Section M4

Warning lamps and instruments Contents

Silver Shadow II
Silver Wraith II
Bentley T2
Corniche

Section M4

Warning lamps and instruments

Introduction

Pages M4 - 1 to M4 - 27 only apply to Silver Shadow II, Silver Wraith II, Bentley T2 and Corniche

For simplicity, the wiring diagrams have been sub-divided into five separate sheets.

To ensure correct alignment when fitting an instrument, it is advisable to scribe the position of the instrument relative to the instrument panel before removal.

Clock

The clock timing is controlled by a quartz crystal and therefore will not need adjusting.

Clock - To remove

1. Disconnect the battery.
2. Remove the facia.
3. Remove the screws securing the clock to the instrument panel.
4. Withdraw the clock and disconnect the cables.

Outside air temperature gauge and sensor

The gauge and sensor are a matched pair, therefore if one is faulty **both** components must be replaced. The temperature gauge is removed in a similar manner to the clock.

Sensor - To remove

1. Disconnect the battery.
2. Remove the radiator grill.
3. Disconnect the pink/blue cable eyelet at the sensor.
4. Unscrew the nut securing the sensor to the bracket.

Ammeter, Fuel/Oil, Coolant, Oil pressure gauges (4-in-1 instrument)

These four instruments are all contained in one case, if a fault occurs on one instrument, the complete unit must be replaced.

4-in-1 instrument - To remove

1. Disconnect the battery.
2. Remove the facia.
3. Remove the screws securing the instrument to the instrument panel.
4. Withdraw the instrument and disconnect the cables.

Fuel tank and oil sump units

Always fit a new gasket and ensure clean clamping surfaces whenever a new tank unit or oil sump unit is fitted.

Speedometer and generator

The speedometer is an electric impulse speedometer driven by a speed generator which is fitted to the gearbox. It is removed in a similar manner to the clock.

If a speedometer is suspected of being faulty it can be confirmed by either substituting a good speedometer or by connecting it to a spare speed generator and spinning the generator shaft.

Refer to Section 5 for details of the speed generator.

Washer fluid level warning (see Figs. M27 & M28)

The basic circuit consists of a warning lamp, a probe fitted inside the washer fluid bottle and an amplifier. There are also two relays for checking purposes and two diodes to prevent feedback through the warning lamp and interaction with other circuits.

When the probe is immersed in the washer fluid it effectively connects the amplifier to earth and prevents an output being available to the warning lamp. However, when the fluid level drops below the probes, the amplifier is switched and connects a live feed to the warning lamp which is illuminated whenever the washer switch is depressed.

The warning lamp will also illuminate during engine cranking. The warning lamp test relay and washer fluid level relay then connects the warning lamp directly to fuse 1 and earth.

Warning lamp - To remove

1. Remove the facia trim, unscrew the screws securing the lamp cluster to the instrument panel and withdraw the cluster.
2. Remove the warning lamp bulb.

Washer fluid level relay - To test

1. Disconnect the white/purple cable from C1 and connect a test lamp between C1 and earth.
2. Switch on the ignition, the lamp should remain extinguished. Switch off the ignition.
3. Link C2 to W1 and switch on the ignition, the test lamp should illuminate. This shows that the coil is energised and that contacts C2 and C1 are 'made'.
4. Switch off the ignition and remove the connecting link between C2 and W1. Reconnect the white/purple cable to C1.

Note

This test assumes that the 14G cable is 'live' and that the left-hand 'A' post earth is sound. If the left-hand 'A' post earth is suspect, connect relay terminal W2 to a good earth for this test.

Diodes - To test
1. Disconnect the battery.
2. Disconnect the light green/black orange/ red cables and purple/orange cables.
3. Connect the positive side of a 12 volt battery to the large terminal on the diode.
4. Connect one lead of a 12v 5w lamp to the negative side of the battery and connect the other lead to the small terminal of the diode, the lamp should be lit.
5. Reverse the battery polarity and ensure that the lamp is extinguished.
6. Repeat this test for the other diode.

Coolant level warning (see Figs. M27 & M29)
The coolant level warning system consists basically of a probe in the coolant header tank, a warning lamp in the warning lamp cluster and an amplifier which is fitted on the warning lamp test circuit board. There are also two relays on the warning lamp test circuit board to enable the lamp to be checked.

While the probe is immersed in the coolant, the amplifier remains inactive and the warning lamp remains extinguished. However, when the coolant level drops below the probes, the amplifier is switched on and connects a live feed to the warning lamp.

The warning lamp will also illuminate during engine cranking. When the starter switch is operated, the warning lamp test and coolant level relays are energised, the contacts of the latter are connected in series with the coolant probe to simulate low coolant conditions.

Warning lamp test circuit board - To remove
1. Disconnect the battery.
2. Remove the top roll.
3. Disconnect the three multi-way connectors.
4. Remove the two screws securing the board support bracket and the screw securing the board. The board can now be removed.

Ice warning (see Figs. M30 & M31)
The basic ice warning system consists of a warning lamp, a low temperature sensor and an amplifier.

When the outside air temperature falls to 1 °C. the amplifier acts like a switch and connects the slate/orange cable of the warning lamp to earth (via the amplifier).

The warning lamp will also illuminate when the starter switch is operated. When the test relay coil energises, it opens contacts C2 and C3 which causes the amplifier to behave like a switch.

Also included in the ice warning system is a warning lamp dimming relay which reduces the intensity of the warning lamp when the car lights are switched on.

Low fuel (see Figs. M30 & M31)
The low fuel warning lamp will illuminate whenever the fuel tank contains 3½ gallons or less thus connecting the lamp directly to earth. The warning lamp dimming relay is also connected to the warning lamp to reduce the intensity of the warning lamp when the car lights are switched on.

Brake pressure 1 and 2 (see Figs. M32 & M33)
The brake pressure warning lamp will illuminate whenever the brake pressure switch is closed (i.e. when the brake pressure is low) and also during engine cranking.

Refer to Chapter G for all details regarding the brake pressure switches.

Parking brake (see Figs. M32 & M33)
The parking brake warning lamp will illuminate whenever the parking brake is applied and also during engine cranking. Details for setting the switch are in Chapter G.

Low brake fluid (see Figs. M32 & M33)
The low brake fluid warning lamp will illuminate when the fluid in either fluid reservoir is low and also when the engine is cranking.

Engine overheat (see Figs. M32 & M33)
When the engine cylinder block temperature reaches a critical temperature, the overheat switch will 'make' and provide an earth for the warning lamp and buzzer. The warning lamp will also illuminate during engine cranking.

Overheat buzzer - To test
1. Switch on the ignition.
2. Disconnect the cable from the overheat switch and momentarily connect the cable to the cylinder head or any other good earth. The buzzer should operate.
3. Reconnect the cable and switch off the ignition.

Stoplamp failure (see Figs. M32 & M33)
When both stoplamps are working, the current through the two coils of the stoplamp relay oppose each other and the reed switch remains open. If a stoplamp fails, the current flowing through one coil will close the reed switch which connects the warning lamp to earth causing it to glow.

The warning lamp will also glow during engine cranking.

Stoplamp failure relay - To test
1. Disconnect one of the 14YN cables from the relay, switch on the ignition and operate the footbrake. Verify that the warning lamp illuminates.
2. Replace the 14YN cable and disconnect the other 14YN cable. Operate the footbrake and verify that the warning lamp illuminates.
3. Switch off the ignition.

Stoplamp switch
Refer to Chapter G for setting details.

Section M4

Warning lamps and instruments Fault diagnosis

Malfunction	Possible cause	Action
All warning lamps and instruments (except ammeter) inoperative	Fuse 1 blown	Replace fuse. If fuse blows again investigate for short
No warning lamps during engine cranking (except oil pressure warning lamp)	Faulty warning lamps test relay	Substitute relay
	Poor relay earth	Check for soundness of earth at instrument panel and left-hand 'A' post
		Check for live feed on WB cable during cranking
	Faulty connections	Check WB cable at test circuit board and column neutral start switch
	Faulty test circuit board	Substitute board
Oil pressure gauge		
Oil pressure gauge inoperative	Faulty connection	Check for live feed on 14 G cable at instument and 9 GLG cable at instrument, toeboard socket and transmitter for continuity
	Faulty instrument	Substitute instrument
	Faulty transmitter	Substitute transmitter
Inaccurate indication	Inaccurate transmitter	Substitute transmitter
	Inaccurate instrument	Substitute instrument
Fuel/Oil level gauge		
Inaccurate reading	Faulty instrument (if both fuel and oil reading incorrect)	Substitute instrument
	Faulty fuel tank unit (if fuel only affected)	Substitute tank unit
	Faulty oil sump unit (if oil only affected)	Substitute sump unit
Gauge not working on fuel or oil	Faulty gauge	Substitute gauge
	Faulty connection	Check 14 G cable at instrument for live feed and GS and GK cable for continuity.
Gauge not working on fuel only	Faulty tank unit	Disconnect 9GS cable at tank unit, gauge should read low. Momentarily connect the cable to earth, the gauge should read high (off scale).

Malfunction	Possible cause	Action
Gauge not working on fuel only (continued)	Faulty connection	Check that body socket is secure and changeover switch socket is secure
	Faulty change over switch	Substitute switch
Gauge not working on oil only	Faulty oil sump unit	Disconnect 9GK cable at sump unit and proceed as for fuel tank unit
	Faulty connection	Ensure that toeboard socket is secure and changeover switch socket is secure
	Faulty changeover switch	Substitute switch
Coolant temperature gauge		
Inaccurate reading	Faulty sensor	Substitute sensor
	Faulty instrument	Substitute instrument
Instrument not working	Faulty connection	Check wiring at back of instrument
	Faulty instrument	Substitute instrument
Ammeter		
No current reading	Faulty ammeter	Substitute 4 in 1 instrument
	Faulty connection	Check N and NW cables at ammeter and shunt
Inaccurate reading	Faulty ammeter	Substitute ammeter
	Faulty shunt	Substitute shunt
		For charging faults see Charging System
Speedometer		
Speedometer and speed control inoperative	Speed generator not working	Check generator earth connection at left-hand valance earth
	Faulty generator	Substitute generator
	Faulty connection	Check 14 red/green cable at generator, toeboard socket and speedometer
Speedometer not working, speed control satisfactory	Faulty instrument	Replace instrument
	Faulty connection	Check connections to instrument
		Check earth connections at right-hand 'A' post earth and 'Lucar' connector at main beam warning lamp
Clock		
Clock stopped or inaccurate	Faulty connection	Check brown/purple connection at clock
	Faulty clock	Substitute clock

Malfunction	Possible cause	Action
Outside temperature gauge		
		Note: If a gauge or sensor is faulty, both must be changed as a matched pair
Inaccurate indication	Inaccurate sensor	Substitute sensor (and gauge)
	Inaccurate gauge	Substitue gauge (and sensor)
No reading on gauge	Faulty sensor	Connect sensor to earth, if sensor is faulty gauge will read high
	Faulty connection	Check pink/blue cables at toeboard socket, sensor and gauge
	Faulty gauge	Substitute gauge (and sensor)
	Poor earth	Connect instrument negative to known good earth. Check earth connections at warning lamp test circuit board, instrument panel earth and left-hand 'A' post earth
Gauge reading off-scale 'high'	Faulty sensor	Disconnect pink/blue cable at sensor. If the sensor is faulty the gauge will read low
	Short circuit to earth	Check pink/blue cable at sensor and toeboard socket
	Faulty gauge	Substitute gauge (and sensor)
Brake pressure warning lamps 1 and 2		
Lamps remain lit with ignition on	Low brake pressure	See Chapter G - Workshop manual
	Faulty switch	Disconnect yellow/orange cable at switch for 1 and white/orange cable for 2
	Warning lamp circuit board fault	At circuit board, disconnect 5-way connector
Warning lamps unlit during engine cranking	Faulty bulb(s)	Replace bulb(s)
	Faulty connection	At lamp cluster, check yellow/orange cable for 1 and white/orange for 2
	Faulty diode in circuit board	Substitute circuit board
Low pressure fault condition not indicated	Faulty brake pressure switches	At switch, connect cable to good earth
	Faulty connection	Check yellow/orange or white/orange cable at circuit board, toeboard socket and brake pressure switch

Malfunction	Possible cause	Action
Parking brake warning lamp		
Lamp remains lit with ignition on and parking brake released	Parking brake micro-switch operating mechanism	Ensure that micro-switch is released to 'off' position
	Faulty micro-switch	Disconnect blue/orange cable at micro-switch
Warning lamp unlit during engine cranking	Faulty bulb	Replace bulb
	Faulty diode in circuit board	Substitute circuit board
	Faulty connection	Check blue/orange cable at lamp cluster and circuit board
Warning lamp unlit when parking brake is applied	Faulty micro-switch operating mechanism	Ensure that micro-switch is being operated
	Faulty micro-switch	At the switch, connect blue/orange cable to earth (14B cable)
	Faulty connection	Check blue/orange cable at lamp cluster and circuit board socket
	Poor earth connection	Check 14B cable at micro-switch and right-hand 'A' post earth
Low brake fluid		
Warning lamp remains lit with ignition on	Fluid level low	Check level in reservoirs
	Fluid level switch faulty	Disconnect black/orange cable at reservoir
	Warning lamp circuit board faulty	Substitute circuit board
Warning lamp unlit during engine cranking	Faulty bulb	Replace bulb
	Faulty connection	Check black/orange cable at lamp cluster, circuit board, toeboard socket, fluid level resistor and fluid level switch
	Faulty diode in circuit board	Substitute board
Low fluid level condition not indicated	Faulty low fluid level switch	At the reservoir, connect black/orange cable to earth
	Faulty connection	Check black/orange cable at circuit board socket (5-way), toeboard socket and reservoir
Engine overheat		
Warning lamp and buzzer operate with ignition switched on	Engine overheating	Change overheat switch for a known good switch. If lamp and buzzer still operate with slate/light green cable disconnected, the engine is overheating
	Faulty overheat switch	Substitute switch

Malfunction	Possible cause	Action
Warning lamp lit with ignition on, buzzer not operating. (Engine satisfactory)	Warning lamp circuit board faulty	Disconnect 7-way socket at circuit board
Warning lamp not lit during engine cranking	Faulty bulb	Replace bulb
	Faulty connection	Check slate/red cable at lamp cluster and circuit board 7-way plug
	Faulty circuit board	Replace board
Engine overheat condition not indicated	Faulty overheat switch	Substitute switch
	Faulty connection	Check connections at toeboard socket, overheat switch and fuseboard
	Fuse 1 'blown'	Replace fuse
Stoplamp failure		
Warning lamp not lit during engine cranking	Faulty bulb	Replace bulb
	Faulty connection	Check brown/orange cable at lamp cluster and circuit board
	Faulty circuit board	Substitute board
Warning lamp remains lit with ignition on	Faulty reed switch in stoplamp relay	Substitute relay
	Short circuit to earth	Disconnect stoplamp relay, if fault persists check brown/orange cable at toeboard socket
Stoplamp failure not indicated	Faulty stoplamp relay	Substitute relay
	Faulty connection	Check brown/orange cable at toeboard socket, stoplamp relay and test circuit board
	Poor earth	Connect pin 1 of stoplamp relay to a good earth
Washer fluid level		
Warning lamp not lit during engine cranking	Bulb broken	Replace bulb
	Washer fluid level relay faulty	Test relay
	Poor earth	Check earth connection at instrument panel and left-hand 'A' post
	Faulty diode	At diode block, connect orange/red cable to earth
	Poor connection	Check orange/red cable at test circuit board, purple/orange cable and white/purple cable at lamp cluster and white/purple cable at fluid level amplifier and fluid level relay. Test for 'live' feed on green cable at relay

Malfunction	Possible cause	Action
Warning lamp remains lit	Low washer fluid	Check fluid level
	Washer fluid level relay faulty	Disconnect white/purple cable at relay
	Faulty amplifier	Substitute amplifier
	Poor connections	Check connections at toeboard socket, washer reservoir, amplifier and left-hand 'A' post earth
Low fluid level not indicated	Faulty amplifier	Substitute amplifier
	Bulb broken	Replace bulb
	Faulty diode	At diode block connect light green/black cable to earth
	Poor connections	Check soundness of cables at amplifier, warning lamp, diode block, washer switch and right-hand 'A' post earth
	Washer bottle probe faulty	Disconnect black/purple cable
Coolant level		
Warning lamp remains lit with ignition on	Low coolant level	Check coolant level
	Faulty amplifier on test circuit board	Substitute test circuit board
	Faulty coolant level relay on test circuit board	Substitute board
	Faulty probe	At probe, connect black/light green cable to black cable
	Faulty connection	Check black/light green cable at warning lamp circuit board, toeboard socket and probe
	Warning lamp circuit board fault	Substitute circuit board
Warning lamp unlit during engine cranking	Faulty bulb	Replace bulb
	Faulty circuit board	Substitute circuit board
	Faulty connection	Check light green/orange cable at lamp cluster and circuit board
	Poor earth connection	Check earth at instrument panel and left-hand 'A' post
Low coolant condition not indicated	Faulty coolant probe	Replace probe
Ice warning		
Warning lamp lit with ignition switched on	Low ambient temperature	Determine temperature at which lamp operates

Malfunction	Possible cause	Action
Warning lamp lit with ignition switched on (continued)	Faulty sensor	At sensor, connect yellow/slate cable to white/slate cable
	Faulty test circuit board	Substitute circuit board
	Faulty connection	Check yellow/slate cable at sensor, toeboard socket and circuit board. Check white/slate cable at sensor, toeboard socket and circuit board
	Faulty ice warning unit	Replace unit
Warning lamp not lit during engine cranking	Faulty bulb	Replace bulb
	Test circuit board faulty	Substitute board
	Poor connection	Check green/red cable at warning lamp cluster and test circuit board
	Faulty ice warning unit	Replace unit
Ice warning not indicated	Faulty sensor	Substitute sensor
	Faulty test circuit board	Substitute board
	Faulty bulb	Replace bulb
	Faulty ice warning unit	Replace unit
Ice warning and low fuel lamps dimly lit	Faulty dimming relay on test circuit board	Substitute circuit board
Ice warning and low fuel lamps fail to dim	Faulty dimming relay on circuit board	Substitute circuit board
	Faulty connection	At circuit board, check for 12v at pin 9 of 9-way connector (red cable)
Low fuel		
Warning lamp remains lit when ignition is on	Low fuel level	Check fuel level
	Faulty tank unit	Disconnect green/orange cable at tank unit
	Short circuit to earth	Disconnect black cable at tank unit. If lamp remains lit, check green/orange cable for earth fault
Warning lamp not lit during engine cranking	Faulty bulb	Replace bulb
	Faulty circuit board	Substitute board
	Poor connection	Check green/red cable at test circuit board and lamp cluster and green/orange cable at lamp cluster and tank unit
Warning lamp dimly lit or fails to dim.	See Ice warning	

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Warning lamps and instruments

Component location
(instruments)
Fig. M25

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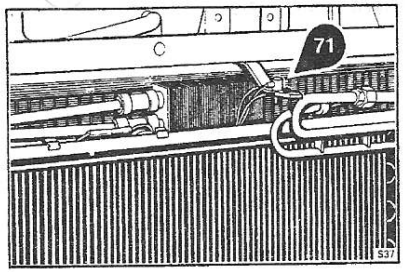

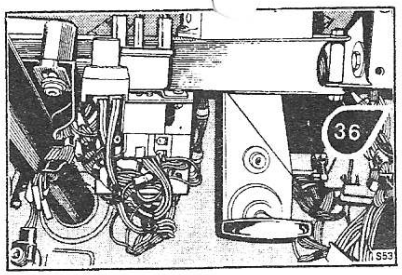

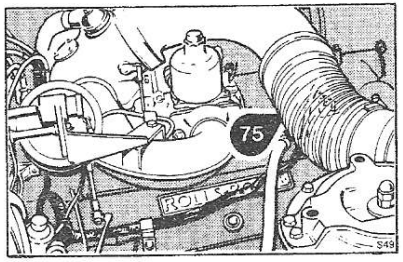

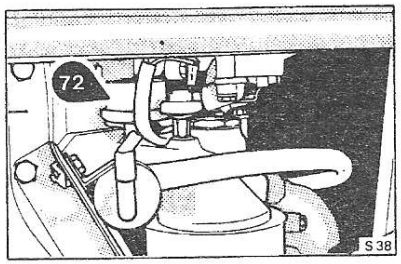

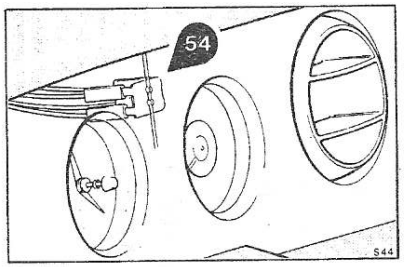

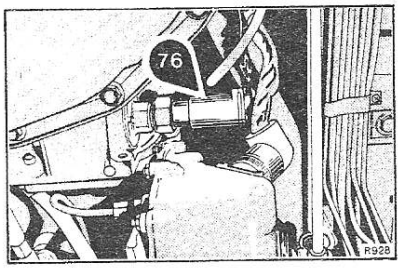

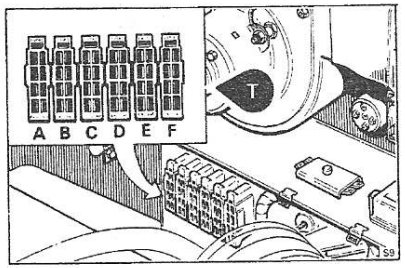

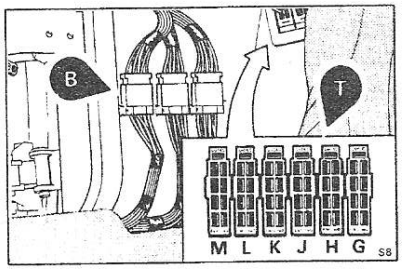

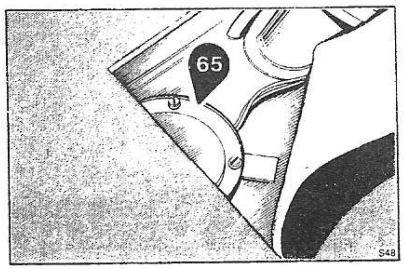

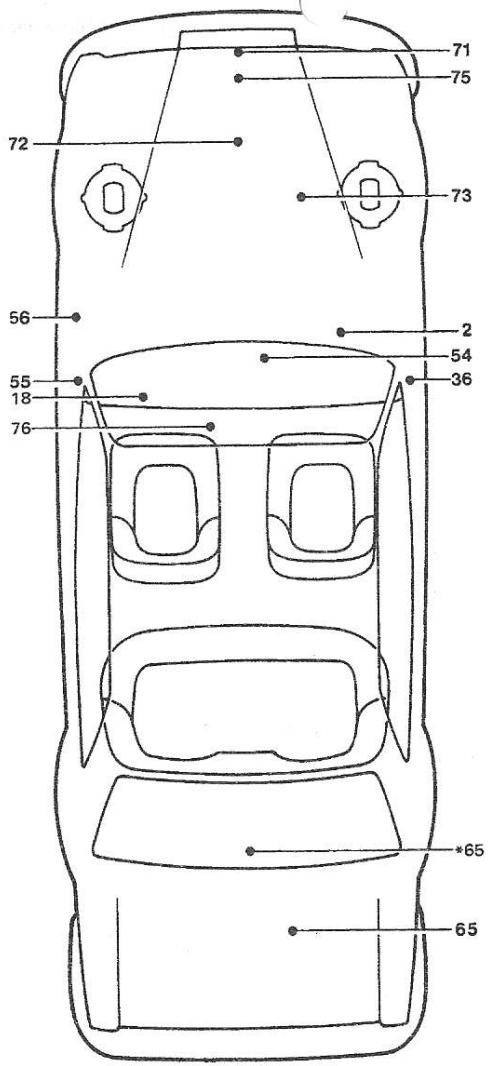

Components

2	Ammeter shunt
4a	Ammeter
4b	Oil pressure
4c	Fuel/Oil contents
4d	Coolant temperature
17	Fuseboard
18	Petrol pumps relay
36	Right-hand 'A' post earth
54	Instrument panel earth
55	Left-hand 'A' post earth
56	Left-hand valance earth
65	Fuel tank unit
66	Clock
67	Front cigar lighter
68	Left-hand rear cigar lighter
69	Right-hand rear cigar lighter
70	Outside temperature gauge
71	Outside temperature sensor
72	Oil pressure transmitter
73	Oil sump unit
74	Fuel/Oil changeover switch
75	Coolant temperature transmitter
76	Speed generator
77	Speedometer
78	Main beam warning lamp
B	Body sockets
T	Toeboard sockets
*	All left-hand drive

Warning lamps and instruments

Schematic wiring diagram (instruments)

From car serial numbers
SRX 33872, LRX 32024, DRX 32635 and JRX 31962 the positive feed to the speedometer is indicated by a dotted line on the diagram

Fig. M26

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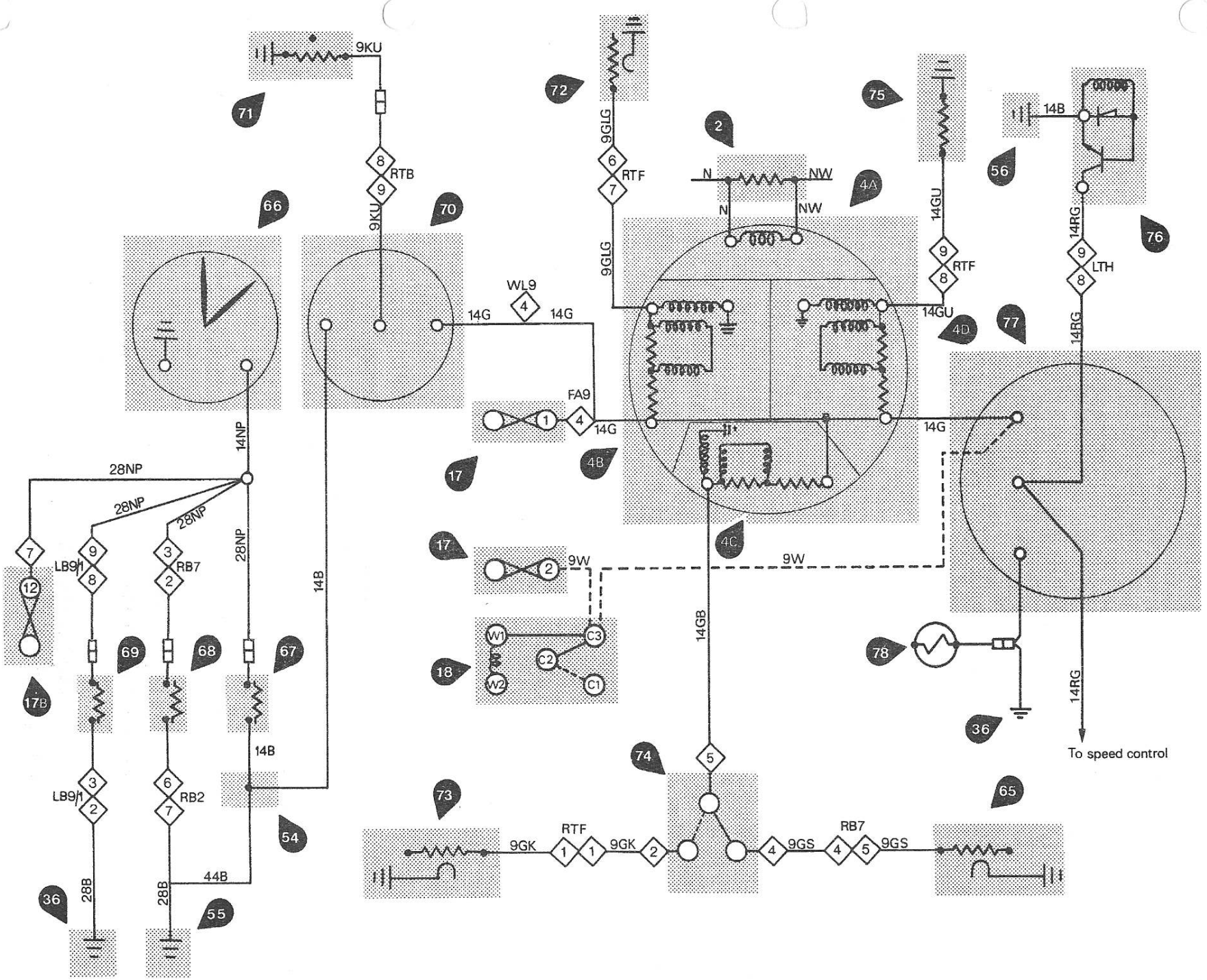

Warning lamps and instruments

Component location
(washer fluid and coolant levels)
Fig. M27

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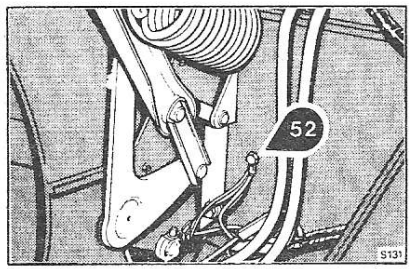

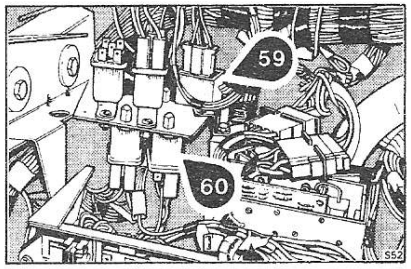

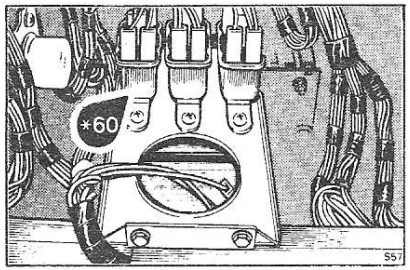

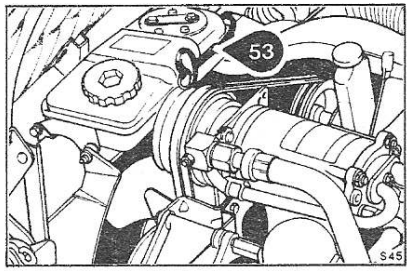

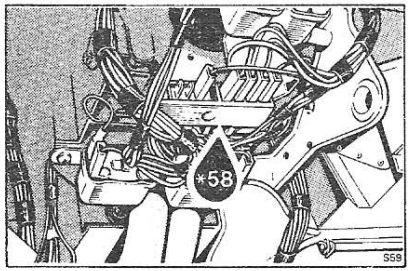

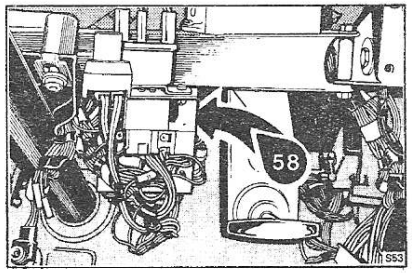

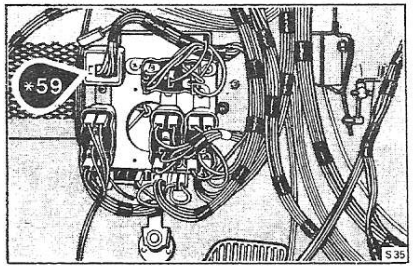

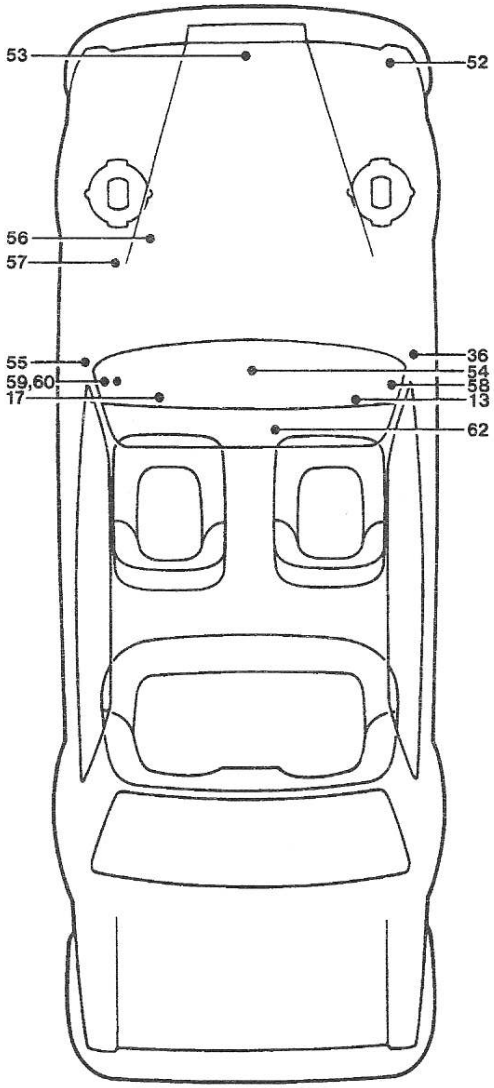

Components

11	Column neutral start switch
13	Starter switch
17	Fuseboard
36	Right-hand 'A' post earth
49	Warning lamps test circuit
51	Warning lamps cluster
52	Right-hand front earth
53	Coolant level probe
54	Instrument panel earth
55	Left-hand 'A' post earth
56	Left-hand valance earth
57	Washer bottle probe
58	Diode block
59	Washer fluid level amplifier
60	Washer fluid level relay
62	Washer switch

* All left hand drive

Warning lamps and instruments

Schematic wiring diagrams
(washer fluid Fig. M28
and coolant levels Fig. M29)

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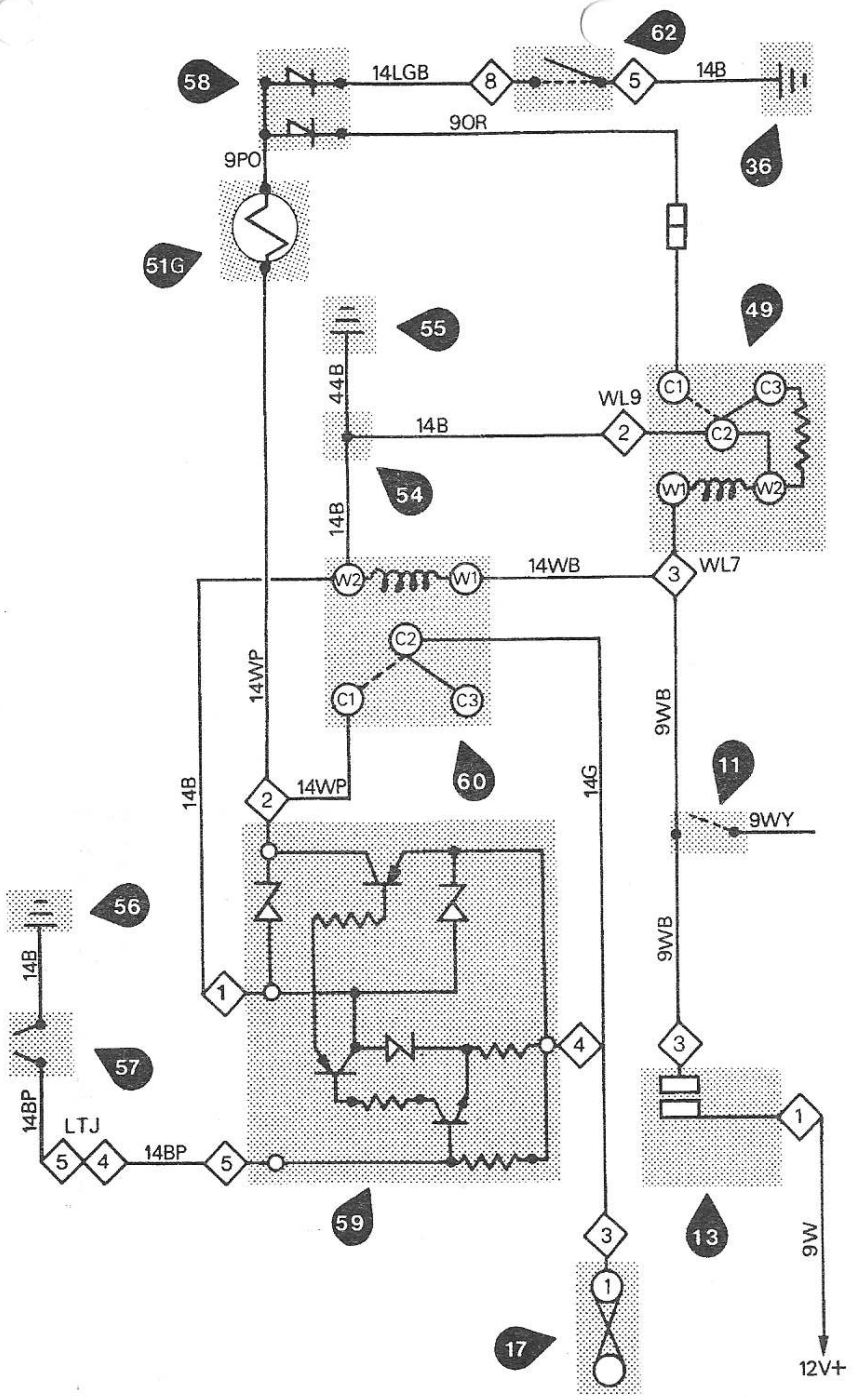

Fig. M28

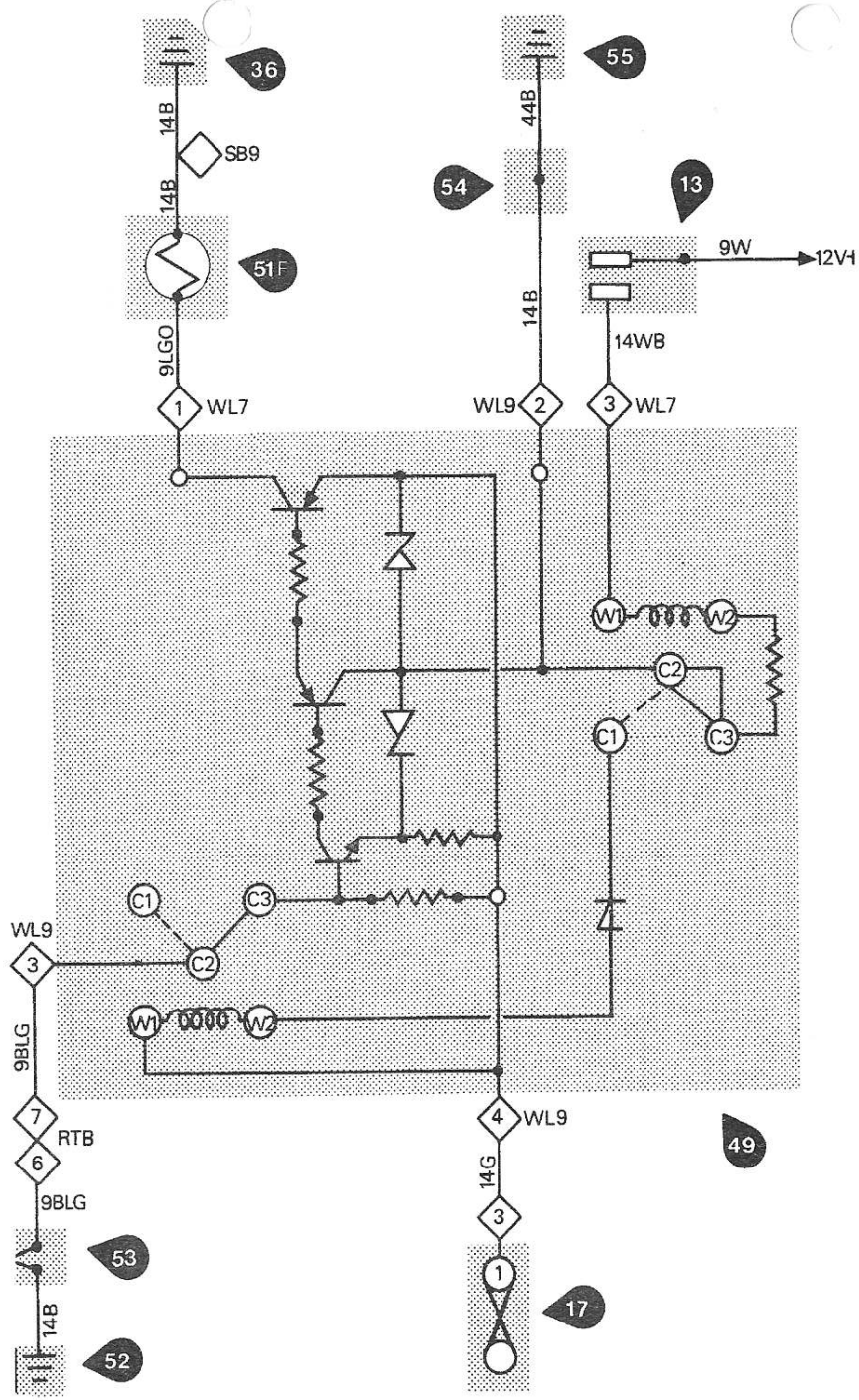

Fig. M29

Warning lamps and instruments

Component location

(ice warning and low fuel)

Fig. M30

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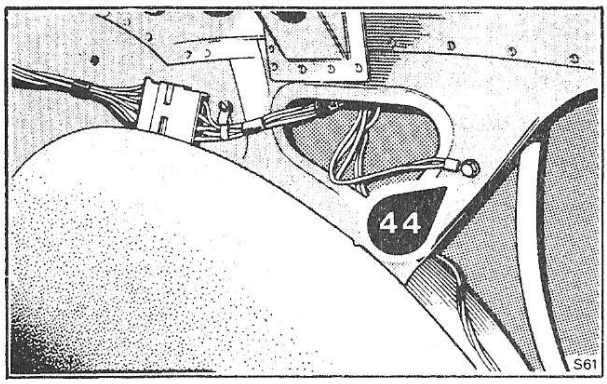
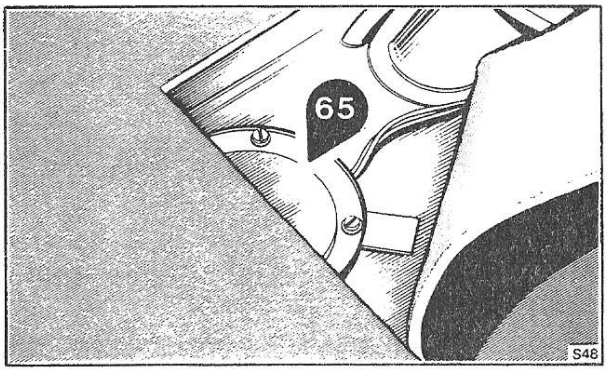
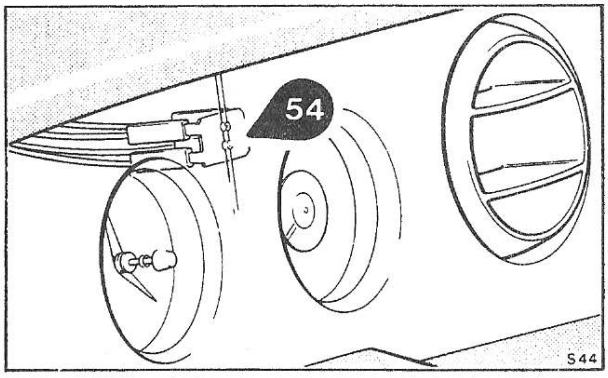
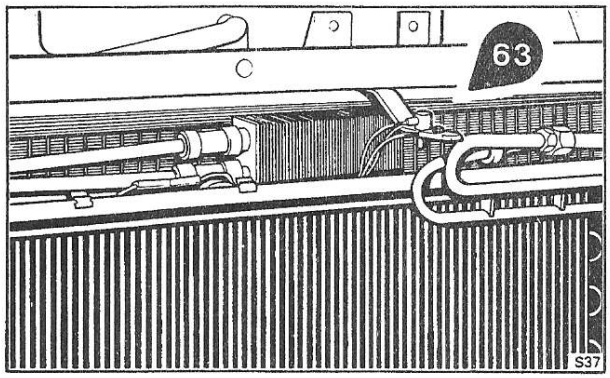
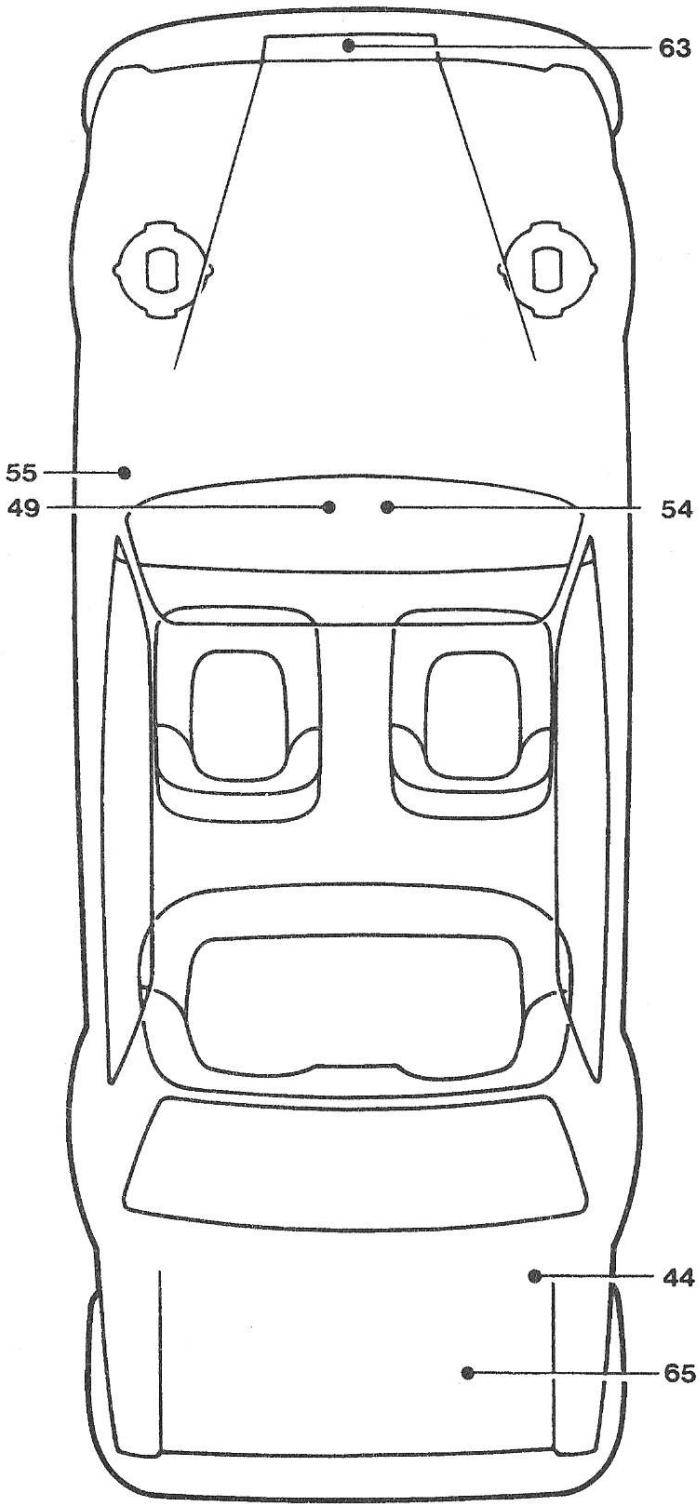








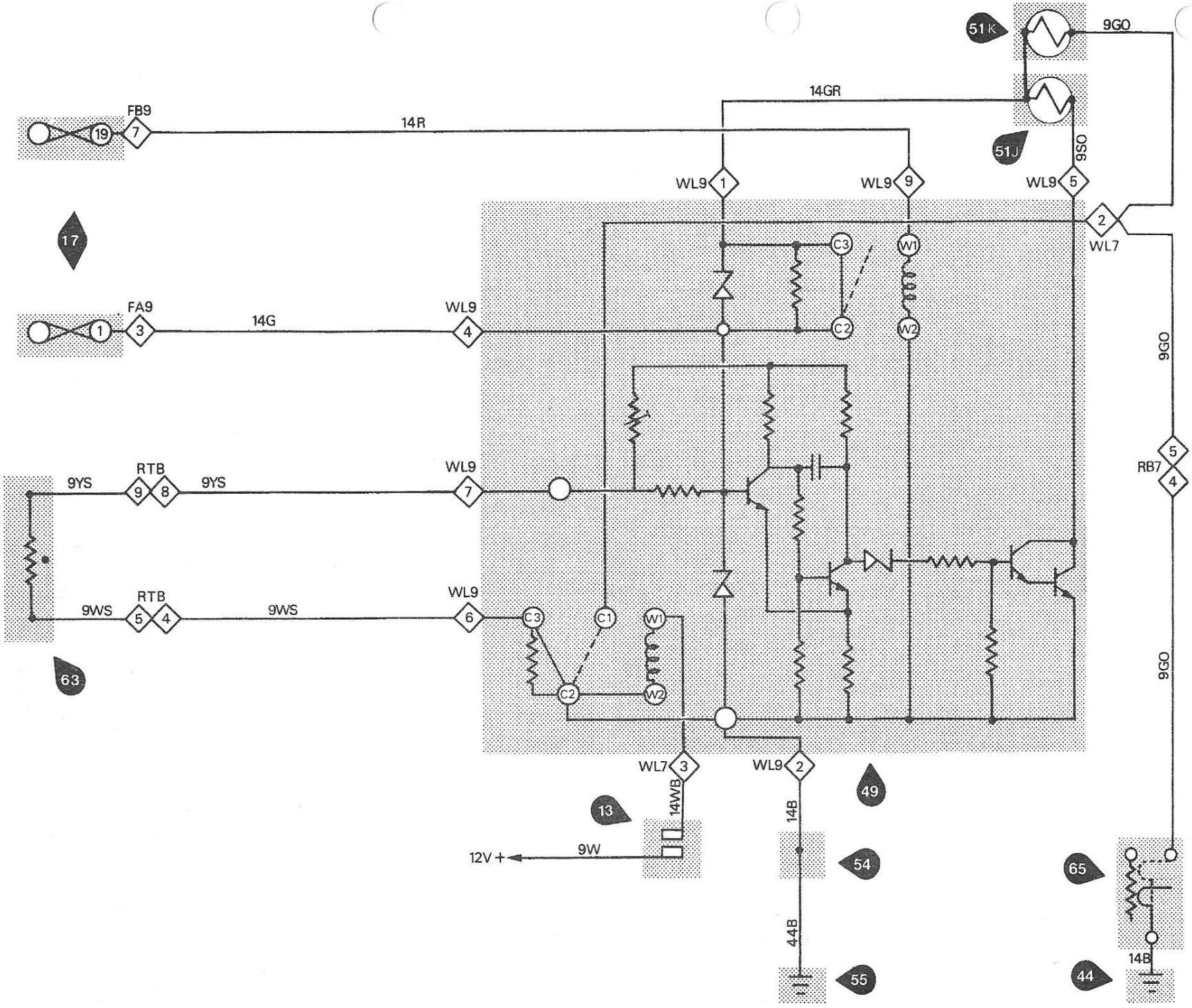


Components

13	Starter switch
17	Fuseboard
44	Right-hand boot earth
49	Warning lamps test circuit board
51J	Ice warning
51K	Low fuel
54	Instrument panel earth
55	Left-hand 'A' post earth
63	Ice warning sensor
65	Fuel tank unit

Warning lamps and instruments

Schematic wiring diagram
(ice warning and low fuel)
Fig. M31



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Warning lamps and instruments

Component location
(remaining warning lamps)
Fig. M32

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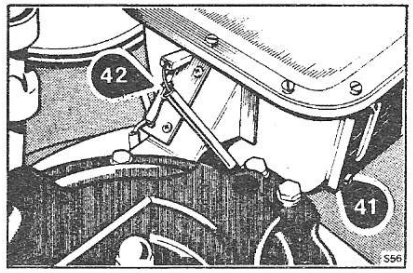
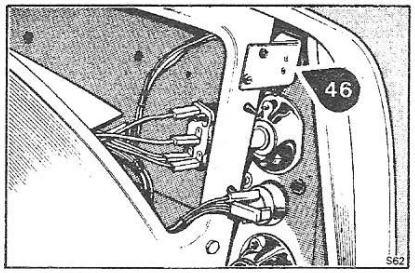
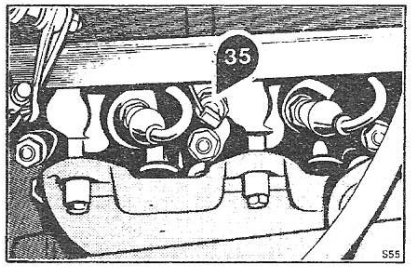
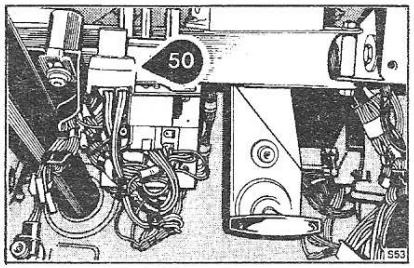
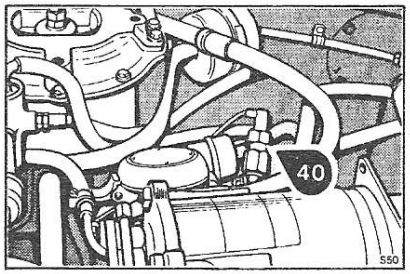
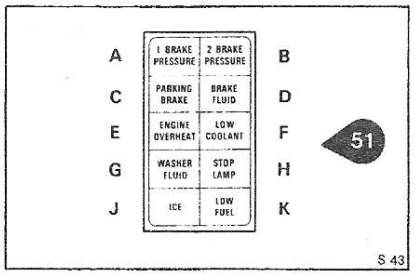


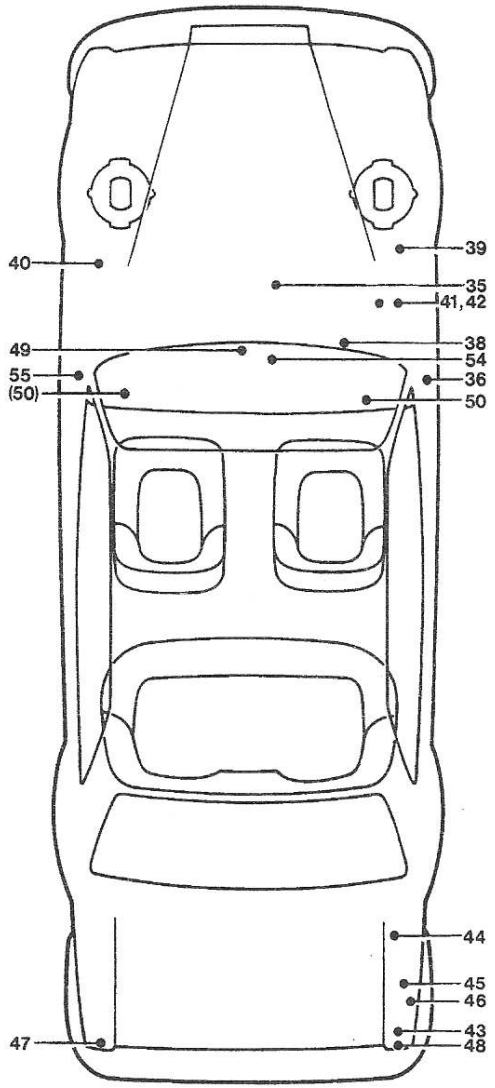










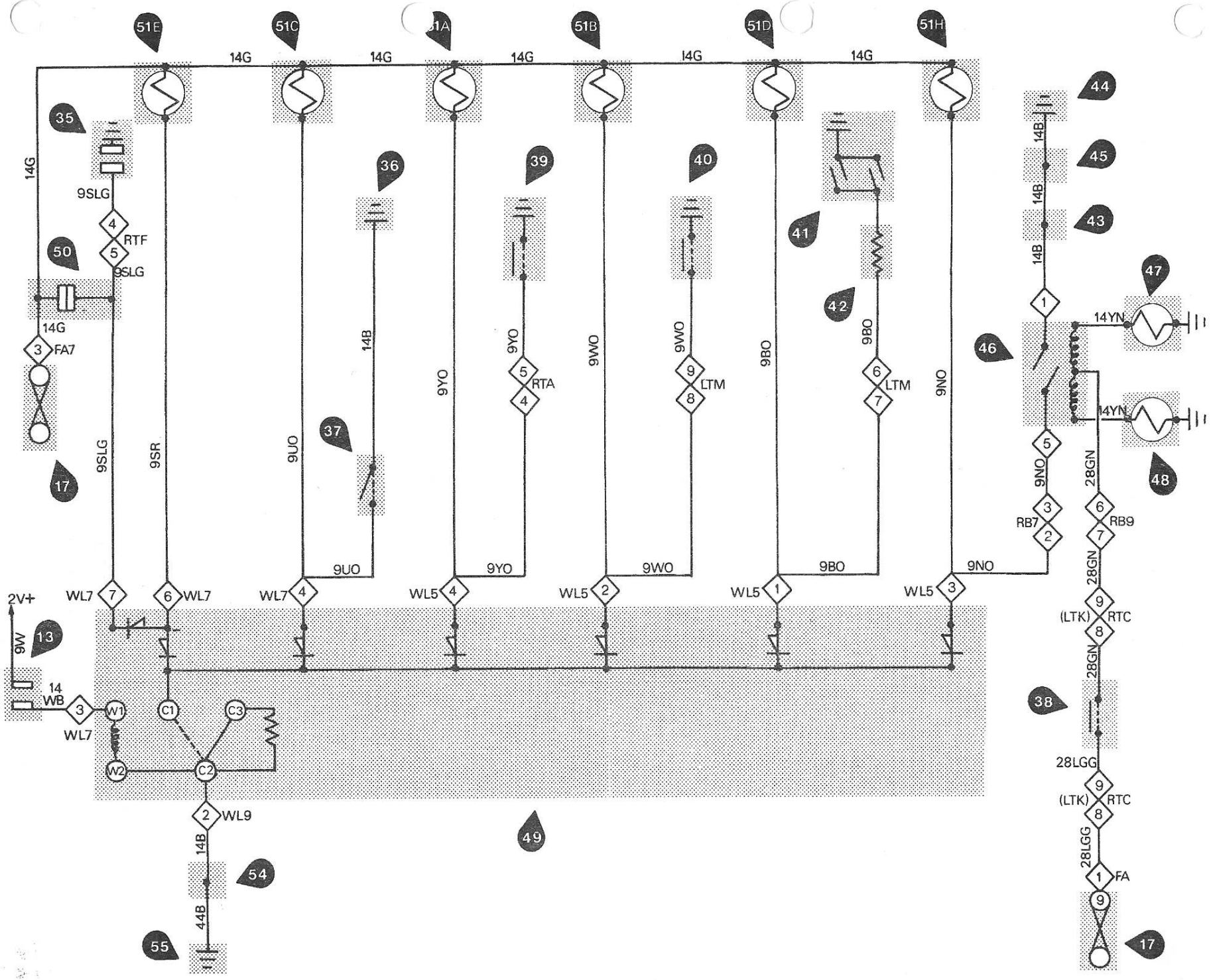


Components

13	Starter switch
17	Fuseboard
35	Engine overheat switch
36	Right-hand 'A' post earth
37	Parking brake switch
38	Stoplamp switch
39	Right-hand brake pressure switch
40	Left-hand brake pressure switch
41	Brake fluid level switches
42	Brake fluid level resistor
43	Right-hand rear lamp cluster
44	Right-hand boot earth
45	Rear window demist relay
46	Stoplamp failure relay
47	Left-hand stoplamp
48	Right-hand stoplamp
49	Warning lamps test circuit
50	Engine overheat buzzer
51	Warning lamps cluster
54	Instrument panel earth
55	Left-hand 'A' post earth

Warning lamps and instruments

Schematic wiring diagram
(remaining warning lamps)
Fig. M33



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Section M5

Speed control
Contents

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Section M5

Speed control

Introduction

The speed control system consists of four major items; a speed generator, electronic control unit, vacuum actuator (bellows) and control switch. In addition, the stoplamp switch switches the control unit off when the footbrake is applied.

System operation

The output frequency from the generator, (which is an integral part of the electronic speedometer system), is directly proportional to road speed and is connected to the control unit, speedometer and overspeed warning unit (if fitted). It must be noted that there will not be any output from the speed generator if the speedometer is disconnected or faulty.

When the speed control switch is set to ON, the control unit converts the generator output frequency to a voltage which it stores in its memory when the SET button is depressed.

The control unit then compares the output voltage with the voltage in the memory and if there is a difference, it signals the bellows to correct the car speed accordingly.

Speed generator

The speed generator is mounted on the gearbox in what was formerly the speedometer cable take-off position.

Speed generator - To remove

1. Disconnect the two Lucar connectors and unclip the cable.
2. Remove the knurled gearchange actuator plug.
3. Unscrew the hexagon nut securing the speed generator and withdraw the generator taking care not to bend the drive-shaft.

Speed control bellows (actuator)

The actuator consists of convoluted rubber bellows with two metal end plates, one being attached to the engine and the other to the throttle linkage with a chain. An operating solenoid is fitted to the fixed end-plate which also has an air bleed and vacuum valve.

When the solenoid is energised, it closes the air bleed and opens the vacuum valve which connects inlet manifold depression to the bellows causing it to collapse. With the solenoid unenergised, the air bleed is open to atmosphere and the vacuum valve is closed.

Bellows - To remove and fit

1. Disconnect the Lucar connectors and also remove the rubber tube.
2. Remove the long bolt and spacer which fixes the bellows to the two mounting brackets. Support the bellows when removing the bolt then unhook the chain from the bellows.
3. When fitting the bellows, the chain must be set to give one ball of slack.

Speed control unit

The speed control unit converts the generator frequency output to a voltage which it then compares with a voltage which was stored in its memory when the SET button was depressed. If there is a difference in voltage, the control unit signals the bellows to correct the car speed accordingly.

Depressing the accelerator pedal will override the speed control unit (e.g. for overtaking) and when the pedal is released the speed control unit will then adjust the car speed to the previously selected speed. When the footbrake pedal is operated, the stoplamp switch connects 12v + to the control unit which is again overridden. Setting the speed control switch to RES (resume) will instruct the control unit to restore the car speed to the previously set speed, provided that the speed exceeds the low speed lockout value of 8 to 48 k.p.h. (5 to 30 m.p.h.).

When the speed control switch is switched on, the memory is erased.

Speed control unit - To remove

1. Disconnect the battery.
2. Remove the top roll.
3. Remove the switchbox
4. Disconnect the connector which is attached to the top of the control unit.
5. Remove the screws securing the control unit and lift out the unit.

Speed control relay

The speed control relay is a Lucas 6RA and is fitted near the speed control unit behind the facia.

Relay - To test

1. Disconnect all cables from the relay.
2. Connect C2 to W1 and the negative side of a battery.
3. Connect a test lamp between C3 and the

positive side of the battery, observe that the test lamp is lit.
4. Connect W2 to the positive side of the battery and verify that the test lamp is extinguished.
5. Remove the test lamp from C3 and connect it to C1, the lamp should light.
6. Disconnect W2 from the positive supply and verify that the test lamp is extinguished.

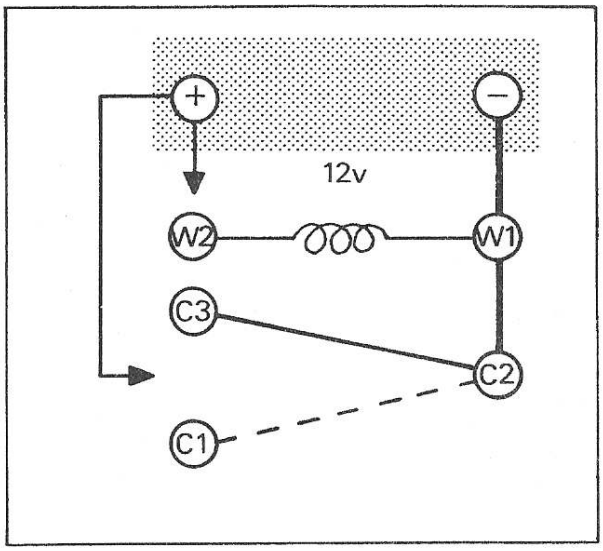

Fig. M34 Speed control relay test circuit

Speed control switch

The switch is mounted on the gear selector lever and comprises a slide switch marked OFF, ON and RES and a push-button market SET.

Moving the slide switch to ON activates the system, depressing the SET button will then set the cruising speed as desired. To resume cruising at a previously selected speed after braking, the slide switch is set to RES (against spring pressure).

Holding in the SET button causes the car speed to increase.

Section M5

Speed control Fault diagnosis

Malfunction	Possible cause	Action
Car speed surges by 1 to 2 m.p.h. around set speed	Speed generator faulty	Fit new generator.
Harsh engagement when cruise speed is set	Excessive slack in chain between bellows and throttle lever	Chain should have one ball of slack without causing the carburetter flap to open.
Cruise speed inaccurate by more than 1½ k.p.h. at 80 k.p.h. (1 m.p.h. at 50 m.p.h.)	As above	As above
	Accelerator linkage lever length incorrect between actuator and carburetter butterfly	Reset linkage
	Control box faulty	Fit new control box
Complete system failure.	Failure in wiring systems, vacuum line or speed signal output	Refer to page M5 - 7

Section M5

Speed control fault diagnosis for complete system failure

Sheet 1 of 2

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Does the speedometer operate?

YES

NO

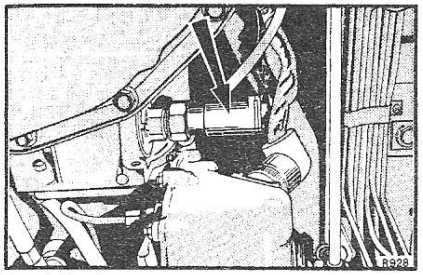
Dependent upon the wiring of the speed control system (see Fig. M36) check either fuse 1 or fuse 2.
Is the fuse intact?

YES

NO

If a fuse has failed check the 'Warning lamps' and instruments' circuit using the diagram shown in Figure M26.
Rectify the fault and retest the system.

1. Check that there is a 12 volts positive ignition feed at the speedometer.
2. Check that there is a good earth at both the speedometer and the speed signal generator.
3. Using a meter (generator type meters such as the 'Megger' must **not** be used as damage to the electronic circuitry would occur) measure the continuity of the red/green cable from the speedometer to the speed signal generator.
   If an open circuit condition exists disconnect the meter and rectify the fault. Then, carry out Operation 5.
4. If Operations 1 to 3 inclusive prove satisfactory it will be necessary to substitute the speed signal generator.
5. Road test the system.
   If the speedometer is still inoperative the speedometer must be replaced and the system road tested again.



Speed signal generator

Check the condition of fuse 9.
Is the fuse intact?

YES

NO

The circuits controlled by fuse 9 include the speed control system. If the cause of the fuse failure is proven to be in the speed control system, rectify the fault using the diagram shown in Figure M36 and then road test the system.
Does the system operate correctly?

NO

YES

No further action is required.

Visually inspect the bellows actuator electrical connections, the vacuum pipe and connections, also the bellows throttle chain linkage.
If no obvious fault exists the bellows actuator should be tested as follows.

1. Ensure that the gear range selector lever is in the Park position and that the gear change isolator is removed.
2. Disconnect both cables from the bellows actuator. On single solenoid actuator connect the red cable to a good earth. Similarly, on double solenoid actuators connect the yellow/black cable to a good earth.
3. Start the engine and momentarily open the engine throttles by briefly touching the remaining cable (blue cable for single solenoids; yellow/white for double solenoids) to a positive 12 volts supply.
   If the throttles do not open this indicates that the bellows actuator solenoids are faulty and must therefore be renewed.

Important
When touching the 12 volts positive supply to either the blue or yellow/white cables care should be taken not to overspeed the engine by connecting the cables for too long a period.
Incorrect connection of the cables will result in permanent damage to the electronic circuits.

4. Switch off the engine.
5. Rectify any fault and then road test the speed control system.

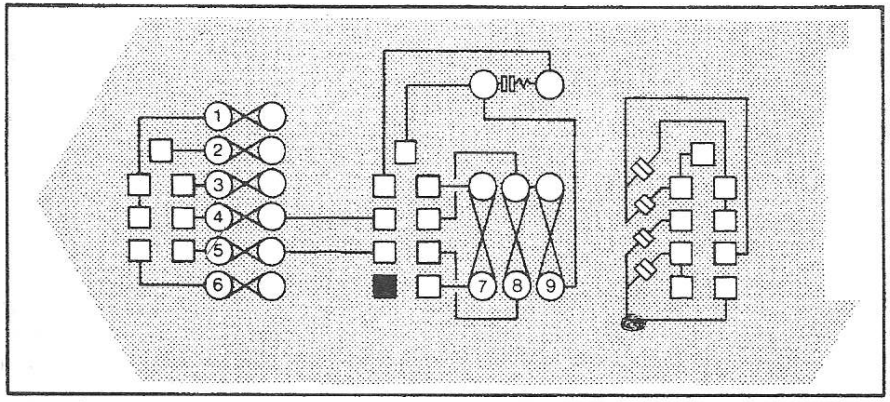
Does the system operate correctly?

YES

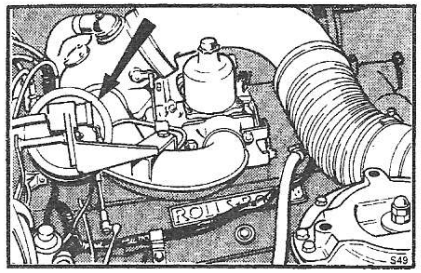
NO

Continued on sheet 2

No further action is required.



Fuseboard A



Bellows actuator assembly

Section M5

Speed control fault diagnosis for complete system failure

Sheet 2 of 2

Continued from sheet 1

1. Disconnect the electronic control unit plug and socket.
2. Check the wiring systems by testing the appropriate pins of the loom plug in the following sequence.
3. Using the meter measure the continuity of the green/blue link cable at the loom plug (see Fig. M35).
4. Connect a 12 volt 2.2 watt test lamp between one of the green/blue cables at the loom plug and a good earth.
5. Switch on the ignition. Move the gear range selector lever to each gear position and observe the test lamp.

In the Park, Reverse and Neutral positions the test lamp should be extinguished; in the Drive, Intermediate and Low positions the lamp should illuminate.

6. Switch off the ignition.
7. If tests 2 to 6 inclusive are satisfactory proceed to Operation 9.
8. If the test lamp does not illuminate in the Low, Intermediate and Drive positions and fuse 9 is intact, rectify the open circuit which exists between fuse 9 and the electronic control unit. This circuit runs via the micro-switches in the transmission actuator (see Fig. M36).
9. Switch off the ignition.
10. Connect the test lamp between the blue/black cable at the loom plug (see Fig. M35) and a positive 12 volts ignition supply.
11. Switch on the ignition and with the speed control switch in the OFF position, ensure that the lamp does not illuminate.
12. Move the switch to the ON position and check if the lamp illuminates.
13. Move the switch to the RES (resume) position and check if the lamp illuminates.
14. If Operations 11 to 13 inclusive do not reveal a fault, switch off the ignition and proceed to Operation 18.
15. If in Operations 12 and 13 the lamp does not illuminate and fuse 9 is intact,there is either an open circuit in the blue/black cable which must be rectified or the speed control switch is faulty and must therefore be renewed.
16. If in Operation 11 the test lamp illuminates there is a short circuit between the blue/black cable and earth.
17. Switch off the ignition rectify the fault and disconnect the test lamp.
18. Connect the test lamp between the green/brown cable at the loom plug (see Fig. M35) and a good earth.
19. Switch on the ignition and check to ensure that the lamp does not illuminate.
20. Depress the brake pedal and check that the lamp illuminates.
21. If Operations 19 and 20 are correct, switch off the ignition, disconnect the test lamp and proceed to Operation 24.
22. If in Operation 19 the lamp illuminates there is either, a short circuit between the green/brown cable and a positive feed or the brake lamps switch has failed in the closed position.

Switch off the ignition and rectify the fault.

23. If in Operation 20 the test lamp does not illuminate and fuse 9 is intact, there is an open circuit between the brake lamps switch feed and the green/brown cable at the loom plug.

Switch off the ignition and rectify the fault.

24. Connect the test lamp between the blue/purple cable at the loom plug (see Fig. M35) and a positive 12 volts ignition supply.
25. With the gear range selector lever in a forward gear position and the speed control switch in the OFF position, switch on the ignition and observe the test lamp.

If the lamp illuminates proceed to Operation 28.

26. Press the SET button of the speed control switch and check the test lamp.

If the lamp illuminates proceed to Operation 29.

27. Release the SET button, move the speed control switch to the Resume position and check the test lamp.

If the lamp does not illuminate proceed to Operation 30. If the lamp does illuminate proceed to Operation 31.

28. Illumination of the test lamp indicates that there is either a short circuit between the blue/purple cable and earth, a short circuit between the blue/brown cable from the relay to the speed control switch and earth or the speed control switch has failed with the Resume contacts permanently closed.

Rectify the fault and continue the test procedure at Operation 26.

29. Illumination of the test lamp indicates that there is either a short circuit to earth on the blue/white cable connecting the relay to the speed control switch, a faulty relay, or the speed control switch is faulty providing a constant earth path to the blue/white cable.

Rectify the fault and continue the test proceedure at Operation 27.

30. Check fuse 9. If it is intact, there is either an open circuit in the blue/brown cable from the relay to the speed control switch or the Resume contacts of the switch have failed.

Rectify the fault and continue the test procedure at Operation 32.

31. With the speed control switch in the ON position, check the test lamp.

If the test lamp illuminates there is a short circuit between the Resume and ON contacts of the speed control switch.

Rectify the fault, switch off the ignition and disconnect the test lamp.

32. Move the speed control switch to the OFF position, connect the test lamp between the blue/yellow cable at the loom plug (see Fig. M35) and a positive 12 volts ignition supply.
33. Switch on the ignition and check the test lamp.

If the lamp illuminates proceed to Operation 36.

34. Press the SET button of the speed control switch and check that the test lamp illuminates.

If the lamp does not illuminate proceed to Operation 37.

35. Switch off the ignition and disconnect the test lamp.
36. Illumination of the test lamp indicates that there is a short circuit between the blue/yellow cable and earth.

Rectify the fault and continue the test procedure at Operation 34.

37. If the lamp does not illuminate, then either the relay contacts are open circuit or the blue/yellow cable from the control unit to the relay is open circuit.

Rectify the fault, switch off the ignition and d sconnect the test lamp.

38. Disconnect the two loom cables from the speed control bellows actuator and join them together. Disconnect the black/green cable from the WI connection of the speed control inhibit relay.
39. Connect the test lamp between the blue/green cable at the loom plug (see Fig. M35) and a good earth.
40. With the gear range selector lever in the Park position, switch on the ignition and observe the test lamp.

If the lamp illuminates there is a fault in the transmission actuator circuit.

Rectify the fault using the diagram shown in Figure M98.

41. Move the selector lever to the Drive position and check to ensure that the lamp does illuminate.

If the lamp does not illuminate there is either an open circuit in one of the bellows actuator cables or the brake lamps switch is faulty.

Rectify any fault and continue the test procedure

42. Depress the brake pedal and ensure that the test lamp is extinguished.

If the lamp remains illuminated there is either a short circuit between the green and green/blue cables to the brake lamps switch or the brake lamps switch is sticking, although the latter fault should have been revealed in Operation 20.

43. Reconnect the black/green cable to the WI connection of the inhibit relay. The test lamp should be extinguished.

If the test lamp remains illuminated, ensure that there is a 12 volts positive feed to the W2 connection of the inhibit relay. Then test the continuity of the black/green cable from the W1 connection of the inhibit relay to the top gear switch connection situated on the gearbox housing. Ensure that the relay operates correctly.

If these checks prove satisfactory and the test lamp remains illuminated, the top gear switch has failed and must therefore be rectified.

Switch off the ignition, reconnect the bellows actuator and disconnect the test lamp.

44. Ensure the continuity of the red/green cable from the speed signal generator to the electronic control unit.
45. If the preceding tests have not revealed a fault subsitute the electronic control unit with a proven replacement and retest the system.

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Speed control

Component location

Fig. M35

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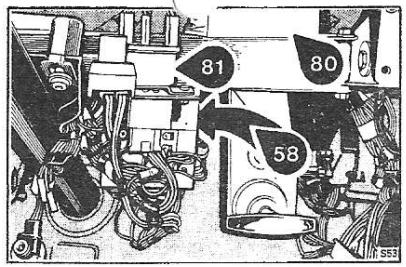
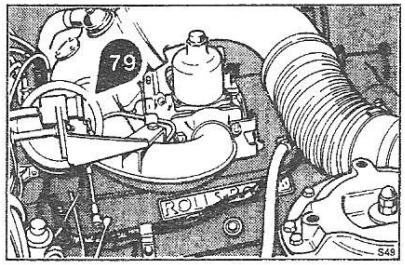
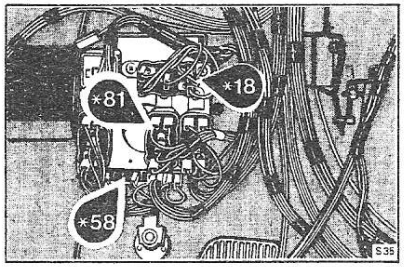
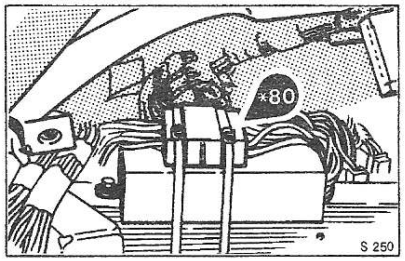
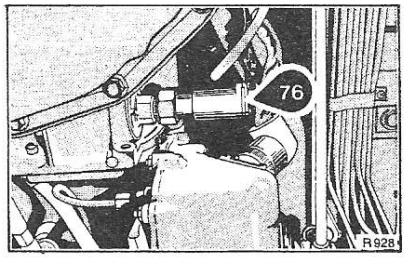
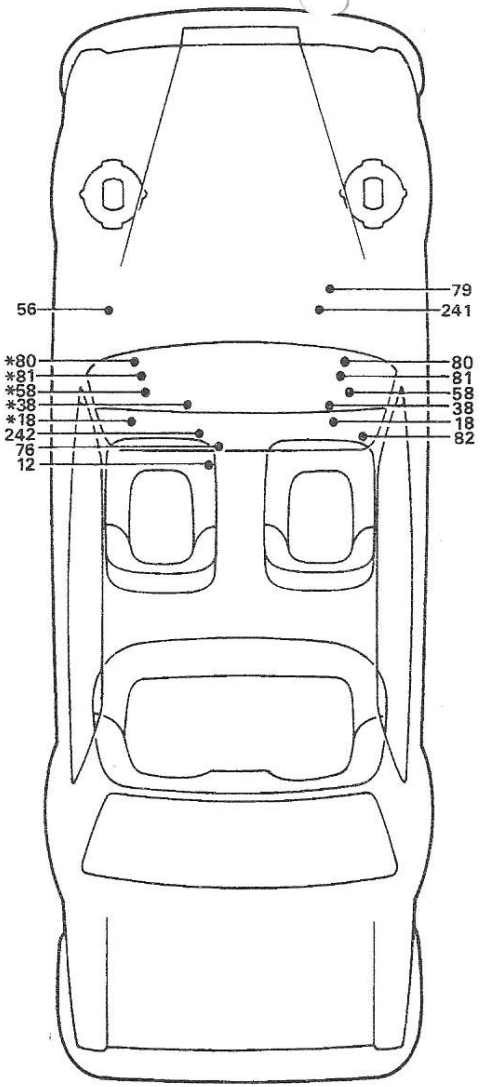


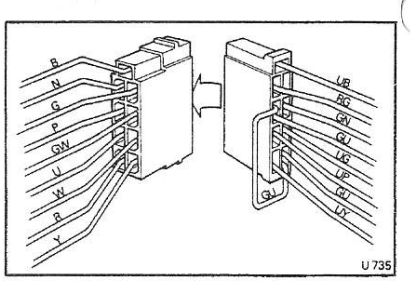












Electronic control unit plug and socket

Connector code

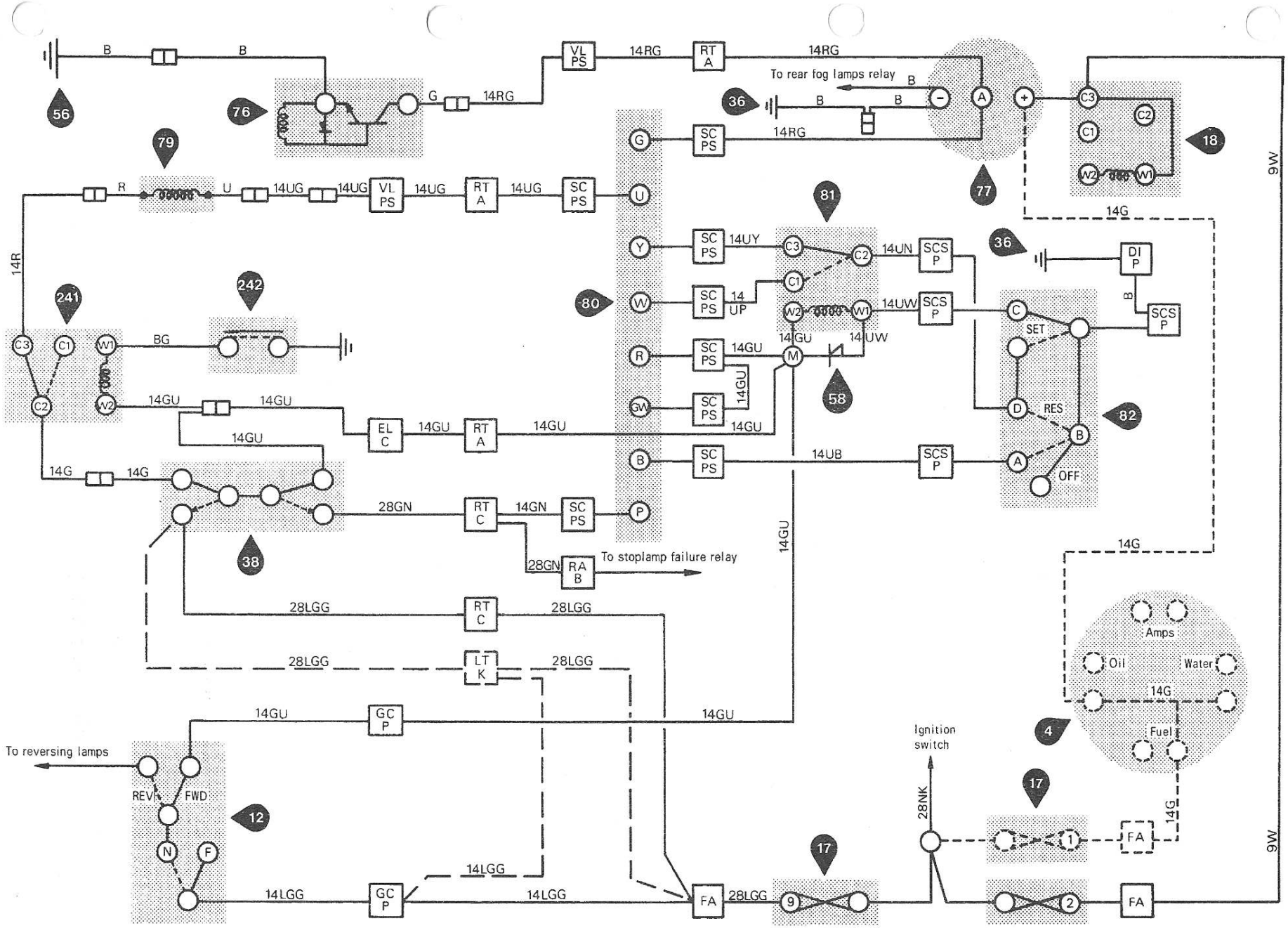
DI P	Direction Indicator switch plug and socket
EL C	Engine loom connection
FA	Fuseboard 'A' plug
GC P	Gearchange actuator plug and socket
LT K	Left-hand toeboard socket K
RT A	Right-hand toeboard socket A
RT C	Right-hand toeboard socket C
RA B	Right-hand 'A' post body plug
SC PS	Speed control electronic unit plug and socket
SCS P	Speed control switch plug and socket
VL PS	Valance loom plug and socket

Components

4	4-in-1 instrument
12	Gearchange actuator
17a	Fuseboard 'A'
18	Petrol pumps relay
36	Right-hand 'A' post earth
38	Stoplamp switch
56	Left-hand valance earth
58	Diode block
76	Speed generator
77	Speedometer
79	Speed control actuator (bellows)
80	Speed control unit
81	Speed control relay
82	Speed control switch
241	Speed control inhibit relay
242	Top gear switch
*	All left-hand drive

Speed control

Schematic wiring diagram
Fig. M36



Left-hand drive cars

Cars prior to serial numbers SRX 33872, LRX 32024, DRX 32635 and JRX 31962

Section M6

Windscreen wipers and washers
Contents

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R.S.D. 4200

Section M6

Windscreen wipers and washers

Silver Shadow II, Bentley T2, Silver Wraith II, Corniche

Introduction
The main wiring diagram includes both windscreen and headlamp wipers and washers. Other wiring diagrams show interconnections and components used for each wiper switch position. Included with these diagrams is a brief circuit description.

Windscreen wiper control unit
The control unit becomes operative whenever 'Intermittent' is selected or the washer switch is depressed, the sequence of operations is described with the appropriate wiring diagram.

Control unit - To remove
The control unit is mounted on a bracket with relays and other components behind the facia on the right-hand side of the car. On right-hand drive cars it is accessible by removing the knee roll and on left-hand drive cars via the fuseboard compartment.

1. Disconnect the battery.
2. On right-hand drive cars, remove the knee roll.
3. Remove the four bolts securing the mounting bracket and lower the bracket to enable the two screws securing the control unit to be removed. Take care not to inadvertently disconnect any cables from the relays etc.
4. Disconnect the cables from the control unit and withdraw the unit.

Wiper control unit - To test
1. Connect a 12.5 v.d.c. positive supply to terminal 1 and negative to terminal 4.
2. Connect a 6 RA relay type 33222 between terminals 2 and 4 as shown in the test circuit.
3. Connect the light green/black cable to terminal 4 and verify that the relay is energised. Measure the voltage between terminals 1 and 2, this must not exceed 1 volt.
4. Disconnect the light green/black cable from terminal 4. The relay should remain energised for a period of 5 seconds ± 1 second. When the relay has de-energised, the voltage measured between terminals 1 and 2 should not be less than 12.5 volts.
5. Connect terminal 3 to terminal 5 and ensure that the relay is energised. The voltage measured between terminals 1 and 2 must not exceed 1 volt.
6. Connect the yellow/blue cable to terminal 1. At the instant of connection the relay must de-energise and the voltage measured between terminals 1 and 2 must not be less than 12.5 volts.

After a delay of 6 seconds ± 1 second, the relay must energise and the voltage measured between terminals 1 and 2 must not exceed 1 volt.

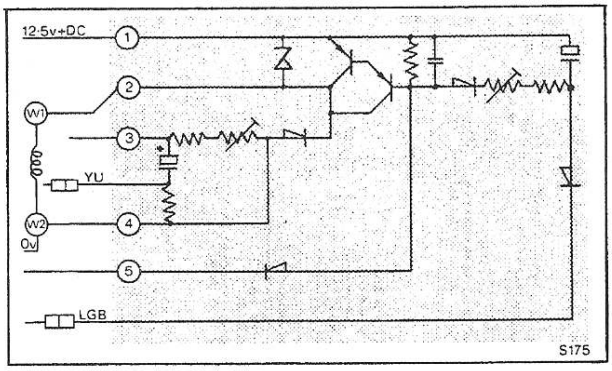

Fig. M37 Wiper control unit test circuit

Windscreen wiper motor
The wiper motor is a Lucas 16W with anti-streak mechanism and 'Park-off screen' facility fitted.

Maintenance - Wiper motor
The motor is of a permanent magnet design and the direction of rotation is dependent upon the polarity of the electrical supply to its terminals. If it becomes necessary to run the motor while it is removed from the car, the negative supply terminal should be connected to terminal 1 and the positive supply to terminal 5 for normal speed and terminal 3 for fast speed. (See Fig. M38).

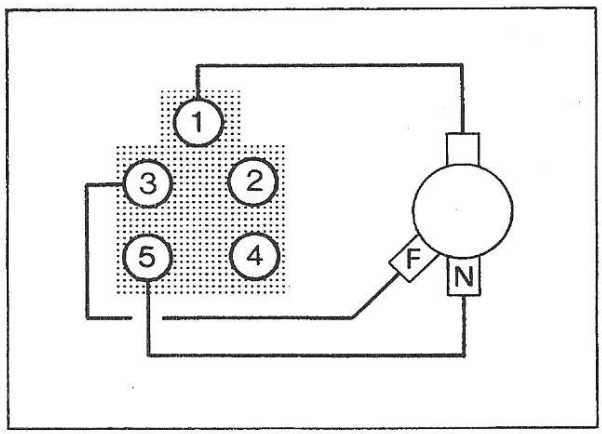

Fig. M38 Wiper motor connections

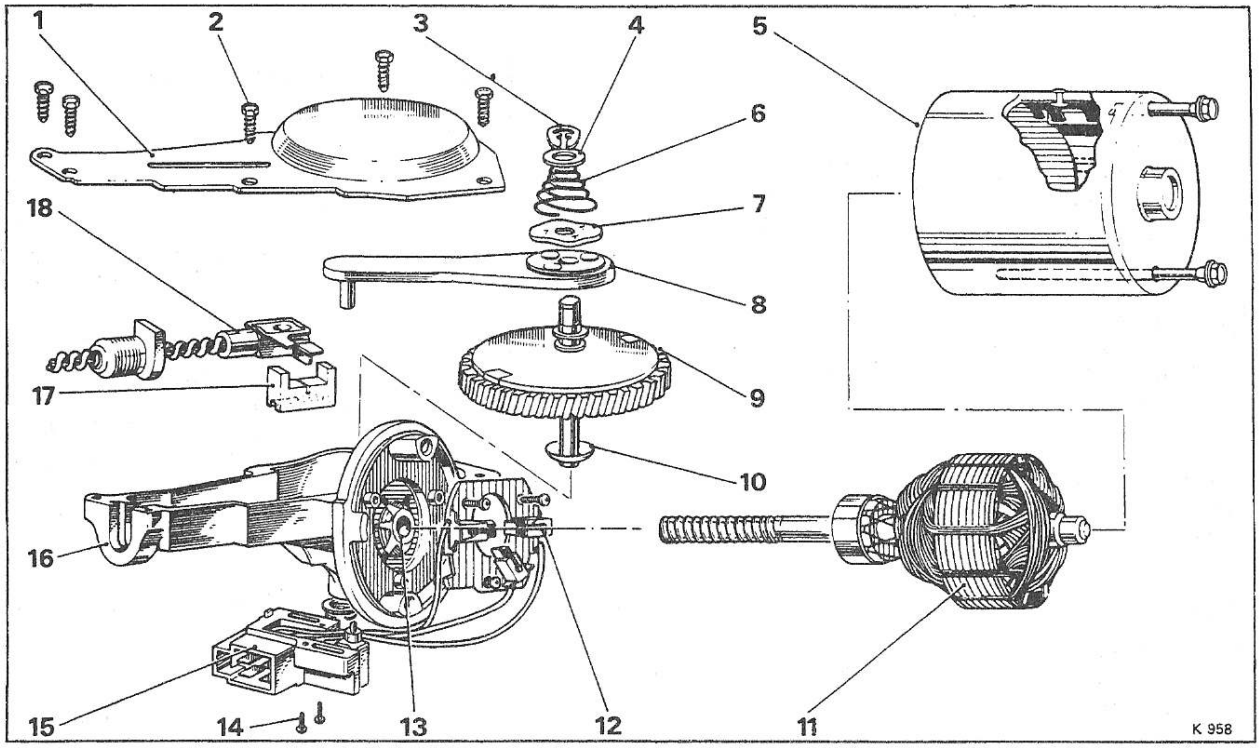

Fig. M39 'Lucas' 16W wiper motor

1	Gearbox cover	7	Friction plate	13	Self-centring bearing
2	Screws	8	Connecting rod	14	Securing screws
3	Circlip	9	Gear	15	Limit switch assembly
4	Washer	10	Dish washer	16	Gearbox
5	Yoke	11	Armature	17	Slider block
6	Spring	12	Brush assembly	18	Cable rack and cross-head

'Lucas' 16 W wiper motor - To remove (see Fig. M39)

1. Disconnect the loom socket from the wiper motor plug.
2. Remove both wiper blades.
3. Release the nut which secures the rack tubing to the wiper motor.
4. Slacken the clip which secures the motor and withdraw the motor and rack from the car.
5. Remove the plastic cover and the cover plate from the wiper motor. It should be noted that care must be taken not to introduce dirt into the gearbox assembly.
6. Remove the circlip and washer from the outer end of the drive gearshaft (see Fig. M39). Discard the circlip.
7. Withdraw the gear and parking device assembly from the motor, ensuring that any burrs around the circlip groove of the gearshaft are removed before withdrawal.

Note

One of the following procedures should now be followed dependant upon which part requires renewal.

Replacement of gear and parking device assembly, or renewal of motor

1. Fit the gear and parking device assembly into the motor, locating the drive rack on the peg of the connecting rod and ensuring that the parking switch slide is fitted to the drive rack and is facing the correct way as shown in Figure M39.

Important

Note the position of the anti-streak mechanism on the output gear crankpin and ensure that it is refitted in the same position. If the pin is fitted 180° out, the tag will break on first park cycle.

2. Using grease from the motor gearbox, lubricate the gear teeth.
3. Fit the dished washer, plain washer and circlip to the outer end of the gearshaft.
4. Fit the plastic cover and the cover plate to the wiper motor.
5. Fit the motor and rack assembly to the car by reversing the procedure given for removal. Ensure that when the motor securing clip is tightened, the alignment between the motor and the rack tubing is not destroyed.

6. Connect the loom socket to the wiper motor and operate the wiper motor for a few seconds and then switch off. This will ensure that the wiper wheelboxes are in the parked position.
7. Fit the wiper blades to the wheelboxes in the parked position.

Drive-rack renewal
1. Withdraw the rack from the motor.
2. Fit the new rack, and replace the drive gear, fitting the dished washer, plain washer and using the new circlip provided. Ensure that the plastic parking switch operating slide is correctly located by the arm on the rack, and that the slide is fitted the correct way around as shown in Figure M39.

Important
Note the position of anti-streak mechanism and output gear crankpin.

3. Replace the motor covers and fit the motor and drive rack to the car by reversing the procedure given for removal. Ensure that when the motor securing clip is tightened, the alignment between the motor and the rack tubing is not destroyed.
4. Connect the loom socket to the wiper motor and operate the wiper motor for a few seconds and then switch off. This will ensure that the wiper wheelboxes are in the parked position.
5. Fit the wiper blades to the wheelboxes in the parked position.

'Lucas' 16 W wiper motor - To assemble
Reverse the procedure given for dismantling, noting the following points.
1. Lubricate sparingly the final gear and armature bearings with 'Shell Turbo 41'.
2. Grease liberally the cross-head guide channel, connecting rod assembly, cable rack and gearbox with 'Rocol' MT 265.
3. Ensure that the output gear crankpin is in the correct position.

Brushes - To renew - 'Lucas' 16 W wiper motor
Remove and dismantle the motor as described in 'Lucas' 16 W wiper motor - To dismantle. The original specified length of the brushes is sufficient to last the life of the motor. If it becomes necessary to renew the brushes the complete brushgear assembly must be fitted. The brushgear assembly must be renewed if the main (diametrically opposed) brushes are worn to or near 4,80 mm. (3/16 in.) or if the narrow section of the third brush is worn to the full width of the brush.

Ensure that the brushes move freely in their brush box.

Brush springs - To check - 'Lucas' 16 W wiper motor
1. Using a push-type spring gauge, press on the end face of the brush until the bottom of the brush is level with the bottom of the slot in the brush box.
2. The spring pressure should read 140 g. to 200 g. (5 oz. to 7 oz.), if the pressure reads below these figures the springs should be renewed.

Armature insulation - To test (see Fig. M40)
1. Subject the armature to an insulation test.
2. Check the armature windings for short and open circuits.
3. If the commutator is worn, it can be lightly skimmed in a lathe using a diamond-tipped tool.
4. After skimming, undercut the armature slots and remove all burrs by lightly polishing with fine emery.

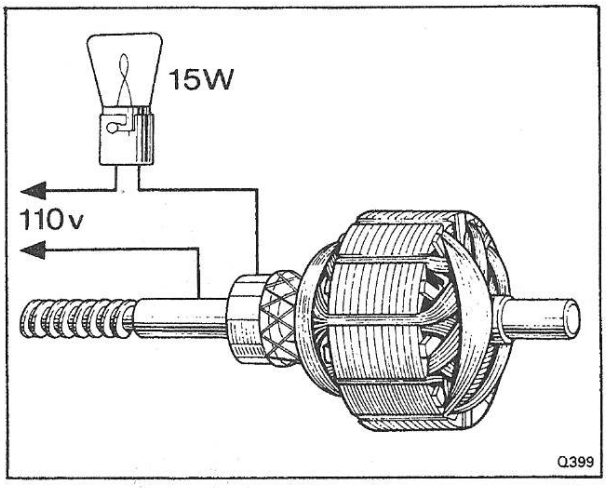

Fig. M40 Armature insulation test

Cable rack and tubing - To examine
1. Badly kinked or flattened tubing must be renewed. Any bends of a radius less than nine inches must be reformed. Access to the cable rack tubing is gained by the removal of the top roll as described in Chapter S - Body, and by the removal of the refrigeration system evaporator box as described in Chapter C - Air Conditioning System.
2. Insert the hook of a spring balance into the hole in the cross-head and withdraw the rack with the balance. The maximum permissible force required should not exceed 2,72 kg. (6 lb.).

Cable rack drive - To renew
1. Remove the wiper blades and arms.
2. Disconnect the rack from the wiper motor as described in Wiper motor - To remove.
3. Remove the rack from the tubing by carefully pulling from the motor end to release the rack from the wiper arm wheelboxes.
4. Lubricate the new rack with 'Rocol' MT 265 grease, then fit into the tubing. It may be necessary to rotate the wheelbox spindles slightly in order to engage the gears with the rack. Fit the rack to the motor.
5. Fit the wiper arms and blades, then check the setting of the parking switch as described in Parking Switch - To adjust.

Wheelboxes
The wheelboxes are lubricated on initial assembly and do not require any maintenance. They are secured in position on the scuttle by a chromium plated nut fitted to the outside of the car.

Loose wheelboxes are a contributory factor to both noisy and faulty wiper operation, therefore ensure that they are secure at all times.

In the unlikely event of a failure of one of the wheelboxes, it must be renewed.

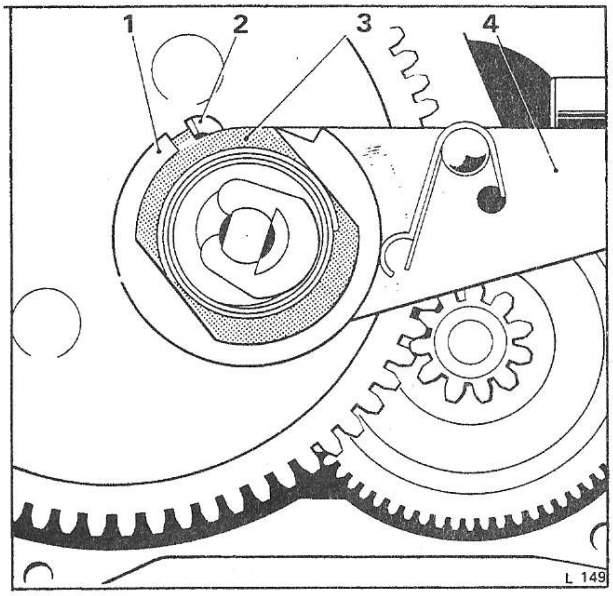

Fig. M41 Anti-streak settings
1 Wave washer recess
2 Drive plate tag
3 Tag an eccentric
4 Crankpin with eccentric in the extended (Park) position

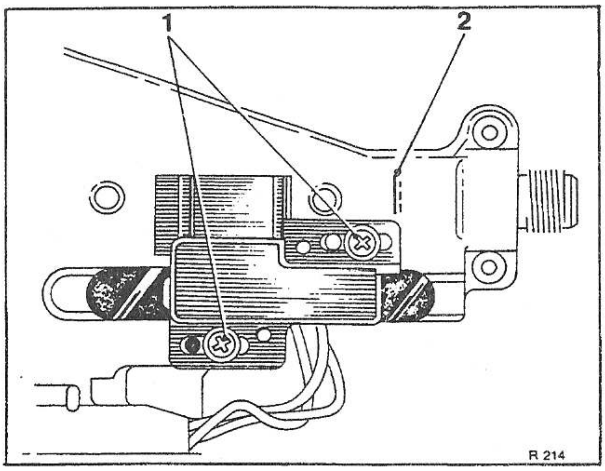

Fig. M42 Parking switch adjustment
1 Parking switch securing screws
2 Point at which motor operates

Wheelbox - To renew
1. Remove the top roll and instrument panel as described in Chapter S - Body.
2. Remove the air conditioning equipment located behind the facia, for full details refer to Chapter C - Automatic Air Conditioning System.
3. Remove the wiper blade and arm.
4. Remove the flexible drive.
5. Unscrew and remove the chrome nut and withdraw the wheelbox.

Anti-streak mechanism
The anti-streak mechanism fitted to the 'Lucas' 16 W wiper motor enables the wiper arms and blades to make a complete wiping cycle before coming to rest in the parked position, thus ensuring there are no streaks on the screen.

It is imperative, when the mechanism has been dismantled, that it is correctly assembled (see Fig. M41).
1. The tag on the driving plate and the recess in the wave washer, face towards the outside of the gearwheel.
2. Rotate the eccentric so that the plastic slide is depressing the park switch, fit the wave washer with marks uppermost and just behind tag. Fit the driving plate bush and driving plate with the latch just behind the tag.
3. It is possible to assemble these components 180° from the position previously described. This must be avoided as the mechanism will lock and the driving plate will fracture before the motor is parked.

Wiper motor - Parking switch adjustment
The parking switch of this motor is provided with an adjustment to allow for different angles of park. When replacing a drive gear assembly it may be necessary to re-adjust the parking switch to suit the new assembly. Failure to do this may result in one of the following faults:
1. With the wiper switch in the intermittent position and the blades parked on the screen, moving the switch to the off position does not cause the blades to move to the off screen position.
2. When moving the wiper switch from off to intermittent, there is a 7 to 8 second delay before the wiper motor operates.

If a new gear assembly has been fitted and the wiper motor exhibits one of the above faults the relevant following procedure should be adopted.

Note
Always ensure that the top plate is in position and the parking switch securing screws are tight before operating the motor.

Procedure for Fault 1
1. Loosen the rack tube nut and release the clamp from the wiper motor. Care must be taken to ensure that the tube is not completely disconnected otherwise the drive rack may become bent.

2. Rotate the motor until the parking switch is accessible (see Fig. M42). Tighten the rack tube nut. This will allow the motor to be operated and also permit adjustment of the switch.
3. Switch on the ignition and slacken the parking switch securing screws and move the parking switch fully inwards towards the gearwheel. Select intermittent wipe, and once the blades have moved, select off. The motor will not reverse and park.
4. Carefully move the limit switch outwards to a position where the motor will reverse and move the blades to the correct parking position. Scribe a line on the motor casing at this point as shown in Figure M42.
5. Move the limit switch 0,51 mm. (0.2 in.) further outwards from the scribe line (dimension A) and tighten the switch securing screws.
6. Switch off the ignition and re-fit the wiper motor to the mounting bracket.
7. Check all of the wiper functions for correct operations.

Procedure for Fault 2
To adjust the parking switch, proceed as follows:
1. Unscrew the rack nut and release the clamp from the wiper motor.
2. Rotate the motor until the parking switch is accessible. Tighten the rack nut. This will allow the motor to be operated and also permit adjustment of the switch.
3. Switch on the ignition and slacken the parking switch securing screws and move the switch fully inwards towards the gearwheel. Select intermittent wipe, and once the blades have moved, select off. The motor will not reverse and park.
4. Carefully move the limit switch outwards to a position where the motor will reverse and move the blades to the correct parking position. Scribe a line on the motor casing at this point as shown in Figure M42.
5. Disconnect the socket to the non-adjustable parking switch situated beneath the main gearwheel casing.
6. Move the limit switch fully outwards, select slow wipe and once the blades have moved, select off and allow the motor to reverse and stop.
7. Connect a circuit continuity tester across the non-adjustable switch terminals 3 and 5 (see Fig. M43).
8. If the previous test indicates a circuit, scribe a line on the motor casing at that point.
9. If no circuit exists move the parking switch slightly inwards and select slow followed by off.
10. Repeat this operation until circuit continuity is indicated and scribe a line on the casing.
11. Secure the parking switch at a point midway between the two scribed lines.
12. Switch off the ignition and replace the socket in the parking switch and refit the motor to the securing bracket.
13. Check all wiper functions for correct operation.

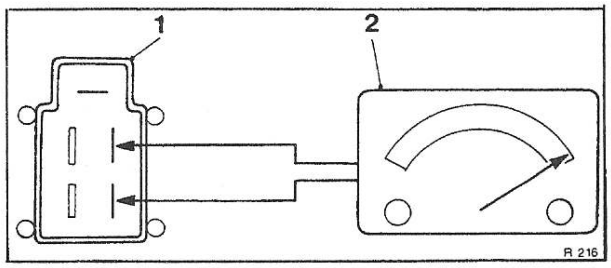

Fig. M43 Continuity testing
1 On-screen parking switch
2 Circuit tester

Wiper motor - To measure light-running current
1. Unscrew and remove the self-tapping screws which secure the gearbox cover, then lift off the cover to expose the connecting rod and gearbox.
2. Remove the circlip securing the eccentric coupling to the final gear crankpin (for further information see Anti-streak mechanism).
3. Remove the connecting rod from the gearbox to release the cross-head and rack.
4. Connect a first grade moving-coil ammeter in series with the wiper motor supply cable and measure the light-running current. The light-running current at normal speed should read between 1 and 2 amps and at high speed between 2 and 3 amps with 12 volt supply measured at the motor.

Should the motor not conform to these figures the motor should be renewed.

Windscreen wiper relays
The relays are Lucas 6 RA type and all can be tested in a similar manner.

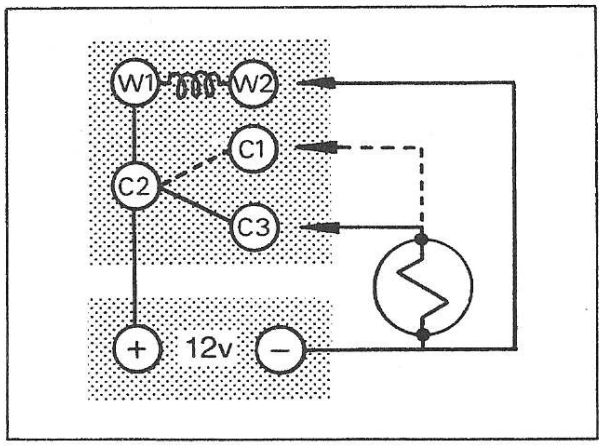

Fig. M44 Wiper relay test circuit

Relays - To test (see Fig. M44)
1. Disconnect the battery.
2. Remove the cables from the relay connections and tape the cables to insulate them.

3. Connect C2 to the positive side of a 12 volt battery.
4. Connect a 12 volt test lamp between C3 and the negative side of the battery and verify that the lamp is lit.
5. Connect the test lamp between C1 and the negative side of the battery and ensure that the lamp remains extinguished.
6. Connect W1 to C2 and connect W2 to the negative side of the battery. Verify that the lamp illuminates.
7. Remove the test lamp and other connections.
8. Reconnect the cables, ensuring that they are connected correctly.
9. Connect the battery.

Camargue

Windscreen wiper motor

The wiper motor is a Lucas 17 W, the motor gearbox incorporates an automatic limit-switch that switches the motor off and then provides an electrical circuit which causes regenerative braking of the armature to ensure consistent parking of the wiper blades.

Routine maintenance
All bearings are lubricated during manufacture and do not require maintenance.

Oil, tar spots or similar deposits should be removed from the windscreen with methylated spirits. Silicone or car wax polishes must not be used for this purpose. Efficient wiping is dependant upon keeping wiper blades in good condition. Worn or perished blades are readily removed for replacement. Periodically remove the blades and wash with liquid detergent.

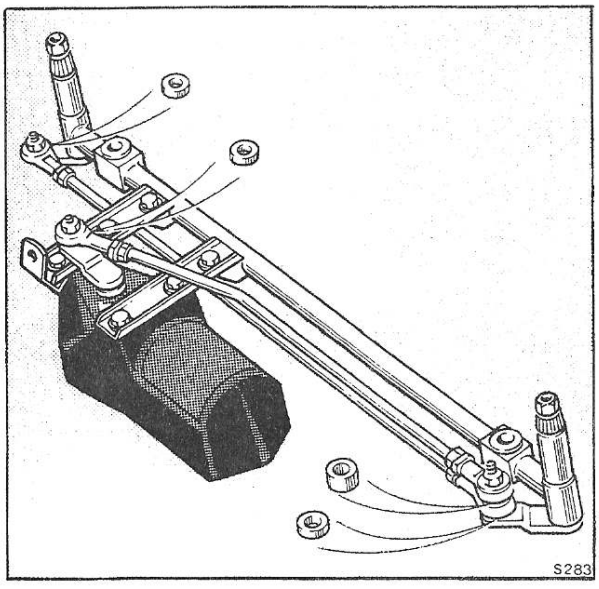

Fig. M45 'Lucas' 17W wiper motor

Windscreen wiping mechanism - To check
Unsatisfactory operation (if the supply voltage is correct) may be caused by a mechanical or electrical fault. The symptoms and remedial procedures associated with the more common causes of wiper failure (or poor performance) are described under the following headings (a) and (b).

(a) Friction
Excessive friction between apparently satisfactory wiper blades and the windscreen may result in a reduction in wiping speed when the blades are wiping on a windscreen that is only partially wet.

A further symptom is that blades become noisy at each end of the wiping arc. When possible the blades should be temporarily replaced with a pair known to be in good condition. If this rectifies the fault, fit new blades.

(b) Low wiping speed or irregular blade movement
To determine whether a low wiping speed is due to excessive mechanical loading or to poor motor performance, disconnect the primary link rod at the wiper motor.

Measuring light running current and speed
Connect a first grade moving coil ammeter in series with the motor supply cable (brown-light green) and measure the current consumption. Check also the operating speed by timing the rotation speed of the rotary link. Compare with table below

Light running current after 60 seconds from cold	LOW SPEED	1.2 amps	
	HIGH SPEED	2.3 amps	
Light running speed after 60 seconds from cold	LOW SPEED	44	r.p.m. at 12.5 v
	HIGH SPEED	64	

If the motor does not run or current consumption and speed are vastly incorrect, an internal fault in the motor is indicated and a replacement motor should be fitted or the motor removed for detailed examination. See Motor - To remove.

If the current consumption and speed are correct check for proper functioning of the transmission linkage and wiper-arm spindles.

Windscreen wiper motor - To remove (see Fig. M45)
Before the motor can be removed, the wiper arms, pantograph, reaction tube and link rods must first be removed. Proceed as follows:
1. Remove the domed retaining nuts.
2. Remove the arms, taking care not to damage the thrust washer and circlip. The arms should be gripped by the main body to avoid bending the arm.
3. Remove the splined tapered driving collars from the wiper arm spindles. (The collars might be lodged in the splined wiper arm dome).
4. Unscrew the Allen screw and remove the dummy tube from the centre wiper spindle.
5. Unscrew the Allen screw on the pantograph clamp and remove the pantograph.

6. Remove the nuts and washers from the three crank pins noting the location of the large washers.
7. Remove the large distance tube from the intermediate link connection on the centre lever crank pin.
8. Remove the straight intermediate link rod from the outboard wiper spindle lever crank pin and the centre lever crank pin.
9. Remove the three small distance pieces from the crank pins.
10. Operate the wiper motor and switch off the ignition when the rotary lever is in the vertical (12° clock) position between the two cantilever brackets. Disconnect the battery.
11. Unscrew the bolts securing the cantilever brackets to the scuttle, remove the bolts, nuts and washers.
12. Unscrew the bolts securing the cantilever brackets to the reaction tube.
13. Slacken the bolts securing the cantilever brackets to the motor body, rotate the bracket on the body to enable the motor to rest on the bottom of the plenum chamber.
14. Rotate the two spindle levers so that they are in line with the reaction tube.
15. Unscrew the two reaction tube bolts and remove with washers. (The nuts are retained in the reaction tube).
16. Push the reaction tube into the duct and rotate the tube so that the wiper arm spindles are facing the front of the car.
17. Slide the reaction tube inboard until the outer end of the tube is free to be lifted out of the duct and slide the tube out of the chamber.
18. Unscrew and remove the cantilever brackets from the motor body.
19. Disconnect the motor fly lead plug.
20. Rotate the motor so that the output lever is facing rearwards and then by twisting and tilting the motor, gently ease it out of the air duct.

Motor and gearbox - Bench inspection
After dismantling, examine individual items.

Brush replacement
The original length of the brushes is sufficient to last the life of the motor. If, due to accidental damage to the brushes or to faulty commutator action it becomes necessary to renew the brushes, the complete brushgear service assembly must be fitted. The brushgear assembly will require renewing if the brushes are worn to 4,8 mm. (3/16in.). Verify that the brushes move freely in the boxes.

Checking brush springs
The design of the brushgear does not allow for easy removal of the brush springs. Similar to the brushes, the springs are expected to last the life of the motor and should not normally require renewing. In the unlikely event of the spring pressure failing to meet the specified requirements, the complete brushgear assembly must be replaced in a similar manner to that detailed for brush replacement.

To check the spring pressure, press on the end face of the brush with a push type spring gauge until the bottom of the brush is level with the bottom of the slot in the brush box, the spring pressure reading should be 140-200 g. (5-7 oz.).

Note
In the event of the brushgear being renewed, it is important to reconnect the cables correctly.

Testing and servicing the armature
Use armature testing equipment to check the armature windings for open and short circuits.

Test the soundness of the armature insulation by using a mains test lamp. If the lamp illuminates, faulty insulation is indicated.

If the commutator is worn, it can be lightly skimmed with the armature mounted in a lathe. Afterwards, clear the inter-segment spaces of copper swarf.

Inspection of moulded gearwheels
Examine each gearwheel for signs of damage, particularly in regard to the teeth and the slip ring on the final gearwheel.

Limit switch
Inspect the inside of the switch cover and ensure that the cable connections are intact and that the contact arms exert the correct pressure upon the slip ring, the measurement between the contact arm contact-faces and the base upon which they are riveted should be approximately 7,1 mm. (9/32in.).

Yoke inspection
Check that the permanent magnet retaining clips secure the magnets firmly to the inside face of the yoke.

Motor and gearbox - To assemble
During assembly, special attention should be given to the following points:

Lubrication
Apply Ragosine Listate grease to the teeth of the gearwheels, the worn gear on the armature shaft and the slip ring on top of the final gearwheel.

Apply Shell Turbo 41 oil to the final-gearwheel shaft, the bearing bushes and sparingly to the armature shaft bearing surfaces.

Apply molybdenum di-sulphide oil to the intermediate gearwheel pivot pin.

General
When fitting the final gearwheel, ensure that the slip ring outer-facing segment is pointing in the same direction as the rotary link.

The final gearwheel fixing nut should be torque tightened to 0,23 kgf.m. (20 lbf.in.). (See note

regarding rotary link in Motor and gearbox - To dismantle).

Before fitting the brushgear assembly, check the gearbox spacing-ring fixing screws for tightness. If necessary, torque tighten them to 0,23 kgf.m. (20 lbf.in.).

Before fitting a service replacement armature, first slacken the thrust screw in the gearbox to ensure proper fitting of the yoke. **The marking on the yoke must be adjacent to the arrow-head marking on the gearbox rim.** Torque tighten the fixing bolts to 0,138 - 0,184 kgf.m. (12 - 16 lbf.in.).

The armature end-float should be between 0,05 - 0,2 mm. (0.002 - 0.008 in.) measured with the final gearwheel removed from the gearbox. To obtain satisfactory end-float adjustment with the motor and gearbox assembled, position the unit so that the adjuster screw is uppermost, tighten the adjuster screw until abutment takes place and then slacken it off one quarter turn, secure it in this position by tightening the locknut.

If the motor is noisy after assembly it may be due to slight misalignment of the yoke bearing which may be rectified by giving the rim of the gearbox a series of light taps with a plastic or wooden mallet. Take care not to strike the yoke with the mallet as this may damage the yoke or permanent magnets.

Windscreen wiper motor - To fit

Run the motor to rotate the rotary lever to a position parallel with the two motor mounting brackets (12 o'clock).

Ensure that the air intake duct and drain tube are free from foreign matter.

1. With the motor parallel to the screen and the nose of the motor facing outboard, position the inner end of the rotary lever under the body skin at the lower edge of the screen, ease the motor towards the front of the car and at the same time twist and tilt the nose of the motor into the plenum chamber. Lower the motor, motor plug and flylead into the bottom of the chamber.
2. Rotate the motor so that the rotary lever is facing upwards. Fit the flylead plug to the supply socket. Verify that the three spigot washers are intact in the motor cover, if any have become detached, affix with Bostick type adhesive.
3. Fix the two cantilever brackets to the motor gearbox cover, but do not fully tighten the brackets.
4. With the spindle levers parallel with the reaction tube, insert the tube through the plenum chamber aperture and feed it along the duct towards the centre of the car until the tube can be completely lowered into the duct. Push the tube rearwards and upwards under the body skin at the lower edge of the screen and slide the tube outboard until the centre spindle is adjacent to the cut-out in the top panel. Rotate the tube to enable the centre spindle to be brought through the cut-out and align the tube to the body mounting holes and fix to the body; a ⅜"A/F spanner should be used to prevent the hexagon headed inserts turning in the rubber mount. Do not fully tighten the fixing bolts.
5. Rotate the cantilever outboard bracket to allow sufficient clearance with the reaction tube and position both brackets on the top face of the reaction tube bracket. Fix in position with the distance tube used for auxiliary bracket to scuttle fixing quarter inch bolts and large flat washers. Fully tighten all fixing bolts.
6. Fit the small distance pieces to both spindle crankpins and the motor rotary lever crankpin. Insert the straight intermediate link rod into the intake duct and locate it on the outboard wiper spindle lever crankpin and centre lever crankpin.
7. Fit the large distance tube over the intermediate link on the centre lever crankpin. Fit the cranked primary link to the motor rotary lever and centre lever crankpin; the cranked section of the link adjacent to the motor and pointing towards the windscreen. Place the large diameter washer over the primary link on the centre lever crankpin and a quarter inch flat washer on the two remaining crankpins. Fit the nuts on the crankpins and fully tighten.
8. Verify that no tools have been left in the air duct. Connect the battery and switch the windscreen wiper switch to the 'off' position. Switch on the ignition switch to enable the wiper mechanism to run to the preset parked position.
9. Fit the pantograph clamp to the driver's wiper spindle with the pin anchorage facing away from the windscreen. Fit the Allen screw in the clamp but do not tighten. Fit the dummy tube onto the centre wiper spindle with the Allen screw facing downwards. Fit the splined tapered driving collars onto both wiper arm spindles.
10. Run the motor rotary lever through 180° from its parked position, fit a box spanner on the rotary lever crankpin nut and set the rotary lever in line with the primary link. Fit the wiper arm articulating link to the pantograph pin anchorage.

Rotate the pantograph clamp to enable the wiper arm to be lightly placed on the wiper spindle driving collar.

11. Using a jig (i.e. block of wood 6 in. x 1.25 in. x 0.5 in.), set the wiper blade parallel to and 1.25 in. away from the 'A' post screen finisher. Lightly hold the blade and arm in position while pressing the arm onto the driving collar.
12. Fit and tighten the arm retaining nut. Tighten the Allen screw in the pantograph clamp.

Note

When fitting the wiper arm onto the splined driving collar, pressure must be applied only to the knuckle part of the arm, not to the arm itself, as this will bend the arm and upset the angular movement of the blade.

13. If difficulty is experienced in maintaining the preset arm position when tightening the retaining nut, remove the arm and turn the splined collar through 180°

14. Run the motor to the 'Park' position and set the passenger's side arm and blade 1.25 in. above the bottom screen finisher, measured between the finisher and the blade pivot pin protrusion at the end of the wiper arm. The jig can be used to achieve this.
15. With a wet screen and the wiper switched to fast speed, note the angle of the pantograph blade on overwipe and trim the pantograph clamp to suit.

Windscreen and headlamp washer (all cars)

The washer unit does not require any maintenance other than to ensure that the electrical connections are secure and that the container is kept clean.

If a motor unit fails it should be replaced by a new unit.

Should a screen jet become blocked, remove the jet and blow out the obstruction. Adjust the screen jet so that the washing liquid impinges on the windscreen at the top of the arc traversed by the blade.

Windscreen wiper blades (all cars)

Excessive friction between apparently satisfactory wiper blades and the windscreen may result in a marked reduction in wiping speed when the blades are wiping a windscreen that is only partially wet. A further symptom is that the blades become noisy during and at each end of the wiping arc.

If the blades are suspect, they should be changed for a pair known to be in good condition; if this rectifies the fault, new blades should be fitted. Ensure that the screen is free from traffic film, silicones, etc. Clean with a french chalk/water solution.

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Section M6

Windscreen wipers and washers

Simplified fault diagnosis
Silver Shadow II, Bentley T2,
Silver Wraith II, Corniche
Fig. M46

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Function faulty?						Possible cause
Fast wipe	Normal wipe	Inter-mittent	Wipe during wash	Park off screen	Wash cycle	
●	●	●	●	●	●	Fuse blown or no live feed to fuse
●	●	●	○	●	○	Wiper switch
○	○	●	●	○	○	Control box
●	○	○	○	○	○	Wiper motor fast brush Relay 122
○	●	●	●	●	○	Relay 122
○	○	○	○	●	○	Wiper motor park off screen switch Relay 130 Relay 131
●	●	●	●	○	○	Wiper motor common brush Relay 130 Relay 131
○	●	●	●	○	○	Wiper motor normal brush Relay 122
○	○	●	○	○	○	Wiper motor park on screen switch
○	○	○	●	●	●	Washer switch
○	○	○	○	○	●	Washer motor

Key

○ ○ ○	Functions satisfactory
● ● ●	Function faulty
● ● ●	All functions faulty

Section M6

Windscreen wipers and washers
Fault diagnosis

Silver Shadow II, Bentley T2, Silver Wraith II, Corniche

Malfunction	Possible cause	Action
Complete system failure (i.e. wiper motors and washer motors)	Fuse 21 blown (if seat mechanism also affected)	Disconnect seat loom plug to isolate seat mechanism. Disconnect left-hand toeboard socket J to isolate screen washer motor headlamp wiper and washer. On right-hand drive cars disconnect left-hand toeboard K and on left-hand drive cars disconnect right-hand toeboard C to isolate screen wiper motor and relays. Replace fuse. If fuse blows again check for short circuit on light green cable at wiper switch, control unit, headlamp wash relay and fuseboard. If fuse was satisfactory, replace toeboard socket J, K (or C) and seat loom plug, check the fuse each time to determine area of fault. (Refer to wiring diagram).
	No supply voltage	Test for live feed on light green cable at fuseboard 'B' and on brown/light green cable at fuseboard 'B' and switchbox.
Screen wiper motor inoperative. Washer motor satisfactory	Wiper motor faulty	At wiper motor, without disconnecting the plug and socket, connect the white/light green cable at terminal 1 to earth. With NORMAL speed selected, check for live feed at red/light green cable at motor, if live feed is present the motor should be removed for further checking.
	Poor connection	Check for live feed on light green cable at switch, at C1 and W1 of relay 131 and C2 of relay 122.
	Poor earth connection	At wiper motor, connect terminal 1 to a good earth. If motor operates, check white/light green cable at motor socket and relay 130. Check valance earth for soundness and black cable on relay 130. If necessary test relay 130. Check black cable on relay 131.
Screen wiper motor inoperative on NORMAL and FAST.	Wiper switch faulty	Test for live feed on light green/white cable at wiper switch or relay 131 with NORMAL or FAST selected.
Screen wiper motor inoperative on NORMAL speed (FAST satisfactory)	Wiper relay 122 or wiper motor faulty	With NORMAL selected, test for live feed on red/light green cable at wiper motor. If live feed is available, the motor is faulty, if live feed is absent, the wiper relay is faulty.
Screen wiper motor inoperative on FAST speed (NORMAL satisfactory)	Wiper switch faulty	Test for live feed at terminal W1 of wiper relay 122.
	Wiper relay 122 faulty	Verify that there is a live feed on terminal C2 (brown/light green cable) then test for live feed on yellow/light green cable at C1 with FAST speed selected.

Malfunction	Possible cause	Action
Screen wiper motor inoperative on FAST speed (NORMAL satisfactory) (continued)	Wiper motor faulty	Test for live feed on yellow/light green cable at motor socket.
Screen wiper motor inoperative on INTERMITTENT or Wash/Wipe	Control unit faulty	Replace control box.
	Light green cable from fuseboard to control box open circuit	Test for 12 volts on light green cable at control box
Screen wiper motor inoperative on INTERMITTENT (Wash/Wipe satisfactory)	Poor connection	With INTERMITTENT selected test for live feed on blue/light green cable at toeboard socket K (socket C on left-hand drive cars) and wiper motor, yellow/blue cable at wiper motor (this checks Park-on-screen switch), left-hand toeboard K (right-hand C on left-hand drive cars) and 'flying lead' at control box.
	Control box faulty	Replace control box.
Wipers will not switch off	Control box	Replace box.
Wash/Wipe inoperative (screen wiper and washer pump)	Washer switch faulty	Test for live feed on light green/black cable of washer switch.
	Poor earth connection	Check earth cable from washer switch to left-hand 'A' post.
Screen wiper inoperative during Wash/Wipe (INTERMITTENT and washer pump satisfactory)	Poor connection	Check 'flying lead' connector (light green/blue) at control box.
	Control box faulty	Replace control box.
Washer pump inoperative (Wipe cycle satisfactory)	Faulty pump motor	At washer motor, connect 12 volt positive to light green cable and 12 volt negative to light green/black cable.
	Poor connection	Test for live feed on light green cable at pump and toeboard socket J. Check also light green/black cable at toeboard socket J.

Camargue

Windscreen wipers fail to operate on NORMAL and FAST speed	No supply voltage	Check supply from fuse 21 to wiper switch terminal 7 (9LG cable). Check supply to Wash/Wipe control unit terminal 3 (9LG cable).
	Wash/Wipe control unit faulty	Switch to INTERMITTENT wipe cycle. If wipers operate, the wiper motor is satisfactory. Operate the Wash/Wipe cycle. If this is inoperative check the 14B cable on terminal 2 of the Wash/Wipe unit. If the earth connections are satisfactory a faulty control unit is indicated.
	Wiper motor faulty	If the motor will not function on any of the three circuits, check the motor by disconnecting the motor socket and applying 12 volts across the 9NLG cable and 14B cable.

Malfunction	Possible cause	Action
FAST SPEED wipers inoperative. NORMAL wipe, wash/wipe cycle and intermittent cycle satisfactory	Wiper switch faulty	Check continuity of wiper switch terminals 1 and 3.
	Motor plug and socket faulty	Check continuity of motor plug and socket at 9YLG cable and 14B cable.
Wiper motor will not operate	Supply faulty	Operate wash/wipe switch, if washer fails to operate, check supply at wash/wipe unit and fuse 21.
	Wiper motor faulty	With known supply connect a voltmeter to earth and test for voltage at terminal 7 (9LG) on the wiper switch, terminals 1 and 3 (9LG and 9LGP) on the intermittent wipe unit, terminal 3 (9LG) on wash/wipe unit and 9LG cable in motor plug. Switch to all circuits during voltage testing.
Wipers will not switch off	Control box	Replace control box.
Wash cycle satisfactory but wipe cycle inoperative. Normal or Fast speed wipers inoperative	Wash/Wipe control box	Check 14B cable at wash/wipe unit and instrument board earth. Switch to intermittent wipe cycle, if the intermittent wipe operates, the wash/wipe unit is faulty.
Wash cycle inoperative, wipe cycle satisfactory. Normal or Fast speed wipers satisfactory	Washer motor faulty	Check for supply at washer motor terminals and also for correct polarity. Check the fluid level in the container and examine the jets and tubing for leaks and blockage.
Wash/Wipe inoperative. Normal and intermittent wipers satisfactory	Faulty supply	Check supply at washer motor
	Wash/Wipe switch faulty	Connect the 14LGB connection at washer motor to earth with 9LG connection live, washer should operate indicating a faulty wash/wipe switch
Time delay when switching to intermittent wipe cycle	Intermittent wipe unit	Faulty 14B cable at intermittent wipe unit.
Intermittent wipe cycle inoperative. Normal wipe and Wash/Wipe satisfactory	Intermittent wipe unit faulty	Check for continuity between terminals 1 and 3 on the intermittent wipe unit (9LG and 9LGP cables).
	Faulty wiper switch	Check for continuity between connections 2 and 5 at the wiper switch
Intermittent wipe cycle runs continuously. Normal wipe and Wash/Wipe satisfactory	Intermittent wipe unit faulty	Check connections at terminal 2 on the intermittent wipe unit.
	Wash/Wipe unit faulty	Check continuity of 9RLG and 9PLG cable, connections at Wash/Wipe unit.
Intermittent wipe cycle operates one cycle only	Intermittent wipe unit faulty	Relay contacts possibly dirty at intermittent wipe unit.

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Windscreen wipers and washers

Simplified wiring diagram and circuit description

OFF mode

Silver Shadow II, Bentley T2, Silver Wraith II, Corniche
Fig. M47

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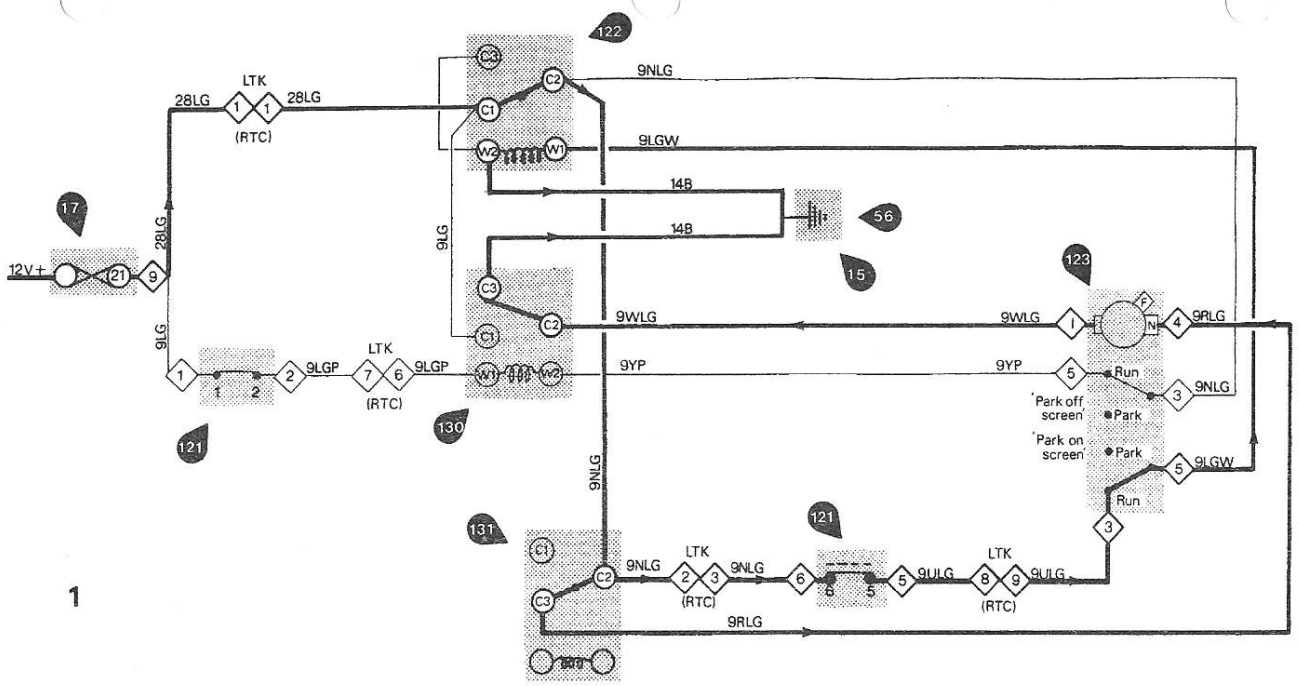
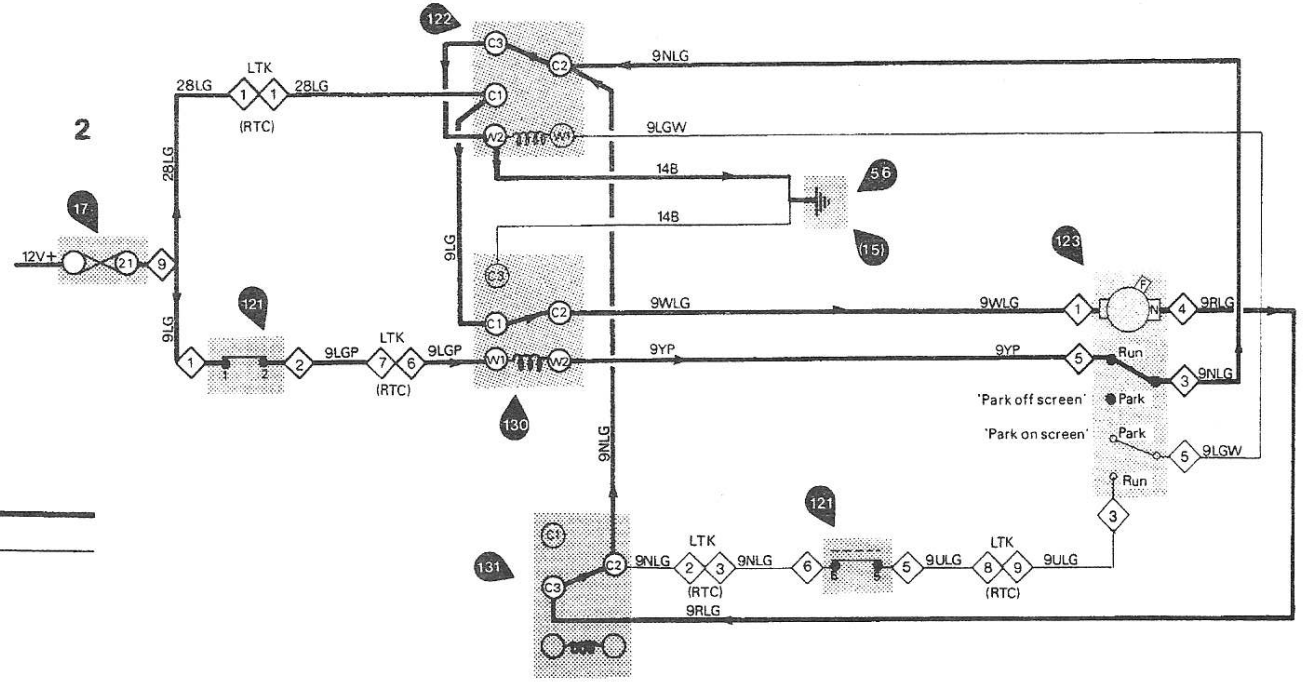
Off

Wiper switch set to 'OFF'. Contacts 1-2 and 5-6 are 'made'.

1. Initially the wiper motor continues to operate until the wiper motor sets the 'Park on screen' switch to 'Park'. This de-energises the coil of relay 122 thereby removing the 12v + supply from the 'Normal' brush of the motor.

2. With the coil of relay 122 de-energised, relay contacts C2 and C3 are made which provides an earth path for the coil of relay 130 via the 'Park off screen' switch. Contacts C1 and C2 of relay 130 are 'made' which connects 12v – to the 'Normal' brush of the wiper motor causing it to rotate in the reverse direction. This extends the parking rod on the wiper motor which sets the 'Park off screen' switch to the 'Park' position, disconnecting the 12v – supply. The motor stops with the wiper blades in the parked position.





Components

15	Right-hand valance earth
17	Fuse number 21
56	Left-hand valance earth
121	Wiper switch
122	Wiper relay
123	Wiper motor
130	Wiper relay
131	Wiper relay

Active circuit ——————

Inactive circuit ——————

Windscreen wipers and washers

Simplified wiring diagram and circuit description

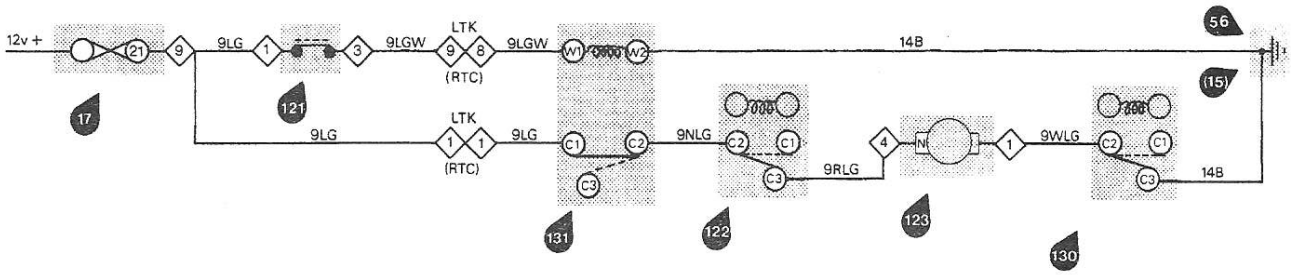
NORMAL and INTERMITTENT modes

Silver Shadow II, Bentley T2, Silver Wraith II, Corniche
Fig. M48

Normal

Wiper switch set to 'Normal' wipe, contacts 1 and 3 made.

With switch contacts 1 and 3 'made', the coil of relay 131 becomes energised which closes contacts C1 to C2. This completes the circuit connecting the 'Normal' brush of the wiper motor to fuse 21.



Components

17	Fuse number 21
56	Valance earth
121	Wiper switch
122	Wiper relay
123	Wiper motor
124	Control unit
130	Wiper relay
131	Wiper relay

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Intermittent

Contacts 1 - 5 and 7 - 8 made.

1. When wiper switch contacts 7 - 8 are made, the electronics in the control unit sets 12v+at terminal 2 of the control unit. This energises the coil of relay 131 which closes contact C2 to C1 thereby connecting the 'normal' brush of the wiper motor to fuse 21, causing the motor to rotate.

2. Immediately the motor rotates, a cam on the motor sets the 'Park on screen' switch to RUN which maintains the 12v+at the coil of relay 131.

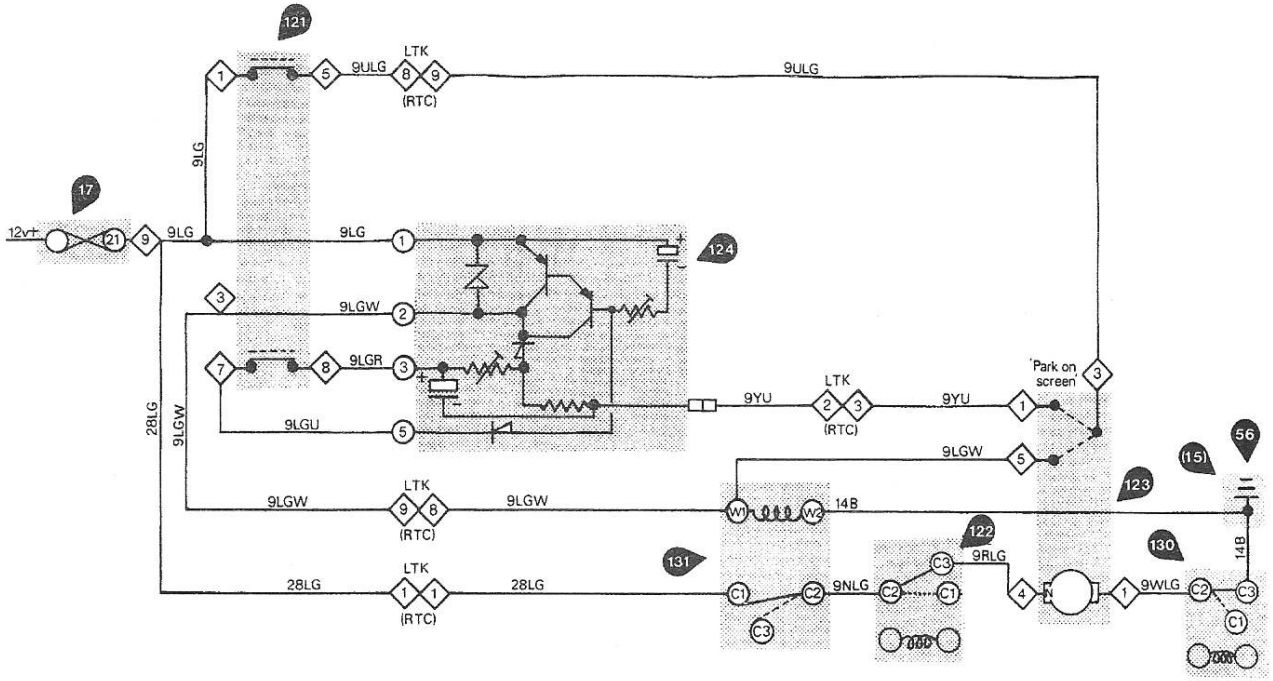
3. After one wipe cycle, the cam on the wiper motor sets the 'Park on screen' switch to PARK which disconnects the 12v+from the coil of relay 131 thereby disconnecting the motor supply. The motor stops with the wiper blades in the 'Park on screen' position.

4. After a delay of 6 seconds, the electronics in the control unit resets 12v+at terminal 2 causing the motor to rotate again.

5. Paragraphs 3 and 4 are repeated until the wiper switch is set to OFF.

Note

The wiper control unit shown is a simplified diagram only.



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Windscreen wipers and washers

Simplified wiring diagram and circuit description

FAST and WASH/WIPE modes

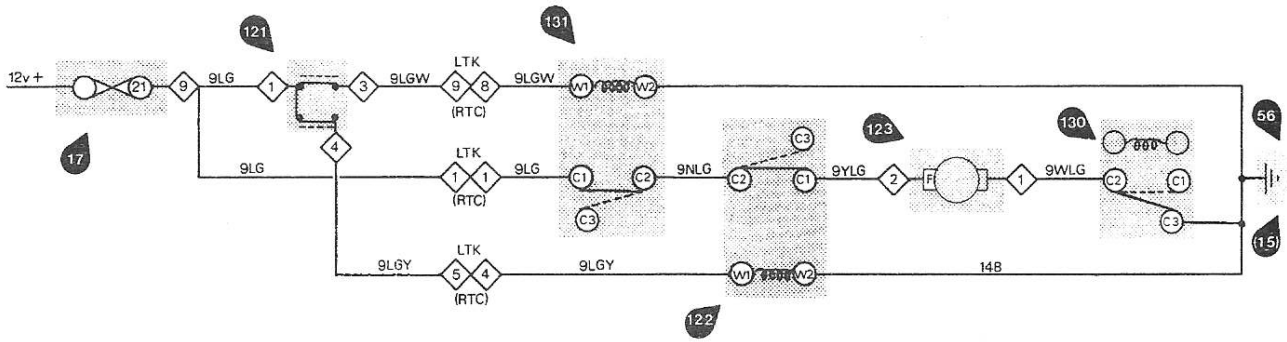
Silver Shadow II, Bentley T2, Silver Wraith II, Corniche
Fig. M49

Fast

Wiper switch set to 'Fast' wipe, contacts 1-3-4 made.

With switch contacts 1 and 3 made, the coil of relay 131 becomes energised which closes contacts C1 to C2.

Simultaneously, switch contacts 1 and 4 are 'made', the coil of relay 122 becomes energised which closes contacts C1 to C2. This completes the circuit connecting the 'Fast' brush of the wiper motor to fuse 21.



Components

15	Right-hand valance earth
17	Fuse number 21
55	Left-hand 'A' post earth
56	Left-hand valance earth
121	Wiper switch
122	Wiper relay
123	Wiper motor
124	Control unit
125	Washer switch
126	Washer motor
130	Wiper relay
131	Wiper relay

Wash/wipe

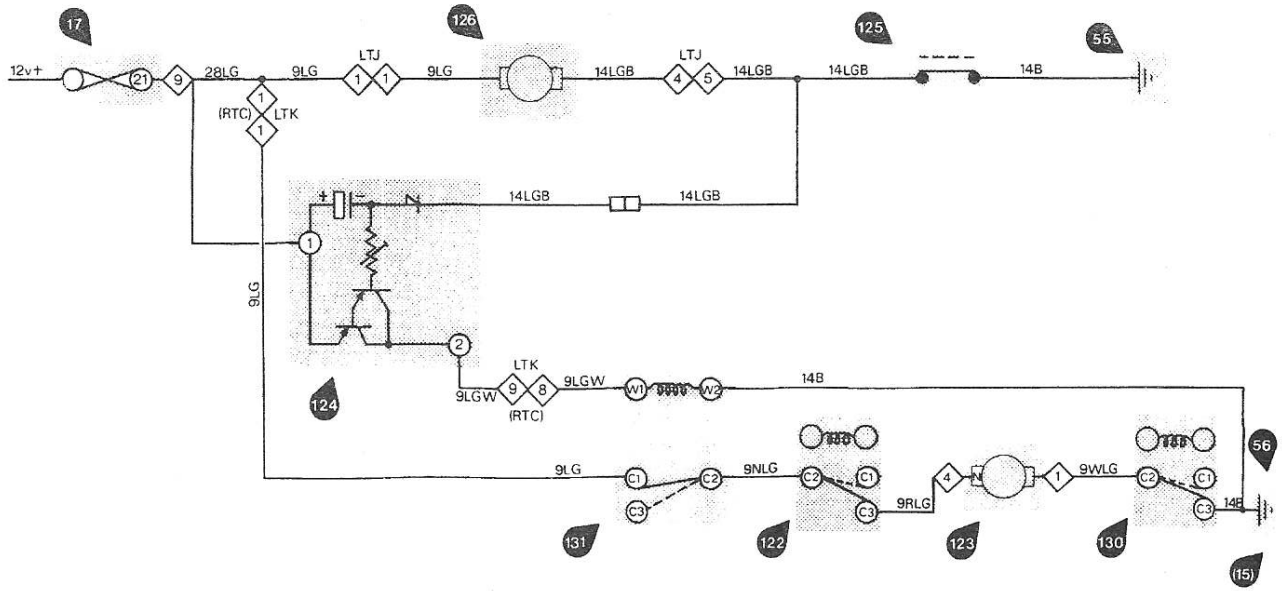
When the washer switch is depressed, an earth path is completed for the washer pump which operates.

The switch also provides an earth path for 'flying lead' 14 LGB of the wiper control unit which sets 12v+ output at terminal 2 of the unit. This energises the coil of relay 131 which closes relay contacts C1 and C2, thereby connecting fuse 21 to the 'Normal' brush of the wiper motor causing it to operate.

When the washer switch is released, the washer pump motor will stop immediately but the electronics in the control unit will maintain the 12v+ supply at the wiper motor for a further 5 seconds. The wipe cycle is completed with the wiper blades in the 'Park' position. Details of this operation are given in the diagrams showing the 'OFF' sequence.

Note

The wiper control unit shown is a simplified diagram only.



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Windscreen wipers and washers

Component location
Silver Shadow II, Bentley T2,
Silver Wraith II, Corniche
Fig. M50

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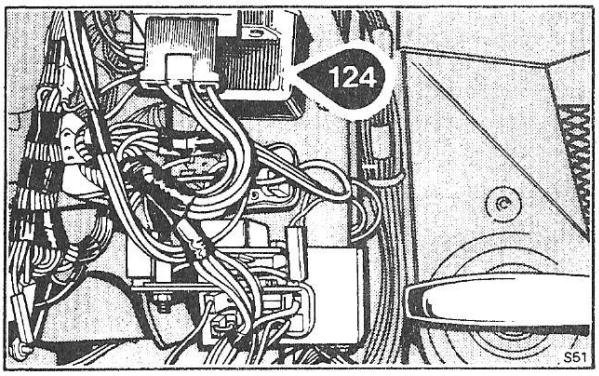
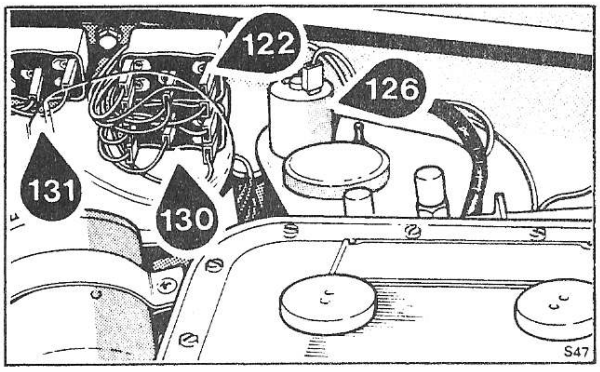
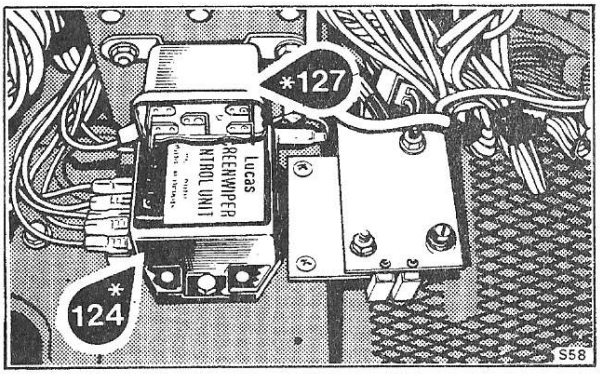
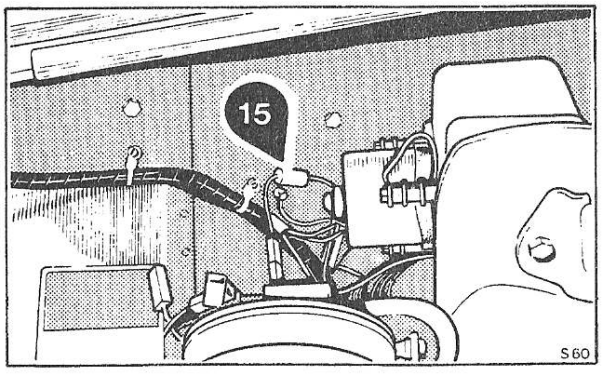
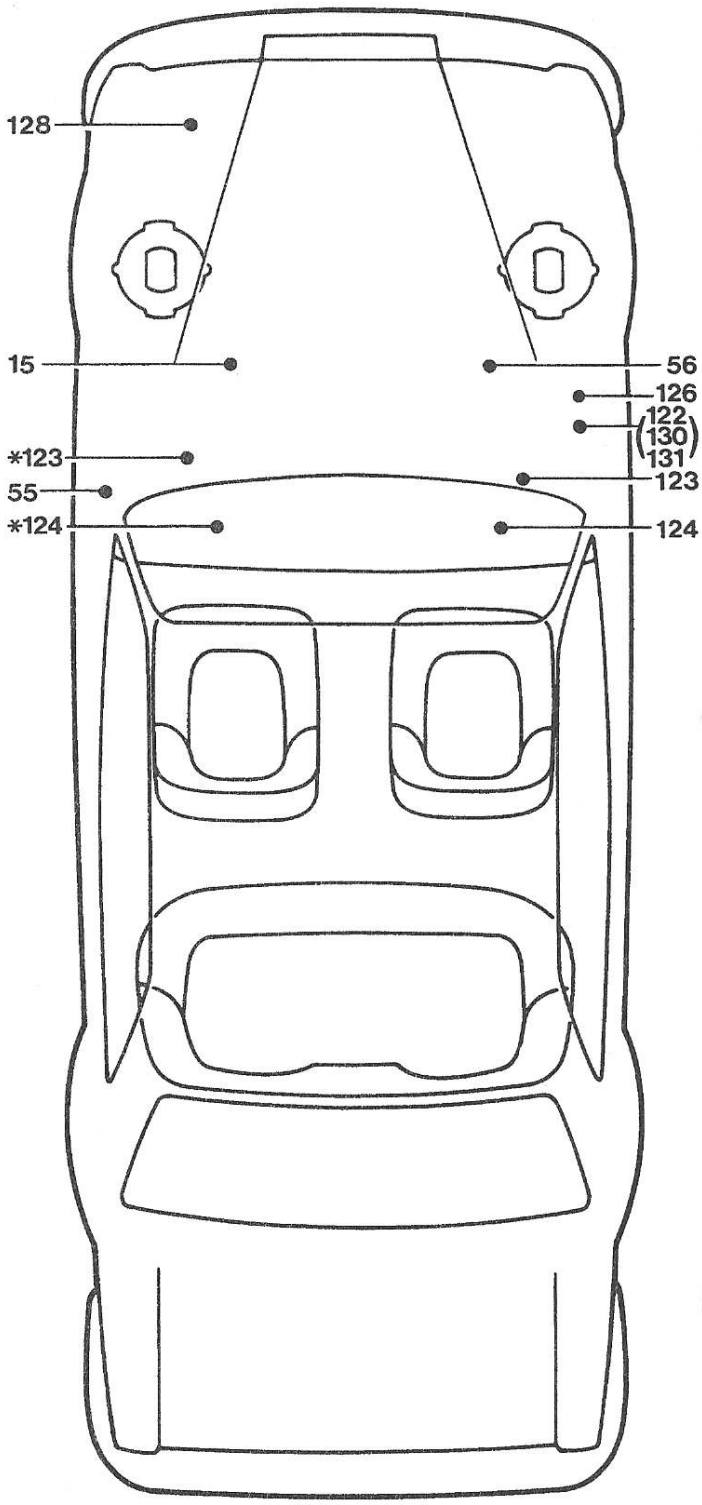








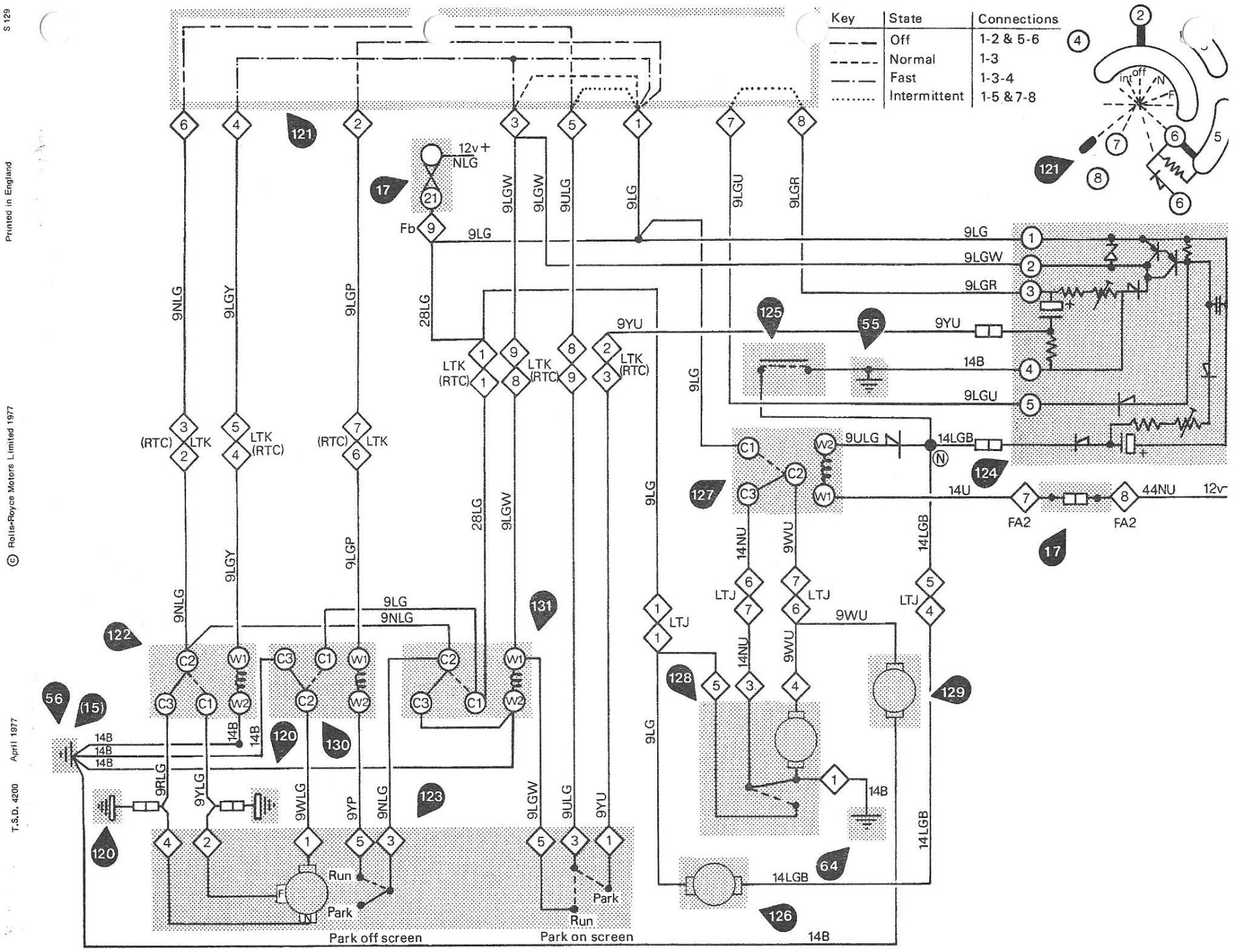


Components

15	Right-hand valance earth
17	Fuseboard
55	Left-hand 'A' post earth
56	Left-hand valance earth
64	Left-hand front earth
120	Radio interference suppressor
121	Screen wiper switch
122	Screen wiper relay (1)
123	Screen wiper motor
124	Screen wiper control unit
125	Screen washer switch
126	Screen washer motor
127	Headlamp wash relay
128	Headlamp wiper motor
129	Headlamp washer motor
130	Screen wiper relay (2)
131	Screen wiper relay (3)

Windscreen wipers and washers

Schematic wiring diagram
Silver Shadow II, Bentley T2,
Silver Wraith II, Corniche
Fig. M51



Windscreen wipers and washers

Component location

Camargue

Fig. M52

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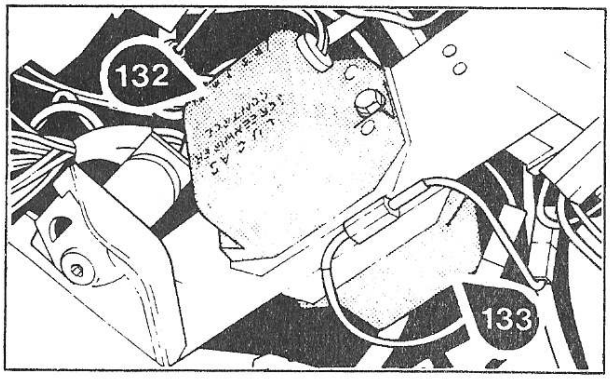

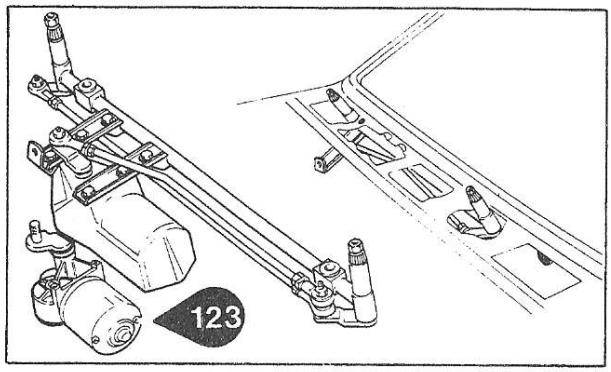

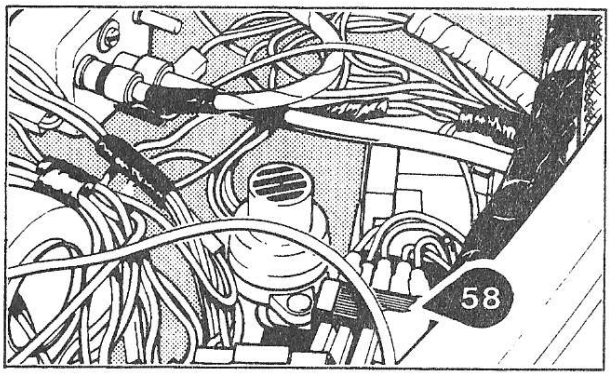

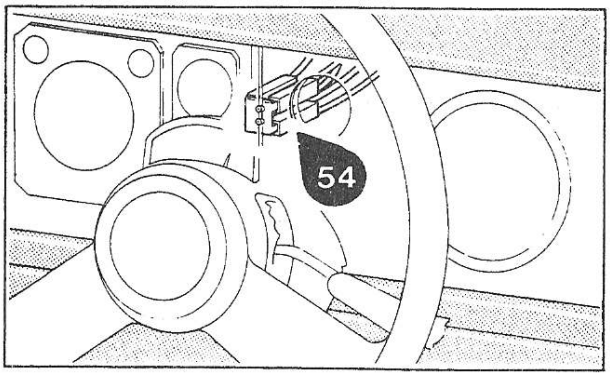

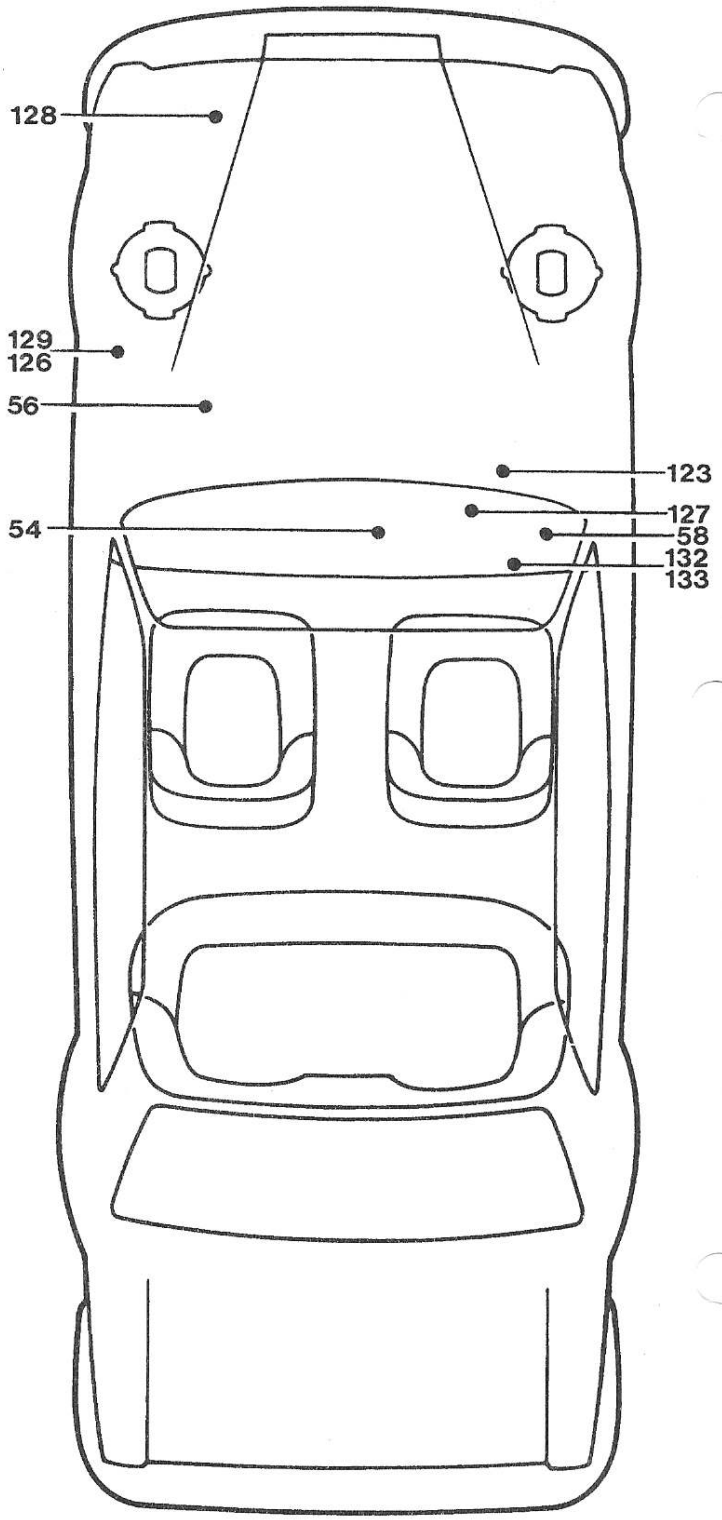

Components

17	Fuseboard
36	Right-hand 'A' post earth
54	Instrument panel earth
56	Left-hand valance earth
58	Diode block
121	Screen wiper switch
123	Screen wiper motor
125	Screen wash switch
126	Screen wash motor
127	Headlamp wash relay
128	Headlamp wiper motor
129	Headlamp wash motor
132	Wash/Wipe control unit
133	Intermittent wipe control unit

Windscreen wipers and washers

Schematic wiring diagram

Camargue

Fig. M53

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