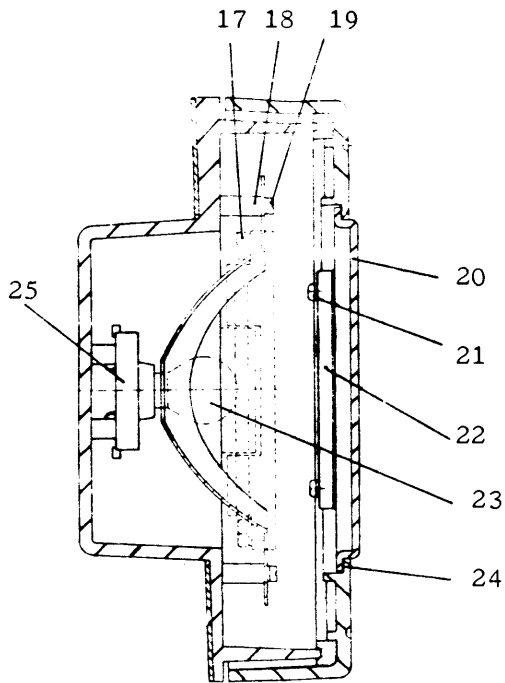
7.17	Headlight H4 night duty	C9529	098/008500
	H4 bulb	B650472	098/008550
	Headlight H3 day duty	C9530	098/008501
	H3 bulb (Lucas 453)	16355	090/003922



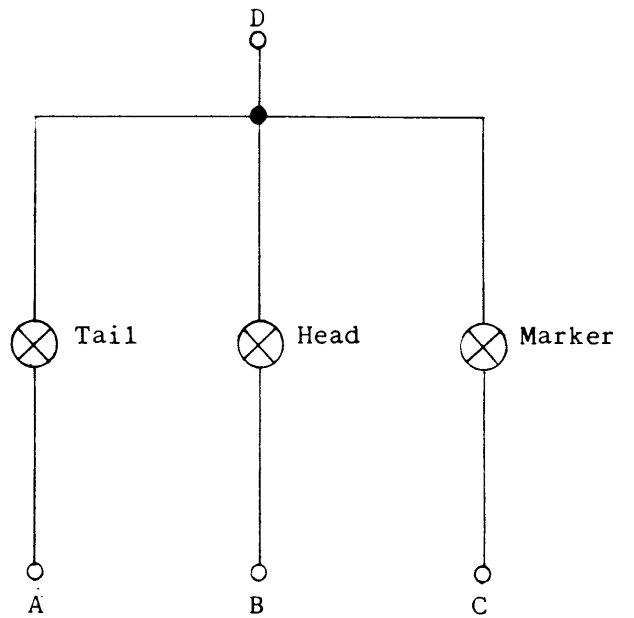
Section A-A



Section B-B



Section C-C



Internal Wiring

Figure 7 Combined Unit: Sectioned Views

SECTION 2 TEST SPECIFICATION

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.

- 1 With the vehicle on level track, switch the headlamp on and check that the beam projects slightly to the right (facing vehicle) and slightly below the horizontal.
- 2 Switch off the headlamp.
- 3 Repeat 1-2 for other headlamp(s).

SECTION 3 TECHNICAL DATA

Table 1 Vehicle Classes and Headlamp Types

Class	Mounting	Fig.	Remarks	Part No.	BR Cat No.
26	Direct	5		2611/12H4	055/011104
31	Adaptor	5		2601 †	061/029814
37 43	Bracket	1-2			
47	Adaptor	5		2601 †	061/029814
50 56 58	Direct	5			
60	Comb'd unit *	6-7	LH, less lamps RH, less lamps	2652/12H4 2653/12H3	090/011334 090/011333
85	Adaptor	5		2601 †	061/029814
86	Adaptor	5		2601 †	061/029814
87	Adaptor	5			
90	Comb'd unit *	6-7	LH, less lamps RH, less lamps	2652/12H4 2653/12H3	090/011334 090/011333
91	Comb'd unit *	6-7	LH RH	2653/12WLH 2653/12WRH	
101	Adaptor	5			
108 117 121 122	Direct	5		2611/12H4	055/011104
140 141 142	Direct	5			
143 144	Comb'd unit	6-7	LH, less lamps RH, less lamps	2622/R12W2 2622/R12W2	015/082490 015/082491

Notes:-

* - Fitted with secondary adjustment.

† - When stocks exhausted, use BMAC part 2611/12H4, Cat. No 055/011104

Table 1 Continued

Class	Mounting	Fig.	Remarks	Part No.	BR Cat No.
150	Comb'd unit	6-7	LH, less lamps RH, less lamps	2622 2623	015/078036 015/078035
155	Comb'd unit	6-7	LH, } RH, } See Note	2626/R12W2 2627/R12W2	015/079840 015/079841
156	Comb'd unit	6-7	LH, less lamps RH, less lamps	2622 2623	098/007037 098/007038
158	Comb'd unit *	6-7	LH RH	2652/12H4 2653/12H3	090/011334 090/011333
165	Comb'd unit *	6-7			
303 310	Bracket	5		2611/12H4	055/011104
312	Bracket	1-2			
313-4-5 507-8	Direct	3/4			
317/1	Direct	3/4			
317/2 318	Comb'd unit	6-7	LH, less lamps RH, less lamps	2624 2625	098/007146 098/007147
319	Comb'd unit	6-7	LH, with lamps RH, with lamps	2628/Y12H4 2629/Y12H3	098/008774 098/008775
442			LH RH	2672/12H3 2673/12H4	098/008979 098/008980
455/1-2	Direct	3/4			
455/4	Comb'd unit	6-7	LH, less lamps RH, less lamps	2624 2625	098/007146 098/007147
DBSO	Direct	3/4			

* Fitted with secondary adjustment.

Note:- Lamp units for Class 155 supplied with headlamp only.

SECTION 4 ADDITIONAL PROCEDURES

API Combination Units: Re-glazing of Window

Materials	BR Cat No.
Glazing kit (for 25 windows)	098/011197
25 x window	
1 x tube sealant	
1 x tube primer	
1 x tube etch primer	
1 x luminair	

- 1 Remove and discard gasket (7.14).
- 2 Clean and dry the front.
- 3 Remove all adhesive from window aperture.
- 4 Lightly abrade the casting around the window aperture.
- 5 Degrease the casting around the window aperture with white spirit.
- 6 Apply Sika 205 primer to the prepared area of the front.
- 7 Prime the circumference of the window with Sika 210T primer.
- 8 Apply Sikaflex sealant to the prepared area of the front.
- 9 Fit the window.
- 10 Remove excess sealant from outside of window with a clean dry cloth.
- 11 Apply an even force of 12 Kg to the window and retain for 41 hrs at 15°C or 38 hrs at 20°C.
- 12 Remove any sealant and dirt from the inside of the window.

AP2 Refurbishment of Combined Unit Front

Materials

BR Cat No.

Unrefurbished front

015/082524

- 1 Remove screws and lockwasher (7.11), clamping plate (7.9), clamping gasket (7.10) and luminaire (7.18). Discard the luminaire if damaged or defective.
- 2 Remove and discard gasket (7.14) and discard the window (7.15) if fitted.
- 3 Remove and discard the screws (7.2) and lens clamping plate (7.6). Remove the red lens (7.4). Discard the lens if defective.
- 4 Remove and discard the screws (7.23) and marker window clamp (7.24). Remove the marker light window (7.22) and sealing putty (7.26).
- 5 Remove the sealing strip (7.12).
- 6 Clean and degrease the casting.
- 7 Etch prime the casting.
- 8 Coat the casting with powdered nylon and stove bake.
- 9 Fit each window in accordance with AP1.