

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable sheaf 3 at Fuse Box (Right)</b>							
65	white	—	from fuse box (connection No. 10) to flash signal mechanism for upper beam	4	56a	—	2.5
62	white	—	from lower beam foot switch to fuse box (connection No. 10)	18	56a	—	2.5
56	red	—	from light switch (rotary) to fuse box (connection No. 1)	14	30	—	1.0
46	grey	—	from light switch (rotary) to fuse box (connection No. 8)	14	58	—	1.0
75	yellow	—	from low beam switch to fuse box (connection No. 12)	18	56b	—	2.5
10	black	—	from steering lock to fuse box (connection No. 6)	7	15/54	—	1.0
21	black	—	from fuse box (connection No. 6) to ignition coil	29	15	—	1.5
<b>Cable sheaf 4 at Flash Signal Mechanism for Upper Beam</b>							
27	black	blue	from fuse box (fuse No. 4) to flash signal mechanism for upper beam	2	15	—	2.5
65	white	—	from fuse box (connection No. 10) to flash signal mechanism for upper beam	3	56a	—	2.5
26	black	—	from upper beam flash mechanism switch to flash mechanism for upper beam	13	31	—	1.5
<b>Cable sheaf 5 at Cable Connector – Tail Lights – Wiring Harness</b>							
23	black	green	from cable connector – steering – to cable connector – tail lights – wiring harness (flash signal rear right)	28	—	—	1.0
22	black	white	from cable connector – steering – to cable connector – tail lights – wiring harness (flash signal rear left)	28	—	—	1.0
74	blue	black	from reserve fuel indicator or, alternatively, from instrument cluster plug-socket to connector – tail lights – wiring harness	32	—	—	0.5
51	grey	yellow/red	from reversing light switch to cable connector – tail lights – wiring harness (reversing light)	30	—	—	1.0
49	grey	black	from fuse box (fuse No. 8) to cable connector – tail lights – wiring harness (tail light left)	2	—	8	0.5
48	grey	—	from fuse box (fuse No. 7) to cable connector – tail lights – wiring harness (tail light right)	2	—	7	1.0
71	blue	—	from instrument cluster plug-socket to cable connector – tail lights – wiring harness (fuel level indicator for fuel gage)	32	—	—	0.5
4	black	red	from brake light switch to cable connector – tail lights – wiring harness (brake light)	19	—	—	0.75
70	green	black	from parking light changeover switch to cable connector – tail lights – wiring harness (parking light rear left)	15	—	—	0.5
69	green	—	from parking light changeover switch to cable connector – tail lights – wiring harness (parking light rear right)	15	—	—	0.5
<b>Cable sheaf 6 at Switch for Starter Cable</b>							
16	black	—	from fuse box (fuse No. 2) to switch starter cable	2	—	2	0.5
17	black	red	from switch starter cable to pilot light or, alternatively, to instrument cluster plug-socket	32	—	—	0.5

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable sheaf 7 at Steering Lock</b>							
57	red	—	from light switch (rotary) to steering lock	14	30	—	2.5
10	black	—	from steering lock (ignition switch part) to fuse box (connection No. 6)	3	15/54	—	1.0
72	blue	—	from regulator to steering lock (charging light)	36	61	—	1.0
24	black	red	from steering lock to starter push-button switch	12	15	—	2.5
<b>Cable sheaves 8 and 9 at Cigar Lighter</b>							
30	brown	—	from cigar lighter to ground	31	—	—	1.5
9	black	—	from fuse box (fuse No. 5) to cigar lighter	2	—	5	1.5
<b>Cable sheaf 10 at Push-Pull Switch for Windshield Wipers</b>							
6	black	mauve	from fuse box (fuse No. 2) to push-pull switch for windshield wipers	2	—	2	1.5
8	black	—	from push-pull switch for windshield wipers to wiper motor	33	—	—	1.5
<b>Cable sheaf 11 at Push-Pull Switch for Instrument Lighting</b>							
44	grey	red	from fuse box (fuse No. 8) to push-pull switch for instrument lighting	2	—	8	0.5
47	grey	—	from push-pull switch of instrument lighting to clock (lighting)	34	—	—	0.5
45	grey	—	from push-pull switch of instrument lighting to instrument cluster (lighting) or, alternatively, to instrument cluster plug-socket	32	—	—	0.5
<b>Cable sheaf 12 at Starter Push-Button Switch</b>							
25	black	red	from starter push-button switch to starter	37	50	—	2.5
24	black	red	from steering lock to starter push-button switch	7	15	—	2.5
<b>Cable sheaf 13 at Upper Beam Flash Signal Switch</b>							
26	black	—	from upper beam flash signal switch to flash signal mechanism for upper beam	4	31	—	1.5
41	brown	—	from upper beam flash signal switch to ground	31	—	—	1.0
<b>Cable sheaf 14 at Light Switch (Rotary)</b>							
58	red	—	from fuse box (fuse No. 1) to rotary light switch (parking light)	2	—	1	0.5
60	red	yellow	from rotary light switch (parking light) to toggle switch for parking light	15	—	—	0.5
61	white	black	from rotary light switch to low beam foot switch	18	56	—	2.5
56	red	—	from rotary light switch to fuse box (connection No. 1)	3	30	—	1.0
46	grey	—	from rotary light switch to fuse box (connection No. 8)	3	58	—	1.0
57	red	—	from rotary light switch to steering lock	7	30	—	2.5

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
52	grey	red	from fuse box (fuse No. 8) to fog-light switch (rotary light switch)	2	—	8	2.5
15	black	—	from fog-light switch (rotary light switch) to fog lights	24	—	8	2.5
55	red	—	from fuse box (fuse No. 1) to cable connector for roof light	2	—	1	0.5
53	red	—	from starter to rotary light switch	37	30	—	4.0
<b>Cable sheaf 15 at Toggle Switch for Parking Light</b>							
60	red	yellow	from rotary light switch (parking light) to toggle switch for parking light	14	—	—	0.5
69	green	—	from toggle switch for parking light to cable connector – tail lights – wiring harness (parking light rear right)	5	—	—	0.5
67	green	—	from toggle switch for parking light to parking light front right	35	—	—	0.5
70	green	black	from toggle switch for parking light to cable connector – tail lights – wiring harness (parking light rear left)	5	—	—	0.5
68	green	black	from toggle switch for parking light to parking light front left	17	—	—	0.5
<b>Cable sheaf 16 at Toggle Switch for Blower</b>							
19	black	yellow/red	from toggle switch for blower to cable connector, blower left	26	—	—	0.5
18	black	red	from fuse box (fuse No. 6) to toggle switch for blower	2	—	6	0.5
<b>Cable sheaf 17 at Flash Direction Signal (With Parking Light) Front Left</b>							
13	black	white	from cable connector – steering – to flash signal front left	28	—	—	1.0
39	brown	—	from flash signal left to ground	31	—	—	1.0
68	green	black	from toggle switch for parking light to parking light front left	15	—	—	0.5
<b>Cable sheaf 18 at Lower Beam Foot Switch</b>							
61	white	black	from rotary light switch to lower beam foot switch	14	56	—	2.5
62	white	—	from lower beam foot switch to fuse box (connection No. 10)	3	56a	—	2.5
75	yellow	—	from lower beam foot switch to fuse box (connection No. 12)	3	56b	—	2.5
<b>Cable sheaf 19 at Brake Light Switch</b>							
3	black	red	from fuse box (fuse No. 6) to brake light switch	2	—	6	0.75
4	black	red	from brake light switch to cable connector – tail lights – wiring harness (brake light)	5	—	—	0.75

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable sheaf 20 at Lampholder, Headlight, Left</b>							
64	white	black	from fuse box (fuse No. 10) to headlight upper beam left	2	56a	10	1.5
77	yellow	black	from fuse box (fuse No. 112) to headlight lower beam left	2	56b	12	1.5
43	grey	black	from fuse box (fuse No. 8) to headlight parking bulb left	2	58	8	0.5
38	brown	—	from headlight, left, to ground	27	31	—	1.5
<b>Cable sheaf 21 at Fog Lamp</b>							
15	black	—	from fog light switch (rotary light switch) to fog light	14	—	8	2.5
36	brown	—	from fog light to ground	24	—	—	2.5
<b>Cable sheaf 22 at Lampholder, Headlight, Right</b>							
35	brown	—	from headlight, right, to ground	24	31	—	1.5
63	white	—	from fuse box (fuse No. 9) to headlight upper beam right	2	56a	9	1.5
76	yellow	—	from fuse box (fuse No. 11) to headlight lower beam right	2	56b	11	1.5
42	grey	—	from fuse box (fuse No. 7) to headlight parking bulb right	2	58	7	0.5
<b>Cable sheaves 23 and 24 at Cable Connector, Blower Right</b>							
20	black	yellow/red	from cable connector, blower, left, to cable connector, blower, right	26	—	—	0.5
34	brown	—	from cable connector, blower, right, to ground	24	—	—	0.5
36	brown	—	from fog light to ground	21	—	—	2.5
35	brown	—	from headlight, right, to ground	22	31	—	1.5
<b>Cable sheaf 25 at Horn Unit</b>							
2	black	yellow	from horn unit to cable connector – steering	28	—	—	2.5
1	black	yellow	from fuse box (fuse No. 3) to horn unit	2	—	3	2.5
<b>Cable sheaves 26 and 27 at Cable Connector, Blower, Left</b>							
20	black	yellow/red	from cable connector, blower, left, to cable connector, blower, right	23	—	—	0.5
19	black	yellow/red	from toggle switch for blower to cable connector, blower, left	16	—	—	0.5
40	brown	—	from cable connector – steering – to ground	28	—	—	2.5
37	brown	—	from cable connector, blower, left, to ground	27	—	—	0.5
38	brown	—	from headlight, left, to ground	20	31	—	1.5

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable sheaf 28 at Cable Connector for Steering Tube Wiring Harness</b>							
40	brown	—	from cable connector – steering – to ground	27	—	—	2.5
2	black	yellow	from horn unit to cable connector – steering	25	—	—	2.5
12	black	white/green	from flash signal mechanism (terminal 54) to cable connector – steering	1	54	—	1.0
22	black	white	from cable connector – steering – to cable connector – tail lights – wiring harness (flash signal rear, left)	5	—	—	1.0
13	black	white	from cable connector – steering – to flash signal front, left	17	—	—	1.0
23	black	green	from cable connector – steering – to cable connector – tail lights – wiring harness (flash signal rear, right)	5	—	—	1.0
14	black	green	from cable connector – steering – to flash signal front, right	35	—	—	1.0
<b>Cable sheaf 29 at Ignition Coil</b>							
21	black	—	from fuse box (connection No. 6) to ignition coil	3	15	—	1.5
<b>Cable sheaf 30 at Cable Connector for Reversing Light Switch</b>							
51	grey	yellow/red	from cable connector reversing light switch to cable connector – tail lights – wiring harness (reversing light)	5	—	—	1.0
50	black	blue	from fuse box (fuse No. 4) to cable connector for reversing light switch	2	—	4	1.0
<b>Cable sheaf 31 Ground to Body Front Panel Left</b>							
31	brown	—	from instrument cluster or, alternatively, instrument cluster plug-socket to ground	32	—	—	0.5
28	brown	—	from flash signal mechanism to ground	1	31	—	1.0
32	brown	—	from wiper motor to ground	33	—	—	1.0
41	brown	—	from upper beam flash signal switch to ground	13	—	—	1.0
30	brown	—	from cigar lighter to ground	8	—	—	1.5
39	brown	—	from flash signal, left, to ground	17	—	—	1.0
<b>Cable sheaf 32 at Instrument Cluster Plug-Socket</b>							
5	black	—	from fuse box (fuse No. 2) to instrument cluster plug-socket (fuel gage)	2	—	2	0.5
71	blue	—	from instrument cluster plug-socket (fuel gage) to cable connector – tail lights – wiring harness (fuel level indicator mechanism)	5	—	—	0.5
45	grey	—	from push-pull switch for instrument lighting to instrument cluster plug-socket (lighting)	11	—	—	0.5

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
66	green	—	from flash signal mechanism to instrument cluster plug-socket (pilot light for flash signal)	<b>1</b>	—	—	0.5
17	black	red	from switch starter cable to instrument cluster plug-socket (pilot light for starter cable)	<b>6</b>	—	—	0.5
31	brown	—	from instrument cluster to ground	<b>31</b>	—	—	0.5
73	blue	white	from fuse box (fuse No. 9) to instrument cluster plug-socket (upper beam pilot light)	<b>2</b>	—	9	0.5
74	blue	black	from instrument cluster plug-socket (fuel reserve indicator) to cable connector – tail lights – wiring harness (fuel reserve indicator mechanism)	<b>5</b>	—	—	0.5
<b>Cable sheaf <b>33</b> at Windshield Wiper Motor</b>							
29	brown	—	from clock to ground	<b>34</b>	—	—	0.5
33	brown	—	from flash signal, right, to ground	<b>35</b>	—	—	1.0
32	brown	—	from wiper motor to ground	<b>31</b>	—	—	1.0
8	black	—	from push-pull switch for windshield wipers to wiper motor	<b>10</b>	—	—	1.5
7	black	mauve	from fuse box (fuse No. 2) to wiper motor	<b>2</b>	—	2	1.5
<b>Cable sheaf <b>34</b> at Clock</b>							
29	brown	—	from clock to ground	<b>33</b>	—	—	0.5
47	grey	—	from push-pull switch for instrument lighting to clock (lighting)	<b>11</b>	—	—	0.5
59	red	—	from fuse box to electric clock (in the standard version, a mechanical clock is fitted – lead not connected)	<b>2</b>	—	1	0.5
<b>Cable sheaf <b>35</b> at Flash Signal (With Parking Light), Front, Right</b>							
67	green	—	from toggle switch for parking light to parking light, front, right	<b>15</b>	—	—	0.5
33	brown	—	from flash signal, right, to ground	<b>33</b>	—	—	1.0
14	black	green	from cable connector – steering – to flash signal, front, right	<b>28</b>	—	—	1.0
<b>Cable sheaf <b>36</b> at Regulator</b>							
72	blue	—	from regulator to steering lock (charging light)	<b>7</b>	61	—	1.0
54	red	—	from starter to regulator	<b>37</b>	51	—	2.5
<b>Cable sheaf <b>37</b> at Starter</b>							
25	black	red	from starter push-button switch to starter	<b>12</b>	50	—	2.5
53	red	—	from starter to rotary light switch	<b>14</b>	30	—	4.0
54	red	—	from starter to regulator	<b>36</b>	51	—	2.5

**Note:** It is possible that changes may be made in the color coding system of the individual leads. In this case, the change can easily be seen from a study of the circuit diagram of the main wiring harness (see Fig. 54—1/1).

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Terminal	Fuse box connection No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable Sheaf 35 at Flash Signal (With Parking Light), Front, Right</b>							
67	green	—	from toggle switch for parking light to parking light, front, right	15	—	—	0.5
33	brown	—	from flash signal, right, to ground	33	—	—	1.0
14	black	green	from cable connector – steering – to flash signal, front, right	28	—	—	1.0
<b>Cable Sheaf 36 at Regulator</b>							
72	blue	—	from regulator to steering lock (charging light)	7	61	—	1.0
54	red	—	from starter to regulator	37	51	—	2.5
<b>Cable Sheaf 37 at Starter</b>							
25	black	red	from starter push-button switch to starter	12	50	—	2.5
53	red	—	from starter to rotary light switch	14	30	—	4.0
54	red	—	from starter to regulator	36	51	—	2.5

**Note:** It is possible that changes may be made in the color coding system of the individual leads. In this case, the change can easily be seen from a study of the circuit diagram of the main wiring harness (see Fig. 54—1/1).

## C. Removal and Installation of Main Wiring Harness

The cable sheaf and lead numbers shown in the following text all refer to Section A, Fig. 54—1/1.

### Removal:

1. Remove the hood (see Job No. 88—6).
2. Remove the battery (see Job No. 54—9).
3. Remove the cowl insulation panel in the engine compartment (see Job No. 68—2).
4. Remove the air duct with heat exchangers, left and right (see Job No. 83—5).
5. Remove the scoops with blowers, left and right (see Job No. 83—4).
6. Remove both headlights and disconnect Leads Nos. 38, 43, 77 and 64 at headlight left, and Nos. 42, 76, 63 and 35 at headlight right (see Job No. 82—1, Section A). Pull back the Cable Sheaves 20 (left) and 22 (right) into the engine compartment (Fig. 54—1/2).
7. Disconnect Cable Sheaf 21 with Leads Nos. 15 and 36 at the fog light (see Job No. 82—19).
8. Disconnect Cable Sheaf 25 with Leads Nos. 1 and 2 at horn (see Job No. 54—15).
9. Unscrew the two cable sheaf clips on the front cross tube.
10. Disconnect Cable Sheaf 26 with Leads Nos. 19 and 20 and Ground Lead No. 37 from Cable Sheaf 27 at cable connector (1) for the heater blower, left.  
Disconnect Cable Sheaf 27 with Ground Leads Nos. 37, 38 and 40 at clip (5) and remove the clip (5) (Fig. 54—1/2).

11. Disconnect Cable Sheaf **23** with Lead No. 20 and Ground Lead No. 34 from Cable Sheaf **24** at cable connector for the heater blower, right. Disconnect Cable Sheaf **24** with Ground Leads Nos. 34, 35 and 36 at the clip and remove the clip.
12. Disconnect Cable Sheaf **29** with Lead No. 21 at the ignition coil (4) (see Fig. 54 — 1/2).
13. Disconnect Cable Sheaf **23** with Leads Nos. 2, 12, 13, 14, 22, 23 and 40 at cable connector (3) for steering tube cable harness (6) (see Fig. 54 — 1/2).
15. Disconnect Cable Sheaf **19** with Leads Nos. 3 and 4 at the brake light switch (see Job No. 54 — 13).
16. Remove the foot dimmer switch at toe-board and disconnect Cable Sheaf **18** with Leads Nos. 61, 62 and 75 (see Job No. 54 — 14). Pull Cable Sheaf **18** through the cowling into the engine compartment.
17. Disconnect Cable Sheaf **31** with Ground Leads Nos. 31, 32, 30, 28, 41 and 39 at the fixing clip (1) at the cowling. Remove the fixing clip (1) (Fig. 54 — 1/3).

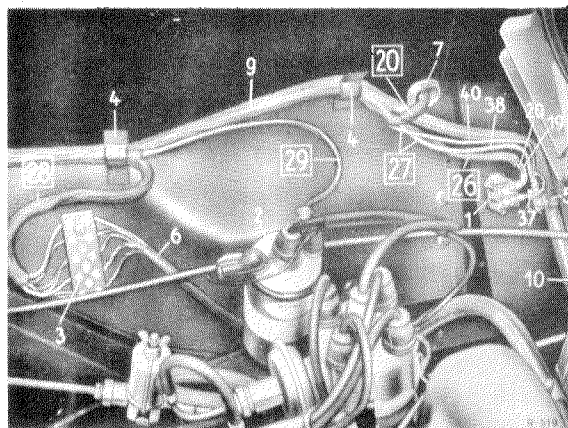


Fig. 54 — 1/2

- 1 Cable connector for heater blower at left wheel arch assembly
- 2 Ignition coil
- 3 Cable connector for steering tube cable harness
- 4 Fixing clip
- 5 Fixing clip
- 6 Cable harness steering tube
- 7 Rubber grommet
- 9 Cable arm
- 10 Cable arm
- 19 Black/yellow/red cable (Lead No. 19) from toggle switch for blower to cable connector, blower, left
- 20 Black/yellow/red cable (Lead No. 20) from cable connector, blower, left, to cable connector, blower, right
- 37 Brown cable (Lead No. 37) from cable connector, blower, left, to ground
- 38 Brown cable (Lead No. 38) from headlight, left, to ground
- 40 Brown cable (Lead No. 40) from cable connector, steering to ground

The figures in white squares are the numbers of the individual cable sheaves (see Sections A and B).

14. Disconnect Cable Sheaf **30** with Leads Nos. 50 and 51 at the cable connector for the reversing light switch and take it out of the fixing clip (1) at the cowling (see Fig. 54—1/4).

**Note:** The cable connector of the reversing light switch is fixed to the bearing assembly for the shift linkage.

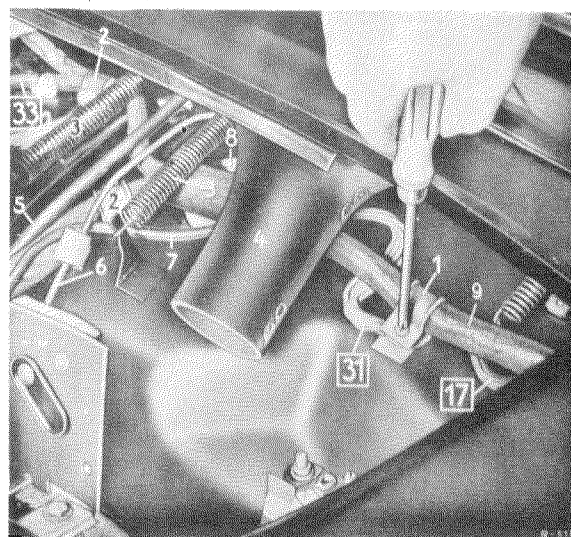


Fig. 54 — 1/3

- 1 Fixing clip
- 2 Fixing clip
- 3 Tension spring
- 4 Defroster jet
- 5 Flexible drive shaft for speedometer
- 6 Oil pressure gage line
- 7 Capillary tube for radiator thermometer
- 8 Rubber grommet
- 9 Cable arm

The figures in white squares are the numbers of the individual cable sheaves (see Sections A and B).

18. Remove the left and right flash signals with parking lights (see Job No. 82 — 3). Disconnect Cable Sheaf **17** (left) with Leads Nos. 13, 39 and 68 and also Cable Sheaf **35** (right) with Leads Nos. 14, 33 and 67 and pull the Cable Sheaf through the wheel arch assembly into the engine compartment (Fig. 54 — 1/4).

19. Remove the bracket for the fuse box (see Job No. 68 — 3, Para 6).

Disconnect the leads to the fuse box (see Job No. 54—0, Section D).

20. Disconnect Cable Sheaf **1** with Leads Nos. 28, 66, 12 and 11 at the flash signal mechanism (see Job No. 54—16, Section A).
21. Disconnect Cable Sheaf **4** with Leads Nos. 27, 65 and 26 at the upper beam flash signal mechanism (see Job No. 54—16, Section B).
22. Take apart the plug at Cable Sheaf **32** for the instrument cluster together with Leads Nos. 73, 74, 17, 31, 45, 66, 5 and 71 and pull it out (see Job No. 54—11, Section A).

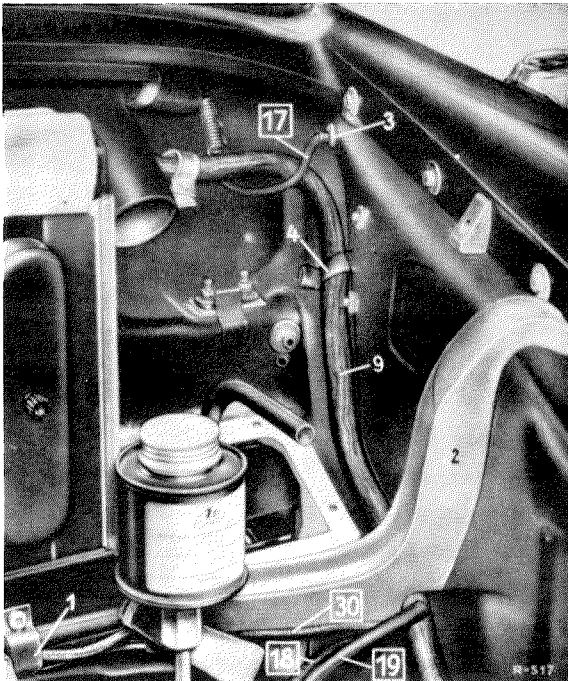


Fig. 54—1/4

- 1 Fixing clip
- 2 Seal, left, at wheel arch assembly
- 3 Rubber grommet
- 4 Fixing clip
- 9 Cable arm

The figures in white squares are the numbers of the individual cable sheaves (see Sections A and B).

23. Disconnect Cable Sheaf **33** with Leads Nos. 7, 8, 29, 33 and 32 at windshield wiper motor (see Job No. 82—4).
24. Remove the clock on the instrument panel (see Job No. 54—12) and disconnect Cable Sheaf **34** with Leads Nos. 29 and 47.

**Note:** Lead No. 59 in Cable Sheaf **34** is the feed for an electrically-driven clock.

25. Disconnect Cable Sheaf **36** with Leads Nos. 54 and 72 at the regulator cut-out switch of the generator (see Job No. 15—14).
26. Disconnect Cable Sheaf **37** with Leads Nos. 54, 53 and 25 at the starter and push it out of the rubber loops with which it is fixed to the starter cable (see Job No. 15—1).
27. Carefully bend up the spot-welded fixing clips (4) at the wheel arch assembly left and right and lift out the cable arms at the left and right (see Figs. 54—1/2 and 54—1/4).
28. Remove the sound-insulating material of the toe-board upper section, operating from inside the car. To do this, carefully bend up the fixing clips which are welded to the bodywork and take off the insulation card-board.
29. Disconnect Cable Sheaf **5** with Leads Nos. 23, 22, 74, 51, 49, 48, 71, 4, 70 and 69 at the cable connector for the tail-light wiring harness under the instrument panel and push it upward through the rubber grommet in the cowl (see Job No. 54—2, Section C).
30. Take out the cable cover behind the mounting plate for the control knobs.
31. Take out the ashtray.
32. Disconnect Cable Sheaf **8** with Lead No. 30 and Cable Sheaf **9** with Lead No. 9 at the cigar lighter (see Job No. 82—11).
33. Reach behind the steering column bracket (4) with the hand and after unscrewing the round nut (3), push back the contact cover (1) above the ignition switch (2) over the leads, far enough for the cable connections to be accessible (see Fig. 54—1/5).
24. Disconnect Cable Sheaf **7** with Leads Nos. 57, 10, 72 and 24 at the steering lock. Take off the contact cover (1) (see Job No. 15—21 and Fig. 54—1/5).
35. Remove the switch for the instrument panel lighting and disconnect Cable Sheaf **11** with Leads Nos. 44, 47 and 45 (see Job No. 54—18).

36. Remove the choke control and disconnect Cable Sheaf **6** with Leads Nos. 16 and 17 (see Job No. 30 — 6).

37. Remove the starter push-button switch and disconnect Cable Sheaf **12** with Leads Nos. 24 and 25 (see Job No. 54 — 19).

38. Remove the push-pull switch for the wind-shield wipers and disconnect Cable Sheaf **10** with Leads Nos. 6 and 8 (see Job No. 82 — 9).

39. Remove the headlight upper beam flash switch and disconnect Cable Sheaf **13** with Leads Nos. 26 and 41 and pull it out of the steering column jacket (see Job No. 54 — 17).

**Note:** Cable Sheaf **13** is taken through the steering column jacket. Its point of entry is at the panel cover plate at the instrument panel below the steering column. It is advisable to fix a length of thin wire to the end of the cable sheaf before pulling it out. This wire can then be used to pull a new sheaf in when re-installing.

40. Remove the panelling of the instrument panel left (see Job No. 83 — 3, Paras. 1 and 4). Disconnect Cable Sheaf **14** with Leads Nos. 58, 60, 61, 56, 46, 57, 52, 15 and 53 at the rotary light switch. Disconnect Lead No. 55 at the cable connector for the roof light (see Job No. 82 — 15).

41. Disconnect Cable Sheaf **15** with Leads Nos. 60, 69, 70, 67 and 68 at the toggle switch for the parking light (see Job No. 82 — 16).

42. Disconnect Cable Sheaf **16** with Leads Nos. 18 and 19 at the toggle switch for the blower (see Job No. 82 — 17).

43. Detach the tension springs (3) for the instrument cluster, disconnect the speedometer drive shaft (see Job No. 54 — 11, Section A) and unscrew the fixing clips (2) of the cable harness on the cowling. Carefully pull Cable Sheaves **5** to **16** through the cowling into the engine compartment. Take care that the speedometer drive shaft is not kinked. After all cable sheaves have been freed, take out the complete main wiring harness.

#### Installation:

44. Before installing, connect Cable Sheaves **2**

and **3** to the fuse box, with the fuse box removed (see Fig. 54 — 0/2).

**Note:** On Fig. 54 — 0/2 the front and rear faces of the fuse box are shown. For the sake of clarity the leads have been omitted from the illustration. Leads are connected to every terminal on which a screw can be seen. Those terminals where only an empty threaded bore is seen, remain free. The numbers of the individual leads on Fig. 54 — 0/2 correspond to those of Fig. 54 — 1/1.

45. Push the rubber grommet (8) over the cable arm which incorporates Cable Sheaves **5** to **16**. Working from the engine compartment side, place the main wiring harness in the opening in the cowling in such a position that Cable Sheaves **5** to **16** are on the inside. When this is done, make sure that the rubber grommet (8) is correctly positioned in the opening (see Fig. 54 — 1/3).

46. Take the cable arm (9) with Cable Sheaves **17** to **31** under the left defroster jet (4) and fix it to the cowling with the fixing clip (1) (see Fig. 54 — 1/3). Cable Sheaf **31**, with Ground Leads Nos. 31, 32, 30, 28, 41 and 39 should be connected at the same time by means of the screw which holds the fixing clip (1). Care must be taken to ensure that the connection is tinned.

47. Take the cable arm (9) along the wheel arch assembly and fix it in the spot-welded fixing clips (4), bending the latter into position (see Fig. 54 — 1/4).

48. Fix the cable arm (10) with Cable Sheaves **21** to **25** by means of the fixing clip (5) and at the same time connect Cable Sheaf **27** with the Ground Leads Nos. 40, 37 and 38 (see Fig. 54 — 1/2). Care must be taken to ensure that the connection is tinned.

49. Take the cable arm (10) with Cable Sheaves **21** to **25** in front of the radiator over the cross tube and fasten it to the cross tube with two fixing clips.

50. Pass Cable Sheaf **22** with Leads Nos. 42, 76, 63 and 35 through the cable conduit of the right front fender and connect it to right headlight (see Job No. 82 — 1, Section A).

Install the right headlight.

51. Pass Cable Sheaf **20** with Leads Nos. 64, 77, 43 and 38 through the cable conduit of the left front fender (see Fig. 54 — 1/2) and connect it to the left headlight (see Job No. 82 — 1, Section A).

Install the left headlight.

52. Connect Cable Sheaf **23** with Lead No. 20 and Ground Lead No. 34 from Cable Sheaf **24** to the cable connector for the heater blower, right.
53. Connect Cable Sheaf **26** with Leads Nos. 19 and 20 and Ground Lead No. 37 from Cable **27** to the cable connector (1) for the heater blower, left (see Fig. 54 — 1/2).

54. Connect Cable Sheaf **25** with Leads Nos. 1 and 2 to the horn (see Job No. 54 — 15).

55. Connect Cable Sheaf **21** with Leads Nos. 15 and 36 to the fog light (see Job No. 82 — 19).

**Note:** If no fog lights are fitted to the vehicle, insulate the end of cable No. 15 and roll up Cable Sheaf **21** and stow it away safely.

56. Connect Cable Sheaf **29** with Lead No. 21 to the ignition coil (see Fig. 54 — 1/2).

57. Connect Cable Sheaf **28** with Leads Nos. 23, 14, 22, 13, 12, 2 and Ground Lead No. 40 to the cable connector (3) for the cable harness (6) for the steering tube (see Fig. 54 — 1/2). The individual leads must be so connected that the color coding of the leads of the main wiring harness corresponds to the color coding of the leads of the cable harness for the steering tube.

58. Take Cable Sheaf **30** along the cowl and fix it with the pipe clip (1) (see Fig. 54 — 1/4). Connect Leads Nos. 50 and 51 to the cable connector.

**Note:** The cable connector for the reversing light switch is fixed to the bearing assembly for the shift linkage.

59. Connect Cable Sheaf **19** with Leads Nos. 3 and 4 to the brake light switch (see Job No. 54 — 13).

60. Push Cable Sheaf **18** with Leads Nos. 61, 62, and 75 through the cowl into the

foot space at the toeboard and connect it to the foot dimmer switch. Install the foot dimmer switch (see Job No. 54 — 14).

61. Take Cable Sheaf **17** with Leads Nos. 13, 39 and 68 through the left front wheel arch panelling and the left front fender (see Fig. 54 — 1/4). To do this, insert a hooked wire through the hole in the fender from above and push it through the hole in the wheel arch panelling. Push the rubber grommet (3) over the wire and then fix Cable Sheaf **17** to the wire. Pull the Cable Sheaf through the hole in the fender. Fix in position the rubber grommet (3) at the wheel arch panelling and the rubber grommet at the fender. Connect the leads to the flash direction signal and parking light and install the flash direction signal and parking light (see Job No. 82 — 3).

62. Push the cable arm with Cable Sheaves **32** to **37** under the flexible speedometer drive shaft and fix it in position along the cowl by means of the push-in clips provided for this purpose.

Continue taking the cable arm with Cable Sheaves **36** and **37** along the front right wheel arch panelling. The fixing clips provided for this purpose are spot-welded to the wheel arch panelling (see Fig. 54 — 1/2).

63. Connect Cable Sheaf **36** with Leads Nos. 54 and 72 to the regulator cut-out switch for the generator (see Job No. 15 — 14).

64. Connect Cable Sheaf **37** with Leads Nos. 25, 53 and 54 to the starter (see Job No. 15 — 1).

65. Connect Cable Sheaf **35** with Leads Nos. 14, 33 and 67 to the front right flash direction signal and parking light in the same way as was done at the left (see Para. 61).

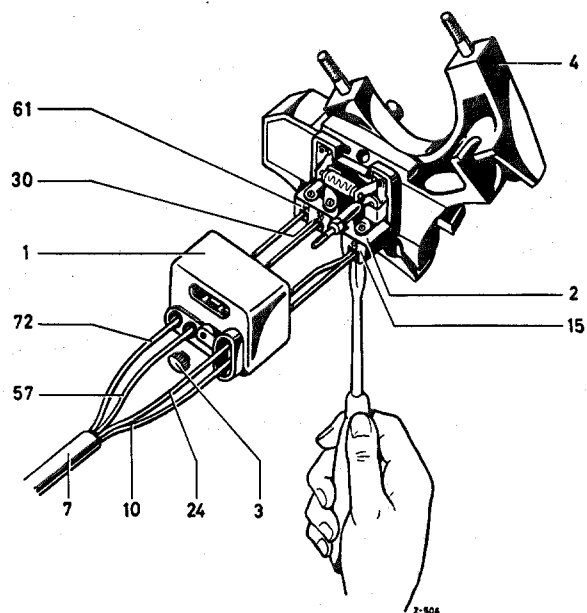
66. Connect Cable Sheaf **34** with Leads Nos. 29 and 47 to the clock and install the clock (see Job No. 54 — 12).

**Note:** Lead No. 59 which is inside Cable Sheaf **34** is incorporated for connecting an electrically-driven clock.

67. Connect Cable Sheaf **33** with Leads Nos. 7, 8 and Ground Leads Nos. 29, 32 and 33 to

the windshield wiper motor (see Job No. 82—4).

68. Fix Cable Sheaf **32** with Leads Nos. 73, 74, 17, 31, 45, 66, 5 and 71 under the speedometer drive shaft in the push-in clip and assemble the eight-way plug of the instrument cluster and screw it up (see Job No. 54—11, Section A).
69. Install the fuse box bracket and the fuse box, which has already been connected to the wiring harness (see Para. 44) (see Job No. 68—3, Para. 6).
70. Connect Cable Sheaf **1** with Leads Nos. 11, 12, 66 and Ground Lead No. 28 to the flash direction signal mechanism (see Job No. 54—16, Section A).
71. Connect Cable Sheaf **4** with Leads Nos. 27, 65 and 26 to the upper beam flash mechanism (see Job No. 54—16, Section B).
72. Pull Cable Sheaf **5** through the hole in the left glove-locker into the foot space at the toeboard and take it as far as the cable connector to the tail light wiring harness.



- |  |                                  |
|--|----------------------------------|
| 1 Contact cover                              | 15 Terminal 15                   |
| 2 Ignition switch                            | 24 Lead No. 24 (black/red cable) |
| 3 Round nut                                  | 30 Terminal 30                   |
| 4 Steering column bracket assembly with lock | 57 Lead No. 57 (red cable)       |
| 7 Cable sheaf                                | 61 Terminal 61                   |
| 10 Lead No. 10 (black cable)                 | 72 Lead No. 72 (blue cable)      |



Connect Leads Nos. 23, 22, 74, 51, 49, 48, 71, 4, 70 and 69 to the cable connector in such a way that the color coding of the cables of the main wiring harness corresponds to that of the cables of the tail light wiring harness.

73. Install the sound-insulating material of the toeboard upper section, operating from inside the car. Bend the fixing clips into position.
74. Connect Cable Sheaf **8** with Lead No. 30 and Cable Sheaf **9** with Lead No. 9 to the cigar lighter (see Job No. 82—11).
75. Push the contact cover (1) of the ignition switch over Leads Nos. 57, 10, 72 and 24 of Cable Sheaf **7** and connect the leads at the ignition switch (2) to terminals 15, 30 and 61 (Fig. 54—1/5).

(For further details see Job No. 15—21).

76. Push the contact cover (1) over the ignition switch (2) and screw it up tight with the round nut (3) (see Fig. 54—1/5).
77. Connect Cable Sheaf **11** with Leads Nos. 44, 47 and 45 to the switch for the instrument panel lighting and install the switch (see Job No. 54—18).
78. Connect Cable Sheaf **6** with Leads Nos. 16 and 17 to the choke control and install the choke control (see Job No. 30—6).
79. Connect Cable Sheaf **12** with Leads Nos. 24 and 25 to the starter push-button switch and install the switch (see Job No. 54—19).
80. Connect Cable Sheaf **10** with Leads Nos. 6 and 8 to the push-pull switch for the windshield wipers and install the push-pull switch (see Job No. 82—9).

81. Pull Cable Sheaf **13** into the steering column jacket with the aid of a piece of wire. Connect Leads Nos. 26 and 41 to the upper beam flash signal switch and install the upper beam flash signal switch (see Job No. 54—17).

**Note:** The point at which Cable Sheaf **13** enters the steering column jacket is near the panel

cover plate at the instrument panel beneath the steering column (see Note, Para. 39).

82. Connect Cable Sheaf **14** with Leads Nos. 58, 60, 61, 56, 46, 57, 52, 15 and 53 to the rotary light switch and install the rotary light switch. Connect Lead No. 55 to the cable connector for the roof light (see Job No. 82—15).
83. Connect Cable Sheaf **15** with Leads Nos. 60, 69, 70, 67 and 68 to the tumbler switch for the parking light and install the tumbler switch (see Job No. 82—16).
84. Connect Cable Sheaf **16** with Leads Nos. 18 and 19 to the tumbler switch for the blower and install the tumbler switch (see Job No. 82—17).
85. Install the panelling at the instrument panel at the left (see Job No. 83—3, Paras. 1 and 4).
86. Install the cable cover behind the mounting plate for the control knobs.  
Put in the ashtray.
87. Attach the two tension springs for the instrument cluster. Connect up the speedometer drive shaft (see Job No. 54—11, Section A).
88. Install the left and right scoops and blowers (see Job No. 83—4).
89. Install the left and right air ducts with heat exchangers (see Job No. 83—5).
90. Install the cowling insulation panel in the engine compartment (see Job No. 68—2).
91. Install the battery (see Job No. 54—9).
92. Install the hood (see Job No. 88—6).

# Tail Light Wiring Harness

Job. No.  
54—2

## A. Circuit Diagram of Tail Light Wiring Harness

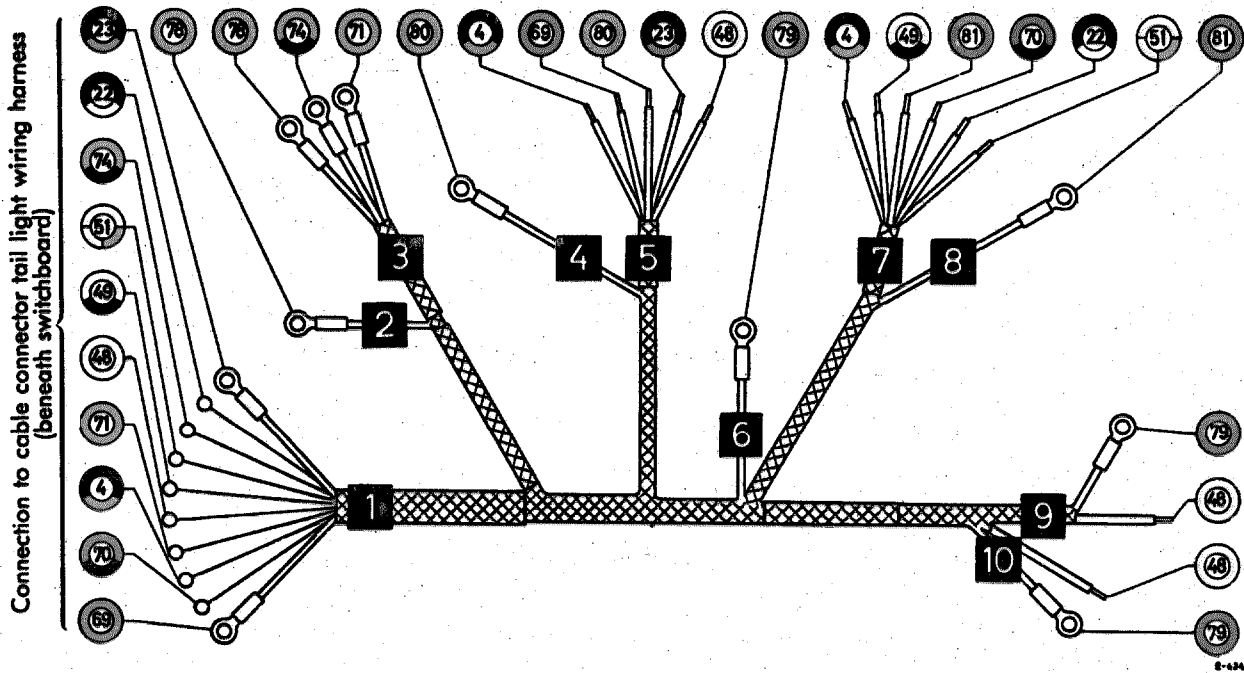


Fig. 54—2/1

## B. Appendix to Tail Light Wiring Harness

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable sheaf 1 at Cable Connector – Tail Lights – Wiring Harness</b>					
23	black	green	from cable connector – tail lights – wiring harness to flash signal, rear, right	5	1.0
22	black	white	from cable connector – tail lights – wiring harness to flash signal, rear, left	7	1.0
74	blue	black	from cable connector – tail lights – wiring harness to fuel level indicator mechanism (reserve)	3	0.5
51	grey	yellow/red	from cable connector – tail lights – wiring harness to reversing light (in left tail light)	7	1.0
49	grey	black	from cable connector – tail lights – wiring harness to tail light, left	7	0.5
48	grey	—	from cable connector – tail lights – wiring harness to tail light, right	5	main lead 1.0 branch leads 0.5
			and to license plate lighting, right	9	
			and to license plate lighting, left	10	
71	blue	—	from cable connector – tail lights – wiring harness to fuel level indicator mechanism (fuel gage)	3	0.5

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Cross-section of lead in mm <sup>2</sup>
4	black	red	from cable connector – tail lights – wiring harness to brake light, right and to brake light, left	5	main lead 1.0 branch leads 0.5 0.5
70	green	black	from cable connector – tail lights – wiring harness to parking light, rear, left	7	
69	green	—	from cable connector – tail lights – wiring harness to parking light, rear, right	7	
				5	0.5
<b>Cable sheaf 2 Ground at Trunk Compartment Floor</b>					
78	brown	—	from fuel level indicator mechanism to ground	3	0.5
<b>Cable sheaf 3 at Fuel Level Indicator Mechanism (Special Indicator)</b>					
78	brown	—	from fuel level indicator mechanism to ground	2	0.5
74	blue	black	from cable connector – tail lights – wiring harness to fuel level indicator mechanism (reserve)	1	0.5
71	blue	—	from cable connector – tail lights – wiring harness to fuel level indicator mechanism (fuel gage)	1	0.5
<b>Cable sheaf 4 Ground in Trunk Compartment, Right</b>					
80	brown	—	from brake light and tail light, right, to ground	5	0.5
<b>Cable sheaf 5 at Brake Light and Tail Light, Right</b>					
4	black	red	from cable connector – tail lights – wiring harness to brake light, right	1	0.5
69	green	—	from cable connector – tail lights – wiring harness to parking light, rear, right	1	0.5
80	brown	—	from brake light and tail light, right, to ground	4	0.5
23	black	green	from cable connector – tail lights – wiring harness to flash signal, rear, right	1	0.5
48	grey	—	from cable connector – tail lights – wiring harness to tail light, right	1	0.5
<b>Cable sheaf 6 Ground in Trunk Compartment, Left, Top</b>					
79	brown	—	from license plate light, right and license plate light, left, to ground	9 10	main lead 1.0 branch leads 0.5
<b>Cable sheaf 7 at Brake Light and Tail Light, Left</b>					
4	black	red	from cable connector – tail lights – wiring harness to brake light, left	1	0.5
49	grey	black	from cable connector – tail lights – wiring harness to tail light, left	1	0.5
81	brown	—	from brake light and tail light to ground	8	0.5
70	green	black	from cable connector – tail lights – wiring harness to parking light, rear, left	1	0.5
22	black	white	from cable connector – tail lights – wiring harness to flash signal, rear, left	1	1.0
51	grey	yellow/red	from cable connector – tail lights – wiring harness to reversing light	1	1.0

Lead No.	Basic color	Color coding color	Wiring position	Emerges at cable sheaf No.	Cross-section of lead in mm <sup>2</sup>
<b>Cable sheaf 8 Ground in Trunk Compartment, Left</b>					
81	brown	—	from brake light and tail light, left, to ground	7	0.5
<b>Cable sheaf 9 at License Plate Light, Right</b>					
79	brown	—	from license plate light, right, to ground	6	0.5
48	grey	—	from cable connector – tail lights – wiring harness to license plate light, right and to license plate light, left and to tail light, right	1 10 5	main lead 1.0 branch leads 0.5
<b>Cable sheaf 10 at License Plate Light, Left</b>					
48	grey	—	from cable connector – tail lights – wiring harness to license plate light, left and to license plate light, right and to tail light, right	1 9 5 6	main lead 1.0 branch leads 0.5
79	brown	—	from license plate light, left, to ground		

### C. Removal and Installation of Tail Light Wiring Harness

#### Removal:

1. Remove the left front seat (see Job No. 91 — 1) and the rear seat cushion (see Job No. 92 — 1).
2. Remove the insulation panel at the toe-board, upper part, under the instrument panel.
3. Disconnect the tail light wiring harness at the cable connector (consisting of two 5-way cable connectors) under the instrument panel.
4. Detach the rubber mat for the front floor and the rubber mat for the rear floor and turn the mats back far enough for the wiring harness to be taken out. To do this, bend the spot-welded fixing clips slightly open.
5. Pull the tail light wiring harness toward the rear into the trunk compartment.
6. Take out the rubber mat in the center part of the trunk compartment. Press off the cover (5) for the fuel tank indicator mechanism.

nism. Then disconnect the two cables (2) and (3) and the ground cable (4) at the fuel level indicator mechanism (Fig. 54 — 2/2).

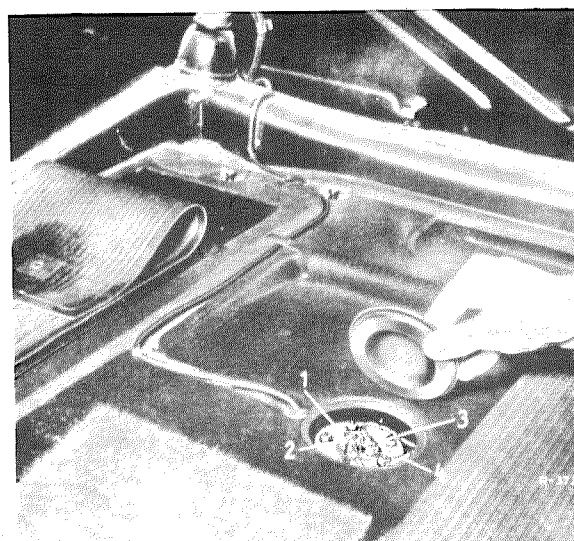


Fig. 54 — 2/2

- 1 Fuel level indicator mechanism
- 2 Connection for fuel indicator
- 3 Connection for reserve fuel indicator
- 4 Ground cable
- 5 Cover

7. Remove the license plate lighting, disconnect the cable (see Job. 82 — 12) and take the cable out of the push-in clips at the inner metal panel of the trunk lid. Then pull the cable out of the trunk lid.
8. Remove the right and left brake lights and tail lights, disconnect the cables and pull them into the trunk compartment (see Job No. 82 — 13).
9. Take the tail light wiring harness in the trunk compartment out of the cable clips.

#### Installation:

10. Installation is the reverse of the removal procedure. When connecting the electric cables, pay attention to the color coding. Connect as follows:

##### Left brake light and tail light:

The grey/black cable (Lead No. 49) to the tail light (4) (see Job No. 82 — 13, Fig. 82 — 13/1),

the black/red cable (Lead No. 4) to the brake light (5),

the green/black cable (Lead No. 70) to the parking light (6),

the grey/yellow/red cable (Lead No. 51) to the reversing light (7),

the black/white cable (Lead No. 22) to the flash direction signal (8),

the brown cable (Lead No. 81) to the ground connection (9) (see also Section A, Circuit Diagram of Tail Light Wiring Harness, Cable Sheaf **7**).

##### Right brake light and tail light:

The grey cable (Lead No. 48) to the tail light (4) (see Job No. 82 — 13, Fig. 82 — 13/1),

the black/red cable (Lead No. 4) to the brake light (5),

the green cable (Lead No. 69) to the parking light (6),

the black/green cable (Lead No. 23) to the flash direction signal (8),

the brown cable (Lead No. 80) to the ground connection (9) (see also Section A, Circuit Diagram of Tail Light Wiring Harness, Cable Sheaf **5**).

##### Fuel level indicator mechanism:

The brown cable (Lead No. 78) to one of the stay bolts of the fuel level indicator mechanism,

the blue/black cable (Lead No. 74) to the connection W (warning light contact — fuel reserve indicator),

the blue cable (Lead No. 71) to the connection G (indicator mechanism — fuel indicator) (see also Section A, Circuit Diagram of Tail Light Wiring Harness, Cable Sheaf **3**).

##### License plate lights:

The grey cable (Lead No. 48) to the back plate of the license plate light,

the brown cable (Lead No. 79) to the lower stay bolt of the license plate light housing (see also Section A, Circuit Diagram of the Tail Light Wiring Harness, Cable Sheaves **9** and **10**).

**Note:** The color coding is the same for the left and the right license plate lights.

##### Cable connector, tail light wiring harness:

The various cables should be connected in such a way that the color coding of the cables of the tail light wiring harness coincides with that of the cables of the main wiring harness.

# Cable Harness for Steering Tube

Job No.

54—3

## A. Circuit Diagram of Cable Harness for Steering Tube

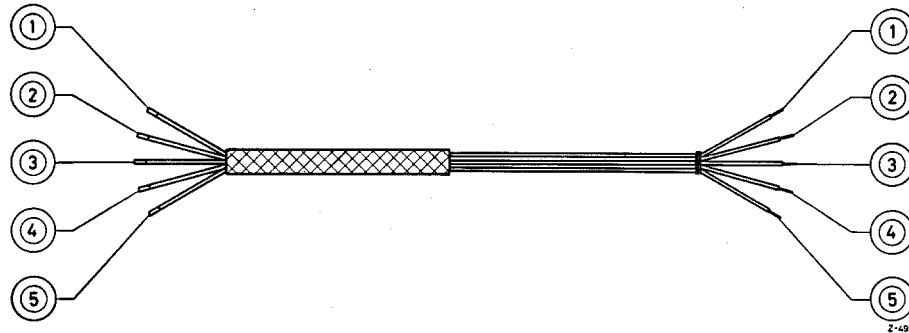


Fig. 54—3/1

## B. Appendix to Cable Harness for Steering Tube

Lead No.	Basic color	Color coding	Wiring position	Wire section in mm <sup>2</sup>
1	black	white	from cable connector, steering to contact plate at steering wheel (flash signal switch)	1.5
2	black	yellow	from cable connector, steering to contact plate at steering wheel (contact bolt)	2.5
3	black	white	from cable connector, steering to contact plate (connection flash signal left)	1.5
4	black	green	from cable connector, steering to contact plate (connection flash signal right)	1.5
5	brown	—	from contact plate at cable connector, steering (ground)	1.5

## C. Removal and Installation of Cable Harness for Steering Tube

### Removal:

1. Disconnect the ground cable at the negative terminal of the battery.
2. Disconnect the cable harness at the cable connector of the steering at the front left wheel arch assembly.
3. Turn the steering wheel to the left until the right steering wheel spoke is about the width of one spoke beyond the vertical and the bore in the steering column jacket is exactly in line with the opening in the contact plate. Then use a piece of welding rod approximately 20 cm long and 3 mm thick to press the trademark plate off the steering wheel from below (Fig. 54 — 3/2).

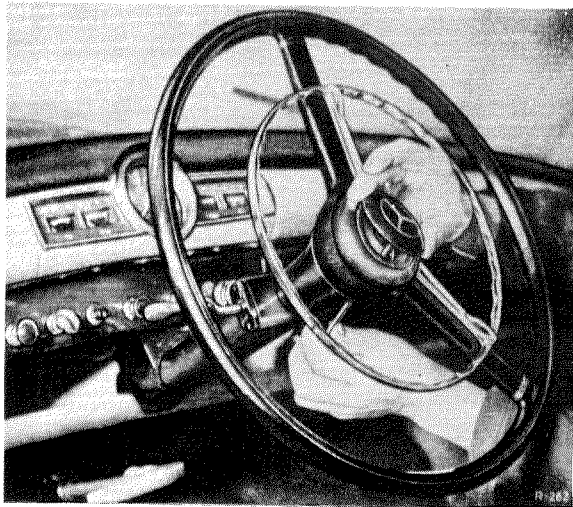


Fig. 54 — 3/2

4. Pull out the cotter pin (67) for the horn ring adjusting nut (66) and unscrew the adjusting nut. Take off the horn ring together with contact disk, compression spring, insulating plate and contact cup (Fig. 54 — 3/3).
5. Back out the three fixing screws (1) for the contact plate (Fig. 54 — 3/4) and lift up the contact plate.
6. Disconnect the cable harness from the contact plate and pull it out of the steering tube.

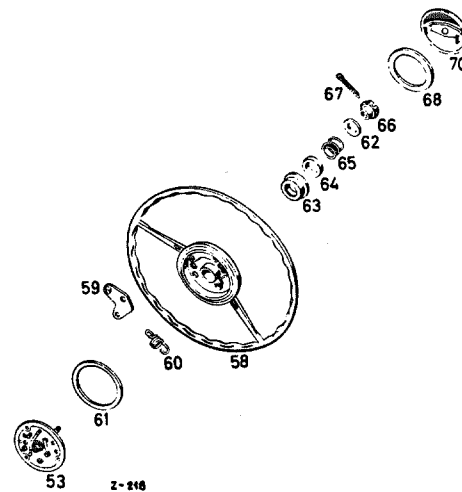


Fig. 54 — 3/3

52 Contact plate	64 Insulating plate
58 Horn ring	65 Compression spring
59 Notch lever	66 Adjusting nut
60 Return spring	67 Cotter pin 1 x 18 DIN 94
61 Washer	68 Rubber washer
62 Contact disk	70 Trademark plate
63 Contact cup	

### Installation:

7. Bind the lower end of the cable harness with insulating tape. Insert the cable harness in the steering tube from the steering wheel side.

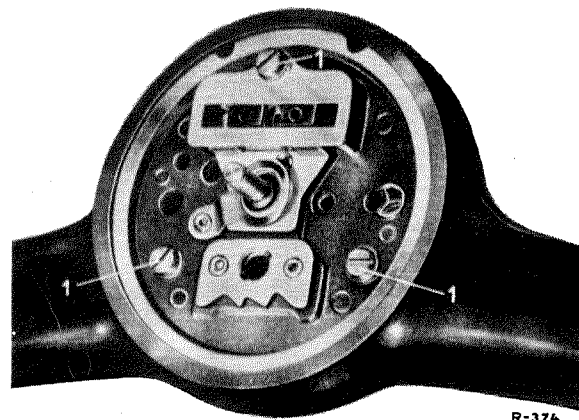


Fig. 54 — 3/4

1 Fixing screws

8. Connect up the cable harness to the contact plate (see Fig. 54 — 3/5). When connecting up the individual cables, pay attention to the color coding. The connecting terminals on the contact plate are marked with colored spots.

Connect as follows:

The black/yellow cable (Lead No. 2) to the terminal (1) marked with a brown spot, the black/green cable (Lead No. 4) to the terminal (2), marked with a black spot and a green spot,

the black/white cable (Lead No. 3) to the terminal (3), marked with a black spot and a white spot,

the brown cable (Lead No. 5) to the terminal (4), marked with a brown spot,

the black/white/green cable (Lead No. 1) to the terminal (5), marked with a black, a white and a green spot (see Section A, Circuit Diagram of Cable Harness for Steering Tube).

**Note:** The terminal (6), marked with a blue spot and a red spot, must be left free.

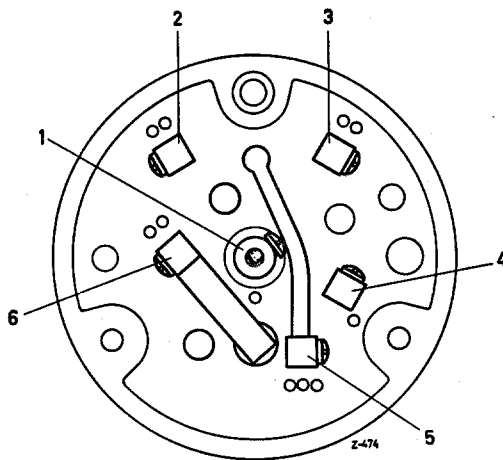


Fig. 54 — 3/5

- 1 Terminal contact bolt
- 2 Connecting terminal for right flash direction signal
- 3 Connecting terminal for left flash direction signal
- 4 Connecting terminal for horn ring, ground
- 5 Connecting terminal for flash direction signal switch
- 6 Remains free

9. Then install the contact plate so that the bore in the contact plate is in line with the one in the steering column jacket. Fix the contact plate to the steering wheel, using the three fixing screws (1) (see Fig. 54—3/4).

10. Connect the cable harness to the cable connector for the steering — at front left wheel arch assembly. When connecting up the individual cables, pay attention to the color coding. The individual cables should be so connected that the color coding of the cables of the cable harness for the steering tube corresponds to the color coding of the cables of the main wiring harness.

(See also Job No. 54—1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf 28.)

11. Connect the ground cable to the negative terminal of the battery.

12. Insert the brass washer (61) in the steering wheel and install the horn ring (58); when doing this, lift the notch lever (59) a little. Then install the contact cup (63), the insulating plate (64), the compression spring (65) and the contact disk (62) and screw on the adjusting nut (66) (see Fig. 54 — 3/3).

13. Install the adjusting nut (66) so that the contact travel is neither too large nor too small.

Check the adjustment by operating the horn.

Then lock the nut with the cotter pin.

14. Check that the flash direction signals are working properly.

15. Install the rubber washer (68) and press on the trademark plate (70) (see Fig. 54 — 3/3).

# Cable Harness from the Generator to the Regulator Cut-out Switch

Job No.

54 — 4

## A. Circuit Diagram of Cable Harness from the Generator to the Regulator Cut-out Switch

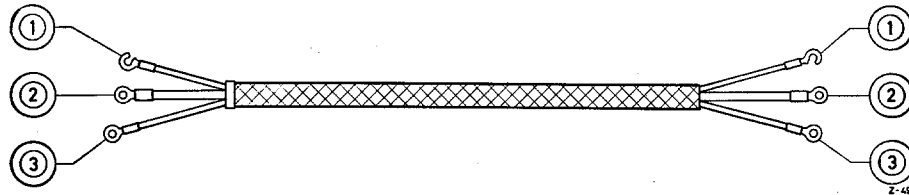


Fig. 54 — 4/1

## B. Appendix to Cable Harness from the Generator to the Regulator Cut-out Switch

Lead No.	Color	Wiring position	Wire section in mm <sup>2</sup>
1	black	From the generator terminal DF to the regulator cut-out switch terminal DF	1.5
2	red	From the generator terminal D + to the regulator cut-out switch terminal D + (61)	4
3	brown	From the generator terminal D — to the regulator cut-out switch terminal D —.	2.5

## C. Removal and Installation of Cable Harness from the Generator to the Regulator Cut-out Switch

### Removal:

1. Disconnect the ground cable at the negative terminal of the battery.
2. Disconnect the electric cables at the generator and at the regulator cut-out switch.

### Installation:

3. Connect the electric cables to the generator and to the regulator cut-out switch. Pay

attention to the color coding of the cables, in accordance with Section B.

**Note:** Be sure to connect cables to correct terminals. Incorrect connection of the terminals involves the danger of pole reversal to the Generator and could result in the destruction of the regulator cut-out switch.

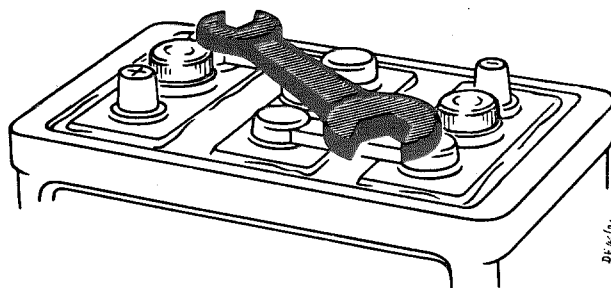
4. Connect the ground cable to the negative terminal of the battery.

## Cable Harness for the Reversing Light Switch

The cable harness for the reversing light switch, consisting of two cables, connects the cable connector for the reversing light (at the bearing assembly of the steering-wheel gear shift) with the reversing light switch in the upper transmission housing cover.

The battery must be regularly serviced and must always be kept clean and dry. No dirt must be allowed to penetrate into the cells; gasoline, benzol or oil must not be allowed to come into contact with the sealing compound. The vent holes in the battery plugs must be kept free of obstructions so that the gases given off during charging can escape freely.

**Caution!** The oxyhydrogen gas given off is explosive. No tools or other metal objects must be placed on the battery because of the danger of short-circuiting! (Fig. 54 — 8/1).



Do not place metal parts on the battery

Fig. 54 — 8/1

Distilled water must always be used for topping up the cells. The cells must never be topped up with sulphuric acid, irrespective of the density, unless it is clear beyond doubt that acid has been spilt out. In the latter case, the density of the acid remaining in the cells must be measured and acid of the same density used for topping up. New batteries should be filled — according to the instructions of the makers — with chemically pure accumulator acid.

Under no circumstances must special electrolytes be used since this would invalidate the guarantee of the battery manufacturer.

Be careful when handling sulphuric acid! It attacks and destroys lacquer finishes, metal parts and fabrics.

**When mixing accumulator acid, the greatest care must be taken to ensure that the concentrated sulphuric acid is always added to the water or to the already-mixed accumulator acid and never vice versa!**

Acid which has been spilt or has overflowed can be rendered innocuous by means of a soda solution or ammonium chloride.

The connections and the terminal connecting bars of the battery must be kept perfectly clean. In order to prevent corrosion, the terminals and connection clamps must be greased both inside and outside with a good acid-resisting grease, for example Ft 40 v 1 produced by the firm of Bosch.

Low temperatures cause a slowing-down of the chemical processes and thus reduce the capacity and the terminal voltage of the battery. It is therefore advisable to remove the battery when the weather is extremely cold and to store it overnight in a warm room.

Although the electrical system of the vehicle is designed to cater for all normal loads, it may none the less be necessary in the cold season, particularly when the vehicle is mainly running on short journeys, to recharge the battery from an outside source from time to time.

Model 190 is fitted with a 12 Volt battery with a capacity of 56 Ah. The capacity of a battery is the amount of electricity, measured in Ah (= current  $\times$  time) which is delivered by the battery under discharge. The rated capacity of a battery is given according to the German DIN system of standards at a discharge temperature of 20° C. (20° C. electrolyte temperature at the beginning of discharge and 20° C. air temperature during the discharge) and for a continuous discharge over a period of 10 hours and at a steady rate of current delivery.

The rated capacity according to the SAE system of standards is given at a discharge temperature of 27° C. and for a continuous discharge over a period of 20 hours at a steady rate of current delivery.

## Removal and Installation of Battery

### Removal:

1. First of all, disconnect the ground cable at the negative terminal of the battery and then disconnect the starter lead at the positive terminal of the battery. Pull the starter lead out through the engine compartment panel toward the front of the car.
2. Unscrew the fixing screw for the right engine compartment panel on the right air duct and detach the tension spring at the right engine compartment panel at the bottom.
3. Separate the two parts of the cemented joint at the moltoprene sound-absorbing material between the right engine compartment panel and the center engine compartment panel and carefully slide the right engine compartment panel upward and remove it.
4. Unscrew the battery carrier and remove the battery.

**Note:** The procedure in the case of right-hand drive vehicles is similar. But in this case the

starter lead is not taken through the engine compartment panel. The corresponding hole in the left engine compartment panel is stopped with a dummy rubber grommet.

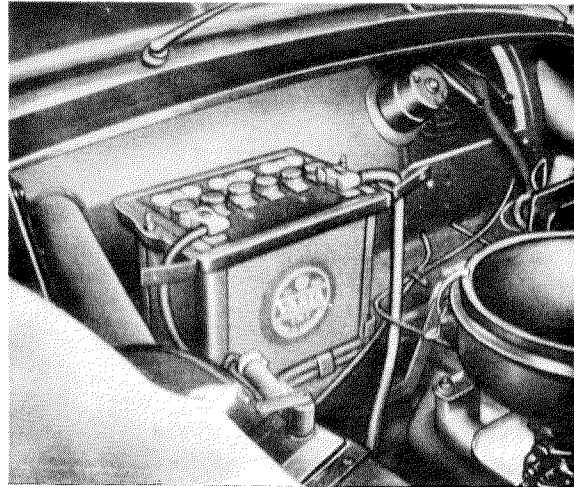


Fig. 54—9/1

### Installation:

5. Installation is the reverse of the removal procedure.

## A. Checking Battery Acid Level and Acid Density

1. The acid level and the acid density should be checked every 4,000 km according to the instructions on the service book sheets. The battery should be topped up with pure, distilled water.

A clean glass vessel and glass funnel should always be used for topping up with distilled water. The acid should be 10 mm above the top edge of the separators and 15 mm above the top edge of the plates. Topping-up with small quantities of distilled water can also be done with the hydrometer (Fig. 54 — 10/1).

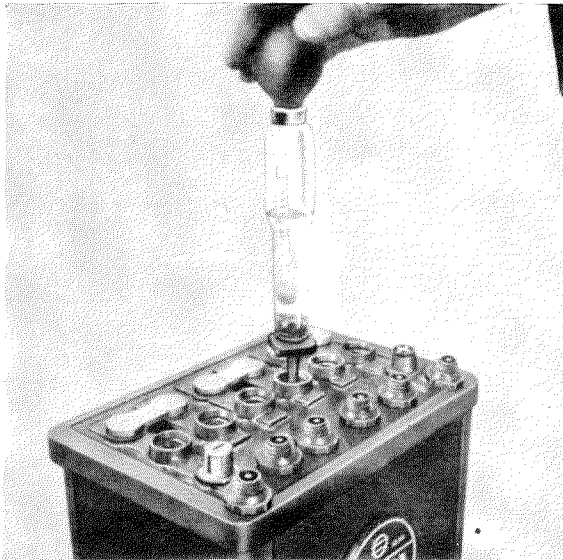


Fig. 54 — 10/1

**Note:** The work should never be carried out near a naked light owing to the danger of explosion due to the battery releasing oxy-hydrogen gas.

2. Check the state of charge of the battery by measuring the acid density.

Acid should be sucked out of the battery for this purpose by means of the hydrometer (areometer). The specific gravity of the battery acid can be read off on the scale marked on the float which is suspended in the acid. A fully-charged battery should give a specific gravity reading of  $1.285 = 32^{\circ}$  Bé (Fig. 54 — 10/2).

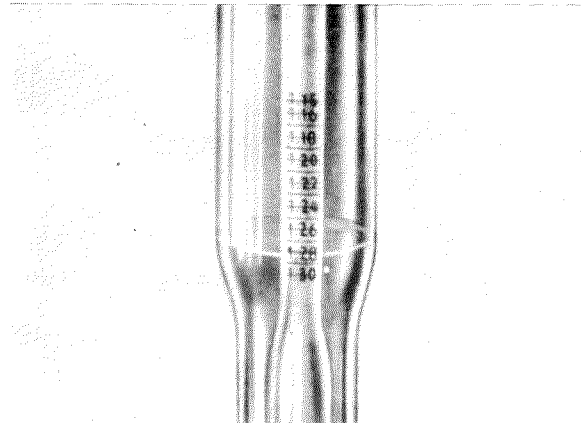


Fig. 54 — 10/2

3. The specific gravities of the battery acid, corresponding to the state of charge of the battery, are shown in the following table.

### Acid Density

Acid density, Beaumé Scale	Specific gravity	State of charge
$32^{\circ}$ Be	1.285	fully-charged
$27-25^{\circ}$ Bé	1.23—1.21	half-charged
$18-14^{\circ}$ Bé	1.14—1.11	discharged

(The specific gravities given are calculated at a temperature of  $+ 20^{\circ}$  C.)

## Acid Density (Tropics)

Specific gravity at			State of charge
20° C.	40° C.	60° C.	
1.23	1.215	1.200	fully-charged
1.16	1.148	1.136	half-charged
1.09	1.080	1.070	discharged

### B. Testing of Battery on Load

The individual cells of the battery are tested with the aid of Cell Tester 000 589 00 27 or some other suitable cell tester. These testers are fitted with a fixed resistance or sometimes with an adjustable resistance so that the cells can be tested individually at a high amperage (generally 100 to 200 Amperes). For an accurate test, the load should be suited to the size of the battery and adjusted with the aid of a variable resistance. But in workshop practice it is sufficient to use an available cell tester with a fixed resistance. The voltmeter which is incorporated in the cell tester can be used to read off the voltage drop of the individual cells under load. In the case of a fully-charged battery which is in good condition the voltage must not drop below 1.8 Volts. For the rest, the operating instructions given by the manufacturers of the tester should be adhered to.

In general, the test should be carried out in the following way:

1. Press the contact prods of the cell tester firmly on the two terminals of a cell (Fig. 54 — 10/3).
2. After a period of at most 10 seconds under load, read off the voltage on the voltmeter.

**Note:** If the battery is fully charged and is in good condition, the voltage must not drop below 1.8 Volts.

3. Check all the cells in this way.

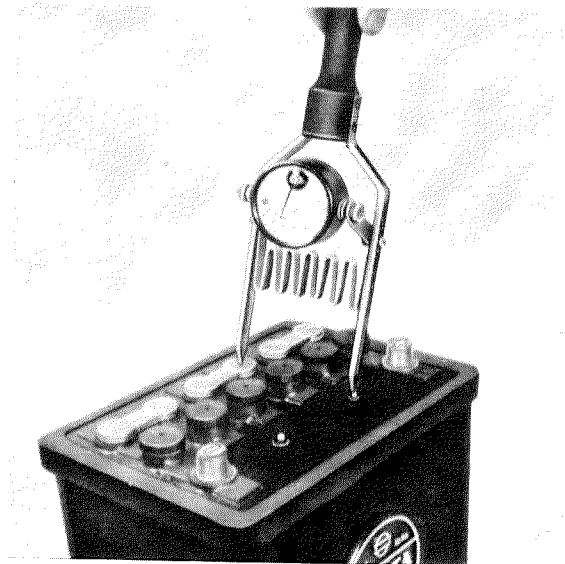


Fig. 54 — 10/3

## C. Normal Re-charging of Battery

It is absolutely necessary to re-charge a battery if the acid density has fallen below  $1.14 = 18^\circ \text{ Bé}$  (in the tropics,  $1.09 = 12^\circ \text{ Bé}$ ) or if the voltage of the individual cells has fallen to 1.8 Volts.

1. Unscrew the filler caps of the individual cells.
2. Check the acid level and if necessary, top up with distilled water.  
The acid should be 10 mm above the edge of the separators and 15 mm above the top edge of the plates.
3. Connect the battery to a charger. The positive cable of the charger is connected to the positive terminal of the battery and the ground cable of the charger to the negative terminal of the battery.
4. Charge the battery at a rate of amperes not exceeding  $\frac{1}{10}$  of the rated capacity, that is to say, at a maximum of 5.6 Amps.
- c) The charge can be considered at an end when the cells have "gassed" for a period of half-an-hour. Three readings should be taken at intervals of 1 hour to ensure that the charging voltage and the acid density show no further increase during that time. If the battery is fully charged, the cell voltage should be 2.6 to 2.7 Volts. **The voltage must be measured with the charger switched on.** When the charger is switched off, the battery voltage then drops to the normal cell voltage of 2 — 2.2 Volts.  
The acid density in a fully-charged battery should be  $1.285 = 32^\circ \text{ Bé}$  (in the tropics,  $1.23 = 27^\circ$ ). The acid density should be measured with the acid at the specified level (see Section A).

### Note:

- a) While the battery is being charged, the acid temperature must not rise above  $40^\circ \text{ C.}$  (in the tropics,  $45^\circ \text{ C.}$ ). If the acid temperature is higher, the rate of charging must be decreased and the period of charging increased.
- b) If the plates of a battery are already sulphated this can be seen from the white deposit on the plates), it should first be charged at  $\frac{1}{4}$  of the specified charging rate, that is to say at 1.4 Amps., for at least forty hours and only at the end of this period should the full charging current of 5.6 Amps. be applied. The charging process can then continue at this amperage until the battery is fully charged.
- d) **During the charge, the charging room should be well ventilated. No naked lights must be used, owing to the danger of explosion occasioned by the release of oxyhydrogen gas.**
5. Disconnect the charger and once more check the acid level.
6. Do not put on the filler caps until at least two hours after the charge.

**Note:** Any acid which has splashed or spilt over should be washed off with water or rendered innocuous by means of a soda solution or ammonium chloride. The battery should then be dried.

## D. Re-charging of Battery with Quick-charging Apparatus

If a quick charge is needed, discharged batteries can be charged at a rate which is considerably higher than the normal charging current rate. A considerable amount of time is saved in this process since a quick charge takes only approx. half-an-hour. Quick-charging, however, should not be made the rule and in any case should only **be undertaken in the case of sound batteries which have already been in use and should never be undertaken at the first charge.** Before beginning a quick charge, it is absolutely necessary to check the battery and make sure that it is in good condition. It is useless to charge defective batteries in this way since this will only increase the damage to the battery. Before charging, therefore, the battery should be repaired or alternatively, replaced by a battery which is in good order.

The modern, commercially available quick-charging plants are fully automatic. The rate and duration of charge are so arranged that it is impossible for overcharging and thus overheating to take place at all. The operating instructions for the charger which is being used should in all cases be strictly adhered to.

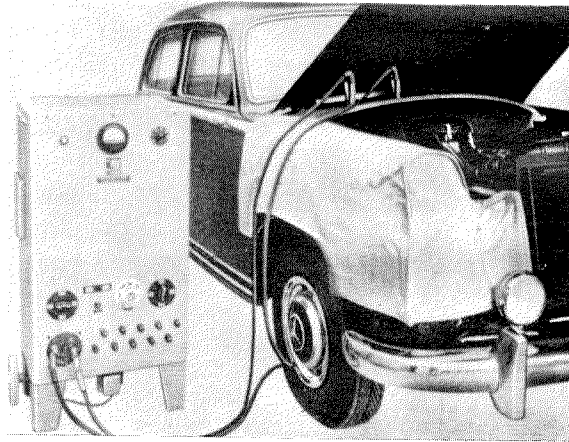


Fig. 54 — 10/4

### E. Preparation of New Batteries

New batteries are generally delivered empty. Initial charging should be carried out according to the instructions issued with the battery. The following is the general procedure adopted:

1. Unscrew the filler caps and fill the cells with chemically pure accumulator acid of a specific gravity of  $1.285 = 32^{\circ} \text{ Bé}$ . The acid should be 10 mm over the top edge of the separators and 15 mm over the edge of the plates.
2. It is absolutely essential that the battery should then be allowed to stand for 5–6 hours so that the plates can become completely soaked in the electrolyte.

**Note:** The acid level decreases somewhat during this period and in consequence the battery should be slightly agitated afterwards so that any air bubbles can escape from the cells. Then top up the cells again so that the battery acid reaches the specified level.

3. Charge the battery at a rate of 3.5 Amps. or less until the voltage of each cell has risen

to 2.5–2.7 Volts on charge and until all cells are actively gassing.

4. Measure the temperature of the battery acid from time to time. If the temperature rises above  $40^{\circ} \text{ C.}$ , reduce the charging rate.
5. After the charge is completed, check the acid density once more (specific gravity  $1.285 = 32^{\circ} \text{ Bé}$ ) and if necessary, correct. If it is necessary to top up the battery with acid or distilled water, charge the battery for a short time afterwards in order to ensure that the battery acid is well mixed and distributed.
6. The filler holes should be left open for a period of at least 2 hours – preferably even more – after the charge has been completed. Then the filler caps should be put on. Any acid which has splashed over should be washed off with water or rendered innocuous by means of a soda solution or ammonium chloride. The battery should then be dried.

## F. Laying-up of a Battery

If a battery is to be out of use for some time, the following procedure should be adopted:

1. Charge the battery according to the instructions (see Section C).
2. Coat the terminals and the cell connecting bars with acid-resisting grease, for example Bosch Ft 40 v 1.
3. Store the battery in a cool, dry room.
4. Discharge and re-charge the battery once a month. Never overcharge the battery. It should only be charged until all cells are actively gassing. Check the acid level.

**Note:** A battery that is filled with acid must never be allowed to stand uncharged since the plates will soon become unserviceable through oxidation!

If the battery is to be out of use for a considerable period

of time, the following procedure should be adopted:

5. Charge the battery according to the instructions (see Section C).
6. After charging, pour out the acid and fill up with distilled water.
7. Re-charge the battery for 6 hours and pour out the distilled water.
8. Fill up with fresh distilled water and store the battery.

**Note:**

- a) It is not necessary in this case to re-charge the battery at intervals of a month.
- b) When the battery is put into use again, it should be given the same treatment as a new battery (see Section E).

The instrument panel contains the following instruments, seen from left to right,

- a) Cooling water thermometer
- b) Oil pressure gage
- c) Speedometer
- d) Fuel gage
- e) Pilot lights for upper beam, starter cable and flash direction signals.

## A. Removal and Installation of Instrument Cluster

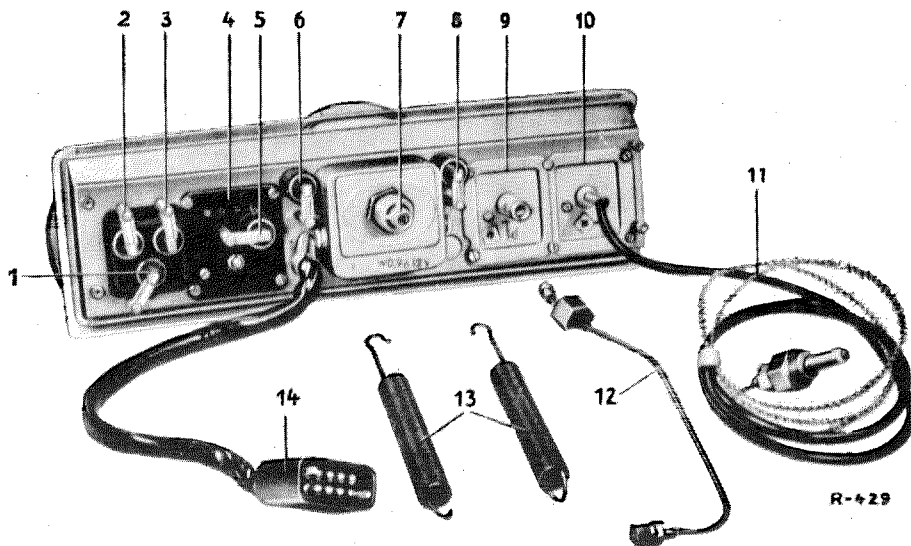


Fig. 54 — 11/1

- |                                     |  |
|-------------------------------------|--|
| 1 Pilot light, starter cable        | 9 Oil pressure gage  |
| 2 Pilot light, flash signal         | 10 Radiator thermometer (water)                            |
| 3 Pilot light, headlight upper beam | 11 Capillary tube with heat feeler of radiator thermometer |
| 4 Fuel gage                         | 12 Oil pressure gage line                                  |
| 5 Light for fuel gage               | 13 Tension springs for instrument cluster lighting         |
| 6 Instrument lighting               | 14 8-pin plug  |
| 7 Speedometer connector             |  |
| 8 Light for fuel gage               |  |

### Removal:

1. Remove the center insulation lining at the top of the engine compartment (see Job No. 68 — 2).
2. Unscrew the two connecting screws in the 8-pin multiple plug (1) for the instrument cluster, and pull the plug out of the socket (Fig. 54 — 11/2).
3. Unscrew the capillary tube (1) for the cooling water radiator thermometer at the left side of the engine and pull the capillary tube, including rubber cuff (3), toward the rear through the center of the engine compartment panel (Fig. 54 — 11/3).
4. Disconnect the two instrument panel retaining springs (2) (see Fig. 54 — 11/2).

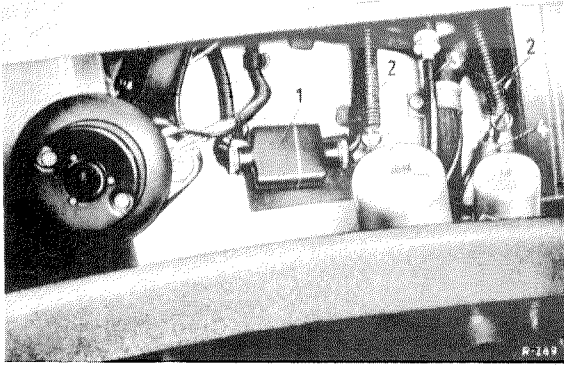


Fig. 54—11/2

- |                       |                          |
|-----------------------|--------------------------|
| 1 8-pin multiple plug | 3 Speedometer cable      |
| 2 Retaining spring    | 4 Oil pressure gage line |

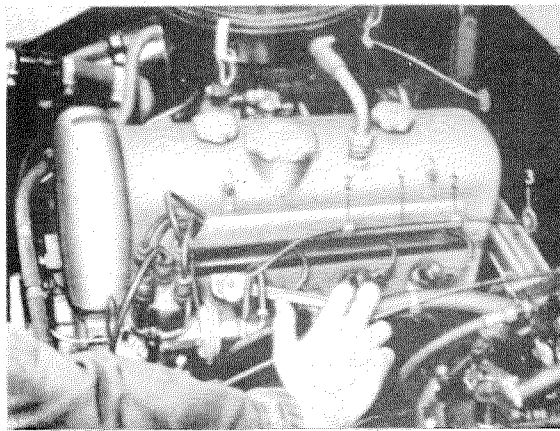


Fig. 54—11/3

- |   |
|---|
| 1 Capillary tube for radiator thermometer   |
| 2 Retaining clips on ignition cable conduit |
| 3 Rubber grommet                            |

5. Remove the windshield reveal molding at the bottom (see Job No. 67—1).
6. Pull the instrument cluster out far enough toward the rear to allow the speedometer cable (3) and the oil pressure gage line (4) to be disconnected (see Fig. 54—11/2).
7. Remove the instrument cluster carefully, taking care when doing so not to damage the capillary tube of the radiator thermometer, which is pulled out together with the instrument cluster (Fig. 54—11/4).

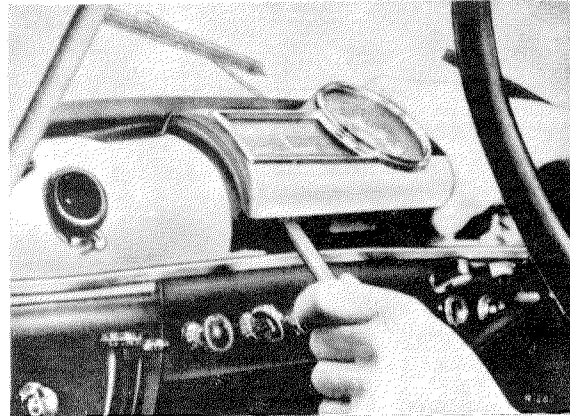


Fig. 54—11/4

#### Installation:

8. Installation is the reverse of the removal procedure.

### B. Removal and Installation of Speedometer

9. Remove the four milled nuts on the rear of the housing and pull out the upper part toward the front. Remove the housing base nut and take off the plate and the rubber pad and take out the speedometer toward the front, exerting light pressure on the connector neck.
10. Installation is the reverse of the removal procedure.

**Note:** When installing the speedometer, care must be taken to ensure that the plate and the rubber pad are correctly installed.

### C. Removal and Installation of Cooling Water Thermometer Oil Pressure Gage and Fuel Gage

#### Removal:

11. Remove the appropriate four fixing screws in each case, and carefully take out the gage in question toward the rear.

12. Installation is the reverse of the removal procedure.

# Removal and Installation of Clock

Job No.

54 — 12

## Removal:

1. Use a thin screwdriver to push the retaining spring of the clock back on both sides and take the clock out of the sound-absorbing material of the instrument panel (Fig. 54—12/1).

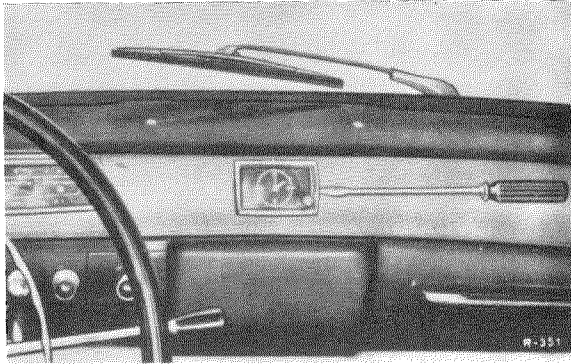


Fig. 54 — 12/1

**Note:** When removing the clock, care must be taken to ensure that the chromium-plated

frame and the plastic cover are not damaged.

2. Pull the bulb-holder, together with the bulb, out of the clock and disconnect the ground cable (brown) from the clock.

## Installation:

3. Connect the brown ground cable (Lead No. 29) to the clock again and press the bulb-holder with the bulb and the grey feed cable connected to it (Lead No. 47) into the clock.

**Note:** When installing an electric clock, the red feed cable (Lead No. 59) must also be connected to the clock (see also Job No. 54—1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **34**).

4. Press the clock into the opening in the sound-absorbing material of the instrument panel in such a way that the retaining springs hold the clock firmly.

## Removal and Installation of Brake Light Switch

### Removal:

1. Disconnect the two cables to the brake light switch.
2. Unscrew the brake light switch with an SW 24 wrench.

### Installation:

3. Fill up the hollow space in the brake light switch with ATE brake paste and also smear ATE brake paste on the thread in the bore in the brake master cylinder.

**Note:** This prevents the formation of an air bubble under the brake light switch.

4. Screw in the brake light switch and connect the two black/red cables (Leads Nos. 3 and 4) of the main wiring harness (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **19**).

### Note:

- a) At first, only screw the brake light switch loosely into position and then operate the brake pedal until brake fluid emerges from the thread of the switch. Then tighten the brake light switch. This operation also is designed to prevent the formation of an air bubble under the brake light switch.
  - b) The thread of the brake light switch is tapered. It should not be possible to screw the switch right in to the end of the thread since the thread is designed to form a seal. Do not use sealing compound. Only brake light switches of the types approved by us must be installed.
5. If necessary, bleed the brake system (see Job No. 42 — 1).
  6. Check the brake system for leakage and check the functioning of the brake light switch.

## Removal and Installation of Foot Dimmer Switch

### Removal:

1. Detach the rubber mat at the front left toe-board and turn it back until the foot dimmer switch is visible.
2. Unscrew the two fixing screws, disconnect the electric cables and remove the foot dimmer switch.

### Installation:

3. Installation is the reverse of the removal procedure.

When connecting the electric cables, pay attention to the color coding.

Connect as follows:

The white/black cable (Lead No. 61) to Terminal 56,

the white cable (Lead No. 62) to Terminal 56a,

the yellow cable (Lead No. 75) to Terminal 56b (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **18**).


## A. Removal and Installation of Disk-Type Horn

### Removal:

1. Open the hood.
2. Disconnect the two cable connections at the disk-type horn.
3. Unscrew the hexagon screw (11) (see Fig. 54 — 15/1) and take off the disk-type horn (4) together with the flexible suspension.

### Installation:

4. Installation is the reverse of the removal procedure.

Connect the two black/yellow cables (Leads Nos. 1 and 2) to the horn (see Job No. 54—1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf .

## B. Subsequent Installation of Two-Tone Extra-Loud Horn Assembly

(Optional, SA 10 210)

1. Disconnect the ground cable at the negative terminal of the battery.
2. Remove the standard Bosch or Hella disk-type horn (4) which is mounted on the front cross tube (see Section A).
3. Screw the Bosch two-tone extra-loud horn HO/FSA 12 3/8 A (horn with deep tone) onto the bracket (6) of the disk-type horn which was removed.
4. Hold the bracket (7) in accordance with the specified dimensions (see Fig. 54 — 15/1) on the left fork support (8) and against the wheel arch assembly (10). With the bracket in this position, mark the bores for the two hexagon screws (9) of the bracket on the wheel arch assembly (10) and bore out with a 6.5 mm diameter drill. Clean the bores and fix the bracket (7) with the two hexagon screws (9) M 6 × 15 with nuts, lock washers and washers.
5. Screw the Bosch two-tone extra-loud horn (5) HO FSA 12 4/8 A (horn with medium tone) with the hexagon screw (11) M 10 × 28

with nut and lock washer, onto the bracket (7).

6. Connect the standard cables and the two cables of 2.5 mm<sup>2</sup> section, 900 mm long, to the two-tone extra-loud horn (4).

**Note:** There is no difference between the connections for the installation of the two-tone extra-loud horn assembly and those of the standard horn assembly. The two horns should be connected in parallel so that the extra set of cables required consists only of two black/yellow cables to shunt the two horns.

7. Connect the other end of the extra cable set to the second two-tone extra-loud horn (5). When doing this, care must be taken to ensure that each cable is connected to the same terminal on the second as on the first two-tone extra-loud horn (4).
8. Reconnect the ground cable to the negative terminal of the battery, switch on the ignition and test the assembly.

# List of Parts:

Number	Designation	Part No.
1	Extra-loud horn Bosch HO/FSA 12 3/8 A	000 542 33 20
1	Extra-loud horn Bosch HO/FSA 12 4/8 A	000 542 34 20
1	Bracket for second horn	120 542 04 40
1	Hexagon screw	M 10×28 DIN 931 — 8 G
1	Lock washer	B 10 DIN 127
1	Hexagon nut	M 10 DIN 934 — 5 S
2	Hexagon screw	M 6×15 DIN 933 — 8 G
2	Lock washer	B 6 DIN 127
2	Washer	A 6 DIN 9021
2	Hexagon nut	M 6 DIN 934 — 5 S
2	Cheese-head screw	AM 4×8 DIN 84 — 4 S
2	Lock washer	B 4 DIN 127
2	Cable, 2.5 mm <sup>2</sup> , 900 mm long for shunting of extra-loud horn 1 and extra-loud horn 2	

## C. Subsequent Installation of Three-Tone Horn Assembly (Optional, SA 10209)

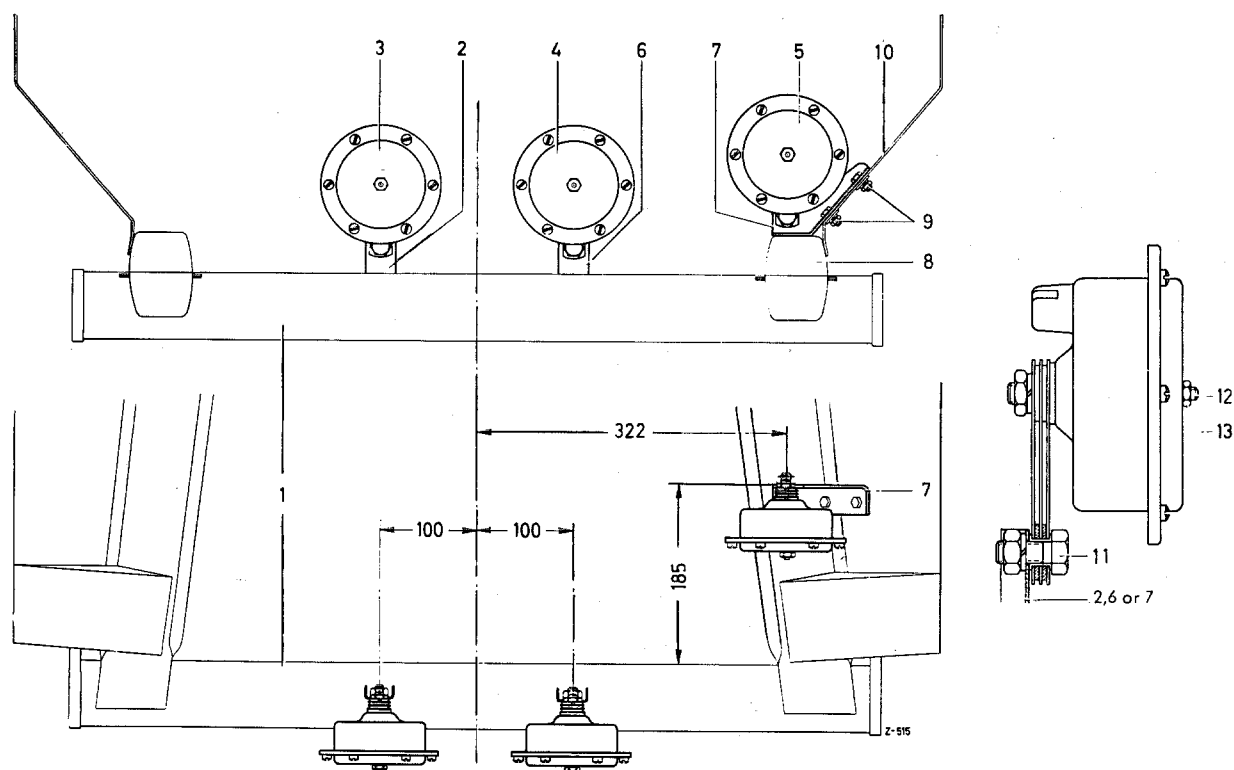


Fig. 54 — 15/1

- 1 Front cross-tube
- 2 Bracket (pedestal) for disk-type horn
- 3 Disk-type horn
- 4 Disk-type horn
- 5 Disk-type horn

- 6 Bracket (pedestal) for disk-type horn
- 7 Bracket for disk-type horn
- 8 Left fork support
- 9 Hexagon screws M 6 × 15

- 10 Wheel arch assembly left
- 11 Hexagon screw M 10 × 28
- 12 Adjusting screw
- 13 Hexagon nut

1. Disconnect the ground cable at the negative terminal of the battery.
2. Bore out the hole of the bracket (7), for fixing the push-pull switch (4), to 13 mm diameter (Fig. 54 — 15/2).

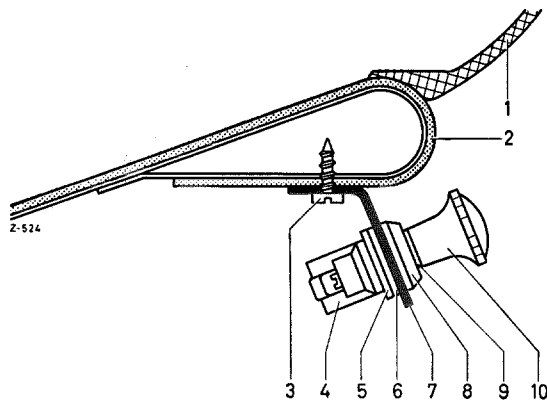


Fig. 54—15/2

- |  |                            |
|--|----------------------------|
| 1 Instrument panel                                 | 6 Washer                   |
| 2 Stiffening plate                                 | 7 Bracket 10 120 869 00 14 |
| 3 Cheese-head self-tapping screw S 4.2X16 DIN 7971 | 8 Escutcheon               |
| 4 Push-pull switch                                 | 9 Felt washer              |
| 5 Washer   | 10 Control knob            |

3. Hold the bracket (7) approx. 200 mm to the left of the center-line of the car under the instrument panel against the stiffening plate (2), mark the two bores for fixing the bracket and bore them out with a 2.3 mm diameter drill.
4. Screw the bracket (7) to the stiffening plate (2) with 2 chromium-plated cheese-head self-tapping screws S 4.2 × 16 DIN 7971 (see Fig. 54 — 15/2).
5. Hold the bracket (7) in accordance with the specified dimensions (see Fig. 54 — 15/1) on the left fork support (8) and against the wheel arch assembly (10). Mark the bores for the two hexagon screws (9) and bore out with a 6.5 mm diameter drill. Clean the bores and fix the bracket (7) with the two hexagon screws (9) M 6 × 15 with nuts, lock washers and washers.
6. Weld the bracket (2) to the cross-tube (1) in accordance with the specified dimensions (see Fig. 54 — 15/1).

7. Screw the disk-type horn (5) Bosch HO/FDF 12 4/8 (with medium tone) with the hexagon screw (11) M 10 × 28, together with nut and lock washer, onto the bracket (7) which is fitted to the wheel arch assembly.
8. Screw the disk-type horn (3) Bosch HO/FDF 12 5/8 (with high tone) with the hexagon screw (11) M 10 × 28, together with nut and lock washer, to the bracket (2) which has been welded to the cross-tube.
9. Unscrew the two hexagon screws (7) for fixing the two flash signal mechanisms (8) and (9) (see Fig. 54 — 15/3).

**Note:** The procedures in Paras. 9 and 10 are not necessary if the contactor (10) for the fog lights or the bracket (12) for the contactor (10) are already fitted

In this case the contactor (5) for the horn assembly should be so mounted that the rear sides of the two contactors are facing each other (Fig. 54 — 15/3).

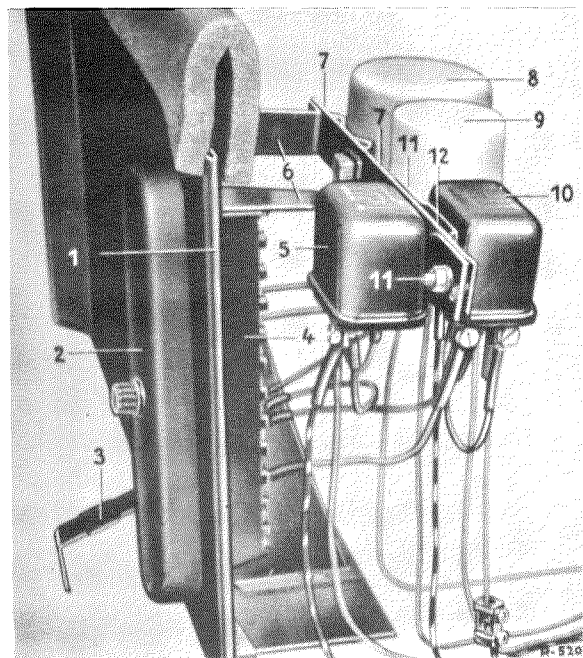


Fig. 54 — 15/3

- |   |  |
|---|--|
| 1 Bracket for the fuse box at center engine compartment | 7 Hexagon screws M 6×10                              |
| 2 Cover of fuse box                                     | 8 Flash signal mechanism for upper beam              |
| 3 Bracket for oil pressure gage line                    | 9 Flash signal mechanism for flash direction signals |
| 4 Fuse box  | 10 Contactor for automatic switch-off of fog lights  |
| 5 Contactor for three-tone horn assembly                | 11 Cheese-head screws                                |
| 6 Bracket for flash direction signal mechanism          | 12 Bracket for contactor                             |

10. By screwing in the two hexagon screws (7) with lock washers, fix the bracket (12) for the contactor (5) with the two flash signal mechanisms (8) and (9) to the bracket (6).
11. Take the cover off the fuse box. Unscrew the two fixing screws for the fuse box (10) and pull the fuse box out forward (Fig. 54 — 15/4).

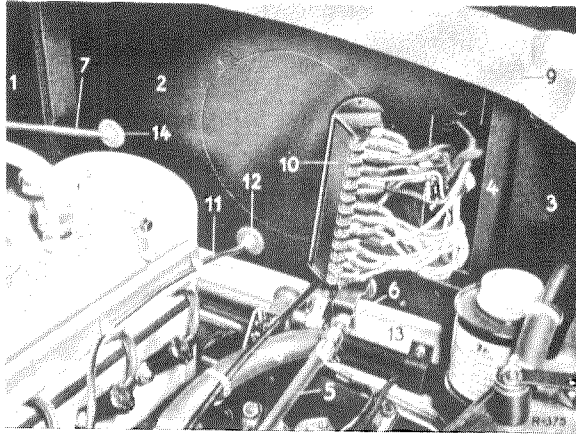


Fig. 54 — 15/4

- |  |  |
|--|--|
| 1 Right engine compartment panel                       | 7 Choke control cable                        |
| 2 Center engine compartment panel                      | 8 Bowden cable for octane number compensator |
| 3 Left engine compartment panel                        | 9 Foam rubber sound-absorbing material       |
| 4 Bracket for fuse box (left-hand drive vehicles only) | 10 Fuse box                                  |
| 5 Flexible hose for oil pressure gage line             | 11 Radiator thermometer pipe                 |
| 6 Fixing nut   | 12 Rubber grommet                            |
|  | 13 Oil pressure gage line                    |
|  | 14 Rubber grommet                            |

12. Connect the cable, 2.5 mm<sup>2</sup> in section and 1000 mm long, to Terminal 30/51 of the contactor (5) and to Fuse No. 3 of the fuse box. Connect the cable, 1.5 mm<sup>2</sup> in section and 80 mm long, with two spade terminals 4 × 0.8 N 261 and the two rubber grommets Part No. 000 997 01 81 to Terminal 30/51 and to Terminal 86 of the contactor (see Fig. 54 — 15/3).
13. Press the fuse box (10) into the engine compartment panel, screw in the two fixing screws and screw on the cover of the fuse box.
14. Connect one of the black/yellow cables of the extra cable set, 1 mm<sup>2</sup> in section and

1500 mm long, with the spade terminal to Terminal 85 of the contactor (5) and the other black/yellow cable to the black yellow lead of the main wiring harness at the cable connector for the steering (see Job No. 54 — 1, Section A Circuit Diagram of Main Wiring Harness, Cable Sheaf **28**).

15. Connect the other two ends of the cables of the extra cable set to the push-pull switch (4) (see Fig. 54 — 15/2).
16. Push the washers (5) and (6) onto the push-pull switch (4). Place the push-pull switch in position in the bracket (7) (see Fig. 54 — 15/2), screw on the escutcheon (8) and tighten up with Hook Wrench 136 589 02 05.  
  
Then push on the felt washer (9) and screw on the control knob (10).

17. Connect the electric cable, 2.5 mm<sup>2</sup> in section and 700 mm long, to Terminal 87 of the contactor and to the disk-type horn (5) Bosch HO/FDF 12 4/8, which is fixed to the wheel arch assembly.
18. Connect the other extra cable set with the black/yellow cables, 2.5 mm<sup>2</sup> in section and 1000 mm long, to the disk-type horn (5) HO/FDF 12 4/8 and to the disk-type horn (3) HO/FDF 12 5/8.

19. Connect the brown ground cable, 2.5 mm<sup>2</sup> in section and 300 mm long, to the disk-type horn (5) HO/FDF 12 4/8 and to the ground connection of the cable connector for the blower at the left wheel arch assembly.
20. If the vehicle is fitted with a disk-type horn (4), make Hella, Part No. 000 542 73 20, as standard equipment, the latter must be replaced by the disk-type horn, make Bosch, HO/FDF 12 3/8 (see Section A).
21. Connect the ground cable to the negative terminal of the battery, switch on the ignition and check the assembly.

# List of Parts:

Number	Designation	Part No.
1	Disk-type horn Bosch HO/FDF 12 3/8 (only necessary if a Hella disk-type horn was installed as standard equipment)	000 542 44 20
1	Disk-type horn Bosch HO/FDF 12 4/8	000 542 45 20
1	Disk-type horn Bosch HO/FDF 12 5/8	000 542 46 20
1	Bracket for disk-type horn at wheel arch assembly left	120 542 04 40
2	Hexagon screw	M 6×15 DIN 933 — 8 G
2	Lock washer	B 6 DIN 127
2	Washer	A 6 DIN 9021
2	Hexagon nut	M 6 DIN 934 — 5 S
2	Hexagon screw	M 10×28 DIN 931 — 8 G
2	Lock washer	B 10 DIN 127
2	Hexagon nut	M 10 DIN 934 — 5 S
1	Bracket for disk-type horn at front cross-tube	10 120 612 00 31
1	12 Volt contactor with operating contact	000 542 15 19
1	Bracket for contactor	180 544 00 38
2	Cheese-head screw	AM 4×6 DIN 84
2	Lock washer	B 4 DIN 127
2	Hexagon nut	M 4 DIN 934 — 5 S
1	Push-pull switch	120 540 00 44
1	Bracket for push-pull switch	10 120 869 00 14
2	Cheese-head self-tapping screws	S 4.2×16 DIN 7971
1	Extra cable set with 2 cables each 1 mm <sup>2</sup> in section and 100 mm long	
1	Extra cable set with 2 cables each 2.5 mm <sup>2</sup> in section and 1000 mm long	
1	Electric cable, 2.5 mm <sup>2</sup> in section and 1000 mm long	
1	Electric cable, 2.5 mm <sup>2</sup> in section and 700 mm long	
1	Electric cable, 2.5 mm <sup>2</sup> in section and 300 mm long	
1	Electric cable, 1.5 mm <sup>2</sup> in section and 80 mm long	B 1 DIN 72551
2	Spade terminal	4×0.8 N 261
2	Rubber grommet	000 997 01 81
2	Cheese-head screw (for cable connection at disk-type horn)	AM 4×8 DIN 84
2	Lock washer	B 4 DIN 127

## A. Removal and Installation of Flash Signal Mechanism for Flash Direction Signals

### Removal:

1. Unscrew the left hexagon screw (7) behind the engine compartment panel (1) at the bracket (6) for the flash signal mechanisms.
2. Disconnect the electric cables and take out the flash signal mechanism (9) (see Fig. 54 — 16/1).

### Installation:

3. Connect the electric cables, paying attention to the color coding. Connect as follows:  
The black/white/green cable (Lead No. 12) to Terminal 54,  
the black cable (Lead No. 11) to Terminal 15,  
the green cable (Lead No. 66) to Terminal K,  
the brown cable (Lead No. 28) to Terminal 31.  
(See Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf 1).
4. Fix the flash signal mechanism (9) to the bracket (6) by screwing in the left hexagon screw (7).

5. Check the functioning of the flash signal mechanism.

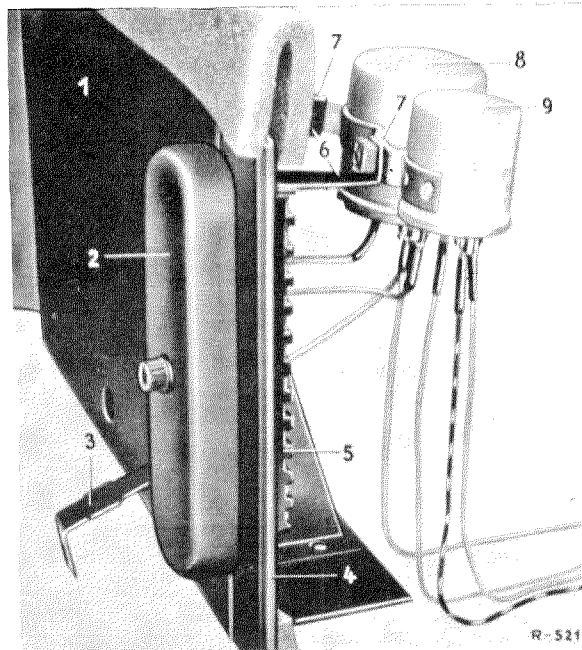


Fig. 54 — 16/1

- |   |  |
|---|--|
| 1 Center engine compartment panel                             | 6 Bracket for flash signal mechanism                 |
| 2 Cover of fuse box   | 7 Hexagon screws M 6×10                              |
| 3 Bracket for oil pressure gage line                          | 8 Flash signal mechanism for upper beam              |
| 4 Bracket for the fuse box at center engine compartment panel | 9 Flash signal mechanism for flash direction signals |
| 5 Fuse box  |  |

## B. Removal and Installation of Flash Signal Mechanism for Upper Beam Flash Signal System

### Removal:

1. Unscrew the two hexagon screws (7) behind the engine compartment panel (1) at the bracket (6) for the flash signal mechanisms (see Fig. 54 — 16/1). Remove the two flash signal mechanisms (8) and (9).

**Note:** The flash signal mechanism (8) for the headlight upper beam flash signal system is connected to the bracket (6) in the same way as the flash signal mechanism (9) for the flash direction signals.

2. Disconnect the electric cables from the upper beam flash signal mechanism (8) and take off the flash signal mechanism.

### Installation:

3. Connect the electric cables, paying attention to the color coding. Connect as follows:  
The black/blue cable (Lead No. 27) to Terminal 15,  
the white cable (Lead No. 65) to Terminal 56a,

the black cable (Lead No. 26) to Terminal 31. (See Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf 4).

4. Screw the two flash signal mechanisms (8)

and (9) onto the bracket (6) by screwing in the two hexagon screws (7).

5. Check the functioning of the flash signal mechanisms.

### C. Subsequent Installation of Contactor for Headlight Lower Beam Flash Signal System

(Optional, SA 10226)

The flash signal system which is fitted as standard enables light signals to be made with the **upper beam**. When the flash signal switch is operated, the upper beam automatically flashes on and off at regular intervals both when the lights are switched off altogether and when only the headlight parking bulbs or the parking bulbs plus lower beam are switched on.

For countries such as for example Austria and Portugal, where upper beam flash signalling without the tail light switched on is forbidden, the flash signal system can be arranged as an optional extra at the works or else subsequently installed in such a way that flash signals can only be made by means of the **lower beam and with the car lights switched on**. If the modification is made subsequently, the flash signal mechanism must be replaced by a contactor and the circuit must be altered. In contrast to the standard version, flash signalling is no longer automatic but must be done by periodic actuation of the flash switch.

The following procedure should be adopted for the modification:

1. Remove the flash signal mechanism for the headlight upper beam flash signal system (see Section B and Fig. 54 — 16/1).

2. Disconnect the electric cable with the two black/blue leads (Leads Nos. 27 and 50, Cable Sheaf 2 of the Main Wiring Harness, see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness) from Fuse No. 4 on the fuse box.

Then nip off the thicker lead, Lead No. 27, 2.5 mm<sup>2</sup> in section.

3. Re-connect the thinner lead, Lead No. 50, 1 mm<sup>2</sup> in section, to Fuse No. 4.

4. Push a rubber grommet, Part No. 000 997 01 81, onto the thicker lead, Lead No. 27, solder on a spade terminal 4 × 0.8 N 261 and connect Lead No. 27, together with the two grey leads Nos. 42 and 48 of Cable Sheaf 2, to Fuse No. 7.

5. Disconnect the electric cable with the two white leads (Leads Nos. 62 and 65, Cable

Sheaf 3) at connection No. 10 of the fuse box (right side).

6. Nip off Lead No. 65 which leads to the flash signal system (Cable Sheaf 4) and mark it with a yellow spot.

**Note:** The two white leads, Leads Nos. 62 and 65 are similar, both being 2.5 mm<sup>2</sup> in section. Check which of these leads is No. 65 by means of a testing light.

7. Re-connect Lead No. 62 to the connection No. 10 of the fuse box (right side).

8. Push a rubber grommet onto Lead No. 65, Part No. 000 997 01 81, and solder a spade terminal 4 × 0.8 N 261 onto it.

Then connect the lead, together with the yellow lead, Lead No. 75 (to Terminal 56b of the foot dimmer switch) to connection No. 12 of the fuse box (right side).

9. Push a rubber grommet, Part No. 000 997 01 81, onto the black lead, Lead No. 26 on Cable Sheaf 1 to the contactor (which has replaced the flash signal mechanism) and solder a spade terminal 4 × 0.8 N 261 onto it.

10. Strap together Terminals 30/51 and 86 at the contactor with the black cable, 1 mm<sup>2</sup> in section and 80 mm long, B 1 DIN 72 551 and connect the electric cables of Cable Sheaf **4** as follows:

The white cable (Lead No. 65) to Terminal 87, the black/blue cable (Lead No. 27) to Terminal 30/51 and

the black cable (Lead No. 26) to Terminal 85.

11. Install the contactor in place of the flash signal mechanism (see Section B).

12. Check the functioning of the system.

**List of Parts:**

Number	Designation	Part No.
1	Relay, 12 Volt, with operating contact Bosch SH/SE 20/2	000 542 15 19
1	Electric cable, black, 1 mm <sup>2</sup> , 80 mm long	B 1 DIN 72 551
5	Rubber grommet	000 997 01 81
5	Spade terminal	4 × 0.8 N 261

# Removal and Installation of Upper Beam Flash Signal Switch

Job No.
54 — 17

## Removal:

1. Unscrew the two fixing screws for the fixing strap.
2. Unscrew the fixing screw for the cover, push back the cover and disconnect the electric cables.

## Installation:

3. Installation is the reverse of the removal procedure.  
Connect the black cable (Lead No. 26) and the brown cable (Lead No. 41) (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **18**).

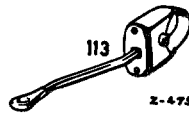


Fig. 54 — 17/1

# Removal and Installation of Push-Pull Switch and Dimmer Resistance for Instrument Lighting

## Removal:

1. Take the cable covering (cardboard) out of the left glove locker (under the mounting plate for the control knobs).
2. Unscrew the control knob (4) and the escutcheon (3) from the push-pull switch (Fig. 54 — 18/1).

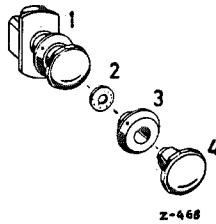


Fig. 54 — 18/1

- |                    |                |
|--------------------|----------------|
| 1 Push-pull switch | 3 Escutcheon   |
| 2 Felt washer      | 4 Control knob |

3. Push the switch forward and pull it out under the mounting plate.
4. Loosen the two slotted screws (1) and pull the electric cables (3), (4) and (5) together with the dimmer resistance (2) out of the terminals (Fig. 54 — 18/2).

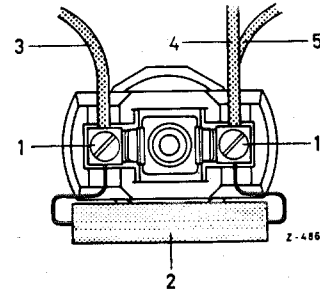


Fig. 54 — 18/2

- |                     |                 |
|---------------------|-----------------|
| 1 Slotted screws    | 4 } Grey cables |
| 2 Dimmer resistance | 5 }             |
| 3 Grey/red cable    |                 |

## Installation:

5. Installation is the reverse of the removal procedure.

The connections are made as follows:

The two wire ends of the dimmer resistance to one terminal each, the grey/red cable (Lead No. 4) to one terminal, the two grey cables (Leads Nos. 45 and 47) to the other terminal (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **11**).

Before screwing on the control knob (4), do not forget to install the felt washer (2) (see Fig. 54 — 14/1).

# Removal and Installation of Starter Push-Button-Switch

Job No.  
54 — 19

## Removal:

1. Take the cable covering (cardboard) out of the left glove locker (under the mounting plate for the control knobs).
2. Unscrew the escutcheon from the push-button switch, using Hook Wrench 136 589 02 05.
3. Push the push-button switch forward, pull it

out under the mounting plate and disconnect the electric cables.

## Installation:

4. Installation is the reverse of the removal procedure. Connect the two black/red cables (Leads Nos. 24 and 25) (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **12**).

# Subsequent Installation of Socket for Inspection Light (in Engine Compartment)

Job No.  
54 — 20

(Optional, SA 779/5 - 120)

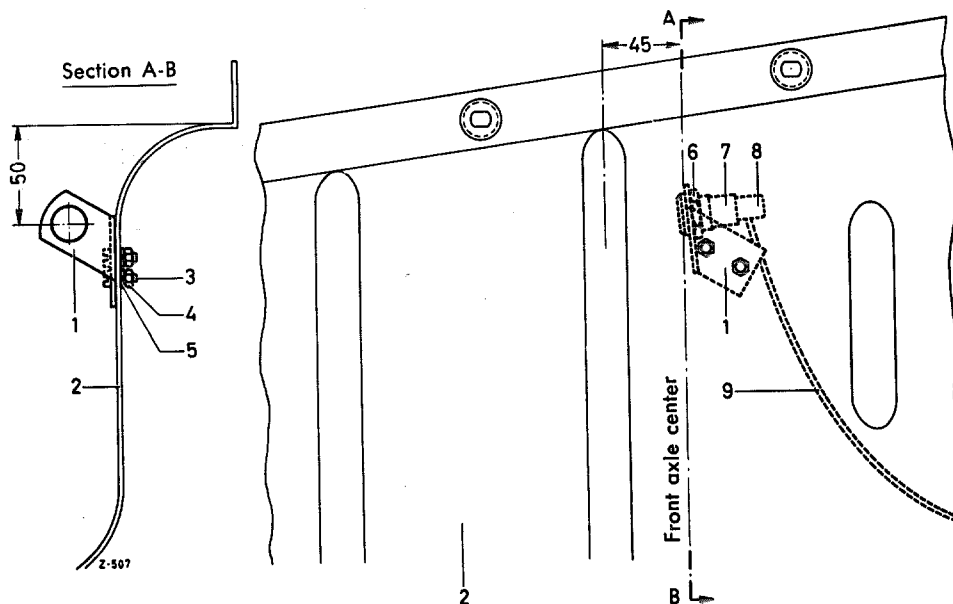


Fig. 54 — 20/1

- |                        |                  |
|------------------------|------------------|
| 1 Bracket for socket   | 6 Hexagon nut    |
| 2 Wheel arch panelling | 7 Socket         |
| 3 Cheese-head screw    | 8 Plug           |
| 4 Hexagon nut          | 9 Electric cable |
| 5 Lock washer          |                  |

1. Hold the bracket (1) for the socket (7) of the inspection light, according to the dimensions given, against the left wheel arch panelling (2), mark the fixing holes and bore them out with a 5.5 mm diameter drill (see Fig. 54 — 20/1).
2. Tin the wheel arch panelling at the point where the bracket (1) butts against it.
3. Tin the bracket (1) at the point where it butts against the wheel arch panelling and screw it to the wheel arch panelling (2) by means of the two cheese-head screws (3) AM 5 × 10 DIN 84 — 4 S with lock washer (5) and hexagon nut (4) (see Fig. 54 — 20/1).
4. Place the socket (7) in position in the bracket (1) and screw up and tighten the hexagon nut (6). When this is done, the plug (8) and the screw must be effectively insulated.
5. Pull an insulation sleeve B 3 × 3.8 sw, 950 mm long, over the cable (9) A 1 DIN 72 551, 1000 mm long (black) and connect the cable (9) to the socket (7) and to the fuse box at Fuse No. 1.

#### List of Parts:

Number	Designation	Part No.
1	Socket for inspection light	000 545 05 25
1	Bracket for socket	120 545 11 95
2	Cheese-head screw	AM 5 × 10 DIN 84
2	Lock washer	B 5 DIN 127
2	Hexagon nut	M 5 DIN 934
1	Electric cable, black, 1 mm <sup>2</sup> in section, 1000 mm long	A 1 DIN 72551
1	Insulation sleeve, black, 950 mm long	B 3 × 3.8 DIN 40621

# Headlights

Job No.

82 — 1

## A. Removal and Installation of Right or Left Headlight

### Removal:

1. Remove the oval head countersunk screw on the ornamental ring and take off the ornamental ring (Fig. 82 — 1/1).

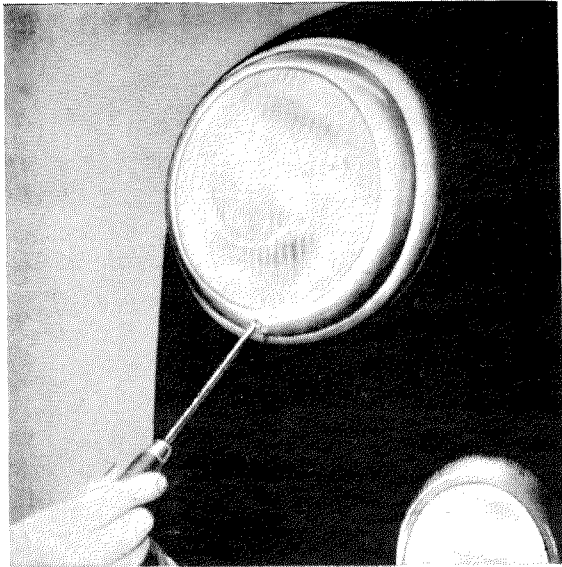


Fig. 82 — 1/1

2. Unscrew the retaining screw at the bottom of the headlight and take out the headlight.
3. Disconnect the lampholder clamp and take out the lampholder (Fig. 82 — 1/2).

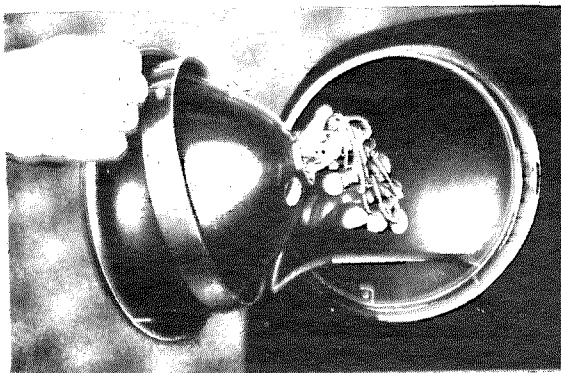


Fig. 82 — 1/2

4. Remove the headlight.

5. If necessary, disconnect the electric cables from the lampholder.

### Installation:

6. Installation is the reverse of the removal procedure.
7. Connect up the electric cables to the lampholder; when doing this, pay attention to the color coding.

#### Headlight, left:

Connect up the white/black cable (Lead No. 64) to terminal 56a,  
the yellow/black cable (Lead No. 77) to terminal 56b,  
the grey/black cable (Lead No. 43) to terminal 58,

the brown cable (Lead No. 38) to terminal 31,

(see Job No. 54 — 1, Section A, Diagram of the Main Wiring Harness, Cable Sheaf 20.)

#### Headlight, right:

Connect up the white cable (Lead No. 63) to terminal 56a,  
the yellow cable (Lead No. 76) to terminal 56b,

the grey cable (Lead No. 42) to terminal 58,  
the brown cable (Lead No. 35) to terminal 31,

(see Job No. 54 — 1, Section A, Diagram of the Main Wiring Harness, Cable Sheaf 22.)

8. After the headlights have been installed, check and, if necessary, correct headlight adjustment (see Job No. 82 — 2).

## B. Replacement of Left or Right Bulb

### Removal:

1. Remove the headlight.
2. Remove the bulb from the lampholder.

on the reflector and reduces its reflecting efficiency.

5. Install the headlight.

### Installation:

3. Insert the new bulb in the lampholder (see Fig. 82 — 1/3).

**Note:** Do not touch the bulb with bare (greasy) fingers; always use a clean cloth or a piece of tissue paper when inserting it. If this is not done, the bulb gives off a grease vapor when it becomes hot, and this vapor settles

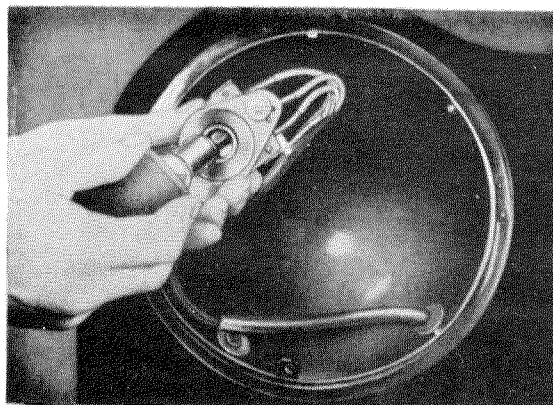


Fig. 82 — 1/3

## C. Removal and Installation of Left or Right Headlight Glass

### Removal:

1. Remove the headlight.
2. Use a screw driver to pry out the retaining springs.
3. Then remove the headlight glass rubber ring (see Fig. 82 — 1/4).
4. Remove the rubber ring from the headlight glass.

### Installation:

3. Installation is the reverse of the removal procedure.

When inserting the headlight glass, care must be taken to ensure that the longitudinal grooves are vertical.

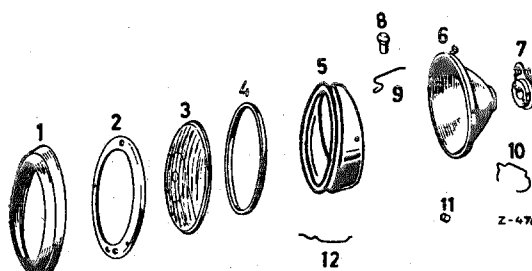


Fig. 82 — 1/4

- |                           |  |
|---------------------------|--|
| 1 Ornamental ring         | 8 Rubber stud with hole for reflector adjustment |
| 2 Retaining ring          | 9 Retaining spring                               |
| 3 Glass                   | 10 Clamp spring                                  |
| 4 Sealing ring            | 11 Rubber pivot pin in reflector mounting ring   |
| 5 Reflector mounting ring | 12 Retaining spring for reflector                |
| 6 Reflector (mirror)      |  |
| 7 Lampholder              |  |

# Headlight Adjustment

Job No.

82 — 2

When the headlights are adjusted, the car must be in normally loaded condition ( $6 \times 65 \text{ kg} + 45 \text{ kg}$  luggage in the trunk compartment). Various efficient headlight adjustment devices are marketed by firms specialising in accessories. These devices can be employed to adjust headlights quickly and effortlessly at any time of the day. The instructions given in each case by the manufacturer should be observed when using these devices.

If no such device is available, the headlights can be adjusted according to the following procedure.

## A. Adjustment of Main Headlights

1. Load the car with  $6 \times 65 \text{ kg} + 45 \text{ kg}$  luggage in the trunk compartment and push the car backward and forward several times so that the front and rear wheels adjust themselves to the load.
2. Stand the car on an even surface 5 m from a vertical headlight adjustment screen (Fig. 82 — 2/1).
4. Remove the ornamental rings from both headlights (see Job No. 82 — 1, Section A).
5. Switch on the upper beam and by turning the adjusting screw (2) adjust each headlight in the lateral plane (Fig. 82 — 2/2) so that the brightest spot on the illuminated area lies on the perpendicular which passes through the adjusting cross (Fig. 82 — 2/1). When adjusting, cover the other headlight.

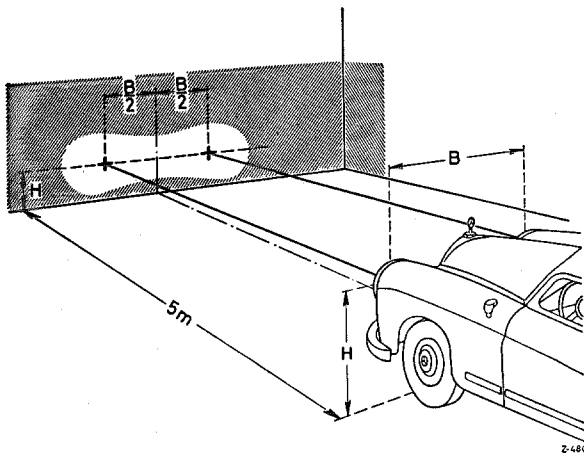


Fig. 82 — 2/1

3. Mark on the adjusting screen the height H of the headlights (center of beam) above the ground and their distance B or  $\frac{B}{2}$  (symmetrical) from the longitudinal axis of the car. This gives two adjusting crosses (see Fig. 82 — 2/1). Then 5 cm below the adjusting crosses draw in the boundary line for the lower beam (see Fig. 82 — 2/3).

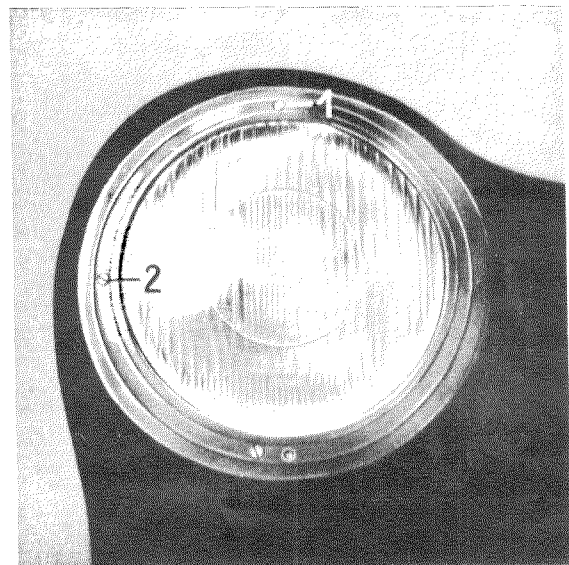


Fig. 82 — 2/2

1 Vertical plane adjusting screw    2 Lateral plane adjusting screw

6. Switch on the lower beam. By turning the adjusting screw (1) adjust the headlights in

the vertical plane so that the highest point on the light-dark boundary lies on the boundary line for the lower beam (Fig. 82—2/3).

**Note:** The term "light-dark boundary" is used to denote the zone of the light beam where the transition from the upper dark to the lower bright part of the lower beam appears most distinct to the eye.

The light-dark boundary must run as horizontally as possible; small patches of light in the middle of the lower beam which are reflected up over the boundary can be disregarded. When carrying out this adjustment, it is advisable to stand directly beside the headlight.

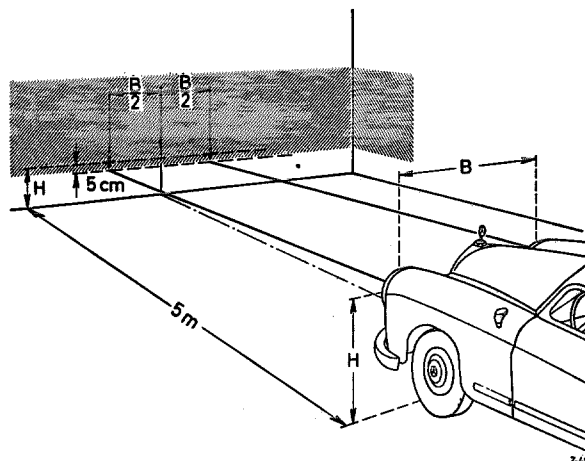


Fig. 82 — 2/3

7. Reinstall the ornamental rings after adjusting the headlights.

## B. Adjustment of Fog Lights

1. Load the car with  $6 \times 65 \text{ kg} + 45 \text{ kg}$  luggage in the trunk compartment and push it backward and forward several times so that the front and rear wheels adjust themselves to the load.

2. Again place the car 5 m from the adjusting screen.

3. On the adjusting screen mark the height H of the fog lights. Underneath this, draw in the adjusting line at the distance (h) marked on the ornamental ring of the fog lights (Fig. 82 — 2/4).

The distance (h) for

Bosch Fog Light

Part No. 000 544 30 06 is 18 cm

Hella Fog Light

Part No. 000 544 30 06 is 26 cm

**Note:** For districts which are subject to frequent, thick fogs it is advisable to direct the fog lights down a further 7 cm, i. e.:

Bosch Fog Light 25 cm,

Hella Fog Light 33 cm.

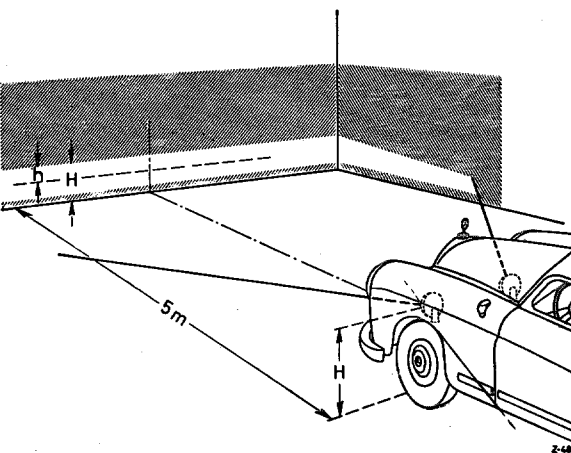


Fig. 82 — 2/4

# Removal and Installation of Left or Right Flash Direction Signal with Parking Light

Job No.

82 — 3

## Removal:

1. Unscrew the oval-head countersunk screw at the bottom of the flash direction signal and take off the housing (Fig. 82—3/1).

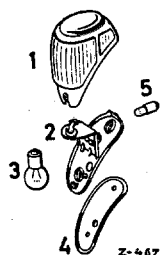


Fig. 82—3/1

- 1 Housing
- 2 Base plate
- 3 Bulb 12 V 15 W
- 4 Rubber pad
- 5 Bulb H 12 V 2 W

2. If necessary, remove the bulbs for the flash direction signal and the parking light from the holder by pressing slightly and turning to the left.
3. Unscrew the oval-head countersunk screws on the base plate and disconnect the electric cables.  
Take off the base plate together with the rubber pad.

Fasten the electric cables with a piece of wire.

## Installation:

4. Installation is the reverse of the removal procedure. When connecting the electric cables, pay attention to the color coding.

Flash direction signal, left,  
connect as follows:

The black/white cable (Lead No. 13) to the flash direction signal,

the green/black cable (Lead No. 68) to the parking light,

the brown cable (Lead No. 39) to ground, (see also Job No. 54—1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **17**).

Flash direction signal, right,  
connect as follows:

The black/green cable (Lead No. 14) to the flash direction signal,

the green cable (Lead No. 67) to the parking light,

the brown cable (Lead No. 33) to ground (see also Job No. 54—1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **35**).

5. Check the functioning of flash direction signals and parking lights.

# Removal and Installation of Windshield Wiper Motor

## Removal:

1. Remove the battery (see Job No. 54 — 9).
2. Remove the top center cowl insulation panel and the right cowl insulation panel (see Job No. 68 — 2).  
Take off the rubber cuff for the windshield wiper motor.
3. Detach the drive rod (5) at the motor and disconnect the feed cable (Fig. 82 — 4/1).
4. Unscrew the 3 hexagon nuts (1), (2) and (3) for fixing the motor (Fig. 82 — 4/1).

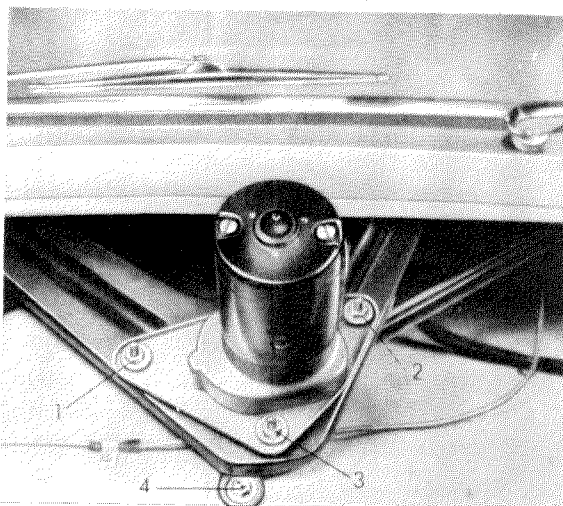


Fig. 82 — 4/1

- |                   |   |
|-------------------|---|
| 1 }<br>2 }<br>3 } | Fixing screws for windshield wiper motor                |
| 4                 | Hexagon screw for fixing the plate with drive mechanism |
| 5                 | Drive rod   |

5. Take off the windshield wiper motor (Fig. 82 — 4/2).

## Installation:

6. Installation is the reverse of the removal procedure. When fixing the motor, do not forget the rubber buffers (25), the spacers

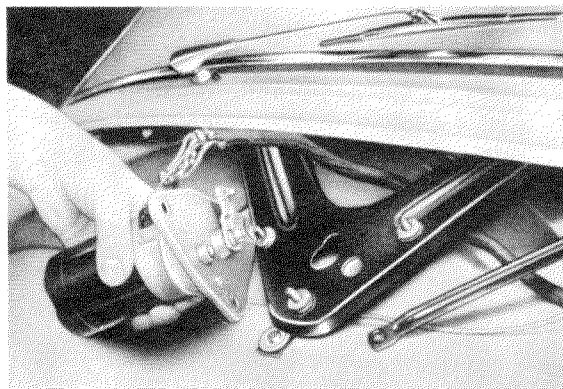


Fig. 82 — 4/2

(26), the washers (29) and the lock washers (30) (Fig. 82 — 4/3).

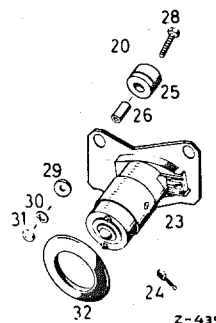


Fig. 82 — 4/3

- |    |                                |
|----|--------------------------------|
| 23 | 12 V. motor with crank         |
| 25 | Rubber buffer                  |
| 26 | Spacer                         |
| 28 | Hexagon screw M 6 · 30 DIN 933 |
| 29 | Washer                         |
| 30 | Lock washer B 6 DIN 934        |
| 31 | Hexagon nut M 6 DIN 934        |
| 32 | Cuff                           |

7. When connecting the electric cables, pay attention to the color coding. Connect as follows:

The black cable (Lead No. 8) to Terminal 2, the black/mauve cable (Lead No. 7) to Terminal 3,

the brown cable (Leads Nos. 29, 33, 32) to the ground connection of the armature housing (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **33**).

# Removal and Installation of Plate with Drive Mechanism for Windshield Wipers, Left and Right, together with Coupling Rod and Drive Rod

Job No.

82 — 5

## Removal:

1. Remove the battery (see Job No. 54 — 9).
2. Remove the top center, the bottom center and the right cowl insulation panels (see Job No. 68 — 2). Take off the rubber cuff for the windshield wiper motor.
3. Remove the left and right wiper arms, together with the wiper blades (see Job No. 82 — 6).
4. Take off the chromium-plated cap (1) on the left and right windshield wiper shafts and unscrew the hexagon nut (2) (Fig. 82 — 5/1). Take off the washer and the rubber seal (5).

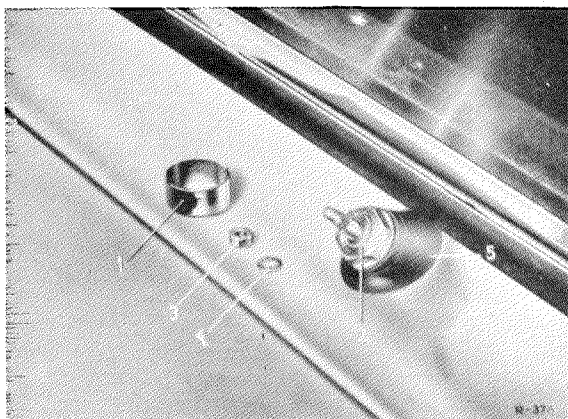


Fig. 82 — 5/1

- 1 Cap
- 2 Hexagon nut
- 3 Hexagon nut for fixing wiper arm
- 4 Toothed washer
- 5 Rubber seal

5. Use Special Socket Wrench 120 589 00 09 to unscrew the bearings (7) of the wiper shafts from the plates (11) on the left and on the right (Fig. 82 — 5/2). Take out the bearings (7) together with the wiper shafts (9) and the corrugated washers (8).

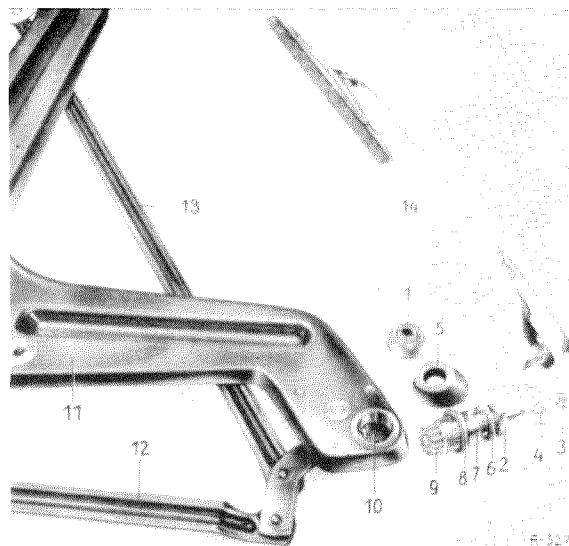


Fig. 82 — 5/2

- 1 Cap
- 2 Hexagon nut
- 3 Hexagon nut for fixing wiper arm
- 4 Toothed washer
- 5 Rubber seal
- 6 Washer
- 7 Bearing for wiper shaft
- 8 Corrugated washer
- 9 Wiper shaft with gear
- 10 Drive mechanism without wiper shaft
- 11 Plate
- 12 Drive rod
- 13 Coupling rod
- 14 Wiper arm with wiper blade

6. Unscrew the lower hexagon screw (4) for the plate (see Fig. 82 — 4/1). Then take out the plate by moving it gently to one side or the other (Fig. 82 — 5/3).

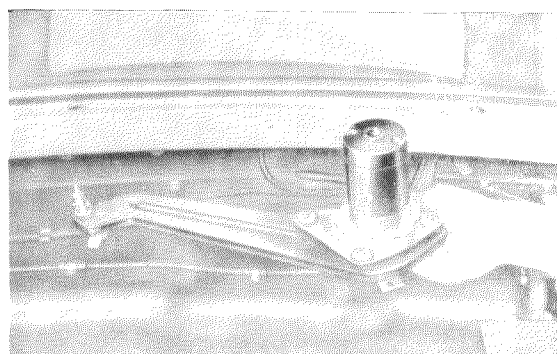


Fig. 82 — 5/3

# Installation:

7. Installation is the reverse of the removal procedure.

If the coupling rod (34) or the drive rod (33)

were taken off, they must be attached again before the plate is inserted (Fig. 82 — 5/4).

8. When screwing in the lower hexagon screw, do not forget the two rubber buffers (43), the spacer sleeve (41) and the washer (42) (see Fig. 82 — 5/4).

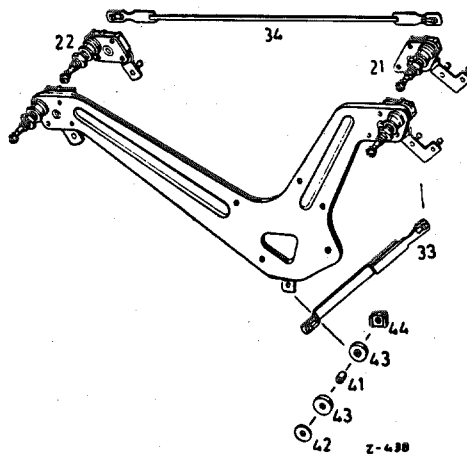


Fig. 82 — 5/4

- 21 Left drive mechanism with wiper shaft
- 22 Right drive mechanism with wiper shaft
- 33 Drive rod
- 34 Coupling rod
- 41 Spacer sleeve
- 42 Washer
- 43 Rubber buffer
- 44 Insert, square cage nut

# Removal and Installation of Wiper Arm with Wiper Blade

Job No.

82 — 6

## Removal:

1. Lift the wiper arm away from the windshield and unscrew the fixing nut (3) at the foot of the wiper arm and take it off together with the toothed washer (4) (see Fig. 82—5/1). Take off the wiper arm with the wiper blade.

## Installation:

2. Installation is the reverse of the removal procedure.  
In an emergency, wiper arms made by the firm of Bosch can be replaced by those made by the firm of Avog and vice versa.

**Note:** When installing, care must be taken to ensure that the wiper arms are placed on the shafts of the windshield wiper drive mechanisms (21) and (22) in such a way that the full deflection of the wiper arms can take place without their striking against the windshield frame (see Fig. 82 — 5/4).

**In order to facilitate adjustment, the serrations on the wiper arms have been omitted on recent models.** When a wiper arm of the later type is being installed, it should in the first place be only lightly mounted and the wiping angle checked. When the fixing nut is tightened up, the serrations on the wiper shaft of the motor bite into the bore of the wiper arm.

Moreover, on wiper motors made by the firm of Avog, the 30.5 mm crank has been shortened to 30.0 mm in order to avoid any possibility of excessive travel of the wiper blades. These shortened cranks can be ordered under Part. No. 10 120 824 05 10. **When replacing, the position of the old crank on the wiper shaft must be marked and the new crank fitted in the same position since otherwise considerable time is wasted in adjusting in order to ensure that the blades stop at the right place.**

# Removal and Installation of Left or Right Wiper Blade of Windshield Wiper

Job No.

82 — 7

## a) Bosch Type

### Removal:

1. Lift the wiper arm (1), with the wiper blade, away from the windshield. Press down the spring (6) on the wiper blade (2) and push the wiper blade out of the anchorage in the direction of the wiper shaft (Fig. 82 — 7/1).

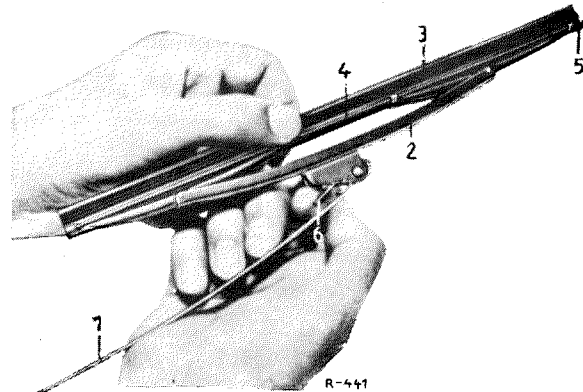


Fig. 82 — 7/1

- |               |                     |          |
|---------------|---------------------|----------|
| 1 Wiper arm   | 3 Rubber molding    | 5 Clamp  |
| 2 Wiper blade | 4 Retaining springs | 6 Spring |

### Installation:

2. Install the wiper blade (2) by sliding it into the anchorage of the wiper arm (1) in the reverse direction until the spring (6) is heard to click into position.

## b) Avog Type

### Removal and Installation:

1. Lift the wiper arm (1) with the wiper blade away from the windshield. Push the lever (6) in the direction indicated by the arrow on the wiper blade (2) and take out the wiper blade or insert it, as required (Fig. 82 — 7/2).

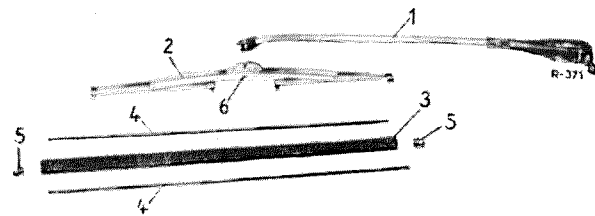


Fig. 82 — 7/2

- |               |                     |         |
|---------------|---------------------|---------|
| 1 Wiper arm   | 3 Rubber molding    | 5 Clamp |
| 2 Wiper blade | 4 Retaining springs | 6 Lever |

The complete wiper blade assemblies (with arms) of both makes are interchangeable, that is to say a wiper blade (with arm) of the firm of Avog can, if necessary, be used on a windshield wiper assembly of the firm of Bosch and vice versa.

# Removal and Installation of Rubber Molding for Wiper Blade

Job No.

82 — 8

## a) Bosch Type

### Removal:

1. Remove the wiper blade (see Job No. 82 — 7).
2. Pull the rubber molding (3) out of the retaining spring (4) in the opposite direction to the clamp (5) (Fig. 82 — 8/1).

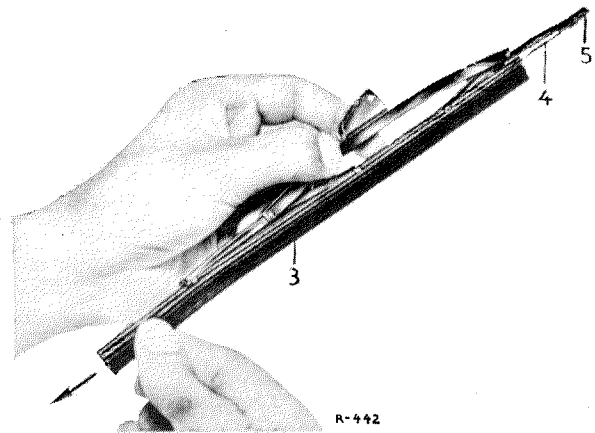


Fig. 82 — 8/1

3 Rubber molding 4 Retaining spring 5 Clamp

### Installation:

3. Installation is the reverse of the removal procedure.

## b) Avog Type

### Removal:

1. Remove the wiper blade (see Job No. 82 — 7).
2. Pull off the clamp (5), depressing the two retaining springs (4) (Fig. 82 — 8/2).
3. Pull the rubber molding (3), together with the retaining springs, out of the anchorage of the wiper blade and take out the retaining springs (see Fig 82 — 8/2).

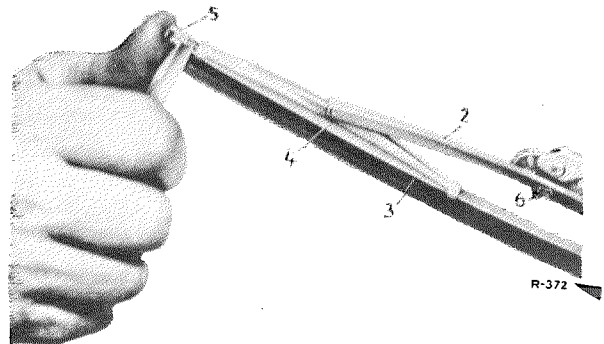


Fig. 82 — 8/2

2 Wiper blade 5 Clamp  
3 Rubber molding 6 Lever  
4 Retaining springs

### Installation:

4. Installation is the reverse of the removal procedure.

## Removal and Installation of Push-Pull Switch for Windshield Wipers

### Removal:

1. Take the cable covering (cardboard) out of the left glove locker (under the mounting plate for the control knobs).
2. Unscrew the control knob (4) and the escutcheon (3) from the push-pull switch (Fig. 82—9/1).
3. Push the push-pull switch forward and pull it out under the mounting plate. Then disconnect the feed cable.

### Installation:

4. Installation is the reverse of the removal procedure. Do not forget the felt washer (see Fig. 82—9/1). Tighten up the escutcheon, using Hook Wrench 136 589 02 05.

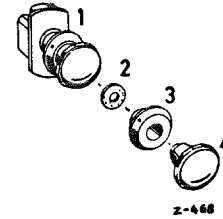


Fig. 82—9/1

1 Push-pull switch    2 Felt washer    3 Escutcheon    4 Control knob

## Removal and Installation of Roof Light

### Removal:

1. Pull the housing off the retaining springs.
2. Disconnect the feed cable and the ground cable.

3. Unscrew the lower section (base plate).

### Installation:

4. Installation is the reverse of the removal procedure.

## A. Removal and Installation of Roof Light

### Removal:

1. Take out the insert (3) for the cigar-lighter (Fig. 82 — 11/1).

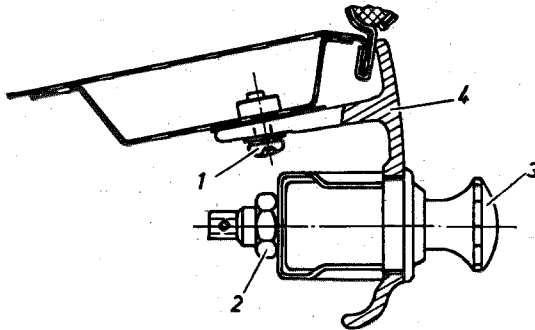


Fig. 82 — 11/1

- 1 Fixing screws
- 2 Fixing nut
- 3 Insert for cigar-lighter
- 4 Mounting plate for control knobs

2. Disconnect the feed cable, unscrew the fixing nut (2) and take off the ground cable. Remove the bracket and take out the cigar-lighter (see Fig. 82 — 11/1).

### Installation:

3. Installation is the reverse of the removal procedure.

Connect as follows:

The brown ground cable (Lead No. 30) under the fixing nut (2),

the black cable (Lead No. 9) to the terminal (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaves 8 and 9).

## B. Replacement of Lighter Element

### Removal:

1. Take out the insert (3) for the cigar-lighter (see Fig. 82 — 11/1).
2. Unscrew the lighter element with the thumb, by pressing it in and turning it to the left.
3. If necessary, clean the contacts of the cigar-lighter socket.

### Installation:

4. Screw the new lighter element into the insert with the thumb.
5. Put in the insert for the cigar-lighter.

# License Plate Lighting

Job No.
82 — 12

## A. Replacement of Bulb

### Removal:

1. Unscrew the closing plug (88) on the lower side of the license plate light and remove it together with the bulb (see Fig. 82 — 12/1).

**Note:** The closing plug is at the same time the anchorage for the bulb.

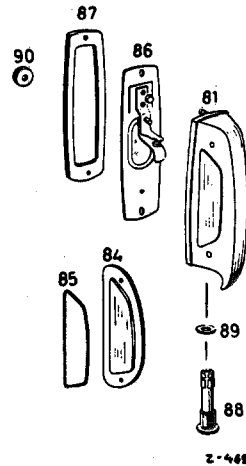


Fig. 82 — 12/1

### Installation:

2. Screw the closing plug, together with the bulb, into the license plate light. Do not forget the sealing ring (89) (Fig. 82 — 12/1).

81 License plate light  
84 Transparent pane  
85 Seal  
86 Back plate with lamp holder and pane

87 Seal  
88 Closing plug  
89 Sealing ring  
90 Rubber grommet

## B. Removal and Installation of License Plate Light

### Removal:

1. Remove the bulb (see Section A, Para. 1).
2. Unscrew the two hexagon nuts on the inner side of the trunk lid and take off the electric cable (ground cable).
3. Lift off the license plate light housing (81) and disconnect the electric cable at the back plate (86) (see Fig. 82 — 12/1).

Then take off the back plate (86) together with the seal (87).

### Installation:

4. Installation is the reverse of the removal procedure.

When connecting the electric cables, pay attention to the color coding. Connect as follows:

The grey cable (Lead No. 48) to the back plate,

the brown cable (Lead No. 79) to the lower stay bolt of the housing of the license plate light

(see Job No. 54 — 2, Section A, Circuit Diagram of Tail Light Wiring Harness, Cable Sheaves **9** and **10**).

## C. Replacement of Transparent Pane

### Removal:

1. Remove the license plate light.
2. Unscrew the two oval-head countersunk screws with hexagon nuts and take off the transparent pane (84) together with the seal (85) (see Fig. 82 — 12/1).

**Note:** The left housing has only one transparent pane on the inner side but the right housing

which illuminates the nationality plate has a further transparent pane fitted on the outer side.

### Installation:

3. Installation is the reverse of the removal procedure.

# Removal and Installation of Left Brake Light and Tail Light with Reversing Light and Parking Light or Right Brake Light and Right Tail Light with Parking Light

Job No.

82—13

## Removal:

1. Remove the upper and lower fixing screw on the cover. Take off the cover with the window.
2. If necessary replace the bulbs.  
To remove the lamp complete, take out the base plate (2) with lampholder.

**Note:** The base plate (2) is held in place in the housing (3) by the two springs (1) (Fig. 82—13/1).

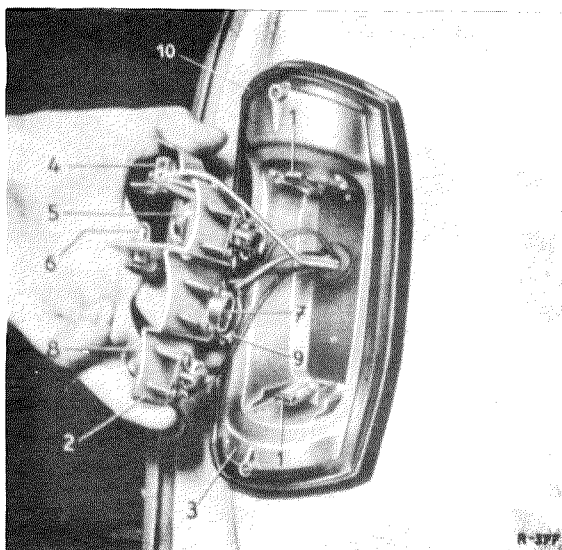


Fig. 82—13/1

- |                 |                                      |
|-----------------|--------------------------------------|
| 1 Spring        | 7 Reversing light (not connected up) |
| 2 Base plate    | 8 Flash direction signal             |
| 3 Housing       | 9 Ground connection                  |
| 4 Tail light    | 10 Seal                              |
| 5 Brake light   |                                      |
| 6 Parking light |                                      |

3. Disconnect the feed cables and remove the base plate.
4. Unscrew the hexagon fixing nut for the housing (3) underneath the rear fender and

remove the housing together with the rubber washer, washer and lock washer.

5. Remove the seal (10).

## Installation:

6. Installation is the reverse of the removal procedure. When connecting up the electric cables pay attention to the color coding:

### Left brake light and tail light:

#### Connect:

the grey/black cable (Lead No. 49) to the tail light (4) (see Fig. 82—13/1),  
the black/red cable (Lead No. 4) to the brake light (5),  
the green/black cable (Lead No. 70) to the parking light (6),  
the grey/yellow/red cable (Lead No. 51) to the reversing light (7),  
the black/white cable (Lead No. 22) to the flash direction signal (8),  
the brown cable (Lead No. 81) to the ground connection (9) (see also Job No. 54—2, Section A, Circuit Diagram of the Tail Light Wiring Harness, Cable Sheaf 7).

### Right brake light and tail light:

#### Connect:

the grey cable (Lead No. 48) to the tail light (4) (see Fig. 82—13/1),  
the black/red cable (Lead No. 4) to the brake light (5),  
the green cable (Lead No. 69) to the parking light (6),  
the black/green cable (Lead No. 23) to the flash direction signal (8),  
the brown cable (Lead No. 80) to the ground connection (9) (see also Job No. 54—2, Section A, Circuit Diagram of Tail Light Wiring Harness, Cable Sheaf 3).

# Removal and Installation of Rotary Light Switch

Job No.

82—15

## Removal:

1. Use a screw-driver to remove the two control knobs for the bowden cables of the heating and air-conditioning system (see Job No. 83—3).
2. Pull out the rotary light switch (9) control knob and use Hooked Wrench 136 589 02 05 to loosen the escutcheon plate (Fig. 82—15/1).

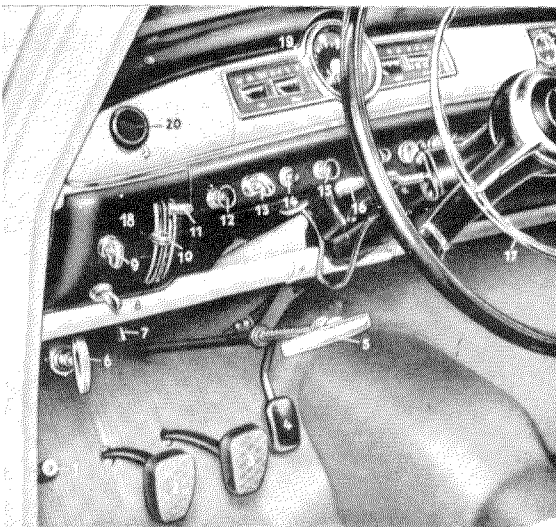


Fig. 82—15/1

- |                                      |  |
|--------------------------------------|--|
| 1 Low beam foot switch               | 12 Pull switch for windshield wipers                 |
| 2 Clutch pedal                       | 13 Rotary control knob for octane-number compensator |
| 3 Brake pedal                        | 14 Starter button                                    |
| 4 Accelerator pedal                  | 15 Starter pull switch                               |
| 5 Hand brake grip                    | 16 Upper beam flash signal (Flash approach warning)  |
| 6 Hood lock grip                     | 17 Contact ring for horn and flash direction signals |
| 7 Toggle switch for defroster blower | 18 Trim panel, left                                  |
| 8 Parking-light change-over switch   | 19 Instrument cluster                                |
| 9 Rotary light switch                | 20 Air outlet to left front side pane                |
| 10 Temperature control knob          |  |
| 11 Air control knob                  |  |

3. Remove the fixing screws for the trim panel (18) and pull back the panel (18) far enough to permit the removal of the rotary light switch (9) (see Fig. 82—15/1 and Job No. 83—3).

**Note:** The fixing screws are accessible from underneath the control knob mounting plate.

4. Remove the escutcheon plate completely and pull the control knob out of the rotary light switch.
5. Disconnect the electric cables at the rotary light switch.

## Installation:

6. Connect the electric cables to the rotary light switch.

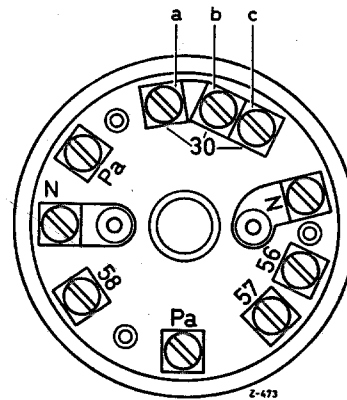


Fig. 82—15/2

When doing this, pay attention to the color coding, proceeding as follows:

### Connect:

the red cable (4 mm<sup>2</sup> in section) (Lead No. 53) to "a" of terminal 30 (Fig. 82—15/2), the red cable (2.5 mm<sup>2</sup> in section) (Lead No. 57) to "b" of terminal 30, the red cable (1.0 mm<sup>2</sup> in section) (Lead No. 56) to "c" of terminal 30.

**Note:** Do not confuse these cables with the two red cables (0.5 mm<sup>2</sup> in section) (Lead No. 55 and Lead No. 58).

### Connect:

the black cable (Lead No. 15) and the grey/red cable (Lead No. 52), each to a terminal N, the white/black cable (Lead No. 61) to terminal 56. Terminal 57 should remain free.

**Connect:**

the red/yellow cable (Lead No. 60) and one of the two thin red cables (0.5 mm<sup>2</sup> in section) (Lead No. 55 or Lead No. 58) each to a terminal Pa.

**Note:** The other thin red cable is connected to the cable connector for the roof light.

Connect up the grey cable (Lead No. 46) to terminal 58 (see Job No. 54 — 1, Section A, Circuit Diagram of the Main Wiring Harness, Cable Sheaf 14).

7. The remaining installation operations are the reverse of the removal procedure.

# Removal and Installation of Toggle Change-over Switch for Parking Light

Job No.

82 — 16

## Removal:

1. Pull out the two controls for the Bowden cables of the heating and air-conditioning system at the left side by means of a screw-driver (see Job No. 83 — 3).
2. Unscrew the fixing screws of the trim panel (18) for the instrument panel at the left and pull back the trim panel (18) far enough to permit removal of the toggle change-over switch (8) (see Fig. 82 — 15/1 and Job No. 83 — 3).

**Note:** The fixing screws are accessible from underneath the mounting plate for the control knobs.

3. Disconnect the feed cable.  
Then unscrew the escutcheon, using Hook Wrench 136 589 02 05, and take off the switch.

## Installation:

4. Installation is the reverse of the removal procedure.

When connecting the electric cables, pay attention to the color coding. Connect as follows:

The red yellow cable (Lead No. 60) to Terminal (1),  
the green cable (Leads Nos. 67 and 69) to Terminal (2),  
the green/black cable (Leads Nos. 70 and 68) to Terminal (3) (Fig. 82 — 16/1; the terminal numbers are not marked on the toggle change-over switch).

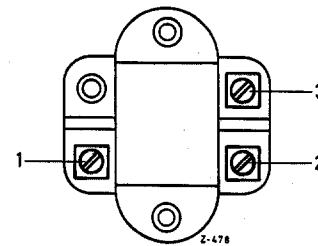


Fig. 82 — 16/1

(see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **15**).

5. Check the functioning of the parking lights.

## Removal and Installation of Toggle Switch for Blower

### Removal:

1. Pull out the two controls for the Bowden cables of the heating and air-conditioning system at the left side by means of a screw-driver (see Job No. 83 — 3).
2. Unscrew the fixing screws of the trim panel (18) for the instrument panel at the left and pull back the trim panel (18) far enough for the toggle switch to be accessible (see Fig. 82 — 15/1 and Job No. 83 — 3).

**Note:** The fixing screws are accessible from underneath the mounting plate for the control knobs.

3. Disconnect the feed cables to the toggle switch.

Then unscrew the escutcheon, using Hook Wrench 136 589 02 05, and take off the toggle switch.

### Installation:

4. Installation is the reverse of the removal procedure.

Connect:

The black/yellow/red cable (Lead No. 19), and also the black/red cable (Lead No. 18) to the toggle switch for the blower (see Job No. 54 — 1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaf **16**).

# Subsequent Installation of Engine Compartment Light

Job No.  
82 — 18

(Optional, KW 5786/2)

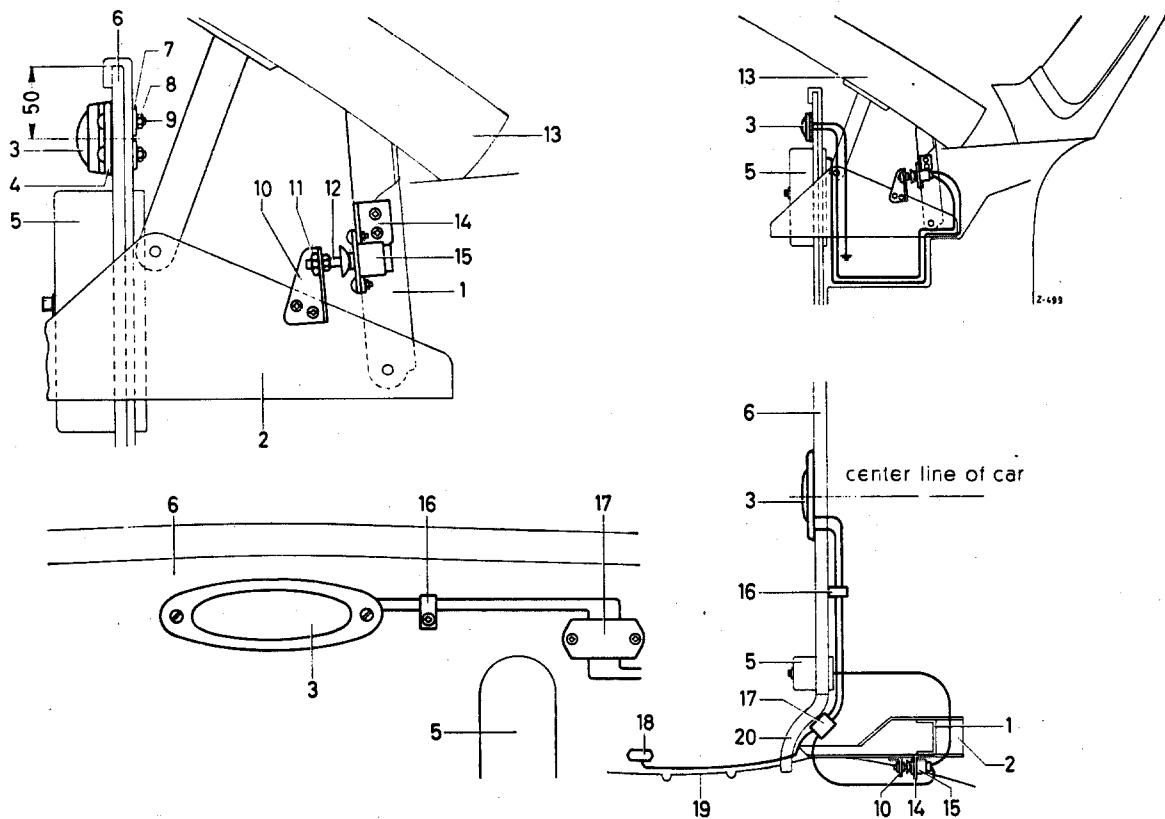


Fig. 82 — 18/1

- |   |   |
|---|---|
| 1 Arm of hood hinge                                       | 11 Lock nut   |
| 2 Arm of hood hinge                                       | 12 Adjusting screw  |
| 3 Engine compartment light                                | 13 Hood   |
| 4 Base plate with lamp holder of engine compartment light | 14 Mounting bracket                                       |
| 5 Fuse box  | 15 Contact switch   |
| 6 Center engine compartment panel                         | 16 Fixing clip  |
| 7 Backing washer  | 17 Cable connector, two-way                               |
| 8 Hexagon nut   | 18 Cable connector for left blower at wheel arch assembly |
| 9 Button-head screw                                       | 19 Wheel arch assembly                                    |
| 10 Adjusting bracket                                      | 20 Left engine compartment panel                          |

1. Disconnect the ground cable at the negative terminal of the battery.
2. Screw the contact switch (15) with the two button-head screws AM 3×8 DIN 7986, with lock washers and hexagon nuts, onto the mounting bracket (14) (see Fig. 82 — 18/1).
3. Screw the contact switch (15) with the mounting bracket (14) onto the arm (1), and

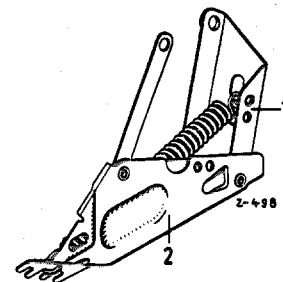


Fig. 82 — 18/2

- 1 Arm of hood hinge      2 Arm of hood hinge

then screw the adjusting bracket (10) with the adjusting screw (12) and the lock nut (11) onto the arm (2) of the hood hinge, using 2 button-head screws AM 4 × 10 DIN 7986 with lock washers and hexagon nuts (the holes for fixing are already bored in the hood hinge) (Fig. 82 — 18/1 and Fig. 82 — 18/2).

4. Unscrew the cover of the engine compartment light (3).

Hold the base plate (4) with the lamp holder of the engine compartment light, according to the dimensions given, against the center engine compartment panel (6) see Fig. 82 — 18/1) and mark the bores for the wiring and for fixing the engine compartment light.

5. Bore out the four 3.5 mm diameter holes for fixing the engine compartment light and the 6 mm diameter wiring hole.
6. Screw the engine compartment light (3) onto the center engine compartment panel (6), using the four button-head screws (9) 3 × 20 DIN 7986 with backing washers (7) and hexagon nuts (8).
7. Hold the cable connector (17) against the left engine compartment panel (20) (see Fig. 82 — 18/1) and mark the holes for fixing the cable connector and drill them out to 4.5 mm diameter.
8. Screw the cable connector (17) to the left engine compartment panel, using 2 oval-head screws AM 4 × 20 DIN 7985 with backing washers, washers 4.3 DIN 125 and hexagon nuts.
9. Solder a spade terminal 4 × 0.8 N 261 on both ends of the cable A 1 DIN 72551 — 900 mm long, and also on one end of the cable A 1 DIN 72551 — 800 mm long.
10. Pull the insulation sleeve B 4 × 5 sw DIN 40621, 700 mm long, over the cable A 1 DIN 72551, 800 mm long. Connect the cable

with the spade terminal to Fuse No. 1 (Terminal 30) of the fuse box (5), and its other end to the contact switch (15).

11. Pull the insulation sleeve B 8 × 9.4 sw DIN 40621, 800 mm long, over the cable A 1 DIN 72551, 900 mm long, and connect the cable with the two spade terminals in such a way that one end is fixed under a fixing screw (9) of the base plate and the other end to the cable connector (18) for the blower at the left wheel arch assembly.
12. Pull an insulation sleeve B 4 × 5 sw DIN 40621, 900 mm long, over the cable 4 1 DIN 72551, 910 mm long, and connect one end to the contact switch (15) and the other to the lamp holder of the engine compartment light.
13. Nip off the cables at the point where the new cable connector (17) has been fitted, but leaving them long enough to be connected to the cable connector.
14. Solder spade terminals to each of the four nipped-off ends of the cables. Push one insulation sleeve B 8 × 9.4 sw DIN 40621 over the two cables running from the cable connector (17) to the engine compartment light (3) and connect the cables to the cable connector (17).
15. Fix the two cables to the center engine compartment panel with the fixing clip (16), using an oval-head screw AM 4 × 15 DIN 7985 with backing washer and hexagon nut; drill the bore 4.5 mm in diameter.
16. Put in the 12 Volt 5 Watt lamp and screw the cover of the engine compartment light (3) onto the base plate (4).
17. Connect the ground cable to the negative terminal of the battery.
18. Check over the whole installation, making sure that the engine compartment light (3) switches off. If necessary, readjust the adjusting screw (12) at the adjusting bracket (see Fig. 82 — 18/1).

# List of Parts:

Number	Designation	Part No.
1	Light without bulb	30 136 825 00 02
1	Bulb L 12 V 5 W	DIN 72601
4	Button-head screw	3 × 20 DIN 7986
4	Hexagon nut	M 3 DIN 934
7	Backing washer	000 984 11 55
1	Contact switch	000 826 02 08
1	Mounting bracket (for contact switch)	10 120 825 00 12
2	Button-head screw	AM 3 × 8 DIN 7986
2	Lock washer	B 3 DIN 127
2	Hexagon nut	M 3 DIN 934
4	Button-head screw	AM 4 × 10 DIN 7986
4	Lock washer	B 4 DIN 127
4	Hexagon nut	M 4 DIN 934
1	Adjusting bracket with adjusting screw and lock nut	10 120 820 00 14
1	Cable connector, two-way	000 546 18 41
2	Oval-head screw	AM 4 × 20 DIN 7985
2	Washer	4.3 DIN 125
3	Hexagon nut	M 4 DIN 934
1	Fixing clip for cables	000 984 11 55
1	Oval-head screw	AM 4 × 15 DIN 7985
1	Electric cable	A 1 DIN 72551 — 800 l.
1	Electric cable	A 1 DIN 72551 — 910 l.
1	Electric cable	A 1 DIN 72551 — 900 l.
1	Insulation sleeve	B 4 × 5 sw. DIN 40621, 790 l.
1	Insulation sleeve	B 4 × 5 sw. DIN 40621, 900 l.
1	Insulation sleeve	B 8 × 9.4 sw. DIN 40621, 800 l.
6	Spade terminal	4 × 0.8 N 261

# Fog Lights

Job No.

82 — 19

## A. Subsequent Installation of Fog Lights (Optional, SA 1412 - 120)

The feed cable for the fog lights is incorporated in the main wiring harness; it is located at the inside of the right wheel arch assembly.

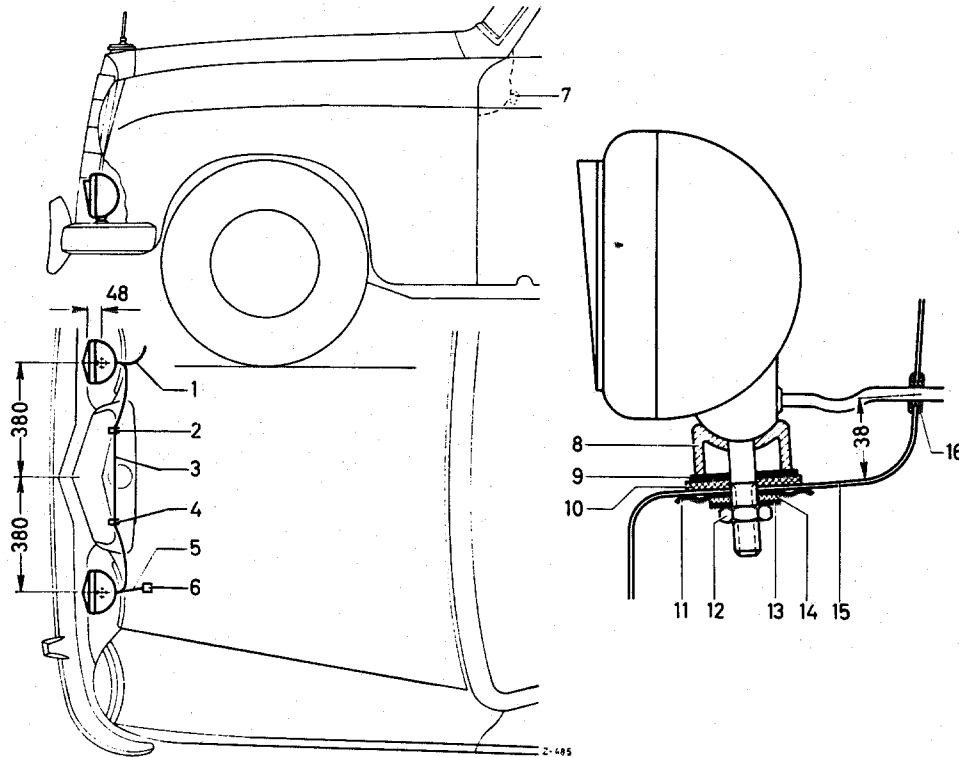


Fig. 82 — 19/1

- |  |                   |
|--|-------------------|
| 1 Feed cable for the fog lights                          | 9 Washer          |
| 2 Cable clip   | 10 Rubber pad     |
| 3 Shunt cable  | 11 Washer         |
| 4 Cable clip   | 12 Hexagon nut    |
| 5 Ground cable   | 13 Washer         |
| 6 Cable connector for blower at left wheel arch assembly | 14 Rubber washer  |
| 7 Rotary light switch for fog light                      | 15 Panelling      |
| 8 Mounting pedestal                                      | 16 Rubber grommet |

- For fixing the two fog lights, drill a hole 12.5 mm diameter on each side, according to the dimensions given (see Fig. 82 — 19/1).
- Bore a 10 mm diameter hole in the panelling on each side for the cables (15), according to the dimensions given, and fit a rubber grommet (16) in each hole.
- Fit the fog light or fog lights, using the specified washers and rubber washers (see Fig. 82 — 19/1).
- Pull Cable Sheaf **24** (1) of the main wiring harness for the fog light, right, through the right rubber grommet (16), rubbing a little tallow on the outside of the insulation sleeve.
- Connect the electric cables to the lamp holder, paying attention to the color coding. Connect as follows:  
  
The black cable (Lead No. 15) to Terminal 56a,

the brown cable (Lead No. 36) to Terminal 31 (see Job No. 54 — 1, Section A, Circuit Diagram of Main wiring Harness, Cable Sheaf **21**).

If a second fog light is to be installed in addition, the following procedures should be carried out:

6. Before pulling Cable Sheaf **21** through the rubber grommet (16), the shunt cable (3) must be pulled through the insulation sleeve of the cable sheaf.
7. Connect the shunt cable (3) (Cable A 1.5 DIN 72 551, 1500 mm long), together with the black cable (Lead No. 15) of the Main Wiring Harness, to Terminal 56a of the fog light.
8. Push the insulation sleeve (B 4 × 5 sw DIN 40 621, 1200 mm long) over the shunt cable and take the shunt cable (3) with the insu-

lation sleeve along the headlight cable to the left fog light and fix it under the existing cable clips (2) and (4).

Solder a spade terminal 4 × 0.8 N 261 to one end of the ground cable (5) (A 1.5 DIN 72 551, 800 mm long, for the left fog light).

9. Pull the shunt cable (3), together with the ground cable (5) for the left fog light, through the rubber grommet (16), using an insulation sleeve (B 6 × 7 2 sw DIN 40 621, 1000 mm long). Rub the insulation sleeve with a little tallow on the outside.
10. Connect the shunt cable (3) Terminal 56a and the ground cable (5) to Terminal 31 of the lamp holder.
11. Connect the other end of the ground cable (5) with the spade terminal to the ground cable connection (brown cable) of the cable connector (6) for the blower at the left wheel arch assembly.

#### List of Parts:

Number of fog lights		Designation	Part No.
1 Number	2 Number		
1	2	Fog lights 130 diameter, clear, Bosch Hella	000 544 30 06 000 544 32 06
1	2	Fog lights 130 diameter, yellow, Bosch Hella	000 544 31 06 000 544 33 06
1	2	Mounting pedestal	183 544 04 25
1	2	Washer	186 990 44 40
1	2	Pad — rubber, black or grey	183 544 00 26 183 544 01 26
1	2	Washer	000 984 21 56
1	2	Rubber washer	000 987 07 41
1	2	Washer	A 12 DIN 9021
—	1	Lead	A 1.5 DIN 72551; 1500 l.
—	1	Lead (ground)	A 1.5 DIN 72551; 800 l.
—	1	Spade terminal	4 × 0.8 N 261
—	1	Insulation sleeve	B 4 × 5 sw DIN 40621; 1200 l.
—	1	Insulation sleeve	B 6 × 7 2 sw DIN 40621; 1200 l.
1	2	Rubber grommet	000 997 18 81
1	2	Bulb	D 12 V. 35 W. DIN 72601

## B. Subsequent Installation of Contactor for Automatic Switch-off of Fog Lights (Optional, SA 569 2 - 136)

1. Disconnect the ground cable from the negative terminal of the battery.
2. Remove the cover of the fuse box. Unscrew the two fixing screws for the fuse box and pull out the fuse box (10) forward (Fig. 82—19 2).
6. Nip off the grey/red cable (Lead No. 52, Cable Sheaf **2** of the Main Wiring Harness), 2.5 mm<sup>2</sup> in section, coming from Fuse No. 8, as close as possible to the terminal of the fuse box.

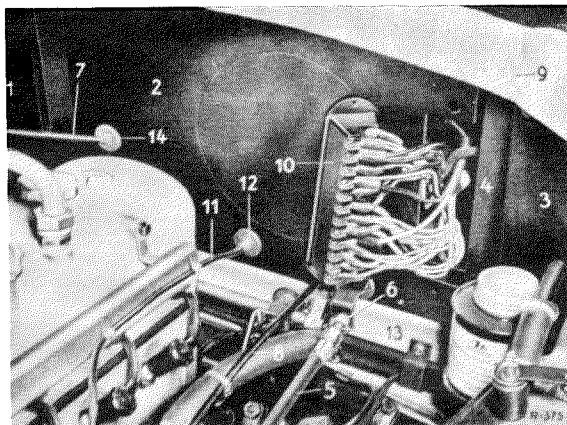


Fig. 82—19/2

- |  |  |
|--|--|
| 1 Right engine compartment panel                   | 7 Choke cable                                |
| 2 Center engine compartment panel                  | 8 Bowden cable for octane number compensator |
| 3 Left engine compartment panel                    | 9 Foam rubber sound-absorbing material       |
| 4 Fuse box bracket (Left-hand-drive vehicles only) | 10 Fuse box                                  |
| 5 Flexible hose of oil pressure gage line          | 11 Radiator thermometer pipe                 |
| 6 Lock nut   | 12 Rubber grommet                            |
|  | 13 Oil pressure gage line                    |
|  | 14 Rubber grommet                            |

3. Solder spade terminals onto the cables which are necessary for connecting the contactor (see List of Parts), one on each end of the two black cables and the brown cable and on one end of the white cable.
4. Unscrew the two hexagon screws (7) for fixing the two flash signal mechanisms (8) and (9) (see Fig. 82—19 3).
5. Fix the bracket (5) for the contactor (10) with the two flash signal mechanisms (8) and (9) to the bracket (6), screwing in the two hexagon screws (7) with lock washers (Fig. 82—19 3).

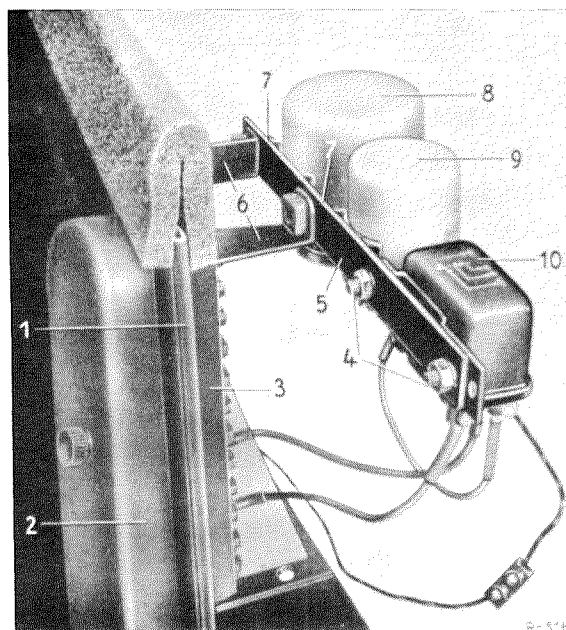


Fig. 82—19/3

- |                                       |   |
|---------------------------------------|---|
| 1 Center engine compartment panel     | 7 Hexagon screws M 6x10                                 |
| 2 Cover of fuse box                   | 8 Upper beam flash signal mechanism                     |
| 3 Fuse box                            | 9 Flash direction signal mechanism                      |
| 4 Cheese-head screws AM 4x6           | 10 Contactor for automatic switch-off of the fog lights |
| 5 Bracket for contactor               |   |
| 6 Bracket for flash signal mechanisms |   |

7. Use a house wiring connector to connect the nipped-off cable to the white cable, 1.5 mm<sup>2</sup> in section.

Connect the other end of the white cable to Terminal 87a of the relay (10).

8. Connect the black cable, 0.5 mm<sup>2</sup> in section, to Fuse No. 10 of the fuse box and to Terminal 86 of the contactor (10).
9. Connect the black cable, 1.5 mm<sup>2</sup> in section, to Fuse No. 8 of the fuse box and to Terminal 30 51 of the contactor (10).

10. Connect the brown cable, 0.5 mm<sup>2</sup> in section, to Terminal 85 of the contactor (10) and in the case of the Hella flash direction signal mechanism, to Terminal 31 of the flash signal mechanism (9).

If an SWF flash signal mechanism was installed, the cable must be connected to a fixing screw (4) of the contactor or taken to ground at some other suitable point.

11. Screw the contactor (10), with the two cheese-head screws (4) and with lock

washers and nuts to the bracket (5) (see Fig. 82 — 19/3).

12. Press the fuse box (10) into the engine compartment panel, screw in the two fixing screws and screw on the cover of the fuse box (see Fig. 82 — 19/2).

13. Connect the ground cable to the negative terminal of the battery.

14. Check the functioning of the contactor.

#### List of Parts:

Number	Designation	Part No.
1	Contactor, 12 Volts, with closed-circuit contact	000 542 16 16
1	Bracket for contactor	180 544 00 38
2	Cheese-head screw	A M 4 × 6
2	Lock washer	B 4 DIN 127
2	Hexagon nut	M 4 DIN 934—5 S
1	House wiring connector, No.1, one-way	000 546 00 42
7	Spade terminal	4 × 0.8 N 261
1	Electric cable, black, 1.5 mm <sup>2</sup> 400 mm long	DIN 72551
1	Electric cable, white, 1.5 mm <sup>2</sup> 400 mm long	DIN 72551
1	Electric cable, black, 0.5 mm <sup>2</sup> 400 mm long	DIN 72551
1	Electric cable, brown, 0.5 mm <sup>2</sup> 150 mm long	DIN 72551

# Subsequent Installation and Testing of Car Radio

Job No.

82 — 20

(Optional, SA 55152 and SA 55160)

In addition to the radios made by the two firms of

Becker and Telefunken

which have been approved for installation at works, the Sindelfingen works has approved the radios made by the two firms of

Blaupunkt and Philips

for subsequent installation at branches and agencies.

All the suppliers of car radios issue installation instructions with the sets and also a digest of the list of parts. The car radios should be fitted according to the installation instructions. The latest modifications are incorporated in the instructions in each case. For this reason, no detailed data on the subject have been included in this Workshop Manual.

The same applies to the installation of aerials. Those made by the firms of Sihn and Hirschmann have been approved. Drilling templates are supplied together with the installation instructions. The templates make the work of installation considerably easier.

When a car radio is installed, the whole ignition system must be fitted with suppressors. Methods of interference suppression are indicated in the installation instructions and these enable complete suppression to be obtained for VHF reception. The most important parts of the suppression system are:

Suppressed spark plugs — resistance of . . . . . 5000 Ohms

Suppressed distributor rotor arm — resistance of . . . . . 5000 Ohms

Suppressed plug contacts for the ignition cables at the distributor and at the spark plugs  
— each resistance of . . . . . 5000 Ohms

Suppressed plug contacts for the high tension cable from the ignition coil to the distributor  
at the distributor end — resistance of . . . . . 5000 Ohms

**Note:** With such an all-embracing system of interference suppression, a particularly unfavourable combination of factors might lead to misfiring under full-load conditions and at high engine speeds, since the suppressor resistors reduce the actual spark considerably. In such cases it is advisable to remove the suppressed plug contacts at the distributor and if necessary, also the suppressed plug contact of the high tension cable from the ignition coil to the distributor. It will then be necessary to put up with some slight ignition interference in VHF and short-wave reception; the interference level is, however, tolerable if the radio station is tuned to the exact carrier frequency.

**If the installation of the radio is carried out strictly according to the installation instructions, there is as a rule no possibility of interference or of malfunction.**

In this connection it should be noted that only those suppressed spark plugs approved by us may be used and that the specified electrode gap of 0.9—1.0 mm must be maintained (see also Job No. 01—3, Section C).

The following hints are designed to facilitate the servicing of installed car radios in which faults develop.

### Trouble-Shooting Hints for Radio

No Reception or Faulty Reception	
Cause	Remedies
Set the wave-change switch on medium wave, tune in several stations with the tuning knob and check the reception.	
1. No battery voltage or battery voltage too low. With the car engine stopped, switch on the radio and turn the volume control to full.	<p>1. Measure the battery voltage at the radio feed-in leads; it must be at least 11 Volts. If there is no battery voltage: Check the fuse, the leads and the battery connection and if necessary, replace the fuses or attend to the battery connection.</p> <p>If the battery voltage is too low: switch off the set immediately and once more check the voltage.</p> <p>If the voltage is then normal, there is a short-circuit in the set and the set must be removed from the vehicle.</p> <p>If the battery voltage is the same whether the set is switched on or not or if there is very little voltage difference, the battery is not fully charged or the contact resistance in the leads or in the contacts is too great.</p>
2. Switch or switch-on relay defective. Check the battery voltage at the contact of the automatic aerial.	2. If there is no voltage, remove the set from the vehicle.
3. Aerial plug not plugged in.	3. Push the aerial plug into the aerial socket.
4. Loud-speaker or loud-speaker connections defective.	<p>4. Check the loud-speaker and the connections to the converter.</p> <p>Try the set with another loud-speaker connected.</p> <p>Attend to the connections at the converter or remove and repair the set.</p>
5. Vibrator defective.	5. Check whether the vibrator is actually operating by listening at the converter. If necessary, replace the vibrator.

Cause	Remedies
<p>6. Short-circuit in aerial.</p> <p>7. Wave-change switch defective.</p> <p>8. Automatic tuning defective.</p>	<p>6. Connect another aerial temporarily to the set. If the reception is now good, replace the aerial.</p> <p><b>Note:</b> Penetrating damp or bodywork shampoo can cause short-circuiting in a car aerial and this affects the reception of the set. It is not possible, however, to measure the resistance of an aerial circuit with a D. C. Ohmmeter. The simplest way of checking the efficiency of the aerial, therefore, is to compare its performance with that of another car-aerial, known to be in good order.</p> <p>7. Check the reception in all wave ranges. If reception is nil or unsatisfactory on one or more wave ranges, remove the set from the vehicle.</p> <p>8. Check the automatic tuning of the set in all wave ranges, setting the sensitivity switch to the position "empfindlich" ("sensitive"). If no stations can be received or if too few are received or if all stations are off tune, remove the set from the vehicle.</p>
Electrical Interference Noises with Engine Running	
Cause	Remedies
<p>When the starter is being operated, the car radio should always be switched off in order to avoid any possible damage to the vibrator, due to supply-voltage drops. All wave ranges should be checked with the engine running and interference in one or more of the ranges noted.</p>	
<p>1. Ignition interference: Characterized by audible chattering which varies with the engine speed. If the ignition is switched off for a moment, the interference disappears.</p> <p>2. Regulator cut-out switch interference: This takes the form of irregular crackling noises which can also be heard with the ignition switched off.</p> <p>3. Generator interference: This kind of interference takes the form of so-called collector-singing and is also audible when the ignition is switched off.</p>	<p>1. Check the interference suppressors of the ignition system according to the instructions on interference suppression. At the same time check the distributor contacts to see if they are oiled-up or dirty.</p> <p>2. Check the interference suppression of the regulator cut-out switch, if necessary, ground the regulator cut-out switch housing with a ground tape.</p> <p>3. Check the generator interference suppression and install an electrically conducting fan belt.</p>

Cause	Remedies
<p><b>Note:</b> The interference symptoms mentioned in 2 and 3 can best be checked with the ignition switched off and the vehicle moving. Slight interference, due to static charges, can be caused by the fan belt of the generator.</p>	
<p align="center"><b>Interference Noises at High Speeds</b></p>	
Cause	Remedies
<p>Static charges: These take the form of crackling noises which disappear when the foot brake is operated.</p>	<p>Check the wheel-hub suppressors or if these are not fitted, fit them to the front wheels.</p>
<p align="center"><b>Atmospheric or other Interference Noises</b></p>	
Cause	Remedies
<p>1a) Atmospheric interference: This is due to electrical storm disturbances in the atmosphere and is particularly strong in the long wave range.</p> <p>1b) Interference from a high tension supply or from electrical apparatus, such as street cars or electric motors: Interference of this kind is particularly strong in the medium and long wave ranges.</p> <p>1c) Interference from other vehicles, not fitted with interference suppression: Such interference is particularly strong in VHF reception.</p> <p>2. Interference caused by faulty contacts in the set or in the vehicle.</p>	<p>1a)—1c): In order to ascertain whether the interference is coming from an external source, pull the aerial plug out of the set. If the interference disappears, the cause must be atmospheric interference or interference from some other external source. There is no remedy for this.</p> <p>2. Check in the same way by pulling out the aerial plug. If in spite of this the interference is still audible, the fault must lie in the leads and in the ground connections. The set must therefore be removed from the vehicle.</p>
<p><b>Note:</b> Any defects in the car radio which cannot be detected and put right with the methods and tests described above, must be repaired by a radio specialist. The radio should be removed from the vehicle and sent for repair to the agency of the firm producing the set.</p>	

# Body

# Body—Groups 61—97

Job No.	Operation	Page
	<b>Chassis Base Panel — Group 61</b>	
61 — 1	<b>Chassis Base Panel Gage</b>	61 — 1/1
	A. Assembly of chassis base panel gage	61 — 1/2
	B. Checking of chassis base panel	61 — 1/3
	C. Welding front axle step bearing or torque arm step bearing to the chassis base panel	61 — 1/6
	<b>Windows — Group 67</b>	
67 — 1	<b>Removal and Installation of Windshield Reveal Molding</b>	67 — 2/1
67 — 2	<b>Removal and Installation of Windshield</b>	67 — 2/1
67 — 3	<b>Removal and Installation of Back Window</b>	67 — 3
67 — 5	<b>Windshield Washer</b>	67 — 5/1
	A. Subsequent installation of windshield washer with hand pump (optional extra, SA 1440 — 1207)	67 — 5/1
	B. Subsequent installation of electric SWF 12-volt windshield washer with gear-type pump (optional extra, SA 55 142/4)	67 — 5/3
	<b>Interior Trim and Panels — Groups 68 and 69</b>	
68 — 1	<b>Removal and Installation of Mounting Plate for Control Knobs</b>	68 — 1
68 — 2	<b>Removal and Installation of Cowl Insulating Panels (in Engine Compartment)</b>	68 — 3/1
68 — 3	<b>Removal and Installation of Engine Compartment Panel Assembly</b>	68 — 3/1
68 — 4	<b>Glove Compartment</b>	68 — 4/1
	A. Removal and installation of glove compartment lid	68 — 4/1
	B. Subsequent installation of cylinder lock (optional extra, SA 1463 — 120)	68 — 4/1
	C. Subsequent installation of automatic glove compartment light (optional extra, KW 57 43/2)	68 — 4/3

Job No.	Operation	Page
69 — 1	<b>Removal and Installation of Headlining</b>	69 — 1
69 — 2	<b>Removal and Installation of Headlining (Sliding Roof Version)</b> A. Left, right, and rear headlining B. Front headlining	69 — 2/1 69 — 2/1 69 — 2/2
69 — 4	<b>Removal and Installation of Left or Right Drip Molding (Garnish Molding)</b>	69 — 4
69 — 5	<b>Removal and Installation of Covering on Trunk Compartment Cover Plate</b>	69 — 5
	<b>Front and Rear Doors — Groups 72 and 73</b>	
72 — 2	<b>Removal and Installation of Door Check Mechanism on Front or Rear Doors</b>	72 — 2/1
72 — 3	<b>Window Reveal Molding at Front or Rear Door</b> A. Removal and installation of reveal molding at front or rear door B. Subsequent installation of divided window reveal molding (optional extra, SA 55 147/1)	72 — 3/1 72 — 3/1 72 — 3/1
72 — 4	<b>Removal and Installation of Window Regulator Handle at the Left or Right Front or Rear Door</b>	72 — 6
72 — 6	<b>Removal and Installation of the Arm Rest at the Left or Right Front or Rear Door</b>	72 — 6
72 — 7	<b>Removal and Installation of the Door Trim Panel on the Left or Right Front or Rear Door</b>	72 — 7
72 — 8	<b>Removal and Installation of Left or Right Front Door Window Regulator</b>	72 — 8
72 — 9	<b>Removal and Installation of the Left or Right Front Door Sliding Window</b>	72 — 9
72 — 10	<b>Removal and Installation of Outside and Inside Sealing Strip at the Left or Right Front or Rear Door</b>	72 — 10
72 — 11	<b>Removal and Installation of the Sealing Brush at the Left or Right Front Door</b>	72 — 12/1
72 — 12	<b>Removal and Installation of the Flexible Window Run Channel at the Left or Right Front Door</b>	72 — 12/1
72 — 13	<b>Front Door Ventilator</b> A. Removal and installation of left or right ventilator B. Removal and installation of left or right ventilator glass and chromium-plated frame	72 — 13/1 72 — 13/1 72 — 13/1

Job No.	Operation	Page
72—14	Removal and Installation of the Window Frame at the Left or Right Front Door	72—14
72—15	Removal and Installation of the Weatherstrip at the Right or Left Front Door	72—15
72—16	Removal and Installation, Disassembly and Reassembly of Front or Rear Door Handles	72—16/1
72—17	Removal and Installation of Left or Right Front or Rear Door Lock	72—18
72—18	Removal and Installation of Front or Rear Inner Door Handle	72—18
72—19	Removal and Installation of Garnish Molding at Ledge of Front or Rear Door	72—20
72—20	Removal and Installation of Lower Front or Rear Door Garnish Molding	72—20
72—21	Removal and Installation of Front and Rear Door Lock Bolt	72—21/1
72—22	Removal and Installation of Left or Right Front or Rear Door	72—21/2
73—8	Removal and Installation of Window Regulator for Left or Right Rear Door	73—8
73—9	Removal and Installation of the Sliding Window in the Left or Right Rear Door	73—9
73—12	Removal and Installation of the Flexible Window Run Channel at the Left or Right Rear Door	73—12
73—14	Removal and Installation of the Window Frame at the Left or Right Rear Door	73—14
73—15	Removal and Installation of the Weatherstrip for the Left or Right Rear Door	73—15
73—20	Hints for the Elimination of Body Noise	73—20/1
<b>Rear Compartment Lid — Group 75</b>		
75—1	Removal and Installation of Rear Compartment Lid	75—2
75—2	Removal and Installation of Rear Compartment Lid Lock	75—2
75—3	Removal and Installation of Rear Compartment Lid Hinge	75—4
75—4	Removal and Installation of Rear Compartment Lid Weatherstrip	75—4

Job No.	Operation	Page
	<b>Center Pillar — Group 76</b>	
76—1	<b>Removal and Installation of Body Center Pillar Left or Right</b>	76—1
	<b>Sliding Roof — Group 78</b>	
78—1	<b>Removal and Installation of Sliding Roof</b>	78—1
78—2	<b>Removal and Installation of Sliding Roof Fittings</b>	78—2
78—3	<b>Trouble-Shooting Hints for the Sliding Roof</b>	78—3/1
	<b>Interior Equipment — Group 81</b>	
81—1	<b>Removal and Installation of Left or Right Sun Visor</b>	81—1
	<b>Heating and Ventilation — Group 83</b>	
83—1	<b>Removal and Installation of Left or Right Heat Exchanger</b>	83—1
83—2	<b>Disassembly and Reassembly of the Heat Exchanger Regulating Valve</b>	83—2/1
83—3	<b>Removal and Installation of the Bowden Cables for the Regulating Valve of the Heat Exchanger and the Flap in the Air Duct</b>	83—3/1
83—4	<b>Scoop and Blower for Air-Conditioning System</b>	83—4/1
	A. Removal and installation of scoop and blower for air-conditioning system	83—4/1
	B. Subsequent installation of an air-conditioning blower at the right side of the vehicle (optional extra, SA 1428/3—120)	83—4/1
83—5	<b>Removal and Installation of the Left or Right Air Duct and Heat Exchanger</b>	83—6
83—6	<b>Removal and Installation of the Flap for the Left or Right Air Duct</b>	83—6
83—7	<b>Removal and Installation of the Insect Screen at the Left or Right Scoop of the Air-Conditioning System</b>	83—7
83—10	<b>Subsequent Installation of Rear Compartment or Underseat Heating and Blower (Optional Extra, SA 55 301/2)</b>	83—10/1
	<b>Chassis Sheet Metal — Group 88</b>	
88—1	<b>Removal and Installation of Left or Right Front Fender</b>	88—1/1

Job No.	Operation	Page
88 — 2	<b>Removal and Installation of Left or Right Rear Fender</b>	88 — 2/1
88 — 3	<b>Removal and Installation of Left or Right Rocker Plate</b>	88 — 3
88 — 4	<b>Removal and Installation of Front Cover Panel</b>	88 — 4
88 — 5	<b>Bumpers</b>	88 — 5/1
	A. Removal and installation of front or rear bumpers	88 — 5/1
	B. Removal and installation of the end bar of the left or right bumper	88 — 5/1
	C. Removal and installation of left or right rear reflector	88 — 5/2
88 — 6	<b>Removal and Installation of the Hood</b>	88 — 6
88 — 7	<b>Removal and Installation of Hood Hinge</b>	88 — 7
88 — 8	<b>Subsequent Installation of Flexible-Mounted Mercedes Star</b>	88 — 8
<b>Front and Rear Seats — Groups 91 — 92</b>		
91 — 1	<b>Removal and Installation of Left or Right Front Seat</b>	91 — 2
91 — 2	<b>Removal and Installation of Bench Driving Seat</b>	91 — 2
91 — 3	<b>Seat-Back Fittings and Reclining-Seat Fittings</b>	91 — 3/1
	A. Removal and installation of seat-back fittings	91 — 3/2
	B. Subsequent installation of reclining-seat fittings for the left or right front seat (optional extra, SA 1436 — 120)	91 — 3/2
	C. Subsequent installation of reclining-seat fittings for bench driving seat	91 — 3/4
91 — 4	<b>Subsequent Installation of Plexiglass Pane for Screening the Driver's Seat (Optional Extra, KW 5815)</b>	91 — 4/1
92 — 1	<b>Removal and Installation of Rear Seat and Rear Seat Back</b>	92 — 1

# Chassis Base Panel Gage

Job No.

61 — 1

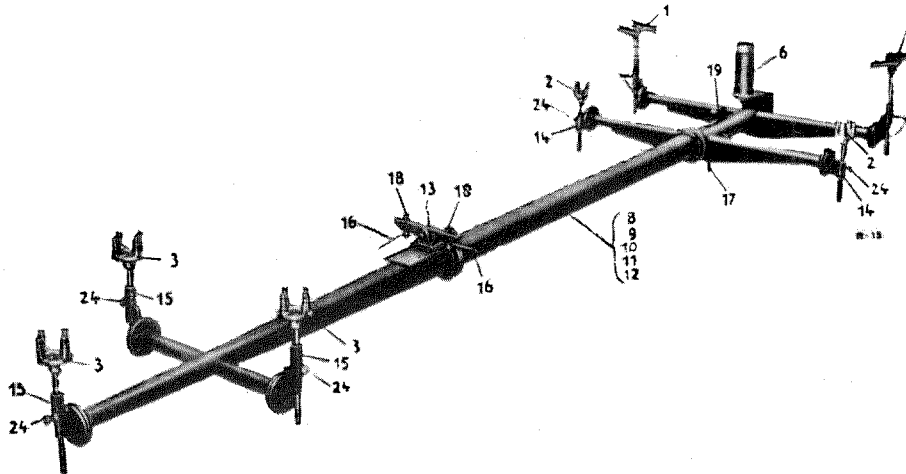


Fig. 61 — 1/1

- |  |  |
|--|--|
| 1 Rear support   | 13 Front support                                       |
| 2 Rear holding cradle                                  | 14 Holder for rear holding cradle and checking device  |
| 3 Front holding cradle                                 | 15 Holder for front holding cradle and checking device |
| 6 Locking device for single-jointed axle               | 16 Crank handle  |
| 8 Adapter tube 970 mm long for Model 190 SL            | 17 Crank handle  |
| 9 Adapter tube 1220 mm long for Models 180, 180 D, 190 | 18 Latch   |
| 10 Adapter tube 1390 mm long for Models 220 a, 220 S   | 19 Latch   |
| 11 Adapter tube 1270 mm long for Model 220 CA          | 24 Locking screw                                       |
| 12 Adapter tube 1320 mm long for Model 219             |  |

The Chassis Base Panel Gage 120 589 08 23 (Fig. 61 — 1/1) is supplied by our Sindelfingen works together with the following accessories:

- 2 rear supports (1)
- 2 rear holding cradles (2)
- 3 front holding cradles (3)
- 2 rear checking devices (4) (see Fig. 61 — 1/5)
- 3 front checking devices (5) (see Fig. 61 — 1/6)
- 1 locking device for single-jointed rear axle (6)
- 1 locking device for twin-jointed rear axle (7) (see Fig. 61 — 1/2)
- 1 adapter tube 970 mm long for Model 190 SL (8)
- 1 adapter tube 1220 mm long for Models 180, 180 D, 190 (9)
- 1 adapter tube 1390 mm long for Models 220 a, 220 S (10)
- 1 adapter tube 1270 mm long for Model 220 CA (11)
- 1 adapter tube 1320 mm long for Model 219 (12)
- 1 front support (13)
- 2 rear holders (14)
- 3 front holders (15)

## A. Assembly of Chassis Base Panel Gage

1. Fit the adapter tube (9) 1220 mm long which is required for Model 190, to the gage (see Fig. 61 — 1/1).
2. Screw the locking device (6) for the single-jointed rear axle to the gage. The locking device is marked "I" or, on older gages, "220" (Fig. 61 — 1/2).

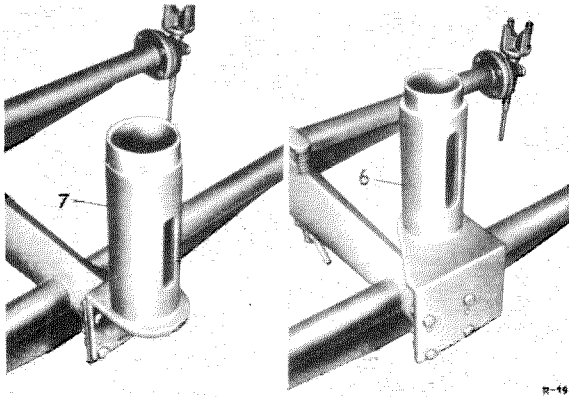


Fig. 61 — 1/2

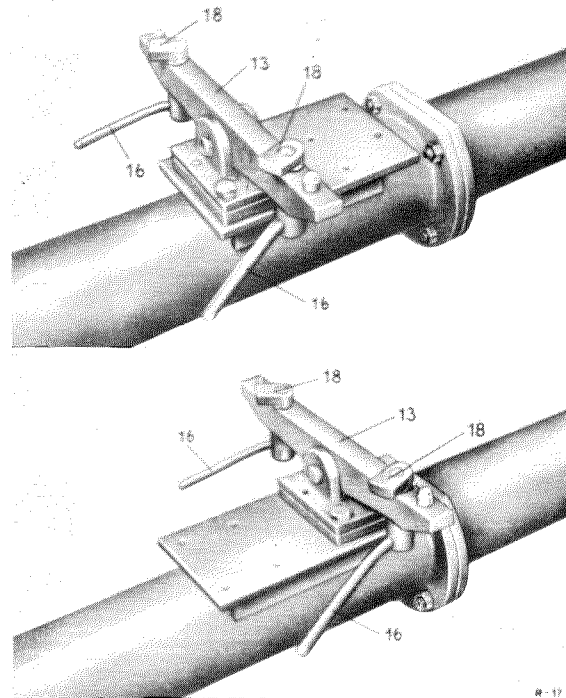
6 Locking device for single-jointed axle  
7 Locking device for twin-jointed axle

**Note:** The locking device (7) (see Fig. 61 — 1/2) for twin-jointed rear axles is marked "II" or, on older gages, "180". It is required for Model 180 cars up to Chassis No. 120 010 5512434, and for Model 180 D cars up to Chassis No. 120 110 5514468. All later cars have a single-jointed rear axle.

3. Screw on the front support (13) (Fig. 61 — 1/3) in the front position.

**Note:** The support can be screwed on in two different positions. The front position marked "180" is required for Models 180, 180 D, 190, and 190 SL. The rear position marked "220" applies to Models 220a, 220 S, 220 CA, and 219.

4. Screw on the holders (14) for the rear holding cradles (2) to the left and to the right in the rear position marked "220" or "I" (Fig. 61 — 1/4).

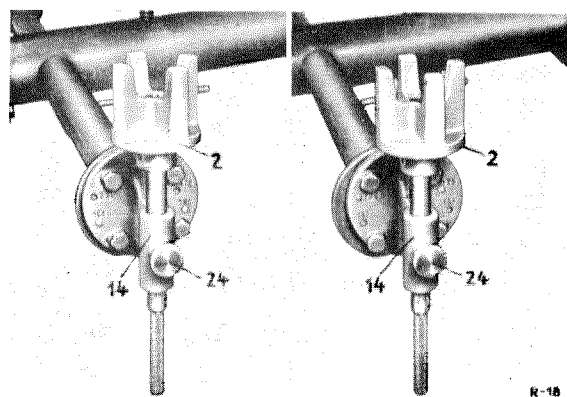


Top: front position  
Bottom: rear position

Fig. 61 — 1/3

13 Front support  
16 Crank handle  
18 Latch

**Note:** The rear position marked "220" applies to all models with single-jointed rear axle, whereas the front position marked "180" applies to cars with a twin-jointed rear axle.



Front position

Rear position

Fig. 61 — 1/4

2 Rear holding cradle  
14 Holder for the rear holding cradle and checking device  
24 Locking screw

On recent gages, the markings "220" and "180" have been replaced by the markings "I" and "II". These punch marks are always directly beside the corresponding dowel

pins. The two dowel pins which are not required are pushed back by the flange until they are flush with the front contact surface.

## B. Checking of Chassis Base Panel

1. Insert the two rear checking devices (4) in the two holders (14) in the chassis base panel gage (see Figs. 61—1/5 and 61—1/8). Insert the three front checking devices (5) in the three holders (15) (see Figs. 61 — 1/6 and 61 — 1/7).
2. Lift the car body by means of a lifting rig or support it over a pit in such a way that the chassis base panel gage can be installed.
3. Fit the chassis base panel gage from below to the chassis base panel and fix it to the front end of the propeller shaft housing by means of the latch (18) (see Figs. 61 — 1/3

and 61 — 1/7), and to the rear end of the propeller shaft housing by means of the latch (19) (see Figs. 61 — 1/1 and 61 — 1/8).

Tighten the crank handles (16). Take care not to tighten the crank handle (17) too much (see Figs. 61 — 1/7 and 61 — 1/8).

4. Grip the checking devices (4) and (5) at the lower end and push them up in the holders

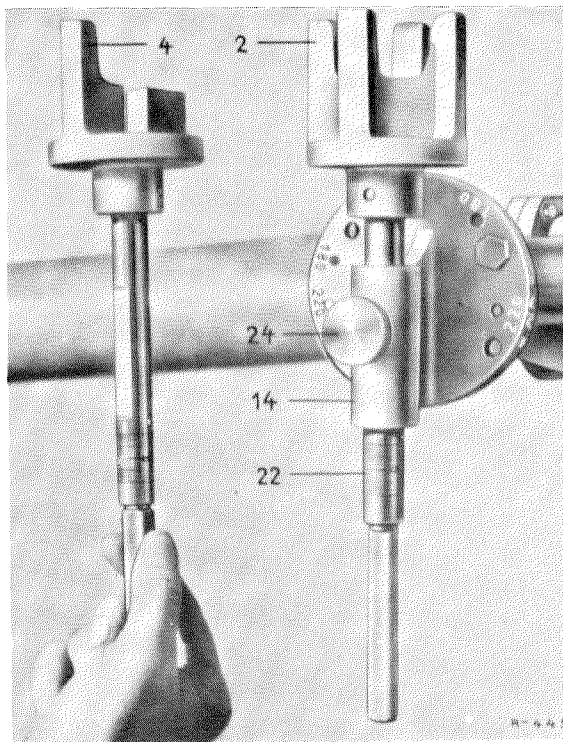


Fig. 61—1/5

- 2 Rear holding cradle
- 4 Rear checking device
- 14 Holder for rear holding cradle and checking device
- 22 Measuring scale at holding cradle and checking device
- 24 Locking screw

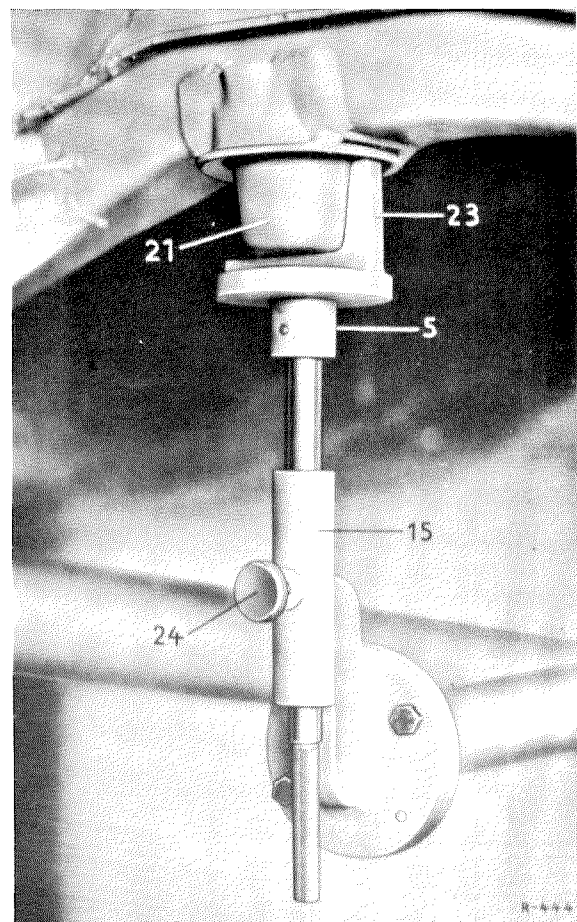


Fig. 61—1/6

- 5 Front checking device
- 15 Holder for front holding cradle and checking device
- 21 Front step bearing
- 23 Measuring finger of the checking device
- 24 Locking screw

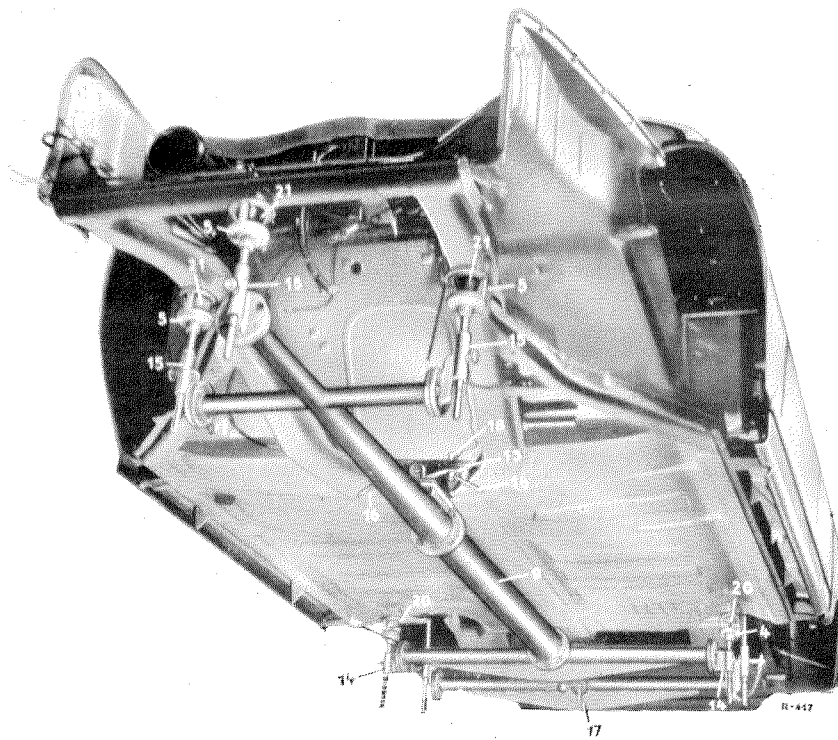


Fig. 61—1/7

- |  |   |
|--|---|
| 4 Checking device for step bearing, rear               | 16 Crank handle                                       |
| 5 Checking device for step bearing, front              | 17 Crank handle                                       |
| 9 Adapter tube 1220 mm long                            | 18 Latch  |
| 13 Front support                                       | 20 Rear step bearing for torque arm mounting          |
| 14 Holder for rear checking device and holding cradle  | 21 Front step bearing for front axle support mounting |
| 15 Holder for front checking device and holding cradle |   |

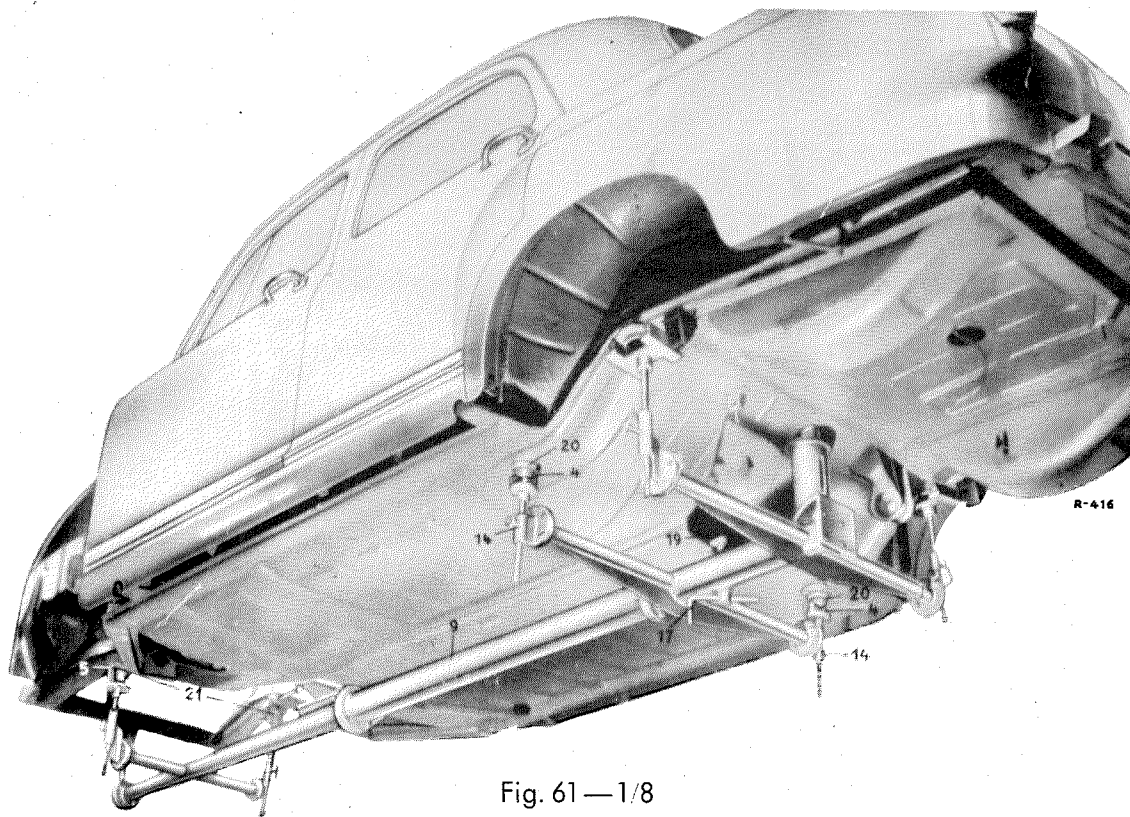


Fig. 61—1/8

- |   |   |
|---|---|
| 4 Checking device for step bearing, rear              | 17 Crank handle                                       |
| 5 Checking device for step bearing, front             | 19 Latch  |
| 9 Adapter tube 1220 mm long                           | 20 Rear step bearing for torque arm mounting          |
| 14 Holder for rear checking device and holding cradle | 21 Front step bearing for front axle support mounting |

(14) and (15) until they touch the step bearings (20) and (21) (see Figs. 61—1/5, 61—1/6, and 61—1/8). The deviation in height from the specified value can be read off at the scale (22) on the shaft of the checking device (Fig. 61—1/5).

The permissible tolerances are shown in Fig. 61—1/12.

5. The lateral deviation from the specified values can be determined by turning the checking devices (4) and (5). If the checking device can be turned  $360^\circ$ , i. e. a full turn,

there is no deviation. If there is any deviation, turn the checking device in such a way that the differences can be measured as the distance between the measuring finger (23) of the checking device and the step bearing (21) or (20) which is welded to the chassis base panel (Fig. 61—1/6). The permissible tolerances are shown in Fig. 61—1/12.

6. If the deviations from the specified values are outside the permissible limits, the step bearing (20) or (21) must be sawn off and rewelded (see Section C).

### C. Welding Front Axle Step Bearing or Torque Arm Step Bearing to the Chassis Base Panel

1. Saw off the damaged or displaced step bearing and grind the cut surface.

In the case of the torque arm step bearings, it is not necessary to cut off the whole step bearing. If cracks are found on the base of the step bearing or if the thread of the welded-in flat-headed screw is damaged, it is sufficient to saw off the lower section of the cup (Fig. 61—1/9).

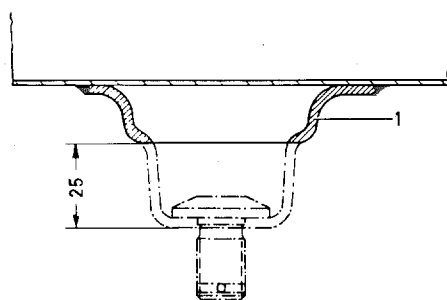


Fig. 61—1/9

1 Remains of the old step bearing

Then electrically weld on a new lower section (Part No. 120 350 06 33) (Fig. 61—1/10).

Please note that the front step bearing for the front axle support is not welded directly

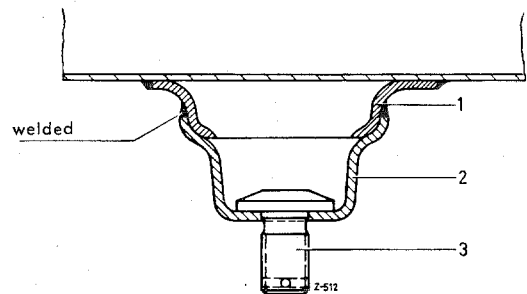


Fig. 61—1/10

1 Remains of the old step bearing  
2 New lower section of step bearing  
3 Flat-headed screw

to the cross tube of the chassis base panel, but to an intermediate spacer cup (Fig. 61—1/11).

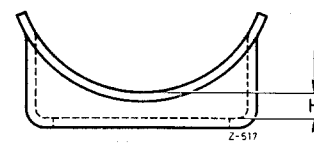


Fig. 61—1/11

To compensate for differences in height, the spacer cup is available in nine different heights from  $H = 1.5$  mm to  $H = 9.5$  mm, in steps of 1 mm. The spacer cups can be ordered under Part Nos. 10 120 616 01 26 to 09 26.

Similarly, the lateral step bearings are not welded directly to the forked members of the chassis base panel, but to intermediate spacer cups.

At the works, the spacer cups are used to correct any differences in height that may occur by welding them to the forked members at a lower or higher point.

When repairs are being made, it is not advisable to cut the spacer cups from the forked members, since there is a danger that the forked members may be damaged in the process. If there are small deviations in height, it is preferable to weld a suitable intermediate plate between the spacer cup and the step bearing or to effect compensation at the support of the rear spring at the chassis base panel.

In the case of large deviations resulting from an accident, the wheel arch assembly has to be removed and the forked members straightened.

2. If the step bearings for the front axle support have to be welded on, insert the three front holding cradles (3) in the three holders (15) (see Fig. 61 — 1/1). If the step bearings for the torque arms have to be welded on, insert the rear holding cradles (2) in the holders (14) (see Fig. 61 — 1/5)

3. Lift the car body by means of a lifting rig or support it over a pit in such a way that the chassis base panel gage can be installed.

4. Fit the chassis base panel gage from below to the chassis base panel and fix it to the front end of the propeller shaft housing by means of the latches (18) (see Figs. 61 — 1/3 and 61 — 1/7), and to the rear end of the propeller shaft housing by means of the latch (19) (see Figs. 61 — 1/1 and 61 — 1/8).

Tighten the crank handles (16). Take care not to tighten the crank handle (17) too much (see Figs. 61 — 1/7 and 61 — 1/8).

5. Put the step bearing (20) or (21) which is to be welded on (see Fig. 61 — 1/7) in the appropriate holding cradles (2) or (3) (see Fig. 61 — 1/1).

6. Move the holding cradles upward until the "0" mark on the scale (22) of the shaft is aligned with the lower edge of the holder (14) or (15) (see Figs. 61 — 1/5 and 61 — 1/6).

Lock the holding cradles in this position by means of the locking screw (24).

7. Attach and weld the step bearings electrically with sheathed electrodes of 3 mm dia.

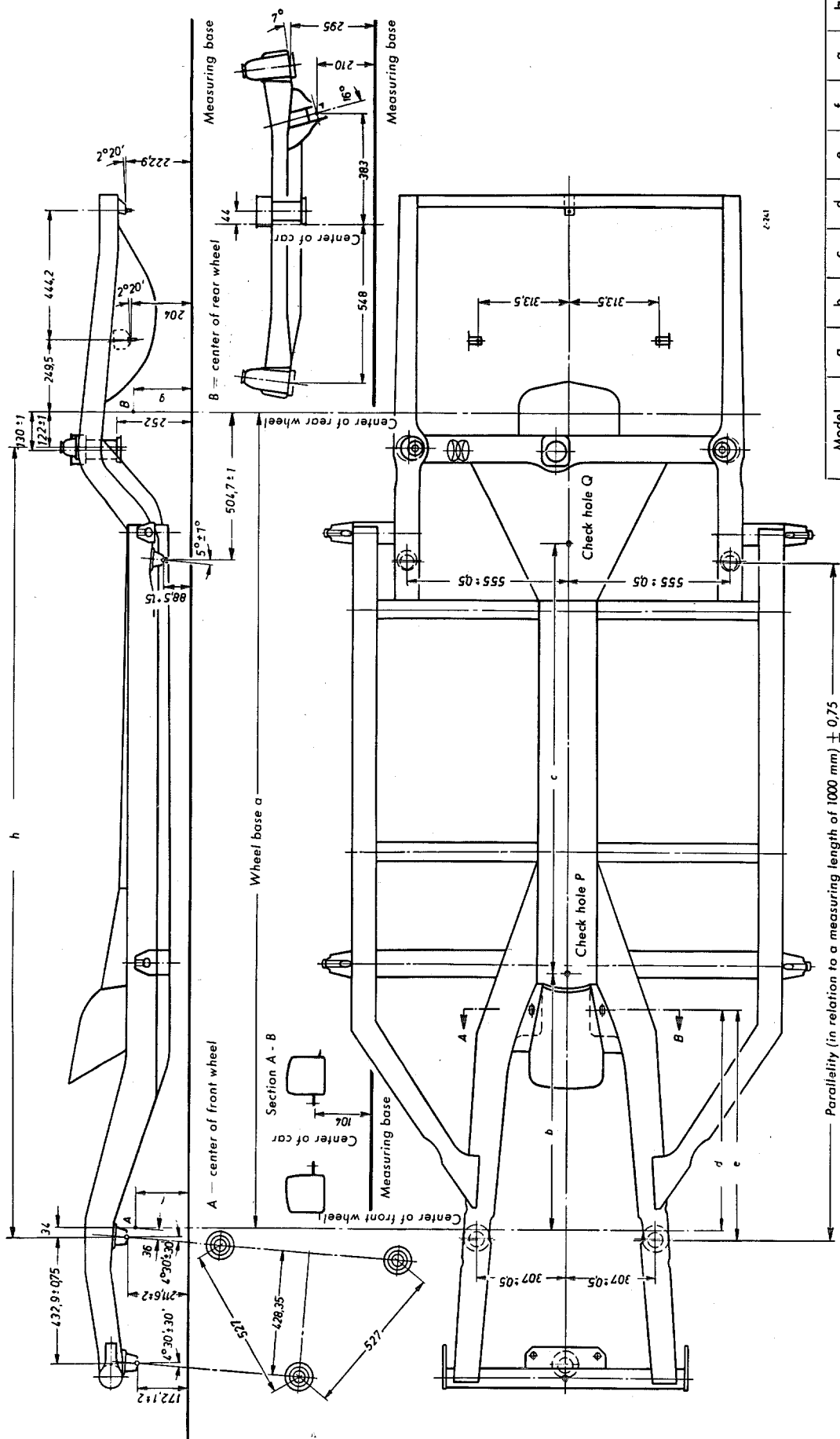


Fig. 61 — 1/12

The height tolerance for the three step bearings of the front axle support is  $\pm 2$  mm. However, the maximum deviation between the three step bearings is 3 mm and must not be exceeded when new step bearings are rewelded (for which a tolerance of 2 mm is specified).

Model	a	b	c	d	e	f	g	h
180, 180 D, 190	2650	788	1412	659	693	175	196.5	2542
190 SL	2400	788	1162	659	693	191	198	2312
219	2750	888	1412	759	793	175	208.5	2662
220 a, 220 S	2820	888	1482	759	793	175	193.5	2732
220 S Conv.	2700	888	1362	759	793	175	193.5	2612

# Removal and Installation of Windshield Reveal Molding

Job No.

67 — 1

The reveal molding consists of the following parts:

Left reveal molding	}	plastic
Right reveal molding		
Upper reveal molding	}	wood
Lower reveal molding		

## Removal:

1. Unscrew the rear view mirror.
2. Unscrew the upper reveal molding.
3. Unscrew the left and right reveal moldings.

4. Unscrew the lower reveal molding.

## Installation:

5. Installation is the reverse of the removal procedure. Do not omit the sound-absorbing fabric liners.

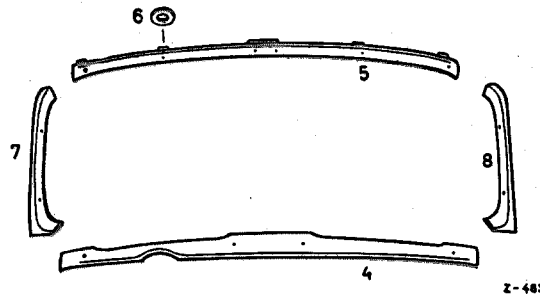


Fig. 67 — 1/1

4 Lower reveal molding  
5. Upper reveal molding  
6 Rubber or felt washer

7 Left reveal molding  
8 Right reveal molding

# Removal and Installation of Windshield

Job No.

67 — 2

The windshield consists of the windshield glass, the rubber molding, and the garnish molding.

## Removal:

1. Unscrew the rear view mirror. Remove the windshield reveal molding (see Job No. 67 — 1).
2. Use a flat piece of wood to push the rubber lip of the rubber molding from the inside behind the sheet metal edge (Fig. 67 — 2/1) and in this way loosen the entire rubber molding (shown here at back window).

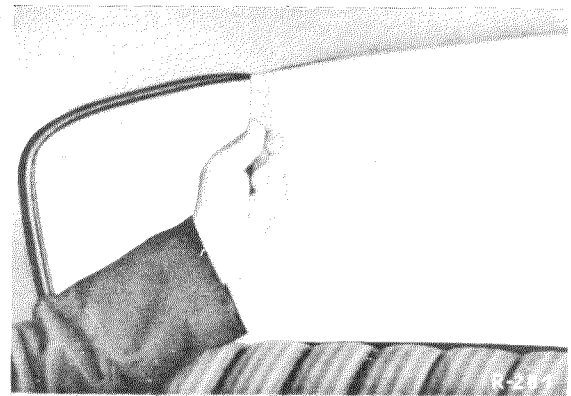


Fig. 67 — 2/1

Shown at back window

3. Carefully remove the windshield glass together with rubber molding from the outside; if necessary, apply slight pressure from the inside.

**Note: Do not strike the windshield glass, since curved laminated glass is extremely easily damaged!**

4. Carefully remove the garnish molding from the rubber molding and then remove the rubber molding from the windshield glass.

#### Installation:

5. Before installation put the windshield glass, convex side down, on a suitable cradle and install the rubber molding (1) on the windshield glass (see Fig. 67 — 2/2). Apply window sealing cement BO 375/10 between glass and rubber molding except the top horizontal edge.

**Note:** Scrupulous cleanliness is required in handling the glass in order to prevent scratches.

6. Turn the windshield glass over and run a folding rule through the garnish molding groove along the rubber molding in order to clear the groove.

7. Coat the retaining section of the garnish molding (3) with soapy water (see Fig. 67 — 2/2). Then carefully press the retaining section into the receiving groove of the rubber molding (1).

8. Turn the windshield over and install an enameled cable (2) or a greased cord in the retaining groove of the rubber molding and rub the rubber molding lightly with glycerine or tallow (Fig. 67 — 2/2).

9. Install the windshield glass together with rubber molding into the windshield opening from the outside and position it accurately, since later adjustments are not possible. Then press it home under slight pressure, do not strike it. Simultaneously, the lip of the rubber molding should be lifted by a second person over the sheet metal edge

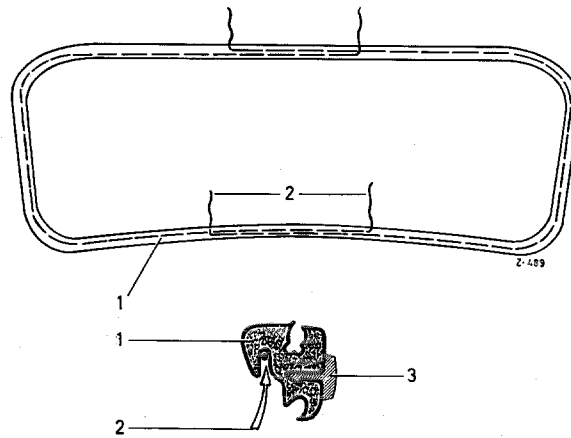


Fig. 67 — 2/2

- 1 Rubber molding
- 2 Enameled cable or greased cord
- 3 Garnish molding

of the front frame from the inside by carefully pulling out the cable or the cord. Cable or cord should always be pulled out parallel to the windshield glass in order to prevent damage to the rubber lip (Fig. 67 — 2/3).

10. Install the reveal molding and the rear view mirror (see Job No. 67 — 1).

**Note:** Cable or cord must be pulled off in the direction of the oblique vulcanization joint of the rubber molding in order to avoid damage to the vulcanized joint.

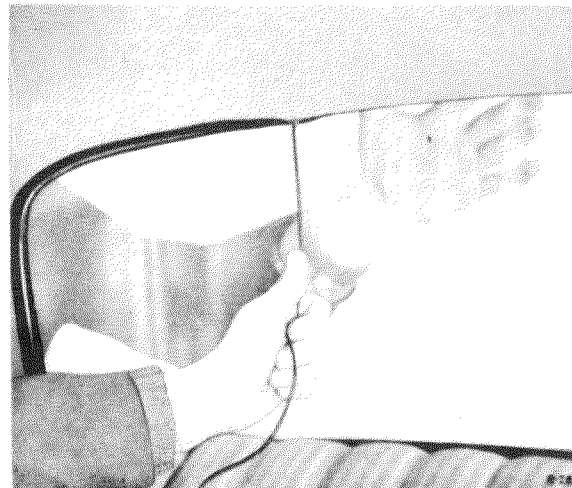


Fig. 67 — 2/3

Shown at back window

# Removal and Installation of Back Window

Job No.

67 — 3

## Removal:

1. Working from inside the car, use a flat piece of wood to push the lip of the rubber molding behind the sheet metal edge (Fig. 67 — 3/1). In this way, loosen one half of the rubber molding (from upper to lower center).

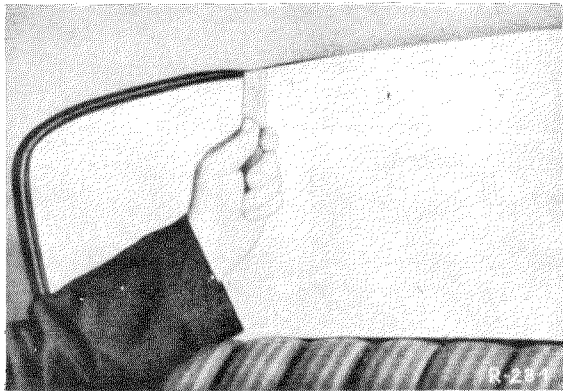


Fig. 67 — 3/1

2. Carefully remove the back window glass together with rubber molding from the outside, starting at the loosened part.
3. Carefully remove the garnish molding from the rubber molding and then remove the rubber molding from the back window glass.

## Installation:

4. Before installation put the glass, convex side down, on a suitable cradle and install the rubber molding on the glass. Apply window sealing cement BO 375/10 between glass and rubber molding except the top-horizontal edge.
5. Turn the glass over and run a folding rule through the garnish molding groove along the rubber molding in order to clear the groove. Coat the retaining section of the

garnish molding with soapy water. Then carefully press the retaining section into the receiving groove of the rubber molding.

6. Turn the back window glass over and install an enameled cable (2) or a greased cord in the retaining groove of the rubber molding (see Fig. 67 — 2/2) and rub the rubber molding lightly with glycerine or tallow.
7. Install the back window glass together with rubber molding into the window opening from the outside and position it accurately, since later adjustments are not possible. Then press it home under slight pressure, do not strike it. Simultaneously, the lip of the rubber molding should be lifted by a second person over the sheet metal edge of the back window opening from the inside by carefully pulling out the cable or the cord. Cable or cord should always be pulled out parallel to the glass in order to prevent damage to the rubber lip (Fig. 67 — 3/2).

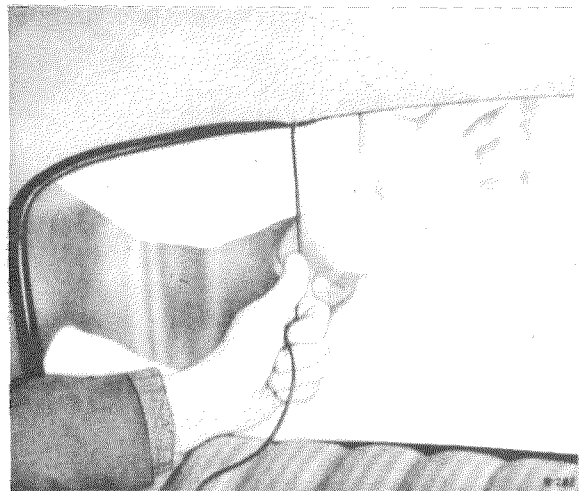


Fig. 67 — 3/2

**Note:** Cable or cord must be pulled off in the direction of the oblique vulcanization joint of the rubber molding in order to avoid damage to the vulcanized joint.

### A. Subsequent Installation of Windshield Washer with Hand Pump (Optional Extra, SA 1440 — 120)

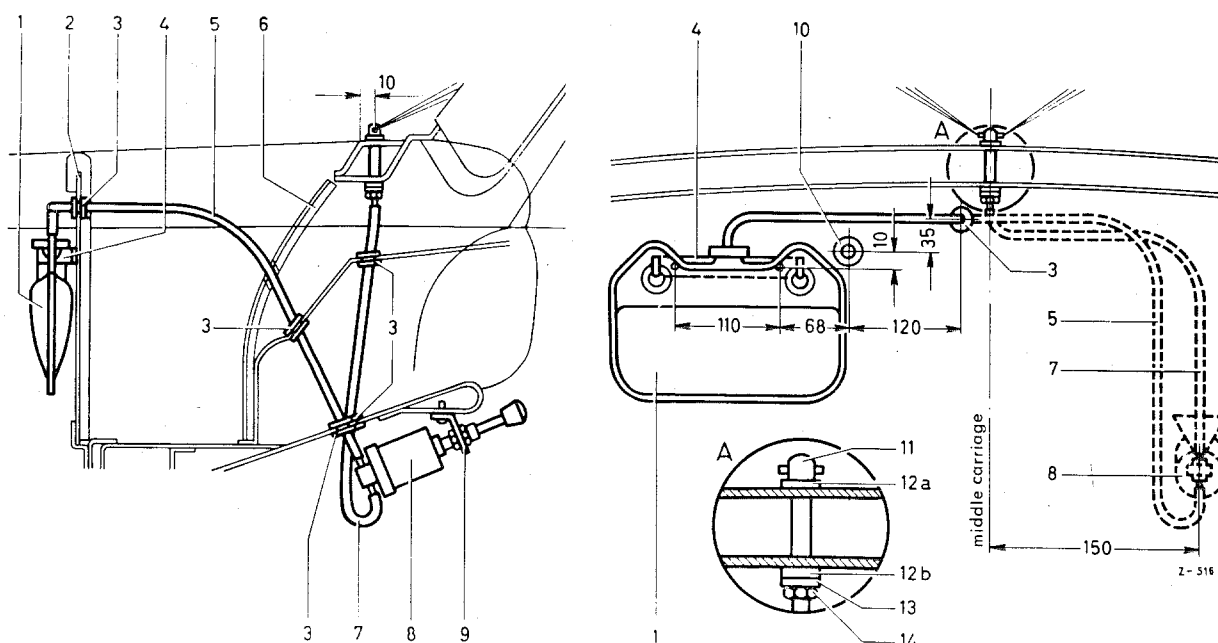


Fig. 67 — 5/1

- 1 Water reservoir
- 2 Right engine compartment panel
- 3 Rubber grommet
- 4 Bracket for water reservoir
- 5 Water hose from water reservoir to hand pump
- 6 Insulating panel (cardboard)
- 7 Water hose from hand pump to spray nozzle
- 8 Hand pump

- 9 Bracket for hand pump
- 10 Battery cable opening in right engine compartment panel
- 11 Spray nozzle
- 12a Rubber washer, top, with cup
- 12b Rubber washer, bottom
- 13 Cup
- 14 Hexagon nut

1. Remove the upper center cowl insulating panel (6). In accordance with the specified locating dimensions, drill a 9.5 mm  $\phi$  hole in the center line of the car for the installation of the spray nozzle. Deburr the hole (see Fig. 67 — 5/1).
2. Remove the clock (see Job No. 54 — 12). Slide the rubber washer (12a) and chromium-plated cup onto the spray nozzle and insert the spray nozzle (11). Slide on the rubber washer (12b), the cup (13), and screw on the hexagon nut (14). Then push on the water hose (7).

**Note:** The spray nozzle is tightened through the aperture for the clock.

3. Drill the 15 mm  $\phi$  holes required for the installation of the water hoses, i.e. one hole in the engine compartment center panel, and 4 holes in the cowl; deburr the holes and install a rubber grommet (3) in each hole (see Fig. 67 — 5/1).

Apply a little tallow to the rubber grommets before installing. Then either drill or stamp a 12 mm  $\phi$  hole in the insulating panel (6).

4. In accordance with the specified dimensions, mark the 2 fixing holes for the bracket (4) of the water reservoir on the right engine compartment panel (see Fig. 67 — 5/1) and drill them with a 5.5 mm  $\phi$  drill.

**Note:** On cars with right-hand drive, the position of the water reservoir (1) is reversed and the hand pump (8) must be arranged according to the space available.

5. Screw the bracket (4) to the engine compartment panel (2) by means of the 2 oval-head screws AM 5 × 12 DIN 7985 together with lock washers and hexagon nuts, and place the water reservoir in the bracket.
6. Hold the bracket (9) for the hand pump (8) against the reinforcement plate under the instrument panel approx. 150 mm to the left of the car center line (see Fig. 67 — 5/1), mark the 2 holes for the cheese-head tapping screws, and drill the holes to 3.4 mm  $\phi$ .
7. Screw the bracket (9) for the pump to the instrument panel by means of the 2 cheese-head tapping screws Z 4.2 × 16 DIN 7871.
8. Place the hand pump (8) in the bracket (9) and fix it by tightening the hexagon nut.
9. Install the water hose (5) from the water reservoir (1) to the hand pump and the water hose (7) from the hand pump (8) to the spray nozzle (11) and connect them up (see Fig. 67 — 5/1).
10. Reinstall the upper center cowl insulating panel.

11. Reinstall the clock (see Job No. 54 — 12).

12. Dilute 1 part of the Mercedes Benz Windshield Cleaning Fluid with 12 parts of water and mix thoroughly.

Pour this solution into the water reservoir (1) (water reservoir capacity approx. 0.75 liters).

**Note:** In winter the reservoir of the windshield washer should be filled with the following mixture:

1 part Mercedes Benz Windshield Cleaning Fluid diluted in 6 parts of water and mixed well. This mixture does not freeze at temperatures down to —9° C.

**Even smeared greasy windshields can be satisfactorily cleaned with this solution.**

**Caution!** The concentration should be as specified, since higher concentrations will attack the car finish.

13. Check the proper functioning of the windshield washer system.

Adjust the spray nozzles by means of a screw driver till the water jet strikes approximately the center of the windshield.

After adjustment, lock the spray nozzles by means of the knurled nuts.

#### List of Available Parts:

Number	Designation	Part No.
1	Windshield washer, consisting of:	10 180 860 00 90
1	hand pump, water reservoir, spray nozzle and water hoses	
1	Bracket for the hand pump	10 120 869 00 14
2	Cheese-head tapping screw	Z 4.2 × 16 DIN 7971
1	Bracket for water reservoir	40 121 869 00 32
2	Oval-head screw	AM 5 × 12 DIN 7985
2	Lock washer	B 5 DIN 127
2	Hexagon nut	M 5 DIN 934
5	Rubber grommet	000 997 21 81
The whole kit can be ordered from our works under order No. 10 180 860 99 90.		

## B. Subsequent Installation of Electric SWF 12-Volt Windshield Washer with Gear-Type Pump (Optional Extra, SA 55142/4)

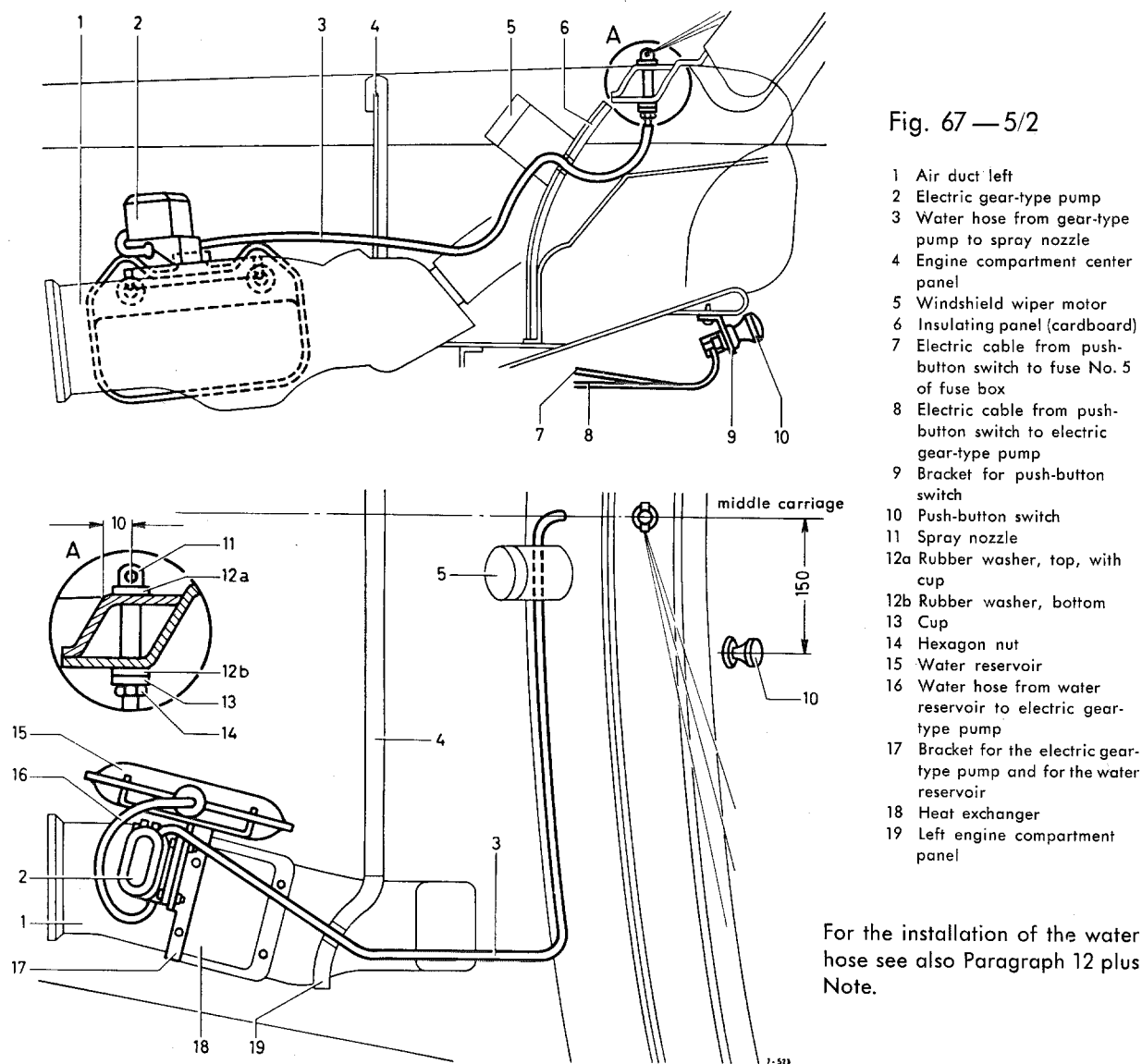


Fig. 67 — 5/2

- 1 Air duct left
- 2 Electric gear-type pump
- 3 Water hose from gear-type pump to spray nozzle
- 4 Engine compartment center panel
- 5 Windshield wiper motor
- 6 Insulating panel (cardboard)
- 7 Electric cable from push-button switch to fuse No. 5 of fuse box
- 8 Electric cable from push-button switch to electric gear-type pump
- 9 Bracket for push-button switch
- 10 Push-button switch
- 11 Spray nozzle
- 12a Rubber washer, top, with cup
- 12b Rubber washer, bottom
- 13 Cup
- 14 Hexagon nut
- 15 Water reservoir
- 16 Water hose from water reservoir to electric gear-type pump
- 17 Bracket for the electric gear-type pump and for the water reservoir
- 18 Heat exchanger
- 19 Left engine compartment panel

For the installation of the water hose see also Paragraph 12 plus Note.

1. Disconnect the ground cable at the negative terminal of the battery.
2. Carry out the procedures listed in Section A, Paragraphs 1 and 2.
3. Hold the bracket (9) for the push-pull switch (10) against the reinforcement plate under the instrument panel approx. 150 mm to the left from the car center line (see Fig. 67 — 5/2), mark the 2 holes for the cheese-head tapping screws and drill the holes to 3.4 mm  $\varnothing$ .
4. Screw the bracket (4) to the reinforcement plate by means of the 2 cheese-head tapping screws Z 4.2  $\times$  16 DIN 7971 (see Fig. 67 — 5/2).
5. Install the bracket (17) at the left air duct (1); to do this, unscrew the 2 front fixing screws for the heat exchanger (18), fit the bracket (17), and screw the fixing screws in again (see Fig. 67 — 5/2).
6. Screw the electric gear-type pump (2) to the bracket (17) by means of the 2 cheese-head screws AM 6  $\times$  20 DIN 84.
7. Connect the two black electric cables 750 mm and 1400 mm long to the push-pull switch (10). Place the push-pull switch (10) in the bracket (9) and fix it by tightening the escutcheon by means of Hook Wrench 136 589 02 05.

8. Place a rubber grommet 000 997 18 81 in the 10 mm  $\phi$  hole in the cowl under the right tension spring for the instrument cluster.  
Drill a 10 mm hole in the reinforcement panel, approx. 90 mm from the push-pull switch toward the front, and install another rubber grommet 000 997 18 81.
  9. Pull an insulating sleeve B 6  $\times$  7.2 DIN 40 621 over each of the two electric cables and connect the short cable (7) to fuse No. 5 of the fuse box and the long cable (8) to the electric gear-type pump (2) (to the positive terminal).
  10. Connect the brown cable (ground) to the electric gear-type pump (2) (negative terminal), pull an insulating sleeve B 4  $\times$  5 DIN 40 621 over the cable and connect the other end of the cable to ground at a suitable point (e. g. cable connector, blower, or windshield wiper motor).
  11. Hang the water reservoir (15) in the bracket (17).
  12. Drill a 12 mm  $\phi$  hole for the water hose (3) in the **right** cowl insulating panel (6) (card-board) to the right of the windshield wiper motor in the car center line and clean the bore.
- Note:** An alternative method to that shown in Fig. 67 — 5/2, is to install the water hose through the center cowl insulating panel, i. e. to the left of the windshield wiper motor. To do this, a 12 mm  $\phi$  hole should be stamped in the center cowl insulating panel at a distance of approx. 180 mm from the windshield wiper motor center and approx. 50 mm from the lower edge.
13. Push the water hose (3) through the hole in the right or center cowl insulating panel (6). Install the water hose (3) by pushing it through the left engine compartment panel (19) at the cut-out for the regulating valve cable and connect it to the electric gear-type pump (2).
  14. Connect the short water hose (16) to the electric gear-type pump (2) and to the water reservoir (15).
  15. Dilute 1 part Mercedes Benz Windshield Cleaning Fluid with 12 parts of water and mix thoroughly.  
Pour this solution into the water reservoir (water reservoir capacity approx. 0.75 liters).
- Note:** In winter the reservoir of the windshield washer should be filled with the following mixture:  
1 part Mercedes Benz Windshield Cleaning Fluid diluted in 6 parts of water and mixed well. This mixture does not freeze at temperatures down to  $-9^{\circ}$  C.
- Even smeared greasy windshields can be satisfactorily cleaned with this solution.**
- Caution!** The concentration should be as specified, since higher concentrations will attack the car finish.
16. Connect the ground cable to the negative terminal of the battery.
  17. Check the proper functioning of the windshield washer system. Adjust the spray nozzles by means of a screw driver till the water jet strikes approximately the center of the windshield.  
After adjustment, lock the spray nozzle by means of the knurled nuts.

# List of Available Parts:

Number	Designation	Part No.
1	Windshield washer consisting of: gear-type pump, water reservoir, spray nozzle and water hoses	11 120 860 00 90
1	Bracket for gear-type pump and water reservoir	10 186 860 01 14
2	Cheese-head screw	AM 6 × 20 DIN 84
2	Hexagon nut	M 6 DIN 934
2	Lock washer	B 6 DIN 127
1	Push-pull switch	000 545 06 11
1	Washer	8.4 DIN 433
1	Escutcheon	136 545 06 72
1	Knob	136 302 09 01
1	Felt ring	000 997 20 40
1	Bracket for push-pull switch	120 869 00 14
2	Cheese-head tapping screw	Z 4.2 × 16 DIN 7971
1	Electric cable, black, 1400 mm long	B 1.5 DIN 72 551
1	Electric cable, black, 750 mm long	B 1.5 DIN 72 551
1	Electric cable, brown, 750 mm long	B 1.5 DIN 72 551
1	Insulating sleeve, 650 mm long	B 4 × 5 DIN 40 621
1	Insulating sleeve, 650 mm long	B 6 × 7.2 DIN 40 621
4	Cable socket	4 × 0.8 N 261
2	Rubber grommet	000 997 18 81
The whole kit can be ordered from our works under Order No. 11 120 860 90 90.		

## Removal and Installation of Mounting Plate for Control Knobs

### Removal:

1. Remove the ash-tray.
2. Remove the cable covering (cardboard) from the left glove compartment (below the mounting plate for the control knobs).
3. Disconnect the feed cable for the cigar-lighter, unscrew the fixing nut (2), and take off the ground cable (Fig. 68—1/1). Take off the bracket and remove the cigar-lighter.

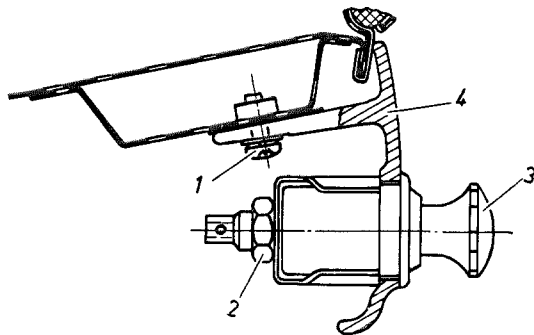


Fig. 68—1/1

- 1 Fixing screw
- 2 Fixing nut
- 3 Cigar-lighter
- 4 Mounting plate for control knobs

4. Use Hook Wrench 135 589 02 05 to unscrew the choke control knob and the guide screw (escutcheon). Pull the choke control out of the mounting plate toward the front so that the center fixing screw for the mounting plate becomes accessible (for details see Job No. 30—6, Removal and Installation of Choke Control).
5. Unscrew the 3 fixing screws for the mounting plate (see Fig. 68—1/1 and arrows in Fig. 68—1/2).

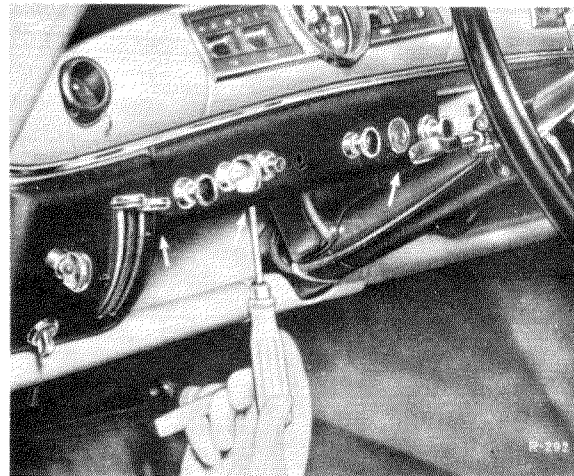


Fig. 68—1/2

Lift off the mounting plate as far as the cable connections permit.

6. Unscrew the 2 hexagon nuts at the knob at the back of the ignition control. Pull out the knob and unscrew the fixing nut (escutcheon) by means of Hook Wrench 136 589 02 05 (for details see Job No. 30—8).
7. Unscrew all other control knobs and escutcheons.  
Then carefully remove the mounting plate. Do not disconnect the switches from their feed cables.

### Installation:

8. Installation is the reverse of the removal procedure.  
Connect the electric cables to the cigar-lighter as follows:  
The brown ground cable (Lead No. 30) under the fixing nut (2), the black cable (Lead No. 9) to the cigar-lighter terminal. (See Job No. 54—1, Section A, Circuit Diagram of Main Wiring Harness, Cable Sheaves 8 and 9).

# Removal and Installation of Cowl Insulating Panels (In Engine Compartment)

Job No.
68—2

The cowl insulation in the engine compartment consists of the following panels:

- a) Right cowl insulating panel
- b) Upper center cowl insulating panel
- c) Lower center cowl insulating panel
- d) Left cowl insulating panel

## Removal:

1. Open the engine hood.
2. The upper center cowl insulating panel can be removed by simply turning back the 2 lower fasteners and by carefully pulling out the panel. Take care not to damage the rubber cuff of the windshield wiper motor.
3. Unscrew the lower center cowl insulating panel.
4. Unscrew the left cowl insulating panel. Pull the air hose out of the air duct connection

and remove the insulating panel downward.

5. The right cowl insulating panel can only be removed after the battery has been taken out (see Job No. 54—9). The removal procedure is the same as in the case of the left cowl insulating panel.

## Installation:

6. Installation is the reverse of the removal procedure.

# Removal and Installation of the Engine Compartment Panel Assembly

Job No.
68—3

The engine compartment panel assembly consists of the following panels:

- a) Right panel (1)
- b) Bracket for the ATE Power Brake T 50 (center piece) (2)
- c) Bracket for the fuse box (4) (only on left-hand drive cars)
- d) Left panel (3) (Figs. 68—3/1 and 68—3/2).

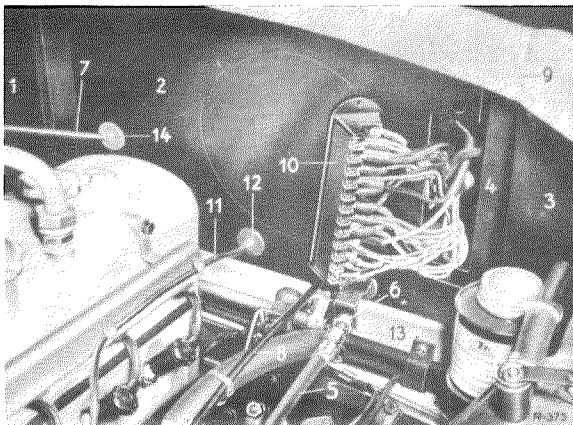


Fig. 68—3/1

- 1 Right engine compartment panel
- 2 Bracket for ATE Power Brake T 50
- 3 Left engine compartment panel
- 4 Bracket for fuse box (only on left-hand drive cars)
- 5 Flexible tube of the oil pressure gage line
- 6 Fixing nut
- 7 Choke control cable
- 8 Bowden cable for the octane-number compensator
- 9 Foam rubber insulation
- 10 Fuse box
- 11 Radiator thermometer line
- 12 Rubber grommet
- 13 Oil pressure gage line
- 14 Rubber grommet

### Removal:

1. Disconnect the starter cable at the battery and pull it out through the right engine compartment panel toward the front.
2. Unscrew the radiator thermometer line (11) at the engine block and pull it out toward the rear through the bracket for the ATE Power Brake (2) (Fig. 68 — 3/1).
3. Disconnect the flexible tube (5) at the oil pressure gage line (13) and unscrew the fixing nut (6) of the oil pressure gage line. Unscrew the fixing clip for the oil pressure gage line at the cowl behind the engine compartment panel and carefully push the oil pressure gage line (13) toward the rear through the bracket for the ATE Power Brake (2). (Fig. 68 — 3/1).
4. Disconnect the choke control cable (7) at the carburetor (for details see Job No. 30 — 6) and pull it out toward the rear through the bracket for the ATE Power Brake.
5. Disconnect the Bowden cable (8) for the octane-number compensator at the distributor (for details see Job No. 30 — 8) and pull it out toward the rear through the bracket for the ATE Power Brake (2) (Fig. 68 — 3/1).
6. Take off the cover of the fuse box. Unscrew the 2 fixing screws for the fuse box. Separate the adhesive joints (9) at the foam rubber insulation between the bracket for the ATE Power Brake and the left and right engine compartment panels. Carefully pull out the bracket for the fuse box (4) toward the rear from the holder in the left engine compartment panel (see Fig. 68 — 3/1).

**Note:** To demonstrate the relative position of the various parts, the fuse box (10) has been pulled out toward the front in Fig. 68 — 3/1. When the engine compartment panel is removed, the fuse box is pushed behind the bracket for the ATE Power Brake. There is no need to disconnect the cables.

7. Use a socket wrench to unscrew the four fixing screws of the ATE Power Brake bracket at the cowl.

**Note:** If an ATE Power Brake T 50 is installed, first remove the Power Brake (see Job No. 42 — 14).

8. Remove the bracket for the ATE Power Brake upward.
9. Unscrew the fixing screws for the left engine compartment panel (3) at the left air duct and remove the left panel upward. Unscrew the fixing screw for the right engine compartment panel (1) at the right air duct. Detach the retaining spring for the right panel at the cowl and remove the right panel upward.

### Installation:

10. Installation is the reverse of the removal procedure.

**Note:** On right-hand drive cars the procedures are essentially the same. However, the fuse box is installed horizontally. Instead of the bracket for the fuse box, a fuse box cover plate is fitted.

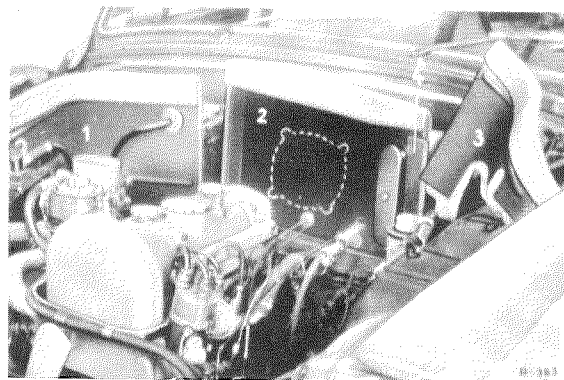


Fig. 68 — 3/2

- 1 Right engine compartment panel
- 2 Bracket for ATE Power Brake T 50
- 3 Left engine compartment panel
- 4 Bracket for fuse box

## A. Removal and Installation of Glove Compartment Lid

### Removal:

1. Unscrew the countersunk screws (2) at the left and at the right and remove the glove compartment lid (see Fig. 68 — 4/1).

### Note:

- a) The two hinges are screwed to the instrument panel by means of two oval-head countersunk tapping screws each, and clip-on nuts. If necessary, the hinges can be easily replaced.
- b) If necessary, use suitable pliers to pull out the ball-type snap lock (4) carefully from the glove compartment lid and press in a new snap lock.
- c) The ball of the snap lock is kept in position by the retaining bracket (3) which is fixed to the body panel by one chromium-plated oval-head countersunk tapping screw S 2.9  $\times$  6.5 DIN 7983 in front, and two oval-head countersunk tapping screws Z 2.9  $\times$  6.5 DIN 7981 at the rear.

### Installation:

2. Fix the glove compartment lid to the hinges by screwing in the four countersunk screws (2).

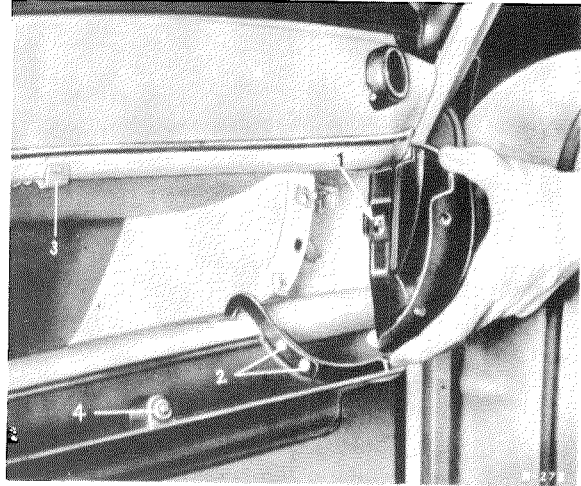


Fig. 68 — 4/1

- |   |                       |
|---|-----------------------|
| 1 Pin   | 3 Retaining bracket   |
| 2 Countersunk screws AM 4 $\times$ 6 DIN 7987 | 4 Ball-type snap lock |

3. Check whether the glove compartment lid opens and closes easily.

## B. Subsequent Installation of Cylinder Lock (Optional Extra, SA 1463 — 120)

1. Remove the glove compartment lid (see Section A).
2. Mark the bore for the cylinder lock of the glove compartment lid in accordance with the specified dimensions (Fig. 68 — 4/2).
3. Cut the bore in the glove compartment lid with an 18 mm  $\varnothing$  counterbore; before doing this, drill a guide bore of corresponding diameter for the pilot of the counterbore.
4. Remove the tongue (5) from the lock after first unscrewing the screw (6), and pay

attention to the lock washer (7), the washer (8), and the corrugated washer (9) (see Fig. 68 — 4/2).

**Note:** The cylinder is not taken out of the lock case.

5. Shorten the tongue (5) by 5 mm (see Fig. 68 — 4/2).
6. File the 18 mm  $\varnothing$  bore in the glove compartment lid to the specified dimensions (see Fig. 68 — 4/2) and fit the lock.

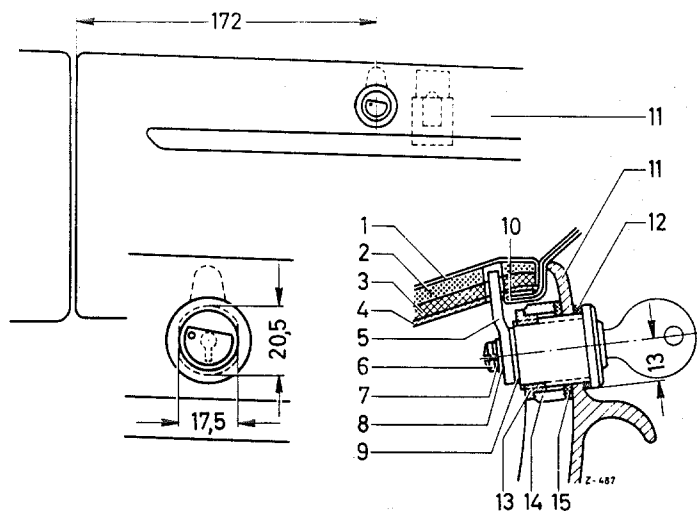


Fig. 68 — 4/2

- |                        |                          |
|------------------------|--------------------------|
| 1 Body panel           | 9 Corrugated washer      |
| 2 Felt                 | 10 Body panel            |
| 3 Foam wool            | 11 Glove compartment lid |
| 4 Insulating cardboard | 12 Rubber pad            |
| 5 Tongue               | 13 Ring nut              |
| 6 Screw                | 14 Spacer ring           |
| 7 Lock washer          | 15 Rubber pad            |
| 8 Washer               |                          |

7. Slide the rubber pad (12) over the lock and install the lock in the glove compartment lid (11). Slide the rubber pad (15) and the spacer ring (14) over the lock from the other side, screw on the ring nut (13) and tighten it by means of Hook Wrench 136 589 01 05 (see Fig. 68 — 4/2).

**Note:** The ring nut (13) must be installed in such a way that it centers the spacer ring (14).

8. Slide the corrugated washer (9) and the tongue (5) onto the lock. Then screw in the screw (6) together with washer (8) and lock washer (7) (see Fig. 68 — 4/2).

9. Install the glove compartment lid (see Section A).

10. Close the glove compartment lid; if the lock should strike against the body panel (10), lightly tap the body panel (10) upward.

11. Cut out the cardboard insulation (4) in the area of the tongue (5). When the lock is closed, the tongue (5) must be behind the body panel (10). In order to mark the section to be cut out of the insulating cardboard, the lock is closed as far as possible so that the tongue can press into the insulating cardboard.

12. Bend the tongue (5) to ensure that the distance between the body panel (10) and the tongue (5) is as small as possible.

#### List of Available Parts:

Number	Designation	Part No.
1	Cylinder lock	10 186 689 00 01
1	Spacer ring	10 120 689 00 36
1	Rubber pad, 2 mm thick, 24 mm external diameter $\varnothing$	10 120 689 00 97
1	Rubber pad, 2 mm thick, 28 mm external diameter $\varnothing$	10 120 689 01 97
The whole kit can be ordered from our works under Order No. 10 120 680 99 91.		

## C. Subsequent Installation of Automatic Glove Compartment Light (Optional Extra, KW 57 43/2)

1. Remove the glove compartment lid (see Section A).
  2. In accordance with the specified dimensions mark the bore for the installation of the glove compartment light (13) and the bore for the rubber grommet (5) for the cable from the contact switch to the glove compartment light at the insulating cardboard (9) (see Fig. 68—4/3).
  3. Remove the ornamental cover at the center of the instrument panel by unscrewing the two left and right oval-head countersunk tapping screws.
- Note:** If a radio set is installed, it must be removed.
4. Remove the insulating cardboard (9) and cut the bores out of the insulating cardboard in accordance with the specified dimensions (see Fig. 68—4/3).

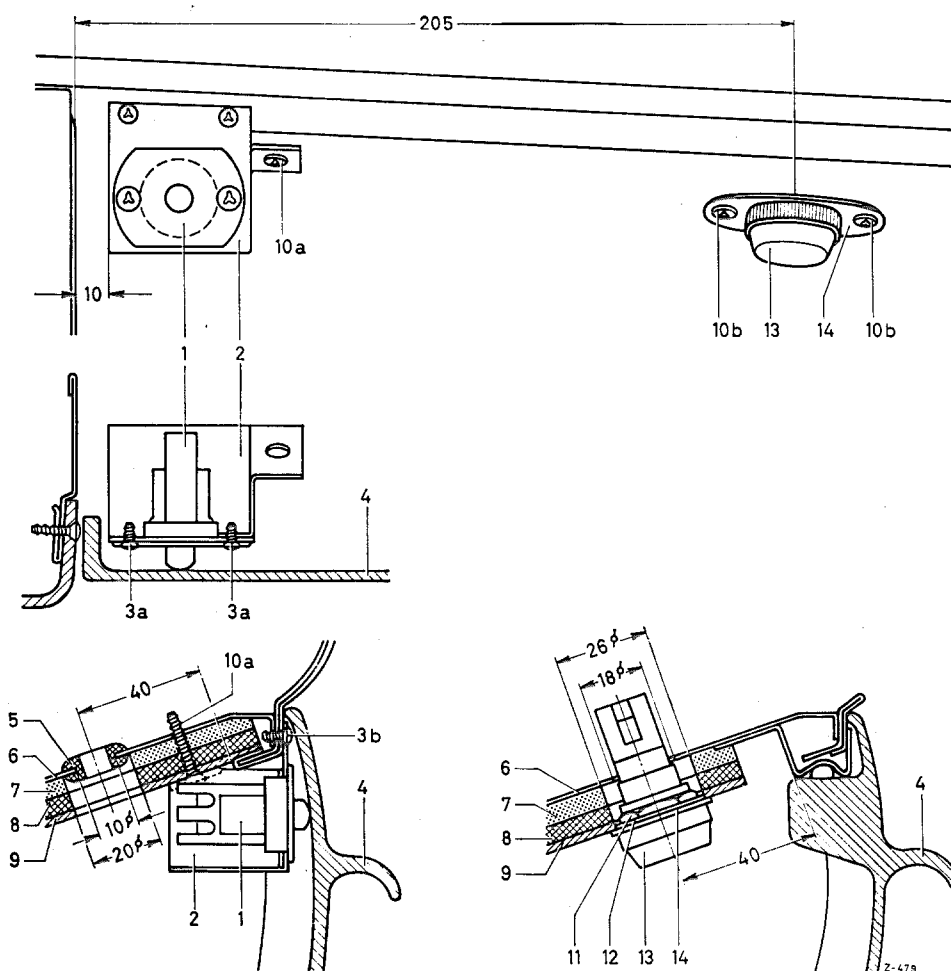


Fig. 68—4/3

- |      |                               |       |                               |
|------|-------------------------------|-------|-------------------------------|
| 1    | Foam wool                     | 8     | Contact switch                |
| 2    | Insulating cardboard          | 9     | Bracket for contact switch    |
| 3b } | Oval-head countersunk tapping | 10a } | Oval-head countersunk tapping |
| 3a } | screws Z 2.9×6.5 DIN 7983     | 10b } | screws Z 3.5×19 DIN 7983      |
| 4    | Hexagon nut                   | 11    | Glove compartment lid         |
| 5    | Washer                        | 12    | Rubber grommet                |
| 6    | Glove compartment light       | 13    | Body panel                    |
| 7    | Cover plate                   | 14    | Felt                          |

5. In accordance with the given dimensions mark on the body panel (6) (see Fig. 68—4/3) the bore for the installation of the glove compartment light (13) and the bore for the rubber grommet (5) for the cable from the contact switch to the glove compartment light.
6. Use a suitable corner drill and a tool of approx. 10 mm  $\phi$  to drill the two bores in the body panel (6) (see Fig. 68 — 4/3).
7. Enlarge the bore for the glove compartment light (13) in the body panel (6) to 18 mm  $\phi$ .
8. Deburr the bores and install the rubber grommet (5) in the 10 mm  $\phi$  bore for the cable.
9. Install the insulating cardboard (9).
10. Hold the bracket (2) for the contact switch (1) at the ornamental cover at the specified distance of 10 mm and mark the three fixing holes (see Fig. 68 — 4/3).  
Drill the two front holes (3 b) with a 2.3 mm  $\phi$  drill and the rear hole (10 a) with a 2.7 mm  $\phi$  drill.
11. Remove the clock (see Job No. 54 — 12).
12. Install a bulb H 12 V 1.5 W DIN 72601 in the glove compartment light.
13. Slide the cover plate (14) and the washer (12) from the rear over the glove compartment light (13) and tighten the hexagon nut (11) (see Fig. 68 — 4/3).
14. Connect two cables approx. 500 mm long with a section of 0.5 mm<sup>2</sup> to the glove compartment light.
15. Through the aperture for the clock, pull a suitable wire through the bore for the glove compartment light. Connect the wire to the two cable ends of the glove compartment light, pull the two cables through and install the glove compartment light in the bore.
16. Use a 2.7 mm  $\phi$  drill to drill two holes into the insulating cardboard (9) and the body panel (6) for fixing the cover plate (14) and screw in the two chromium-plated oval-head countersunk tapping screws (10 b) Z 3.5  $\times$  19 DIN 7983 (see Fig. 68 — 4/3).
17. Fix the contact switch (1) to the bracket (2) by means of the two chromium-plated oval-head countersunk tapping screws (3 a) Z 2.9  $\times$  6.5 DIN 7983 (see Fig. 68 — 4/3).
18. Connect a cable approx. 250 mm long with a section of 0.5 mm<sup>2</sup> to the contact switch after having soldered a tag 4  $\times$  0.8 N 261 to the free end of the cable.
19. Working from the aperture for the clock, push one of the two cables from the glove compartment light through the rubber grommet (5) and connect the cable to the contact switch (1) (see Fig. 68 — 4/3).
20. Push the loose cable of the contact switch through the rubber grommet (5).  
  
Install the contact switch (1) together with the bracket (2) and fix it at the front by two oval-head countersunk tapping screws (3 b) Z 2.9  $\times$  6.5 DIN 7983 and at the right rear with an oval-head countersunk tapping screw (10 a) Z 3.5  $\times$  19 DIN 7983 (see Fig. 68 — 4/3).
21. Connect the red cable (Lead No. 59) provided for an electric clock and leading from Terminal 30 of the rotary light switch via Fuse No. 1 of the fuse box to the electric clock (see also Job No. 54 — 1, Section A, Circuit Diagram of the Main Wiring Harness, Cable Sheaf 34) by means of an ordinary connector to the free cable of the glove compartment light.
22. Connect the free cable of the contact switch with the tag to the ground connection of the clock.
23. Reinstall the clock (see Job No. 54 — 12).
24. Install the ornamental cover — instrument panel center — by screwing in two oval-head countersunk tapping screws Z 4.2  $\times$  13 DIN 7983 at both sides or install the radio set.
25. Install the glove compartment lid (see Section A).
26. Check the glove compartment light for proper functioning.

## List of Available Parts:

Number	Designation	Part No.
1	Glove compartment light	000 545 40 15
1	Bulb H 12 V 1.5 W	12 V 1.5 W DIN 72601
1	Cover plate for glove compartment light	30 188 825 00 11
3	Oval-head countersunk tapping screws, chromium-plated	Z 3.5 × 19 DIN 7983
1	Contact switch	000 821 02 52
1	Bracket for contact switch	10 120 825 00 15
4	Oval-head countersunk tapping screws, chromium-plated	Z 2.9 × 6.5 DIN 7983
2	Electric cables	A 1 DIN 72551 — 500 lg.
1	Electric cables	A 1 DIN 72551 — 250 lg.
1	Connector No. 1, single-pole	000 546 00 42
1	Cable tag	4 × 0.8 N 261
1	Rubber grommet	000 997 18 81
The whole kit can be ordered from our works under Order No. 11 120 820 90 50.		