

SAAB

900

**SERVICE
MANUAL**

3:2 Electrical system,
system diagrams,
operation and
fault-tracing

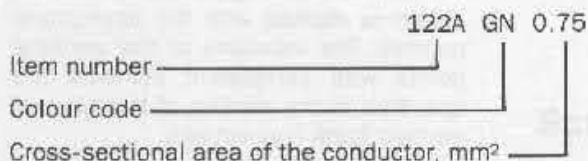
M 1987-88

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Cable code

As a general rule, each cable in the electrical system of the car has a code consisting of three parts, as illustrated by the example below:



Item number. Every cable is designated by a unique number, which is usually followed by a letter designation. Cables designated with the same number, e.g. 122, 122A, 122B, etc. usually belong to the same sub-system.

Colour code. The following colour codes are used in the wiring diagrams as well as in the comprehensive wiring diagrams. The colour codes can also be used in various combinations, e.g. BL/RD, GL/VT, etc.

Code	Colour
BL	Blue
BR	Brown
GL	Yellow
GN	Green
GR	Grey
OR	Orange
RD	Red
SV	Black
VL	Violet
VT	White

Cross-sectional area of the conductor. The cross-sectional area of the conductor is specified in square millimetres (mm²). The current that the cable is capable of carrying is dependent on the cross-sectional area of the conductor.

Abbreviations

The Manual includes the following abbreviations:

AC	Air Conditioning
AIC	(Automatic Idling Control) Automatic adjustment of the engine idling speed
APC	(Automatic Performance Control) Automatic control of the turbocharger boost pressure
AUT	Automatic transmission
CAB	Cabriolet
CONV	(Convertible) Cabriolet
D	(Driver) Driver's side
EZK	(Elektronische Zündung mit Klopfkontrolle) Breakerless ignition system with knock sensor
I	Injection engine
LH	(Luftmassenmesser Hitzdraht) Air mass measurement by means of a hot filament
LHD	Left-hand drive
LHF	Left-hand front
LHR	Left-hand rear
LHS	Left-hand side
MAN	Manual gearbox
P	Passenger side, co-driver's side
T	Turbocharged engine
TSI	Timing Service Instrument
RHD	Right-hand drive
RHF	Right-hand front
RHR	Right-hand rear
RHS	Right-hand side

Example: T8 indicates that the engine is turbocharged and has 8 valves.
 I16 = 16-valve injection engine.
 3-D = two-door Combi Coupe.

Positive supply

The +12 V supply of the car is distributed to the various consumers, etc. across an electrical distribution box.

Cars which are powered by the 8-valve engine and are destined for markets in the U.S.A., Canada and Japan are equipped with a special "Lambda relay box" for controlling the exhaust gas emission control system.

To enable these three connectors to be easily distinguished, they are colour-coded.

152A = White

152B = Red

152C = Black

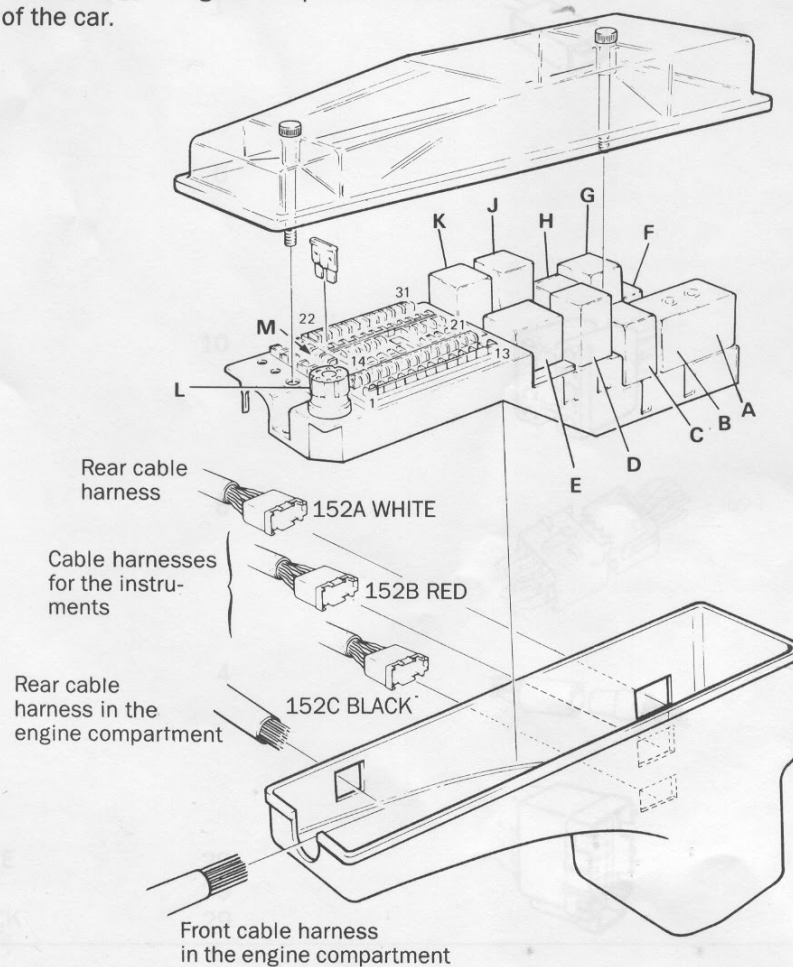
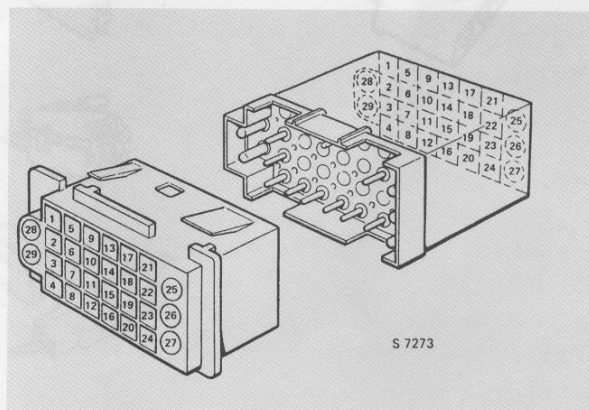
The picture below shows the locations of the pins in the connector, viewed from the interior of the car.

Electrical distribution box

The electrical distribution box is easily accessible and is located under the bonnet, on the left-hand wheel housing. All of the fuses and most of the relays are located in the electrical distribution box.

Item L in the drawing of the electrical distribution box is the socket for the Timing Service Instrument (TSI) and item M is the holder for spare fuses.

Five cable harnesses are connected to the electrical distribution box. The front and rear cable harnesses in the engine compartment are connected directly to the electrical distribution box, whereas the cables to the facia and to the rear of the car are connected across three 29-pole connectors designated 152A, 152B and 152C. These are permanently mounted on the bulkhead between the engine compartment and the interior of the car.



Relays

The following tables show the locations of the relays in the electrical distribution box. In addition to the relays in the electrical distribution box, several other relays are located in different places in the car. The locations of these relays are specified in the corresponding sub-system descriptions.

Europe and other markets

Relay location	Component number	Function	Remarks
A, B	8	Headlamp full beam and dipped beam	
C	113	Heater element for the rear window	With timing function on certain markets
D	147	Ignition pulse amplifier	
E	21	Ignition switch	
F, G	102	Fuel pump	T8
G	102	Fuel pump	I8
H	156	AC compressor	Air conditioning
J	155	Radiator fan for AC	Air conditioning
K	68	Horn	
	78	Dim dipped beam (GB)	
	259	Dim dipped beam (GB)	

USA, Canada and Japan

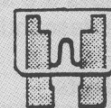
Relay location	Component number	Function	Remarks
A, B	8	Headlamp full beam and dipped beam	
C	113	Heater element for the rear window	With timing function on certain markets
D	147	Ignition pulse amplifier	
E	21	Ignition switch	
F	270	Shift-up indication	
G	102	Fuel pump	I8 Lambda
	107	Extra fog lights	I16 Lambda, T16 Lambda
H	156	AC compressor	Air conditioning
J	155	Radiator fan for AC	Air conditioning
K	68	Horn	
	311	Motor drive for passive seat belts	

Fuses

The locations of the fuses are shown in the illustration of the electrical distribution box.

Fuse No.	Rating	Function
1	—	Spare
2	30 A	Rear window regulators, Convertible (1988)
3	30 A	Rear window regulators, Convertible (1987)
4	10 A	Shift-up indication (US), dim dipped beam (GB)
5	15 A	Brake fluid warning, windscreen wipers, headlamp wipers, seat belt reminder lamp and EXH warning lamp
6	30 A	Air conditioner (AC)
7	15 A	Direction indicators, tachometer, warning lamps for battery charging and choke
8	10 A	Headlamp wipers, rear-view mirrors, Cruise Control
9	30 A	Ventilation fan
10	10 A	APC system, lighting for controls, glove compartment illumination
11	30 A	Window regulators, sunroof
12	20 A	Electric heating pads for the front seats, delayed interior lights
13	20 A	Reversing lights, cigarette lighter lighting
14	15 A	Right-hand headlamp, full beam
15	15 A	Left-hand headlamp, full beam and full beam warning lamp
16	15 A	Right-hand headlamp, dipped beam
17	15 A	Left-hand headlamp, dipped beam
18	10 A	Right-hand parking light, right-hand rear light, number plate illumination
19	10 A	Left-hand parking light, left-hand rear light
20	15 A	Radio
21	15 A	Rear fog lights, extra fog lights (US, CA)
22	10 A	Fuel system, ignition system, temperature gauge, handbrake warning lamp
23	—	Spare
24	10 A	Central locking
25	30 A	Radiator fan
26	25 A	Horn
27	15 A	Hazard warning lights
28	15 A	Interior lighting, clock, radio, electrically operated aerial
29	20 A	Heater element for the rear window
30	20 A	Fuel pump for the fuel injection engine I8, T8, I8 Lambda, T8 Lambda
31	15 A	Brake lights
310D	25 A	Passive seat belts
310P	25 A	Passive seat belts

The fuses are of blade type and, together with the connectors used, cause a lower voltage drop in the system than the earlier fuse type. In addition, the fuses are more resistant to corrosion.

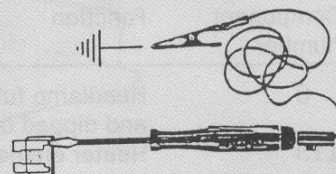


Colour-coding of the blade fuses:

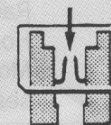
Colour	Rating
Red	10 A
Blue	15 A
Yellow	20 A
Transparent	25 A
Green	30 A

Checking the blade fuses

Every blade fuse has test tappings, so that it can be checked without the need for removing it from the fuse box. If both tappings are live, the fuse is intact.



When the fuse has been removed, it will be clearly visible whether or not the fuse wire has melted.

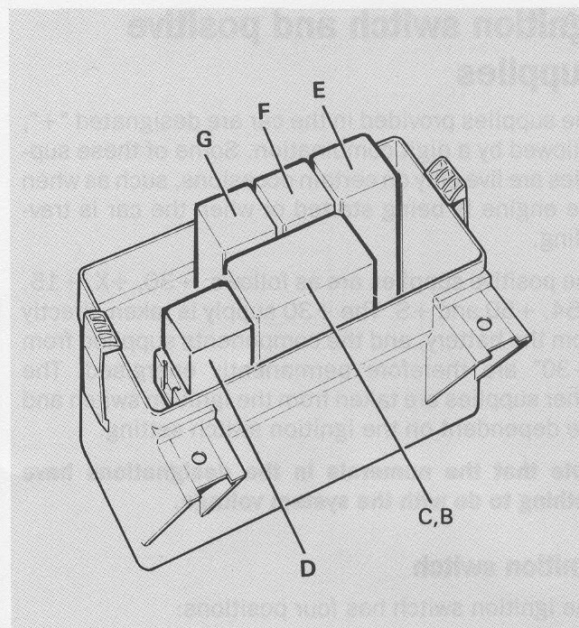


Lambda relay box, USA and other markets

Cars delivered to the U.S.A., Japan and Canada are equipped with the Lambda system which is described in detail in Group 2:3 of the Service Manual. The relay box of the Lambda system shown here contains the following relays:

Relay	Component No.	Function location
A	—	Spare
B	106	Time delay relay
C		
D	107	Extra fog lights ¹⁾
E	105	Engine speed relay, manual
F	104	Hot start relay
G	138	Engine speed relay, Turbo
H	—	Spare

¹⁾ Relay D is fitted only to cars equipped with extra fog lamps.



Lambda relay box, Europe

See the section entitled "CI fuel system", pages 62–63.

Position	Circuit closed between...
S	30-X
P	30-15
D	30-S4
L	30-S0
	30-S1

(1) Although all ignition switches have terminal 2, this terminal is only used on cars destined for the U.S.A. and Canadian markets.
Example: Terminal 15 is live in the drive and start positions.

Ignition switch and positive supplies

The supplies provided in the car are designated "+", followed by a digit combination. Some of these supplies are live only on certain occasions, such as when the engine is being started or when the car is travelling.

The positive supplies are as follows: +30, +X, +15, +54, +50 and +S. The +30 supply is taken directly from the battery, and the components supplied from "+30" are therefore permanently energised. The other supplies are taken from the ignition switch and are dependent on the ignition switch setting.

Note that the numerals in the designations have nothing to do with the system voltage.

Ignition switch

The ignition switch has four positions:

- L Locked position
- P Parked position
- Drive position
- S Start position

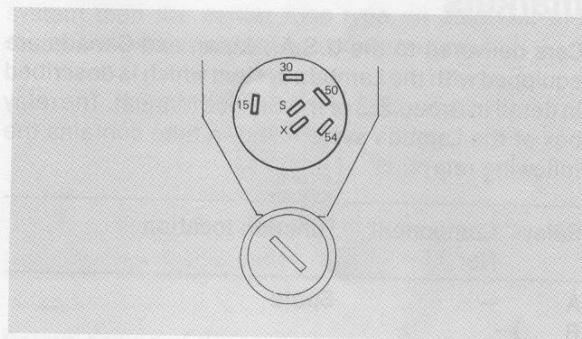
The table below shows the ignition switch terminals which are live in the various positions of the ignition switch. The incoming supply (+30) from the battery is connected to terminal 30.

Circuit closed between...	Position			
	L	P	□	S
30-X				
30-15				
30-54				
30-50				
30-S ¹⁾				

- 1) Although all ignition switches have terminal S, this terminal is only used on cars destined for the U.S.A. and Canadian markets.

Example: Terminal 15 is live in the drive and start positions.

The picture below shows the terminals of the ignition switch.



U.S.A. and Canadian markets

On these cars, terminal S is used for the ignition key warning system. The terminal is always energised when the key is in the ignition switch, regardless of its position.

Distribution terminals

The following four spreads show the consumers/components that are supplied from the following distribution terminals:

- Distribution terminal +30
- Distribution terminal +X
- Distribution terminal +15
- Distribution terminal +54

The various consumers are supplied either directly or across fuses.

The wiring diagrams show all components which are supplied from each distribution terminal. Some components are thus not included on certain markets/versions.

No wiring diagram is shown for distribution terminal +50, since this is used only for a few sub-systems. The terminal is live only when the ignition switch is in the start position, and this is described in the corresponding sub-system description. For particulars of distribution terminal +S, see the section entitled "Instruments and warning systems – Seat-belt and ignition switch warning".

Distribution terminal +30

The supplies provided in the car are designated "+" followed by a digit combination. Some of these supplies are the only ones on certain occasions, such as when the engine is being started or when the car is travelling.

The positive supplies are as follows: +30, +50 and +54. The supply +30 is taken directly from the battery. The components supplied from +30 are the components permanently energised. The other supplies are from the ignition switch and are dependent on the ignition switch setting.

Note that the numerals in the designations have nothing to do with the system voltage.

Ignition switch

The ignition switch has four positions:

1. Locked position
2. Parked position
3. Drive position
4. Start position

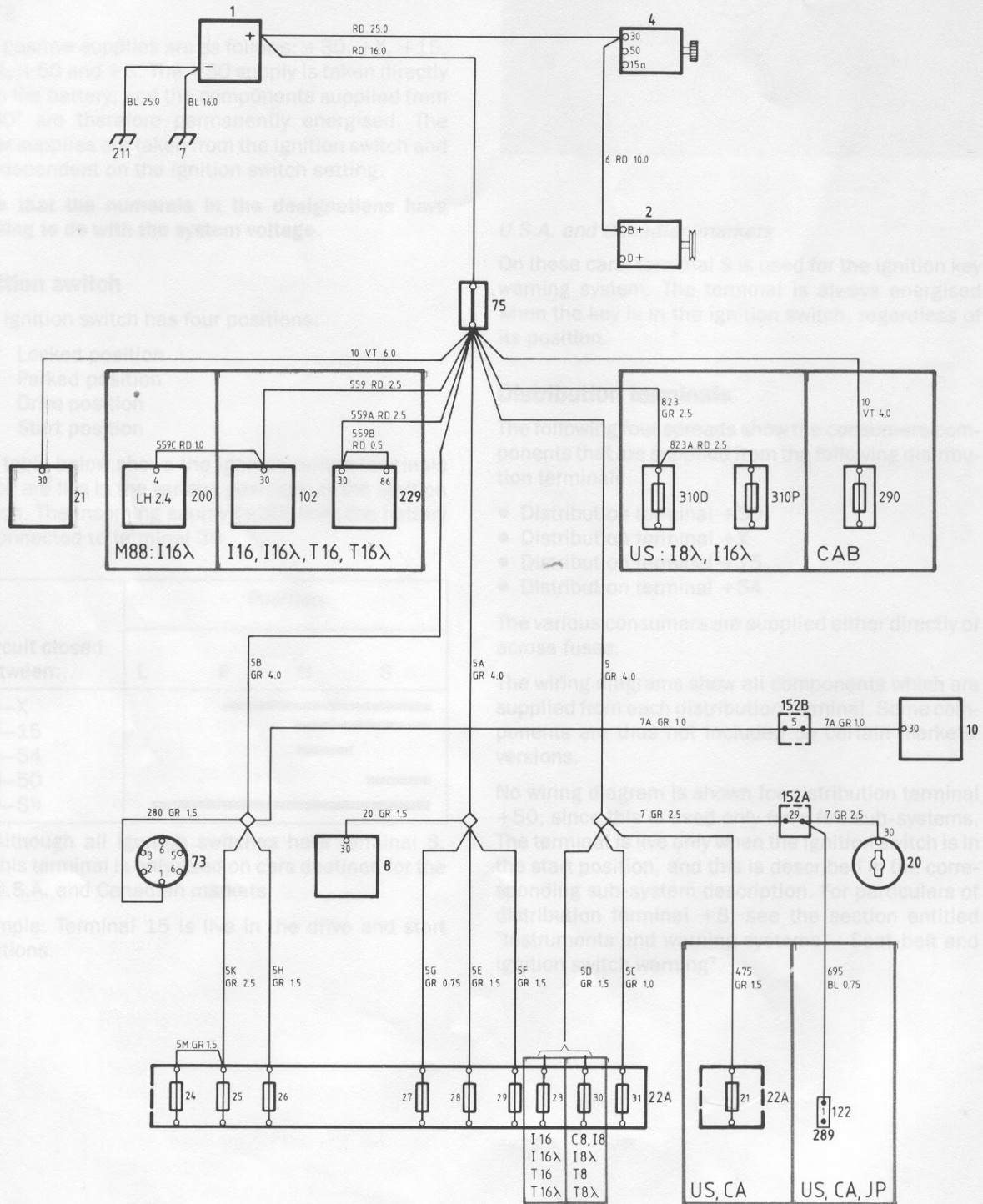
The following components are supplied from the distribution terminal +30:

Circuit closed between...

- 30-X
- 30-15
- 30-54
- 30-50
- 30-54

1) Although all the components supplied from this terminal are on cars equipped with the U.S.A. and Canadian markets.

Example: Terminal 15 is live in the drive and start positions.



Operation

The positive supply is taken from battery 1 directly to starter motor 4 and then further to B+ on alternator 2, and to distribution block 75.

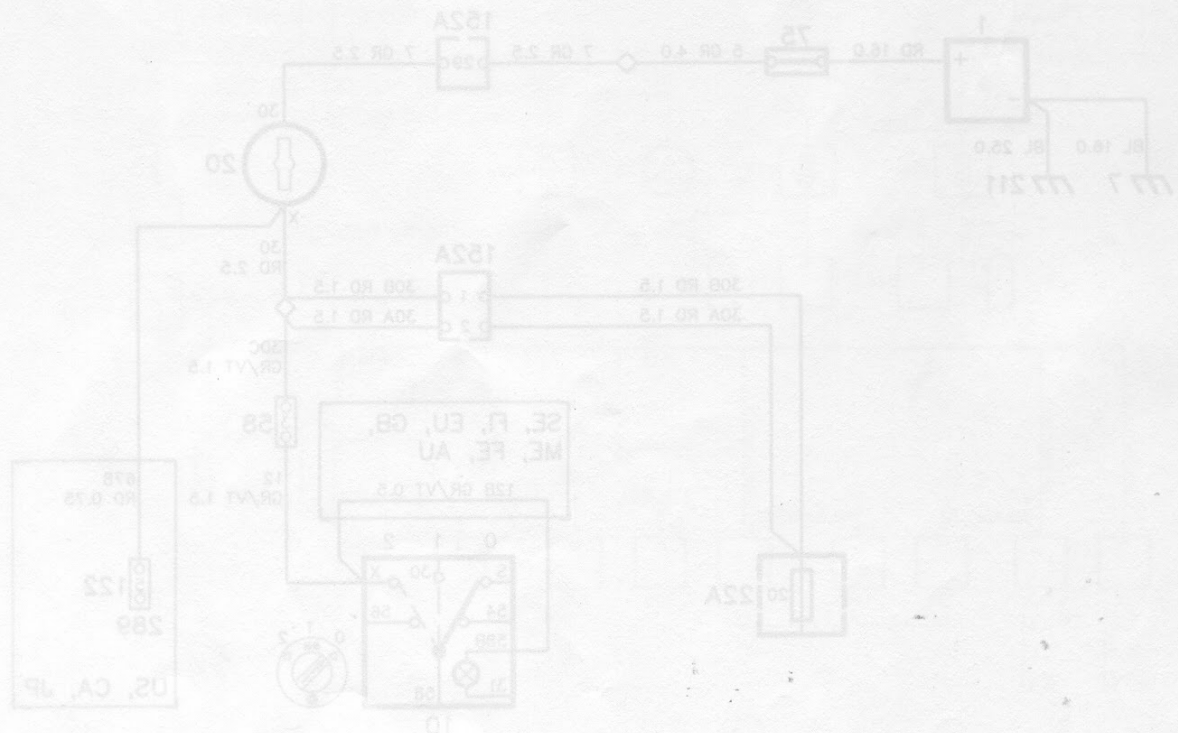
From distribution block 75, supplies are then taken to the following components and to fuses 24–31. (Fuse 23 is not used on cars powered by the 16-valve engine.)

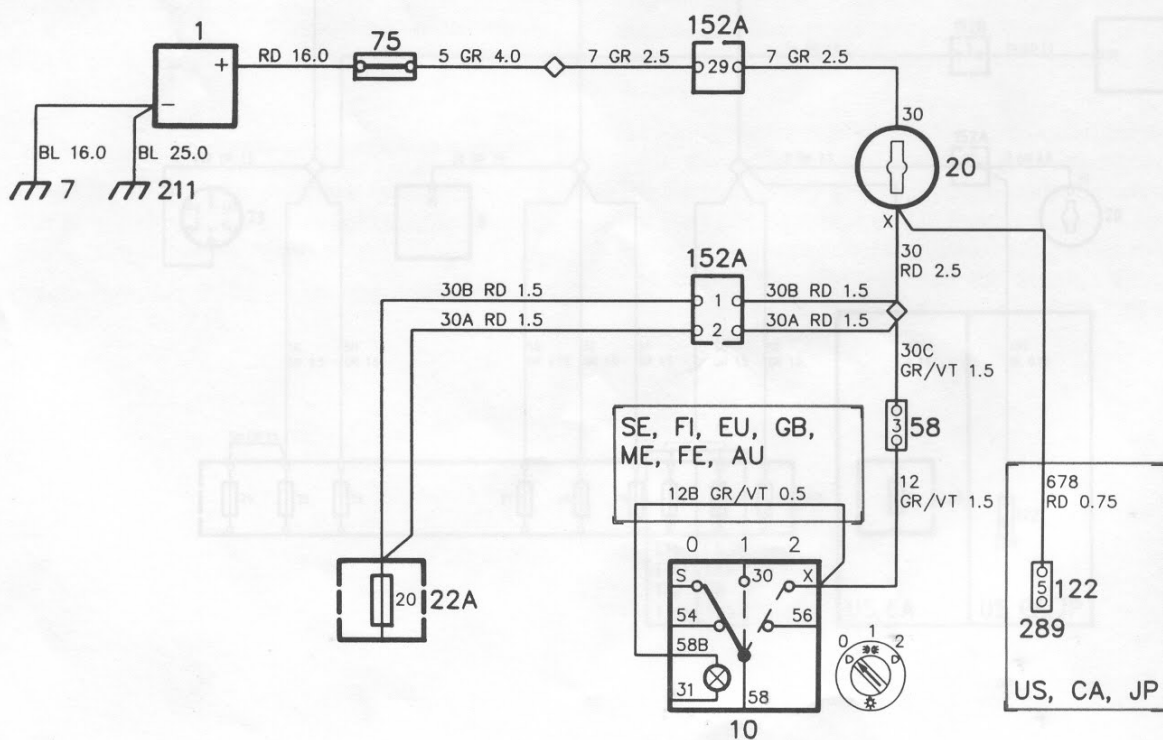
- Ignition switch relay 21
- Timing service instrument socket 73
- Fuel pump relay 102, control unit 200 and main relay 229 for the LH fuel injection system on cars powered by the 16-valve engine. (On cars with the 8-valve fuel injection engine, fuel pump relay 102 is connected instead to fuse 30.)
- Lighting relay 8
- Light switch 10, across 29-pole red connector 152B
- Ignition switch 20 and connector 122 for the burglar alarm, across 29-pole white connector 152A.
- Fuses 310P and 310D for the passive seat belts on cars destined for the US market (cars with I8 or I16 engine).
- Fuse 290 (for the Convertible top)

On cars destined for the U.S.A., Canada and Japan, fuse 21 for the extra fog lamps (US, CA) and connector 289 for the burglar alarm (US, CA, JP) are also connected to this distribution block.

Fault-tracing hints

1. Check the battery voltage.
2. Check the terminals of distribution block 75 and 29-pole connectors 152.
3. Check that the supply to each component is live.
4. Check the relevant wiring.





Operation

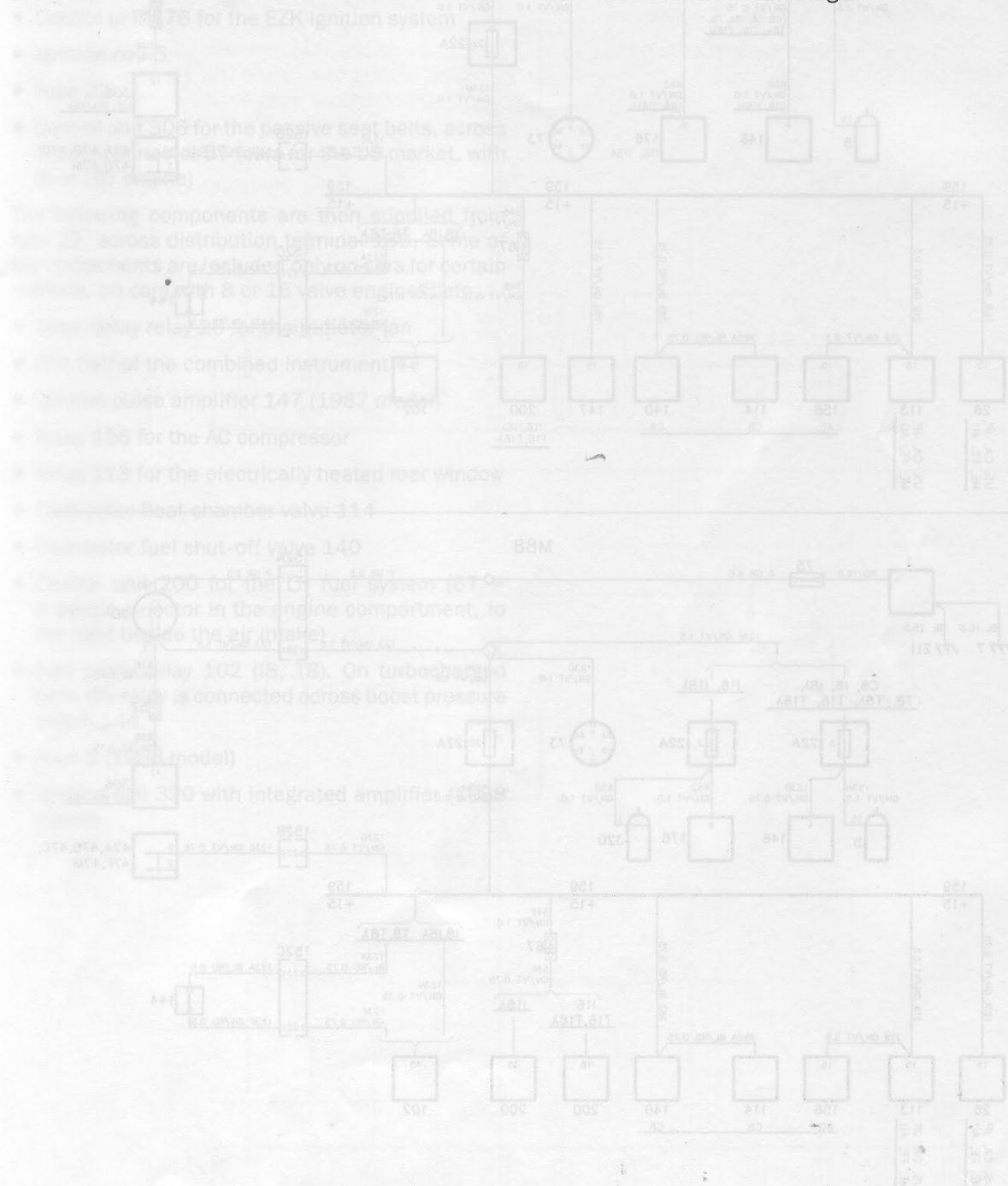
The positive supply is taken from battery 1 to ignition switch 20 across distribution block 75 and 29-pole white connector 152A.

When the ignition switch is set to the parked, drive or start position, terminals 30 and X of the ignition switch will be interconnected. The +X supply will then be connected to fuse 20 and light switch 10.

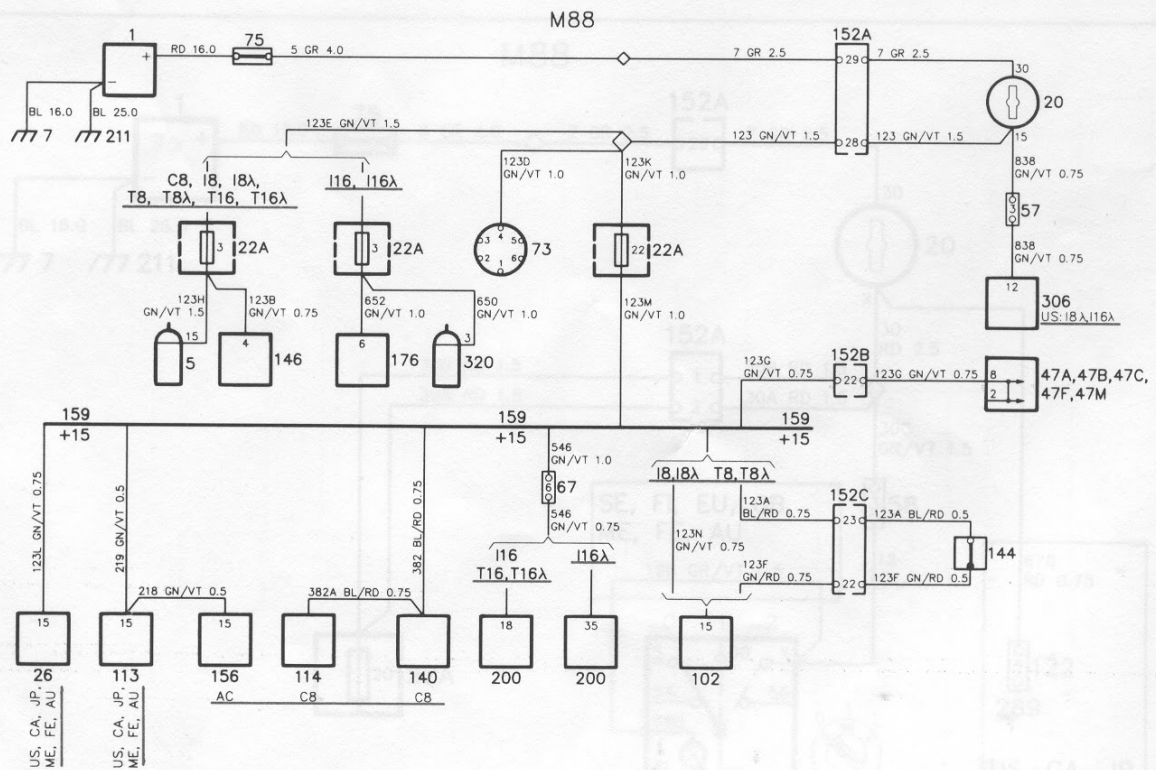
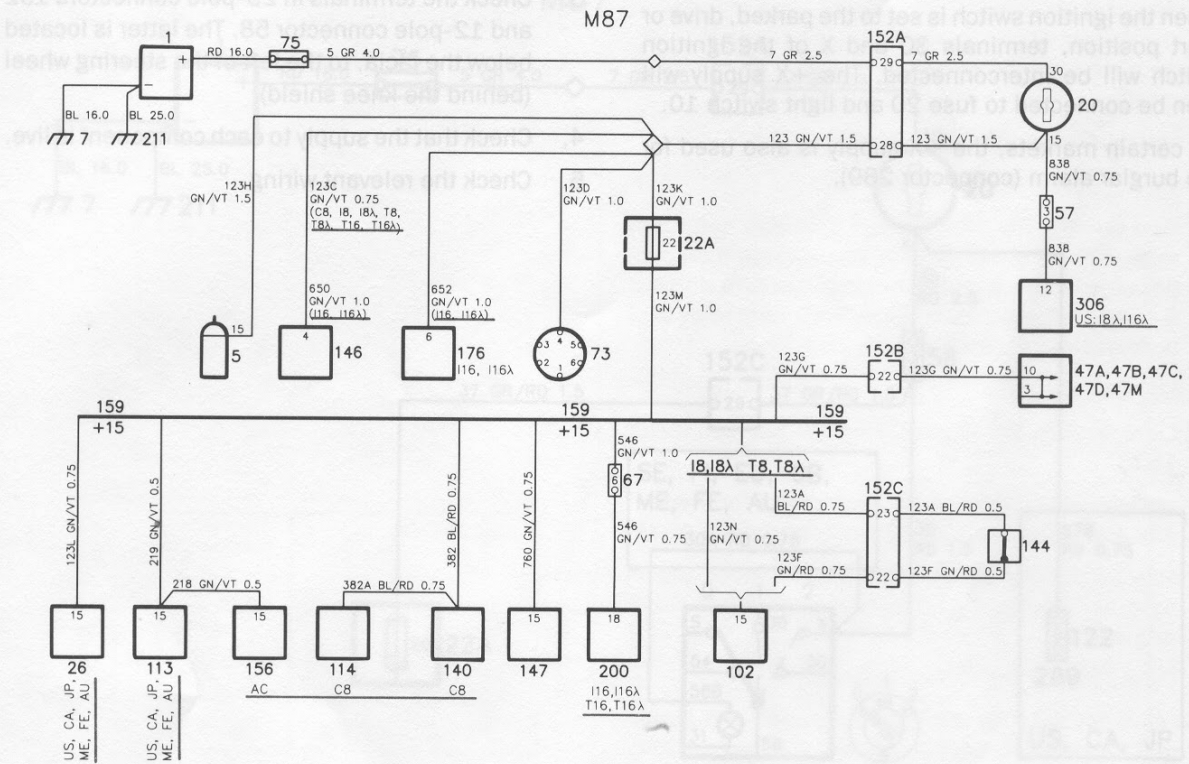
On certain markets, the +X supply is also used for the burglar alarm (connector 289).

Fault-tracing hints

1. Check the battery voltage.
2. Check the terminals of distribution block 75.
3. Check the terminals in 29-pole connectors 152 and 12-pole connector 58. The latter is located below the fascia, to the left of the steering wheel (behind the knee shield).
4. Check that the supply to each component is live.
5. Check the relevant wiring.



Distribution terminal +15



Operation

The positive supply is taken from battery 1 to ignition switch 20 across 29-pole white connector 152A in the electrical distribution box.

When the ignition switch is in the drive or start position, the +15 supply will be taken from terminal 15 of the ignition switch to the following components:

- Timing service instrument socket 73
- Amplifier 146 for the electronic ignition system
- Control unit 176 for the EZK ignition system
- Ignition coil 5
- Fuse 22
- Control unit 306 for the passive seat belts, across 3-pole connector 57 (cars for the US market, with I8 or I16 engine)

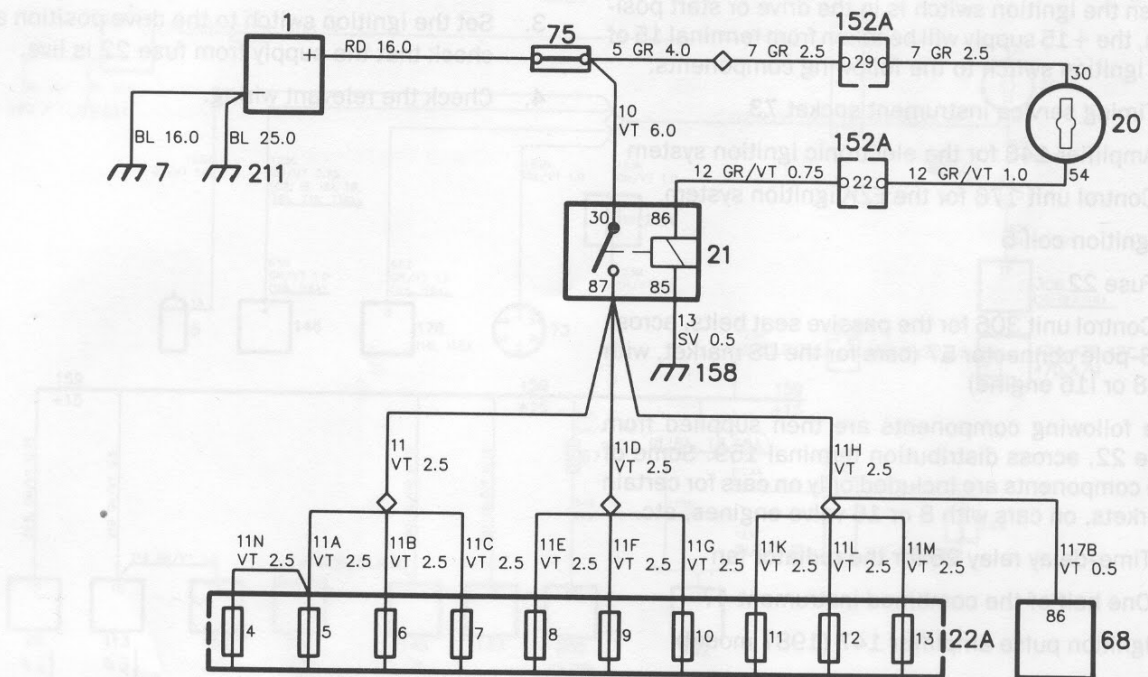
The following components are then supplied from fuse 22, across distribution terminal 159. Some of the components are included only on cars for certain markets, on cars with 8 or 16 valve engines, etc.

- Time-delay relay 26 for the radiator fan
- One half of the combined instrument 47
- Ignition pulse amplifier 147 (1987 model)
- Relay 156 for the AC compressor
- Relay 113 for the electrically heated rear window
- Carburetor float chamber valve 114
- Carburetor fuel shut-off valve 140
- Control unit 200 for the LH fuel system (67 = 6-pole connector in the engine compartment, to the right beside the air intake)
- Fuel pump relay 102 (I8, T8). On turbocharged cars, the relay is connected across boost pressure switch 144.
- Fuse 3 (1988 model)
- Ignition coil 320 with integrated amplifier (1988 model)

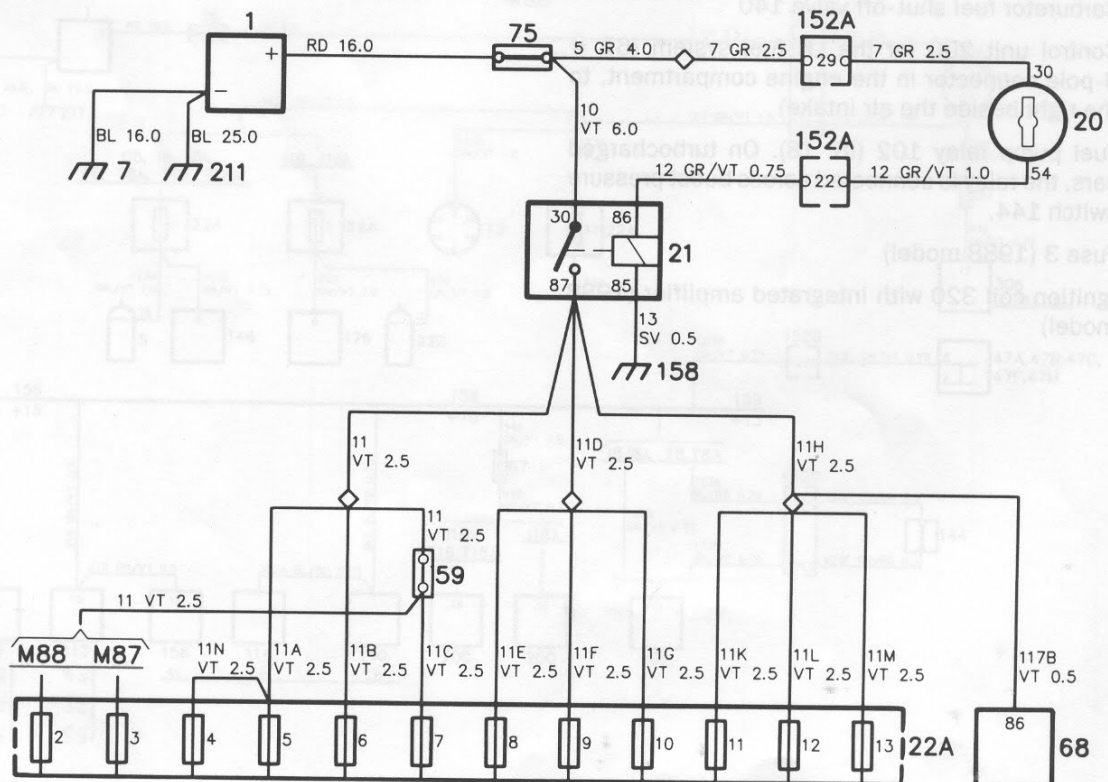
Fault-tracing hints

1. Check the battery voltage.
2. Check the terminals of distribution block 75 and 29-pole connectors 152.
3. Set the ignition switch to the drive position and check that the supply from fuse 22 is live.
4. Check the relevant wiring.
5. Check that fuses 4-13 in fuse holder 22A are live (fuses 2-13 on the Convertible).
6. Check the relevant wiring.

Distribution terminal +54



CAB



Operation

The positive supply is taken from battery 1 across distribution block 75 to:

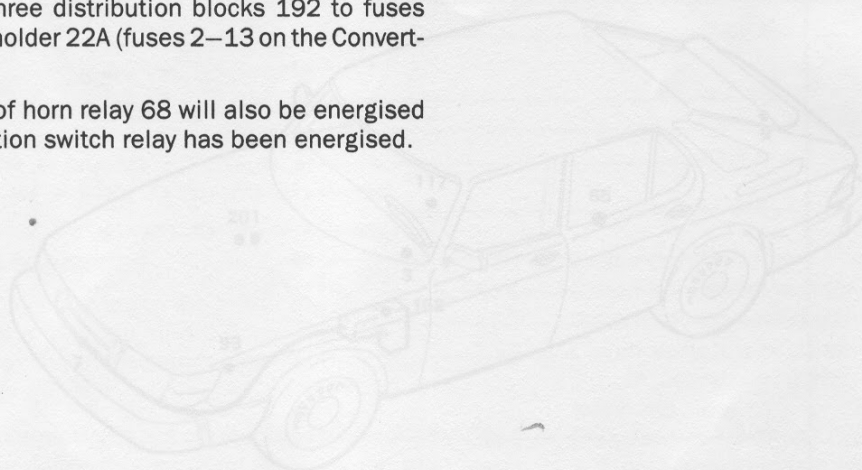
- the contacts (terminal 30) of ignition switch relay 21
- terminal 30 of ignition switch 20 and then on to the coil of ignition switch relay 21

When the ignition switch is set to the drive position, terminals 30 and 54 of the ignition switch will be interconnected. Current will then flow through the coil of ignition switch relay 21 across 29-pole connector white 152A, and the relay will be energised. The relay contacts will close, and current will flow through the three distribution blocks 192 to fuses 4–13 in fuse holder 22A (fuses 2–13 on the Convertible).

The contacts of horn relay 68 will also be energised when the ignition switch relay has been energised.

Fault-tracing hints

1. Check the battery voltage.
2. Check the terminals of distribution block 75, and check that terminal 30 of ignition switch relay 21 is live.
3. Set the ignition switch to the drive position and check that ignition switch relay 21 operates. Terminal 87 of the relay should then be live.
4. Check that fuses 4–13 in fuse holder 22A are live (fuses 2–13 on the Convertible).
5. Check the relevant wiring.



3	Earthing point in the fascia
7	Earthing point on the radiator cross-member
9	Earthing point in the luggage compartment
65	Earthing point under the back seat
68	Earthing point on the amplifier
117	Earthing point at the handbrake lever (1987 model)
118	Earthing point between the ignition switch and the handbrake lever (1988 model)
158	Negative distribution terminal in the electrical distribution box
203	Earthing point, engine (two)
205	Earthing point, gearbox
207	Earthing point, alternator bracket

The battery is earthed by means of a 16 mm² conductor to earthing point 7. The engine is connected directly to the negative pole of the battery by means of a 25 mm² conductor.

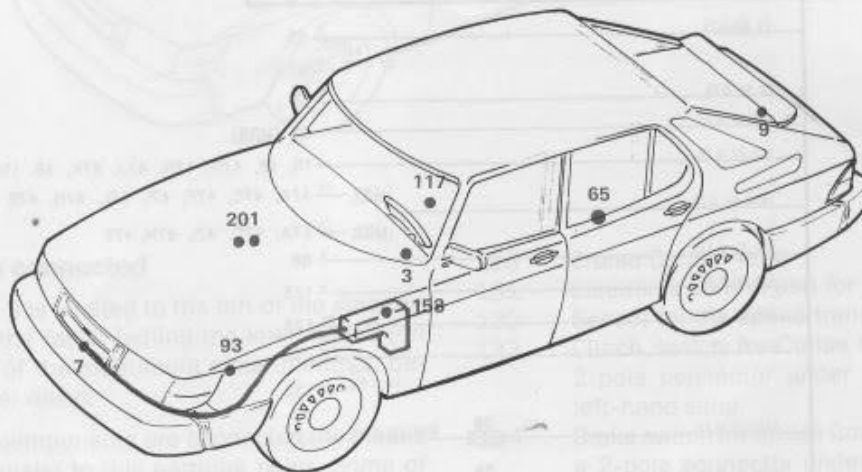
From earthing point 7, a cable then runs to distribution terminal 158 in the electrical distribution box on the left-hand front wheel housing.

Earthing point 65 is used only on cars with passive seat belts.

Earth connections

General

The car has certain earthing points which have "component numbers" and other earthing points at which the component is earthed directly to the chassis, such as temperature transmitters, oil pressure transmitters, etc. The locations of the earthing points with component numbers are the same in the Combi Coupe, the Sedan and the Convertible.



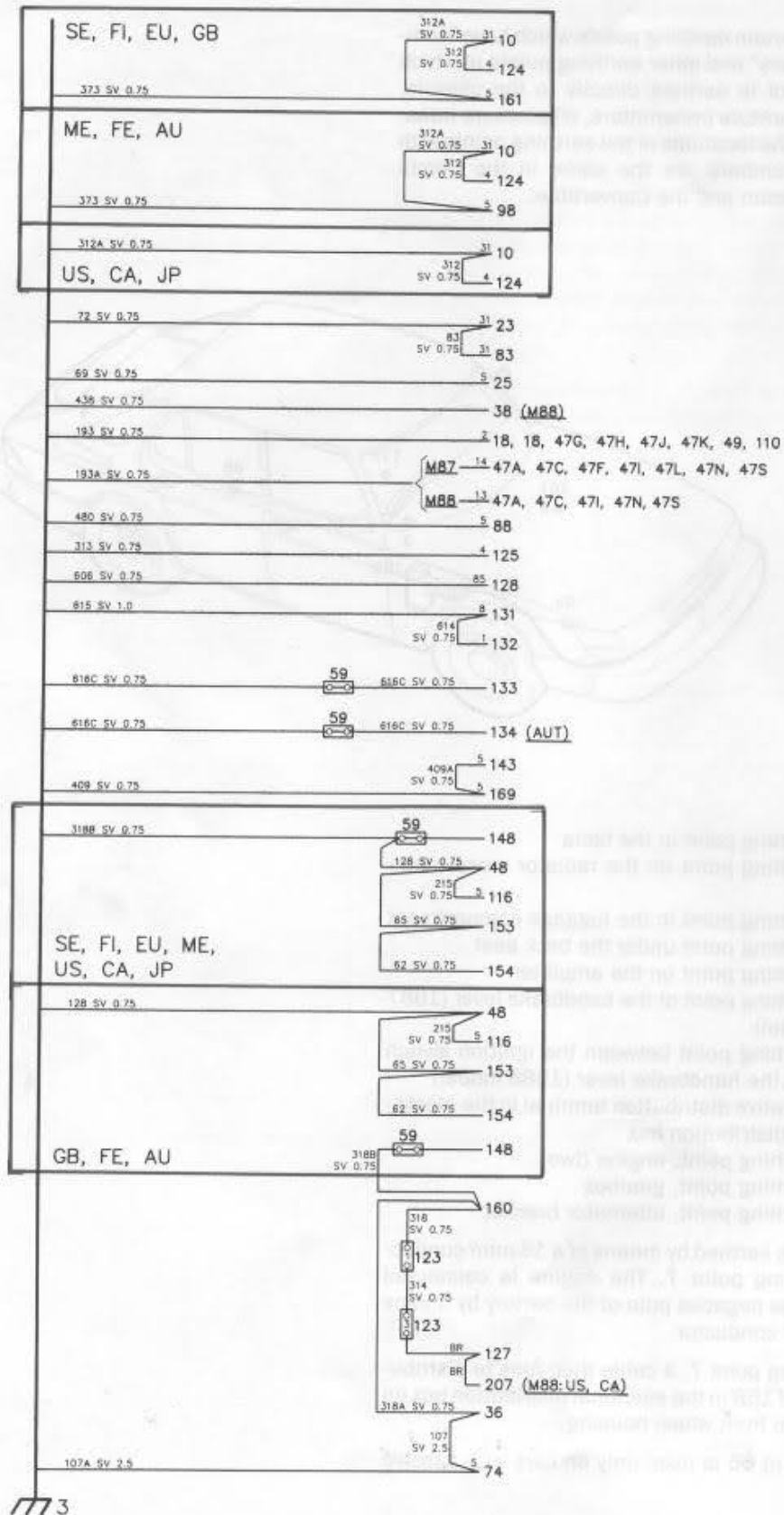
- 3 Earthing point in the fascia
- 7 Earthing point on the radiator cross-member
- 9 Earthing point in the luggage compartment
- 65 Earthing point under the back seat
- 93 Earthing point on the amplifier
- 117 Earthing point at the handbrake lever (1987 model)
Earthing point between the ignition switch and the handbrake lever (1988 model)
- 158 Negative distribution terminal in the electrical distribution box
- 201 Earthing point, engine (two)
- 211 Earthing point, gearbox
- 257 Earthing point, alternator bracket

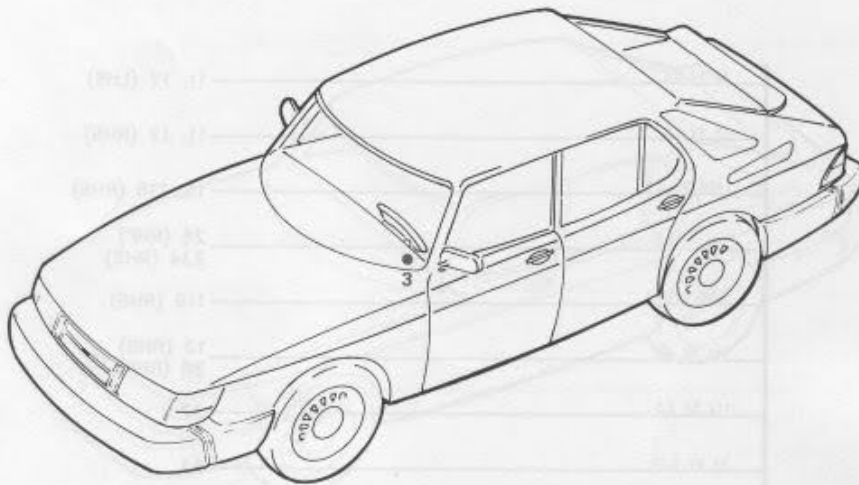
The battery is earthed by means of a 16 mm² conductor to earthing point 7. The engine is connected directly to the negative pole of the battery by means of a 25 mm² conductor.

From earthing point 7, a cable then runs to distribution terminal 158 in the electrical distribution box on the left-hand front wheel housing.

Earthing point 65 is used only on cars with passive seat belts.

Earthing point 3





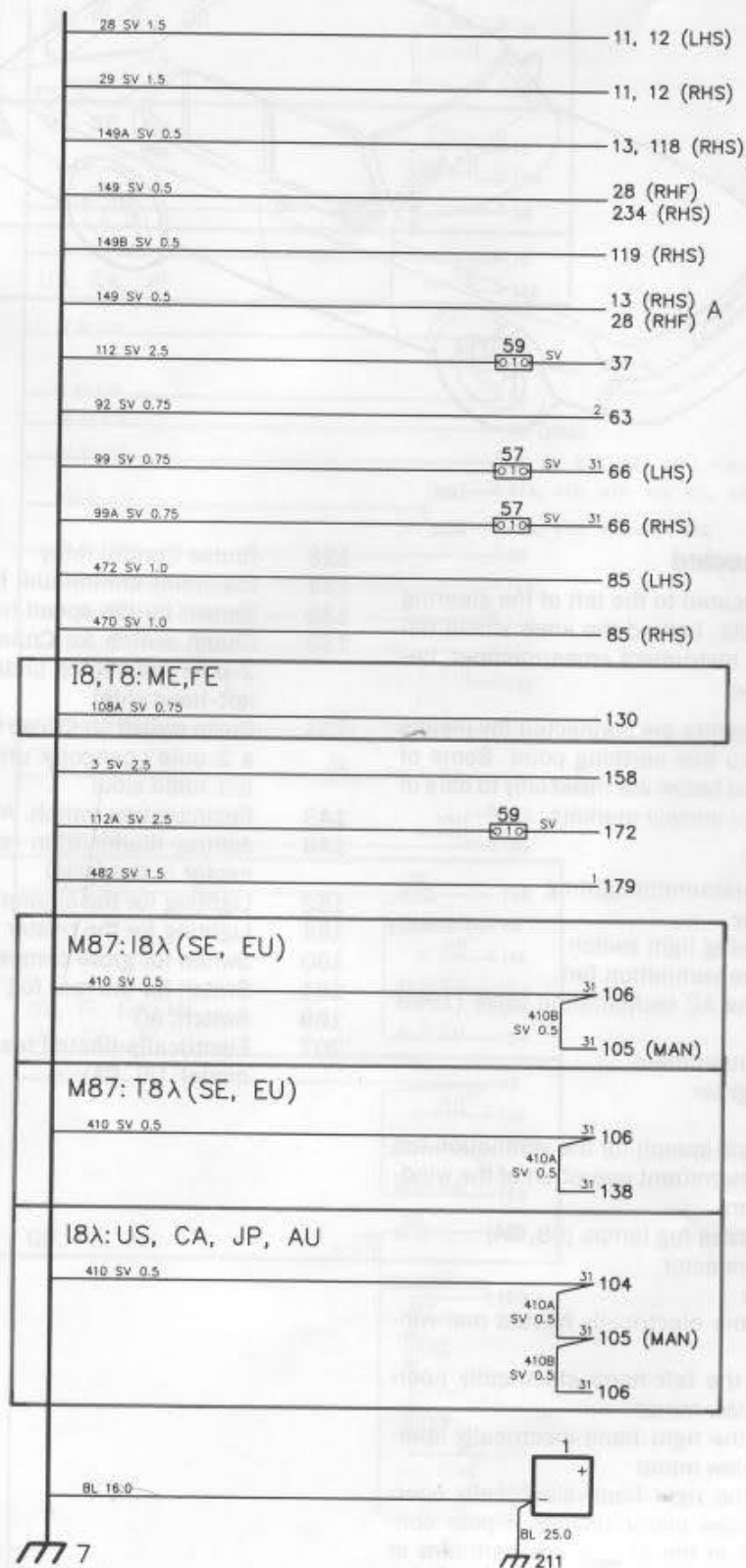
Components connected

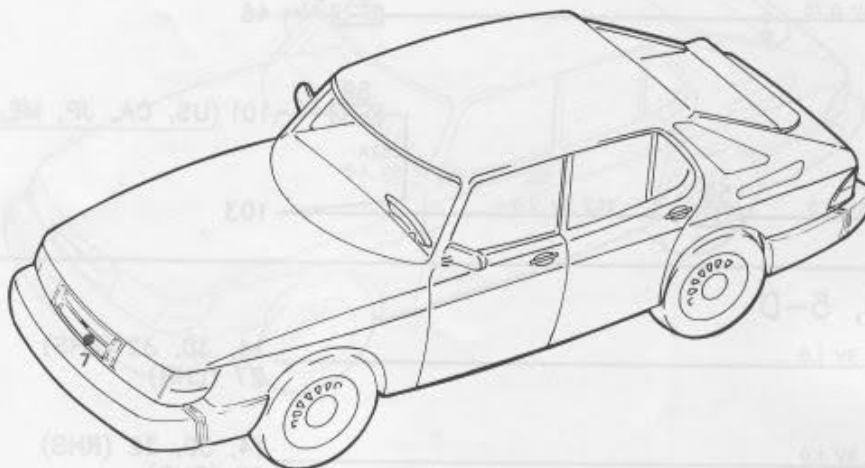
Earthing point 3 is located to the left of the steering wheel, below the facia, behind the knee shield (on the front side of the instrument cross-member, behind the flasher relay).

The following components are connected (by means of screw terminals) to this earthing point. Some of the components listed below are fitted only to cars of certain versions or for certain markets.

10	Light switch	128	Cruise Control relay
18	Combined instrument lighting	131	Electronic control unit for Cruise Control
23	Flasher relay	132	Sensor for the speed transmitter
25	Hazard warning light switch	133	Clutch switch for Cruise Control (across a 2-pole connector under the facia on the left-hand side)
36	Motor for the ventilation fan	134	Brake switch for Cruise Control (AUT) (across a 2-pole connector under the facia on the left-hand side)
38	Motor for the AC recirculation valve (1988 model)	143	Recirculation switch, AC
47	Combined instrument	148	Ashtray illumination (across a 2-pole connector in the facia)
48	Cigarette lighter	153	Lighting for the cigarette lighter
49	Clock	154	Lighting for the heater controls
74	Resistor (half-speed) for the ventilation fan	160	Switch for glove compartment illumination
83	Relay for intermittent operation of the wind-screen wipers	161	Switch for the rear fog lights
88	Switch for extra fog lamps (US, CA)	169	Switch, AC
98	10-pole connector	207	Electrically-heated rear-view mirrors (1988 model: US, CA)
110	Tachometer		
116	Switch for the electrically heated rear window		
124	Switch for the left-hand electrically operated rear-view mirror		
125	Switch for the right-hand electrically operated rear-view mirror		
127	Motor for the right-hand electrically operated rear-view mirror (across 4-pole connector 123 in the engine compartment at the right-hand door pillar and in the right-hand door)		

Earthing point 7





Components connected

Earthing point 7 is located below the radiator, on the right-hand side of the radiator cross-member. The following components are connected (by means of screw terminals) to this earthing point. Some of the components listed below are fitted only to cars of certain versions or for certain markets.

Negative distribution terminal 158 in the electrical distribution box is also connected to earthing point 7.

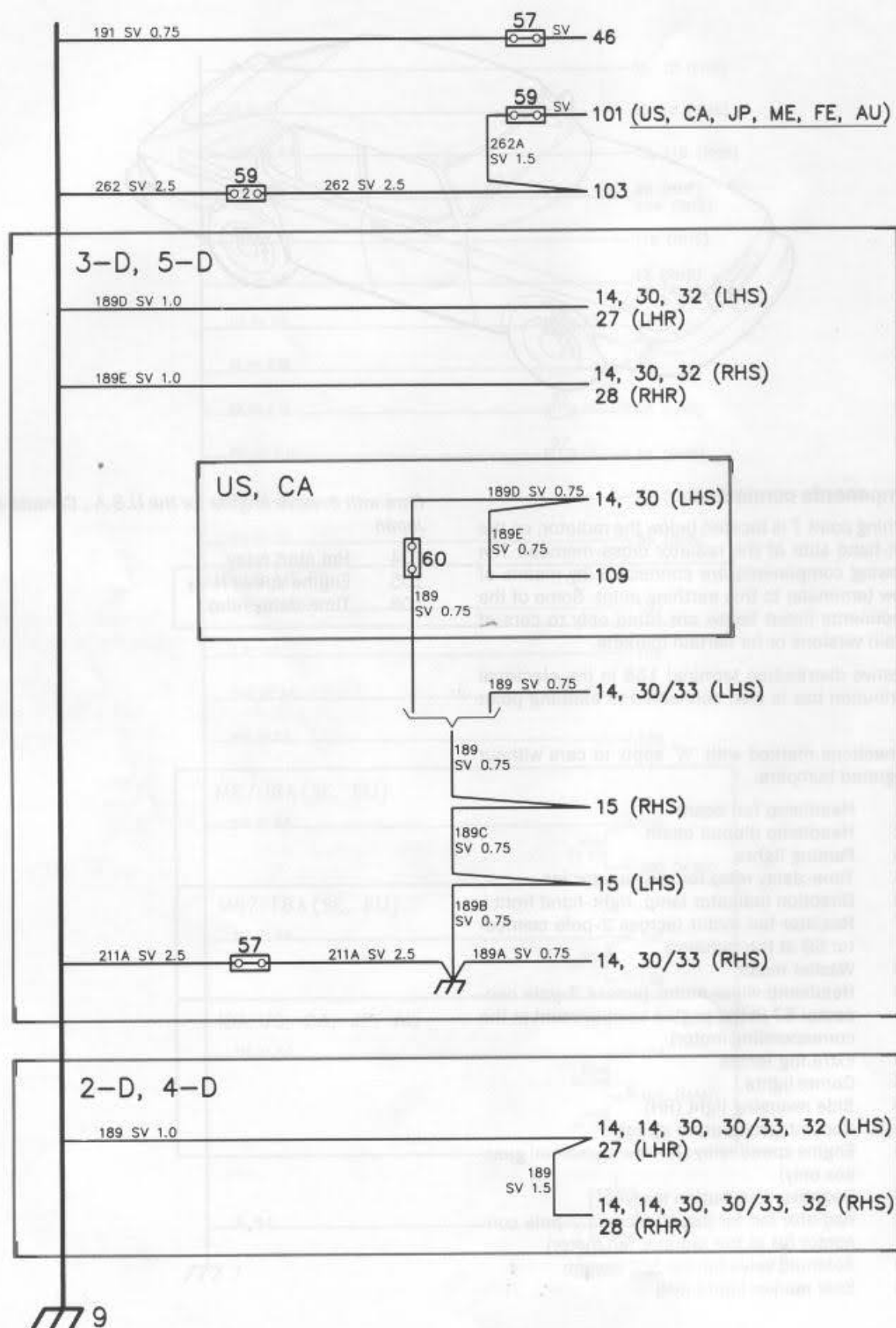
Connections marked with "A" apply to cars without integrated bumpers.

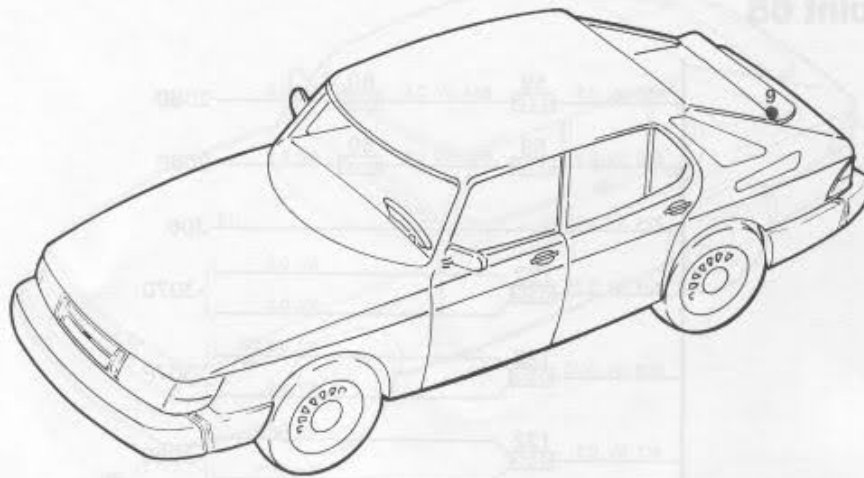
- 11 Headlamp full beam
- 12 Headlamp dipped beam
- 13 Parking lights
- 26 Time-delay relay for the radiator fan
- 28 Direction indicator lamp, right-hand front
- 37 Radiator fan motor (across 2-pole connector 59 at the radiator)
- 63 Washer motor
- 66 Headlamp wiper motor (across 3-pole connector 57 in the engine compartment at the corresponding motor)
- 85 Extra fog lamps
- 118 Corner lights
- 119 Side reversing light (RH)
- 130 Coolant temperature switch
- 138 Engine speed relay (Turbo with manual gearbox only)
- 158 Negative distribution terminal
- 172 Radiator fan for the AC (across 2-pole connector 59 at the radiator fan motor)
- 179 Solenoid valve for the APC system
- 234 Side marker lights (RH)

Cars with 8-valve engine for the U.S.A., Canada and Japan

- 104 Hot start relay
- 105 Engine speed relay
- 106 Time-delay relay

Earthing point 9





Components connected

Earthing point 9 is located under the spare wheel hatch in the luggage compartment, at the extreme rear on the centre member. The following components are connected (by means of screw terminals) to this earthing point. Some of the components listed below are fitted only to cars of certain versions or for certain markets.

- 46 Fuel level transmitter (across 3-pole connector 57, under the luggage compartment floor, beside the transmitter)
- 101 Fuel feed pump (across 2-pole connector 59 under the luggage compartment floor)
- 103 Fuel pump (across 2-pole connector 59 under the luggage compartment floor)
- 177 Control unit for the APC system

3-D, 5-D

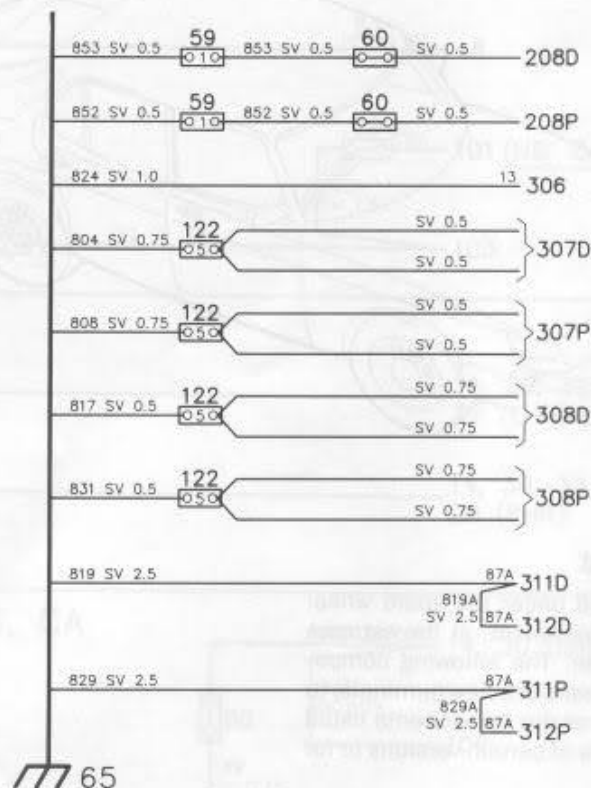
The tailgate lighting is earthed to the tailgate which, in turn, is earthed to earthing point 9 across cable 211A SV 2.5 (across 3-pole connector 57 in the luggage compartment, at the left-hand air outlet).

- 14 Rear lights
- 15 Number plate illumination
- 27 Direction indicator lamps, left-hand
- 28 Direction indicator lamps, right-hand
- 30 Brake lamps
- 32 Reversing lamps
- 33 Rear fog lights
- 109 High-level brake light (across single-pole connector 60 in the tailgate, at the left-hand rear light cluster)

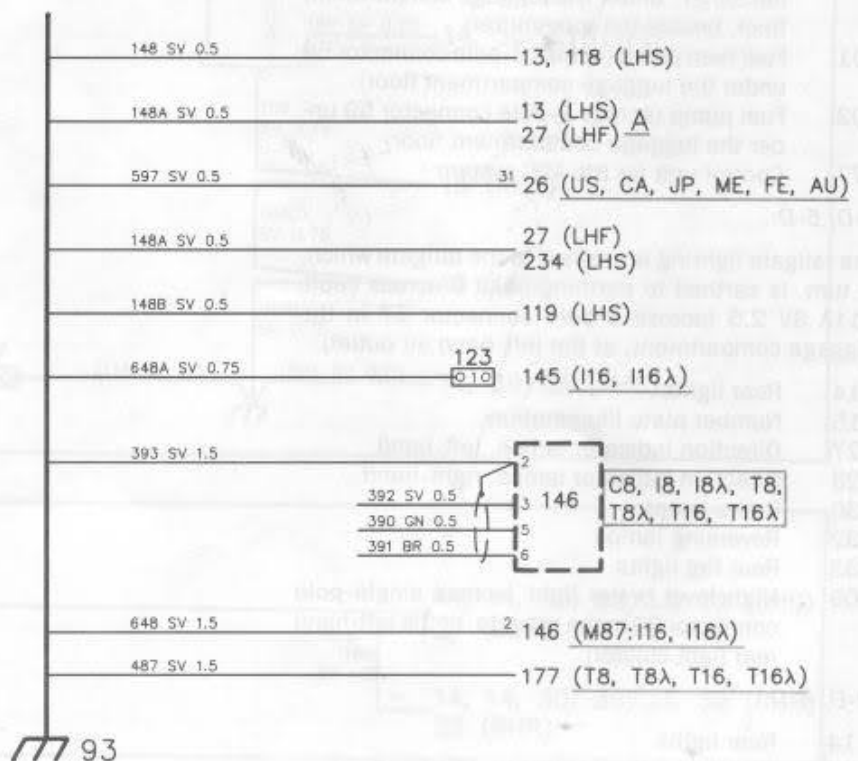
2-D, 4-D

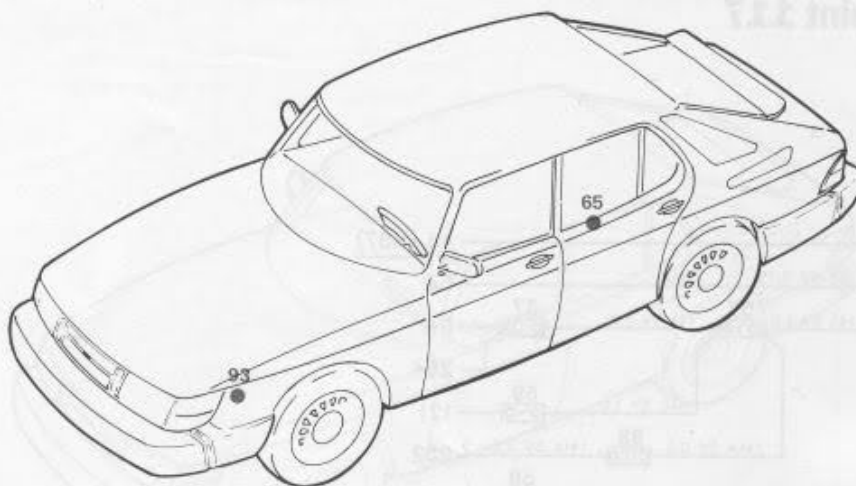
- 14 Rear lights
- 27 Direction indicator lamps, left-hand
- 28 Direction indicator lamps, right-hand
- 30 Brake lamps
- 32 Reversing lamps
- 33 Rear fog lights

Earthing point 65



Earthing point 93





Components connected

Earthing point 65 is located under the back seat, in the centre. The components for the passive seat belts are connected to this earthing point.

- 208D Door lock, reed switch, driver's door
- 208P Door lock, reed switch, co-driver's door
- 306 Logic box for passive seat belts
- 307D Belt reel for passive seat belts, driver's side
- 307P Belt reel for passive seat belts, co-driver's side
- 308D Motor with limit switches for passive seat belts, driver's side
- 308P Motor with limit switches for passive seat belts, (co-driver's side)
- 311D Motor relay for passive seat belts, driver's side
- 311P Motor relay for passive seat belts, co-driver's side
- 312D Motor relay for passive seat belts, driver's side
- 312P Motor relay for passive seat belts, co-driver's side

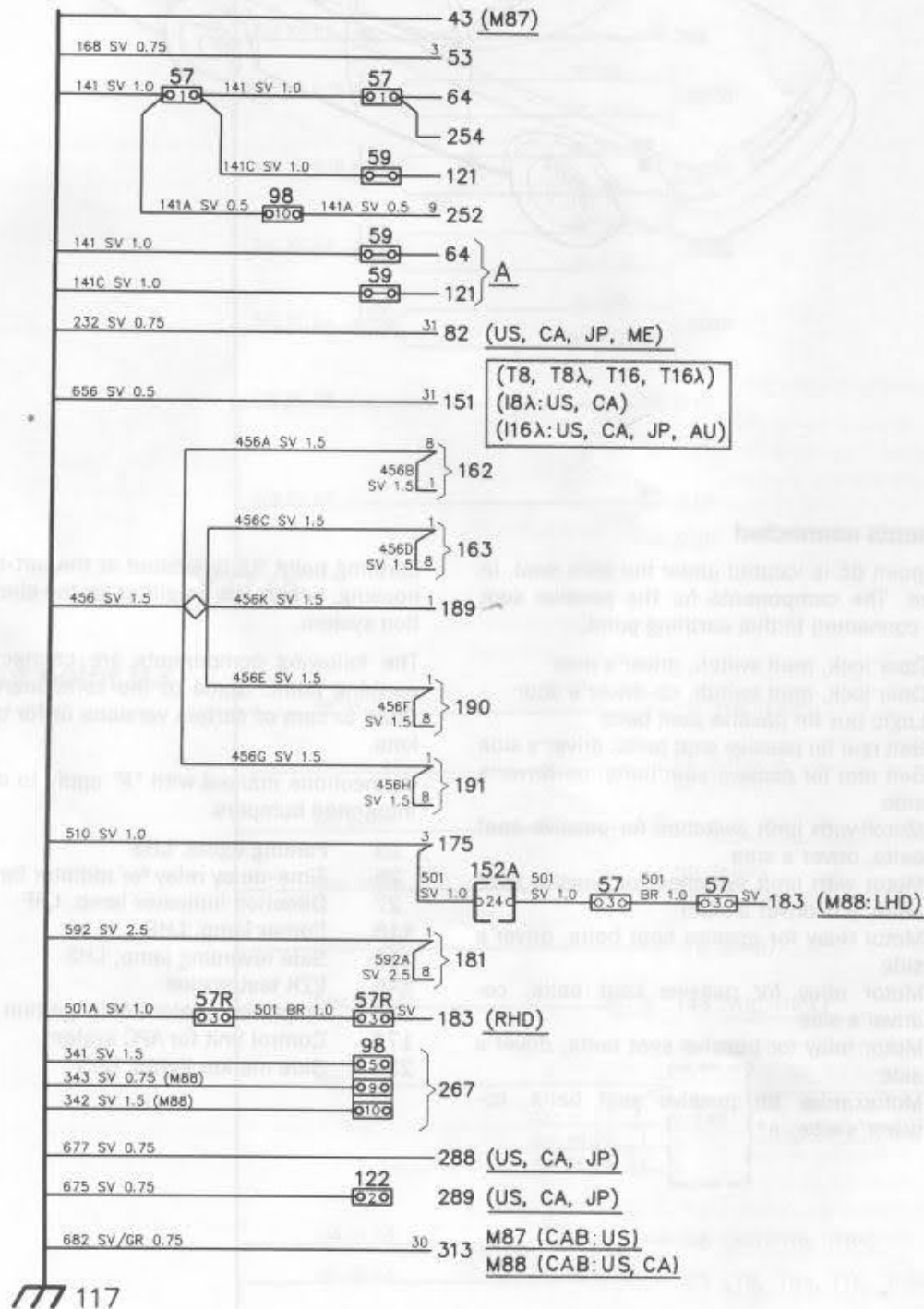
Earthing point 93 is located at the left-hand wheel housing, beside the amplifier for the electronic ignition system.

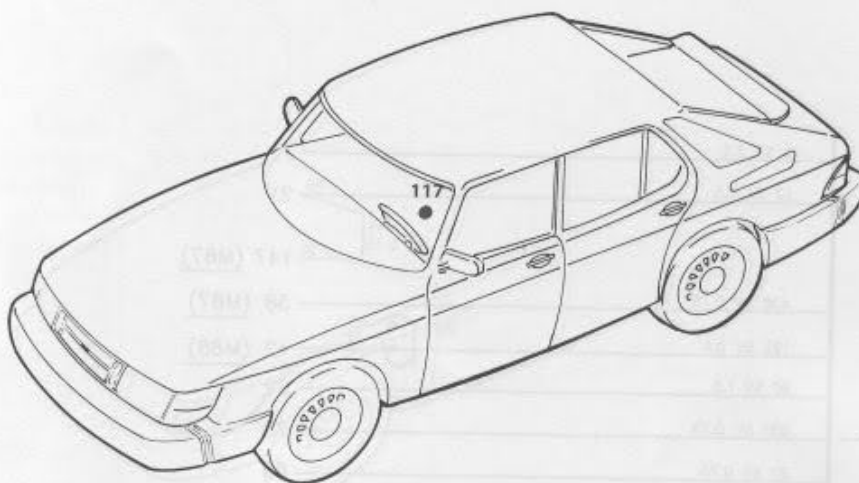
The following components are connected to this earthing point. Some of the components are only fitted to cars of certain versions or for certain markets.

Connections marked with "A" apply to cars without integrated bumpers.

- 13 Parking lights, LHS
- 26 Time-delay relay for radiator fan
- 27 Direction indicator lamp, LHF
- 118 Corner lamp, LHS
- 119 Side reversing lamp, LHS
- 145 EZK test socket
- 146 Amplifier for electronic ignition system
- 177 Control unit for APC system
- 234 Side marker lights, LHS

Earthing point 117





Components connected

On the 1987 model, earthing point 117 is located on the handbrake lever.

On the 1988 model, earthing point 117 is located between the ignition switch and the handbrake lever.

The front seat must be removed before access can be gained to the earthing point.

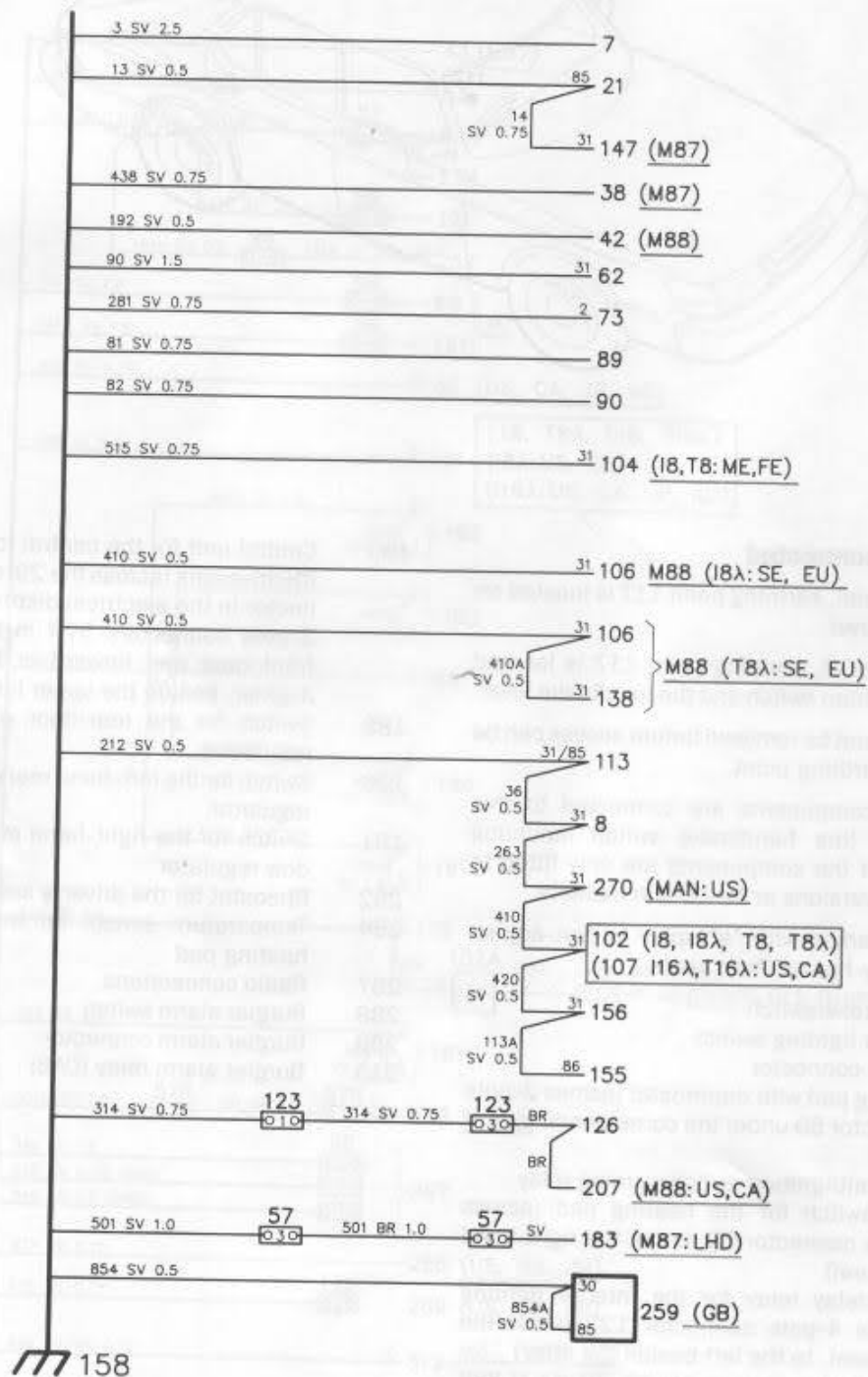
The following components are connected to this earthing point (the handbrake switch mounting screw). Some of the components are only fitted to cars of certain versions or for certain markets.

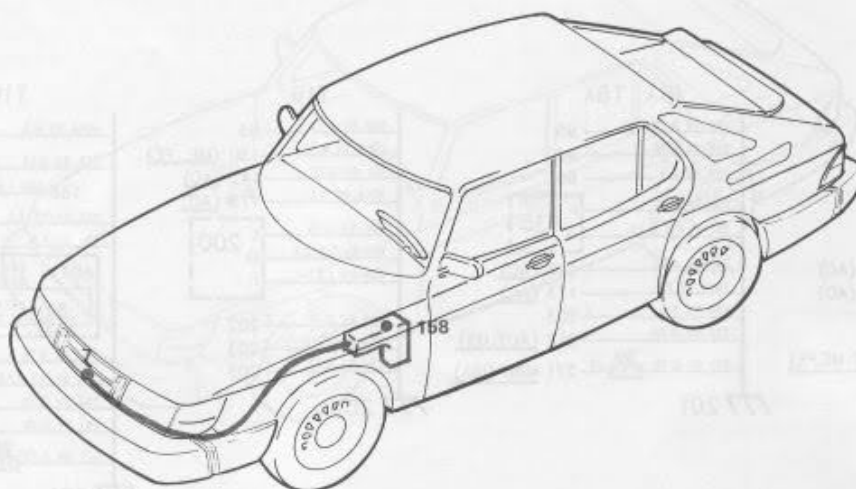
Connections marked with "A" apply to non-adjustable electrically-heated front seats.

- 43 Handbrake switch
- 53 Interior lighting switch
- 57 3-pole connector
- 64 Heating pad with thermostat (across 2-pole connector 59 under the corresponding front seat)
- 82 Seat belt/ignition switch warning relay
- 121 Seat switch for the heating pad (across 2-pole connector 59, under the right-hand front seat)
- 151 Time-delay relay for the interior lighting (across 4-pole connector 123 under the back seat, to the left beside the relay)
- 152A 29-pole white connector
- 162 Switch for the driver's door electric window regulator
- 163 Switch for the co-driver's door electric window regulator
- 175 Electronic unit for the central locking system
- 181 Switch for the electrically operated sunroof

- 183 Control unit for the central locking system, RH drive cars (across the 29-pole white connector in the electrical distribution box and 3-pole connectors 57R in the right-hand front door and forward of the right-hand A-pillar, beside the upper hinge)
- 189 Switch for the rear-door electric window regulators
- 190 Switch for the left-hand rear electric window regulator
- 191 Switch for the right-hand rear electric window regulator
- 252 Rheostat for the driver's seat heating pad
- 254 Temperature sensor for the driver's seat heating pad
- 267 Radio connections
- 288 Burglar alarm switch
- 289 Burglar alarm connector
- 313 Burglar alarm relay (CAB)

Negative distribution terminal





Components connected

Distribution terminal 158 consists of a ring of flat pins and is connected to earthing point 7 on the radiator cross-member by means of cable 3 SV.

The terminal is located on the underside of the electrical distribution box. The following components are connected to the terminal. Some of the components listed below are fitted only to cars of certain versions or for certain markets.

7	Earthing point on the radiator cross-member
21	Ignition switch relay
38	Recirculation valve
42	Brake warning switch
62	Windscreen wiper motor
73	Timing service instrument socket
89	Side direction indicator, left-hand
90	Side direction indicator, right-hand
104	Hot start relay
106	Time-delay relay
126	Motor for the left-hand electrically operated rear-view mirror (across 4-pole connectors 123 in the engine compartment at the left-hand door upper hinge and in the left-hand front door)
138	Engine speed relay (Turbo with manual gear-box only)
147	Ignition pulse amplifier
156	Relay for the AC compressor
183	Control unit for the driver's central door lock (across 3-pole connectors 57 in the engine compartment at the left-hand door upper hinge and in the left-hand front door)
207	Electrically-heated rear-view mirrors
259	Reverse-current protection relay (GB)

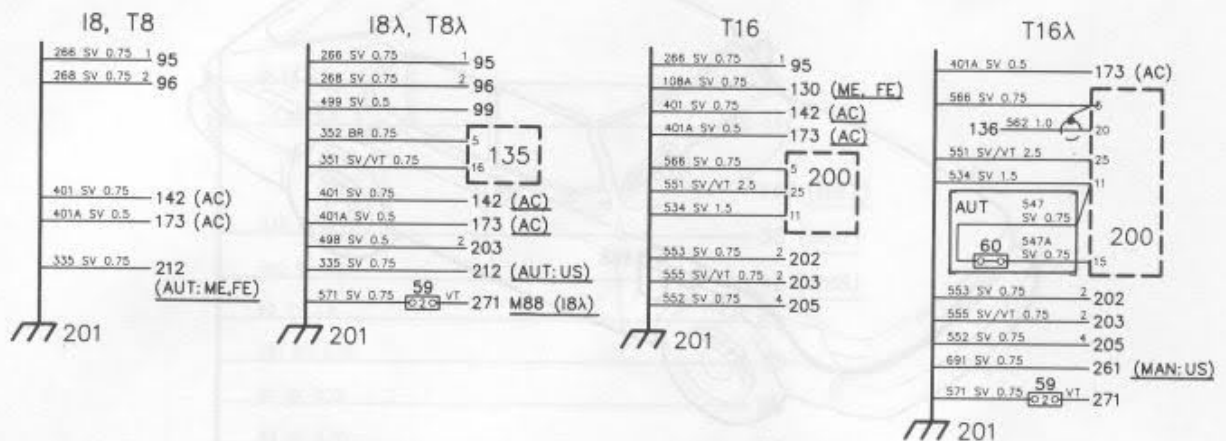
Cars with 8-valve engine

8	Lighting relay
102	Fuel pump relay
104	Hot start relay
113	Relay for the electrically heated rear window
155	Relay for the AC radiator fan
270	Shift-up indication relay

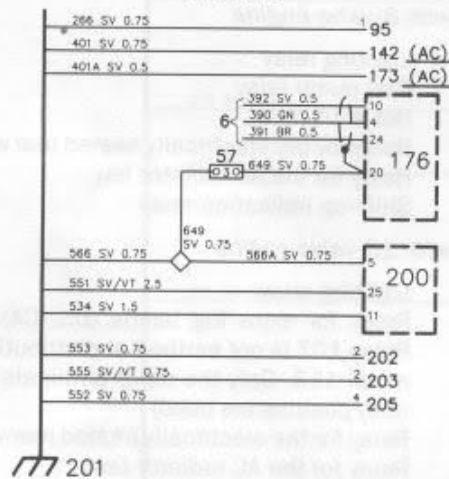
Cars with 16-valve engine

8	Lighting relay
107	Relay for extra fog lamps (US, CA). (N.B. Relay 107 is not earthed at distribution terminal 158. Only the other terminals in this relay position are used)
113	Relay for the electrically heated rear window
155	Relay for the AC radiator fan
270	Shift-up indication relay

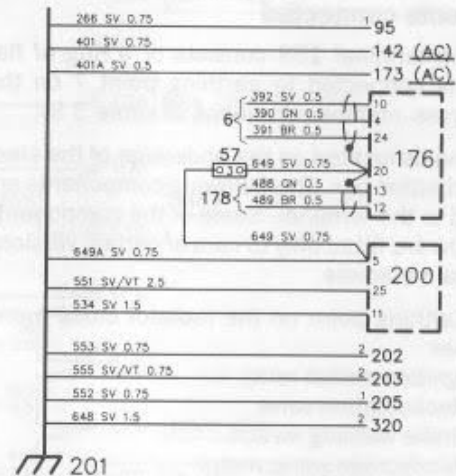
Earthing point 201



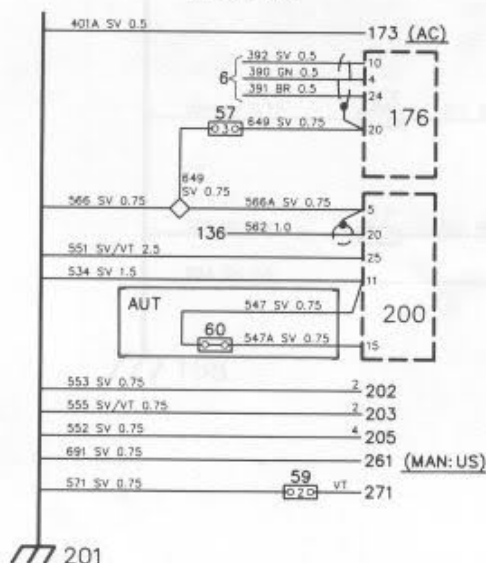
M87:116



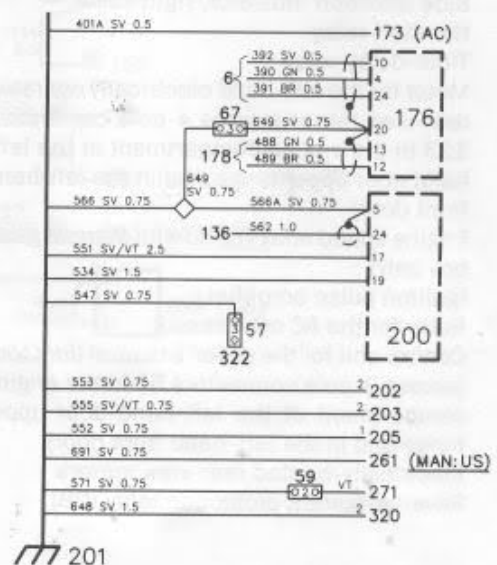
M88:116

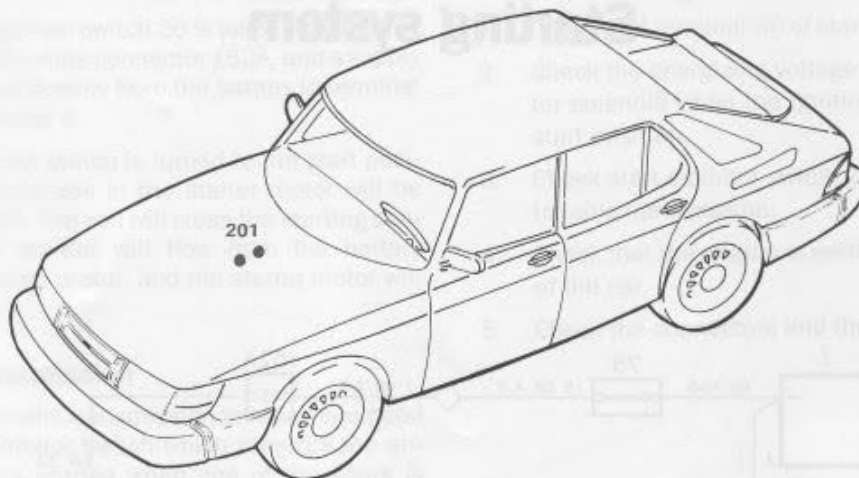


M87:116λ



M88:116λ





Components connected

Earthing points 201 (two) are located on the engine cylinder head at the lifting lug. The following components are connected to this earthing point. Some of the components are only fitted to cars of certain versions or for certain markets.

Cars with 8-valve engine

- 95 Auxiliary air valve (EU, ME, FE)
- 96 Control pressure valve
- 99 Temperature switch II, Lambda
- 135 Lambda control unit
- 142 Solenoid valve for raising the idling speed, AC
- 173 Diode for the AC compressor
- 203 Throttle angle transmitter for the CI fuel injection system, Lambda
- 212 Solenoid valve for raising the idling speed, auto. transm.
- 271 Preheater for the Lambda sensor (I8 Lambda)

Cars with 16-valve engine

- 95 Auxiliary air valve (EU, ME, FE)
- 130 Radiator coolant temperature warning switch (ME, FE)
- 142 Solenoid valve for raising the idling speed, AC (EU, ME, FE)
- 173 Diode for the AC compressor
- 176 Control unit for EZK ignition system (across 3-pole connector 57 in the engine compartment, on the right-hand side at the air intake)
- 200 Control unit for the LH fuel injection system
- 202 Engine temperature transmitter for the LH fuel injection system

- 203 Throttle angle transmitter for the LH fuel injection system
- 205 Air mass meter for the LH fuel injection system
- 261 Throttle contacts, zero position, shift-up indication
- 271 Preheater for the Lambda sensor
- 320 Ignition coil with integrated amplifier



Operation

The supply to ignition switch 20 is taken from battery 1 across 29-pole white connector 152A, and a supply cable is also run directly from the battery to terminal 30 of starter motor 4.

When the ignition switch is turned to the start position, the solenoid coil in the starter motor will be energised (+50). The coil will close the starting contacts, so that current will flow from the battery through the starter motor, and the starter motor will start to rotate.

Automatic transmission

Cars with automatic transmission are also equipped with a start inhibitor switch which prevents the engine from being started when one of the gears is engaged.

Fault-tracing hints

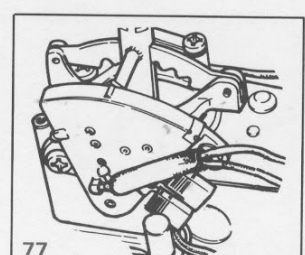
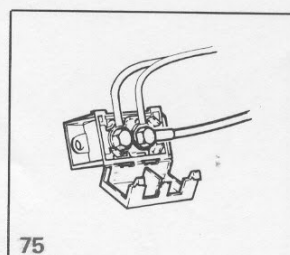
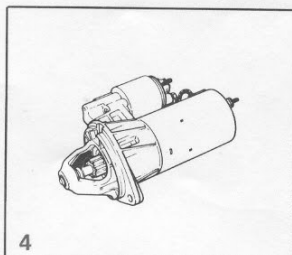
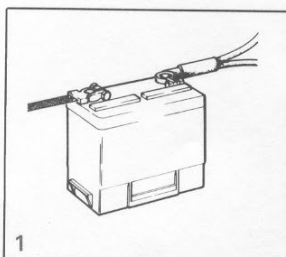
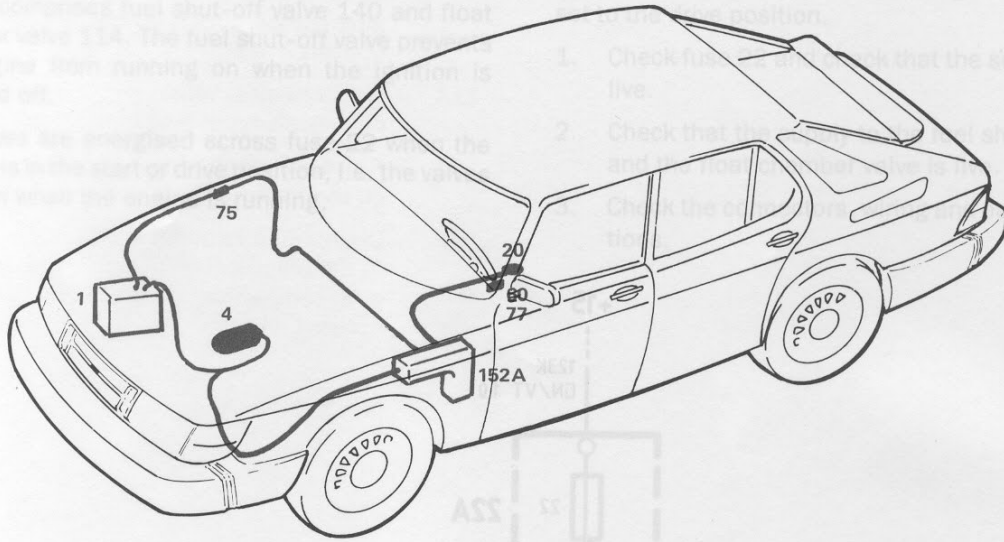
1. Check that terminal 30 of starter motor 4 is live.
2. Check the energising voltage to the starter motor solenoid when the ignition switch is in the start position.
3. Check start inhibitor switch 77 on cars with automatic transmission.
4. Check that the engine is earthed to the chassis of the car.
5. Check the connectors and the wiring.



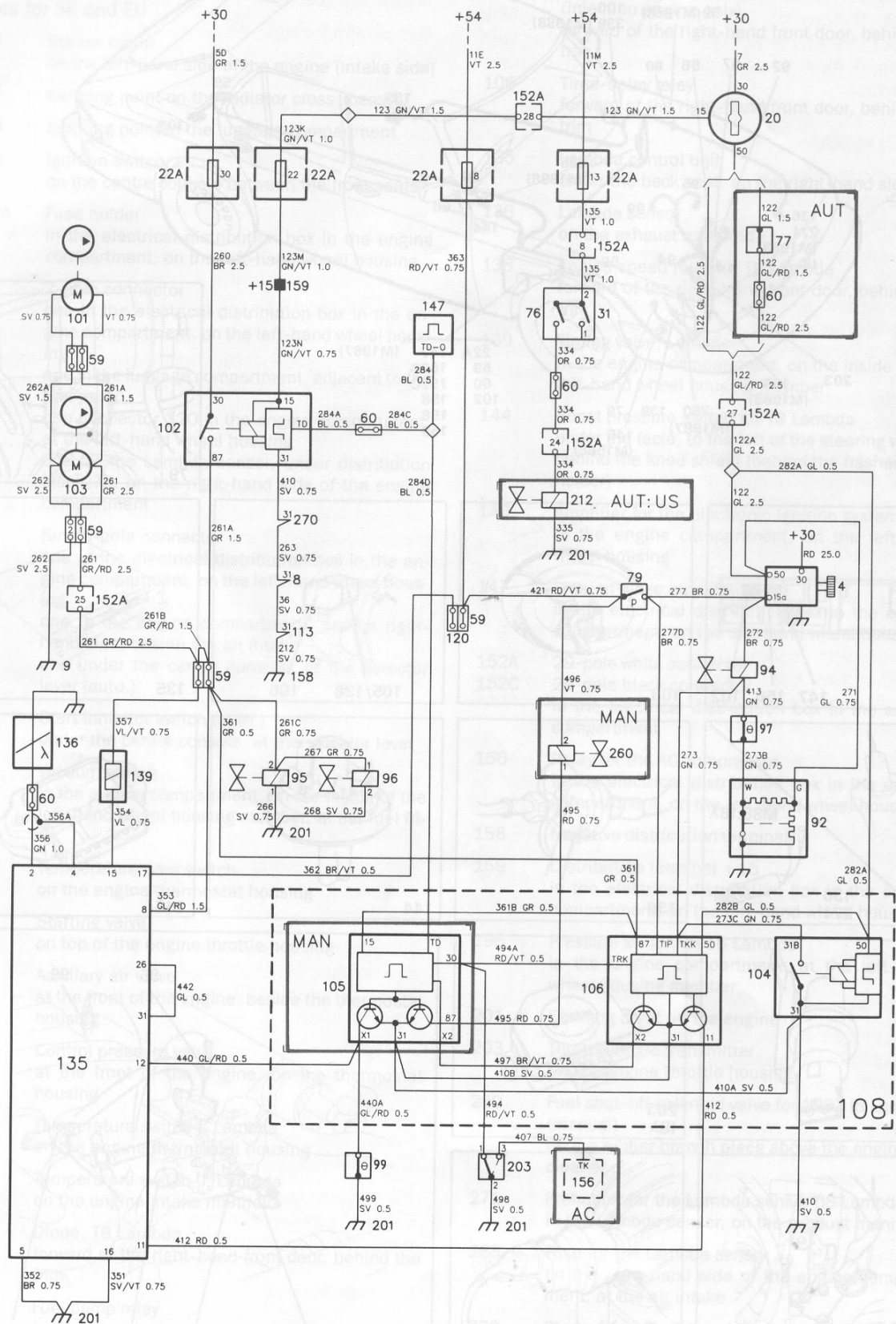
Locations of components

- 1 Battery
on the right-hand side of the engine compartment
- 4 Starter motor
on the left-hand side of the engine (intake side)
- 7 Earthing point, radiator cross-member
- 20 Ignition switch
on the centre console between the front seats
- 60 Single-pole connector (only on cars with automatic transmission)
under the centre console, between the front seats
- 75 Distribution block
in the engine compartment, on the right-hand side
- 77 Start inhibitor switch (only on cars with automatic transmission)
at the selector lever
- 152A 29-pole white connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car.
- 211 Earthing point on the gearbox

Components



CI fuel system: I8 Lambda, 1987 model, US, CA, JP, AU



IS,

Operation

The CI (Continuous Injection) fuel system with emission control (Lambda) is of mechanical type and is used for 8-valve engines. It consists basically of the conventional Saab CI system, although it is supplemented with equipment for more accurate adjustment of the fuel/air mixture.

The CI system

When the ignition key is turned to the start position, power will be supplied (+50) to starter motor 4 and temperature time switch 92.

If the engine is cold, i.e. if its temperature is below +45 °C, temperature time switch 92 will be closed. Starting valve 94, which is energised from terminal 15a of starter motor 4, will then be earthed. The valve will thus be open, and the engine will be supplied with additional fuel during the period when the starter motor is energised (although no longer than about 9 seconds).

If the ignition switch is in the start or drive position, fuel pump relay 102 will be energised (+15) across fuse 22. Relay 102 will be energised and fuel pumps 103 and 101, which are supplied across fuse 30, will start to run. At the same time, the heating coils in auxiliary air valve 95 and control pressure valve 96 will also be energised.

Ignition pulses will be supplied from ignition pulse amplifier 147 to the fuel pump relay and the Lambda system. If the engine should stop, the pulses will cease and the relay will then trip, thus interrupting the supply to the fuel system components.

Lambda

The Lambda equipment includes a Lambda sensor 136 which continuously supplies information to control unit 135 on the oxygen content in the exhaust gases. On the basis of this information, and the signals received by the control unit from the various sensors and relays of the Lambda system, the control unit adjusts the quantity of fuel injected through timing valve 139. (The valve is controlled by earthing of terminal 15.)

Control unit 135 and the relays in relay box 108 are supplied across the contacts in relay 102, from terminal 87. Time-delay relay 106 and hot start relay 104 are used during the starting stage. The relays are energised (+50) when ignition switch 20 is in the start position. The time-delay relay actuates the control unit and timing valve 139 to increase the fuel supply to the engine. The hot start relay pulses starting valve 94 even if the engine is hot on starting (i.e. if temperature time switch 92 would not normally open the valve).

Temperature switch 97 senses the engine temperature. It opens at a temperature above +45 °C and closes at +38 °C. Switch 97 is connected in series with temperature time switch 92.

Vacuum switch 79 is used for controlling the fuel enrichment during acceleration. If the engine is cold, the switch will open starting valve 94. If the engine is hot, a signal is applied instead to time-delay relay 106 which actuates the control unit to increase the fuel supply (active up to 2 minutes after starting).

Engine speed relay 105 is used together with solenoid valve 260 and throttle angle transmitter 203 for shutting off the fuel on overrun braking. The transmitter closes the earth circuit to relay 105 when the accelerator pedal is released. This function is also operative when the engine speed is in excess of about 1375 r/min. The relay is fitted only to cars with manual gearbox.

Throttle angle transmitter 203 is closed via pins 1 and 2 only when the throttle is in the idling position (throttle angle of 0°), and is closed via pins 2 and 3 when the throttle angle is between 72° and 90°.

Temperature switch 99 opens at +25 °C and closes at +19 °C. One of its functions is to improve the fuel enrichment.

Connector 120 is intended for a special instrument and is used for adjusting the timing ratio. The connector is energised when the ignition switch is in the drive position.

Fit the solenoid valve for raising the idling speed (212) if necessary (applies to cars with automatic transmission for the USA market). The cars have been pre-wired for this.

Fault-tracing hints

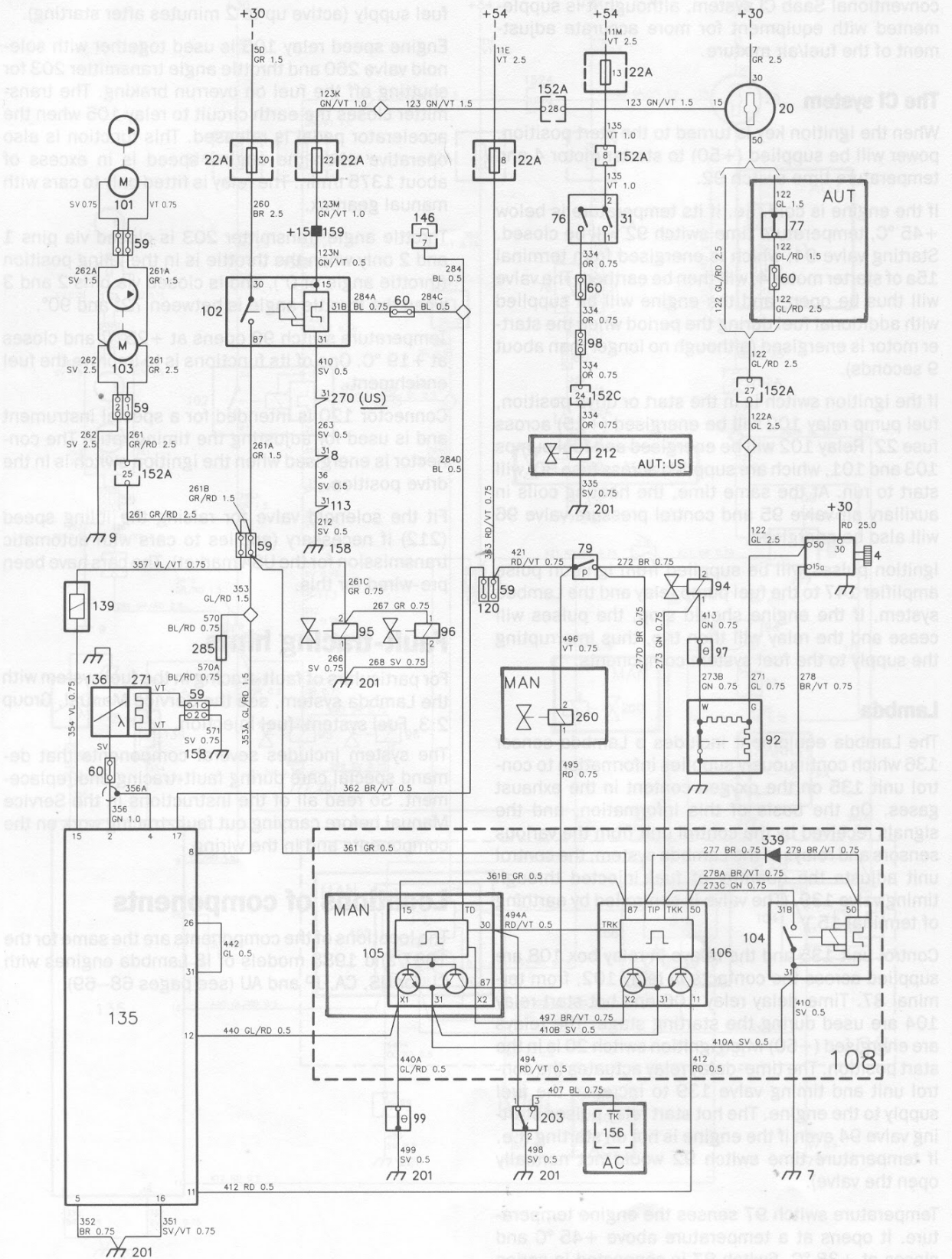
For particulars of fault-tracing in the fuel system with the Lambda system, see the Service Manual, Group 2:3, Fuel system, fuel injection.

The system includes several components that demand special care during fault-tracing and replacement. So read all of the instructions in the Service Manual before carrying out fault-tracing work on the components and in the wiring.

Locations of components

The locations of the components are the same for the 1987 and 1988 models of I8 Lambda engines with CI, for US, CA, JP and AU (see pages 68–69).

CI fuel system: I8 Lambda, 1988 model, US, CA, JP, AU



Operation

The CI (Continuous Injection) fuel system with emission control (Lambda) is of mechanical type and is used for 8-valve engines. It consists basically of the conventional Saab CI system, although it is supplemented with equipment for more accurate adjustment of the fuel/air mixture.

The CI system

When the ignition key is turned to the start position, power will be supplied (+50) to starter motor 4 and temperature time switch 92.

If the engine is cold, i.e. if its temperature is below +45 °C, temperature time switch 92 will be closed. Starting valve 94, which is energised from terminal 15a of starter motor 4, will then be earthed. The valve will thus be open, and the engine will be supplied with additional fuel during the period when the starter motor is energised (although no longer than about 9 seconds).

If the ignition switch is in the start or drive position, fuel pump relay 102 will be energised (+15) across fuse 22. Relay 102 will be energised and fuel pumps 103 and 101, which are supplied across fuse 30, will start to run. At the same time, the heating coils in auxiliary air valve 95 and control pressure valve 96 will also be energised.

Ignition pulses will be supplied from ignition system amplifier 146 to the fuel pump relay and the Lambda system. If the engine should stop, the pulses will cease and the relay will then trip, thus interrupting the supply to the fuel system components.

Lambda

The Lambda equipment includes a Lambda sensor 136 which continuously supplies information to control unit 135 on the oxygen content in the exhaust gases. On the basis of this information, and the signals received by the control unit from the various sensors and relays of the Lambda system, the control unit adjusts the quantity of fuel injected through timing valve 139. (The valve is controlled by earthing of terminal 15.) The Lambda sensor is heated by preheater 271 (protected by fuse 285 in the wiring).

Control unit 135 and the relays in relay box 108 are supplied across the contacts in relay 102, from terminal 87.

Time-delay relay 106 and hot start relay 104 are used during the starting stage. The relays are energised (+50) when ignition switch 20 is in the start position. The time-delay relay actuates the control unit and timing valve 139 to increase the fuel supply to the engine. The hot start relay pulses starting valve 94 even if the engine is hot on starting (i.e. if temperature time switch 92 would not normally open the valve).

Temperature switch 97 senses the engine temperature. It opens at a temperature above +45 °C and closes at +38 °C. Switch 97 is connected in series with temperature time switch 92.

Vacuum switch 79 is used for controlling the fuel enrichment during acceleration. If the engine is cold, the switch will open starting valve 94. If the engine is hot, a signal is applied instead to time-delay relay 106 which actuates the control unit to increase the fuel supply (active up to 2 minutes after starting).

Diode 339 prevents the supply from reaching relays 104:50 and 106:50 when switch 79 is closed.

Engine speed relay 105 is used together with solenoid valve 260 and throttle angle transmitter 203 for shutting off the fuel on overrun braking. The transmitter closes the earth circuit to relay 105 when the accelerator pedal is released. This function is also operative when the engine speed is in excess of about 1375 r/min. The relay is fitted only to cars with manual gearbox.

Throttle angle transmitter 203 is closed via pins 1 and 2 only when the throttle is in the idling position (throttle angle of 0°), and is closed via pins 2 and 3 when the throttle angle is between 72° and 90°.

Temperature switch 99 opens at +25 °C and closes at +19 °C. One of its functions is to improve the fuel enrichment.

Connector 120 is intended for a special instrument and is used for adjusting the timing ratio. The connector is energised when the ignition switch is in the drive position.

Fit the solenoid valve for raising the idling speed (212) if necessary (applies to cars for the USA market with automatic transmission). The cars have been pre-wired for this.

Fault-tracing hints

For particulars of fault-tracing in the fuel system with the Lambda system, see the Service Manual, Group 2:3, Fuel system, fuel injection.

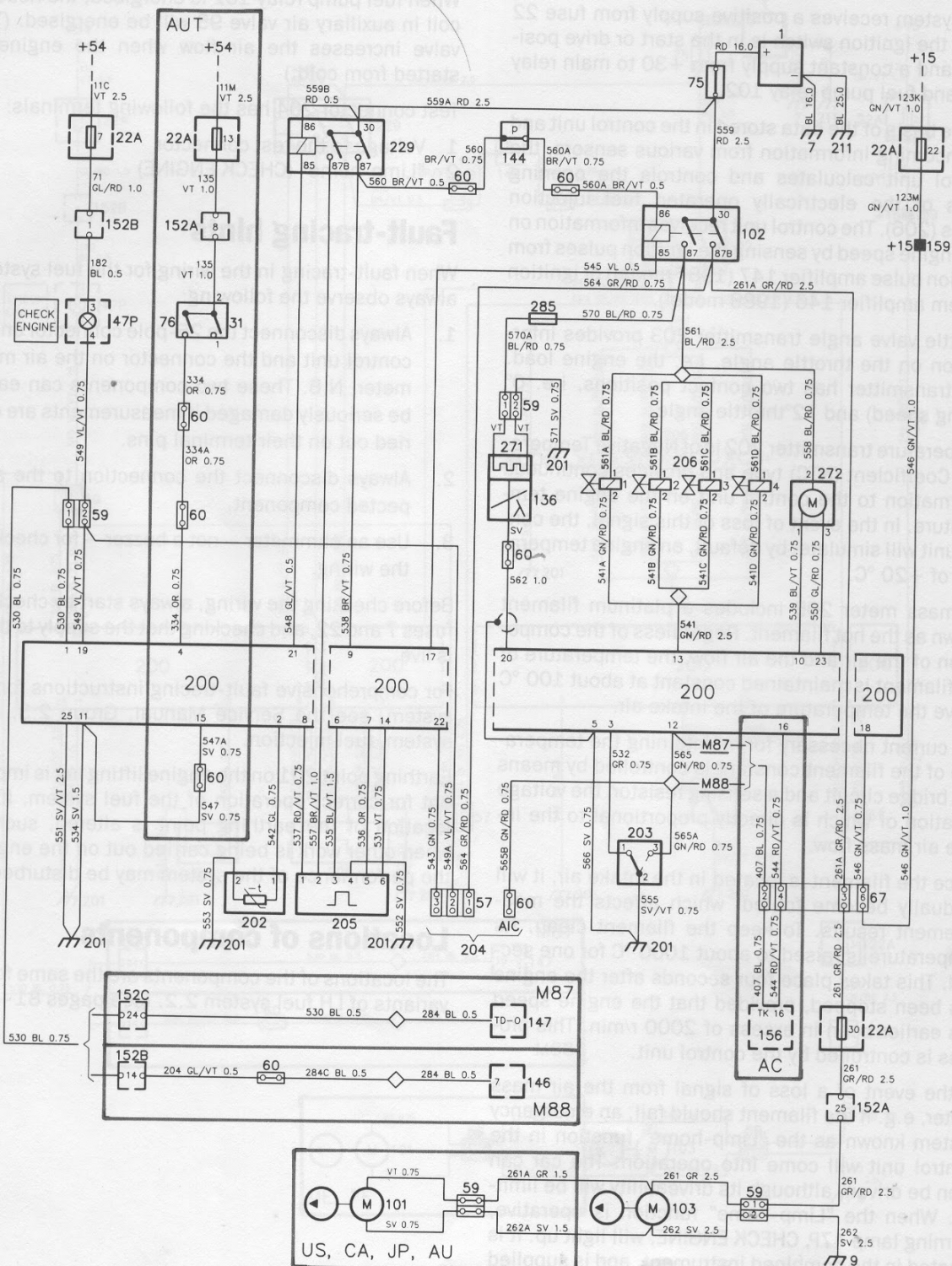
The system includes several components that demand special care during fault-tracing and replacement. So read all of the instructions in the Service Manual before carrying out fault-tracing work on the components and in the wiring.

Locations of components

The locations of the components presented below are the same for the CI fuel systems on 1987 and 1988 models with I8 Lambda engines for US, CA, JP and AU.

4	Starter motor on the left-hand side of the engine (intake side)	101	Fuel feed pump in the fuel tank, under the luggage compartment floor
7	Earthing point on the radiator cross-member	102	Fuel pump relay in the electrical distribution box in the engine compartment, on the left-hand wheel housing
9	Earthing point in the luggage compartment	103	Fuel pump in the fuel tank, under the luggage compartment floor
20	Ignition switch on the centre console between the front seats	104	Hot start relay
22A	Fuse holder in the electrical distribution box in the engine compartment, on the left-hand wheel housing	105	Engine speed relay
31	Reversing light switch under the centre console, at the selector lever	106	Time-delay relay (manual) in the engine compartment, in the Lambda relay box, on the left-hand wheel housing
59	2-pole connector one in the electrical distribution box in the engine compartment, on the left-hand wheel housing two in the luggage compartment, adjacent to the fuel pumps one connector 120 in the engine compartment, at the left-hand wheel housing one for the Lambda sensor, under distribution block 75, on the right-hand side of the engine compartment	108	Lambda relay box in the engine compartment, forward of the left-hand wheel housing
60	Single-pole connector one in the electrical distribution box in the engine compartment, on the left-hand wheel housing one in the engine compartment, on the right-hand side, beside the air intake two under the centre console, at the selector lever (auto.)	135	Lambda control unit under the back seat, on the right-hand side
76	Switch for raising the idling speed (auto.) under the centre console, at the selector lever	136	Lambda sensor on the exhaust manifold
77	Start inhibitor switch (auto.) under the centre console, at the selector lever	139	Timing valve, Lambda in the engine compartment, on the inside of the left-hand wheel housing member
79	Vacuum switch in the engine compartment, on the inside of the left-hand wheel housing member, at the fuel filter	146	Amplifier for the electronic ignition system in the engine compartment, on the left-hand wheel housing
92	Temperature time switch on the engine thermostat housing	147	Ignition pulse amplifier in the electrical distribution box in the engine compartment, on the left-hand wheel housing
94	Starting valve on top of the engine throttle housing	152A	29-pole white connector
95	Auxiliary air valve at the front of the engine, beside the thermostat housing	152C	29-pole black connector in the electrical distribution box in the engine compartment
96	Control pressure valve at the front of the engine, on the thermostat housing	156	Relay for the AC compressor in the electrical distribution box in the engine compartment, on the left-hand wheel housing
97	Temperature switch I, Lambda on the engine thermostat housing	158	Negative distribution terminal
98	10-pole connector to the left of the steering column, under the fascia (behind the knee shield)	159	Distribution terminal +15 in the electrical distribution box in the engine compartment, on the left-hand wheel housing
99	Temperature switch II, Lambda on the engine intake manifold	201	Earthing point on the engine
		203	Throttle angle transmitter on the engine throttle housing
		212	Solenoid valve for raising the idling speed (auto.) at the engine throttle housing, in the hose for the auxiliary air valve
		260	Fuel shut-off solenoid valve (manual) on the rubber branch piece above the engine air cleaner
		271	Preheater for the Lambda sensor in the Lambda sensor, on the exhaust manifold
		285	Fuse for the Lambda sensor on the right-hand side of the engine compartment, at the air intake
		339	Diode in the Lambda relay box in the engine compartment, forward of the left-hand wheel housing

LH fuel system 2.2: T16 Lambda, US, CA, JP, SE, EU, AU



Operation

The Bosch LH Jetronic fuel injection system is used for cars with the 16-valve engine. LH is an abbreviation of Luftmassenmesser Hitzdraht (Air mass meter with hot filament). The fuel injection system is controlled and supervised by control unit 200, which includes a microprocessor.

The system receives a positive supply from fuse 22 when the ignition switch is in the start or drive position, and a constant supply from +30 to relays 229 and 102.

On the basis of the data stored in the control unit and the incoming information from various sensors, the control unit calculates and controls the opening times of the electrically operated fuel injection valves (206). The control unit receives information on the engine speed by sensing the ignition pulses from ignition pulse amplifier 147 (1987 model) or ignition system amplifier 146 (1988 model).

Throttle valve angle transmitter 203 provides information on the throttle angle, i.e. the engine load. The transmitter has two contact positions, i.e. 0° (idling speed) and 72° throttle angle.

Temperature transmitter 202 is of Negative Temperature Coefficient (NTC) type and provides continuous information to the control unit on the engine temperature. In the event of loss of this signal, the control unit will simulate, by default, an engine temperature of +20 °C.

Air mass meter 205 includes a platinum filament known as the hot filament. Regardless of the composition of the air and the air flow, the temperature of the filament is maintained constant at about 100 °C above the temperature of the intake air.

The current necessary for maintaining the temperature of the filament constant is controlled by means of a bridge circuit and a sensing resistor, the voltage variation of which is directly proportional to the intake air mass flow.

Since the filament is located in the intake air, it will gradually become fouled, which affects the measurement results. To keep the filament clean, its temperature is raised to about 1000 °C for one second. This takes place four seconds after the engine has been stopped, provided that the engine speed has earlier been in excess of 2000 r/min. This process is controlled by the control unit.

In the event of a loss of signal from the air mass meter, e.g. if the filament should fail, an emergency system known as the "Limp-home" function in the control unit will come into operation. The car can then be driven, although its driveability will be limited. When the "Limp-home" function is operative, warning lamp 47P, CHECK ENGINE, will light up. It is located in the combined instrument, and is supplied from fuse 7. (The lamp can also be energised from EZK-type ignition systems.)

The engine is supplied with fuel by electrically driven fuel pump 103 and feed pump 101 drawing fuel from the fuel tank and building up a pressure in the fuel system. Boost pressure switch 144 is fitted on cars equipped with a turbocharger and will trip the fuel pumps if the boost pressure should exceed a predetermined value.

The idling speed is controlled by motor 272 for automatic idle control (AIC). The AIC test connector is used for the basic setting of the engine idling speed.

Test connector 204 has the following terminals:

- 1 Voltage to the test connector
- 2 "Limp-home" (CHECK ENGINE)
- 3 Timing ratio, Lambda

The control unit is connected to the air-conditioning system via pin 16, "AC 156". When the AC compressor is running, the control unit will compensate for the increased load applied by the compressor at engine idling speed. A signal (earth) is applied from pin 12 at full throttle.

Exhaust gas emission control, Lambda

Components for precision control of the fuel/air mixture have been added to the fuel system. Lambda sensor 136 continually measures the oxygen content of the exhaust gases, thus enabling the control unit to adjust the mixture to the most beneficial ratio. The sensor is heated by preheater 271 (protected by fuse 285 in the wiring).

Automatic transmission

Cars with automatic transmission are also equipped with switch 76 which will close when the selector lever is set to "Drive", and the control unit will then compensate for the increased load applied by the automatic transmission when the engine is running at idling speed.

Fault-tracing hints

When fault-tracing in the wiring for the fuel system, always observe the following:

1. Always disconnect the 25-pole connector on the control unit and the connector on the air mass meter. N.B. These two components can easily be seriously damaged if measurements are carried out on their terminal pins.
2. Always disconnect the connection to the suspected component.
3. Use an ohmmeter — not a buzzer — for checking the wiring.

Before checking the wiring, always start by checking fuse 22 and checking that the supply to it is live. Also check fuse 7 and the fuse in the wiring for the Lambda sensor preheater.

For comprehensive fault-tracing instructions for the system, see the Service Manual, Group 2:3, Fuel system, fuel injection.

Earthing point 201 on the engine lifting lug is important for correct operation of the fuel system. If the location of the earthing point is altered, such as when other work is being carried out on the engine, the performance of the system may be disturbed.

Components

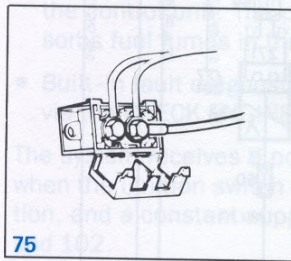
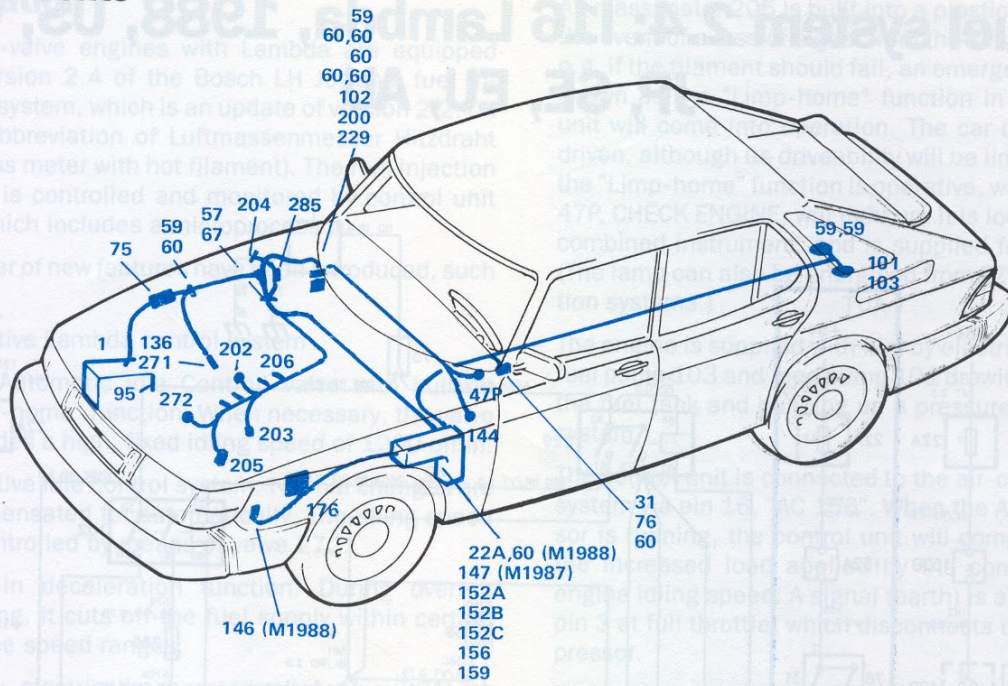
Locations of components

The locations of the components presented below are the same for all variants of LH fuel system 2.2.

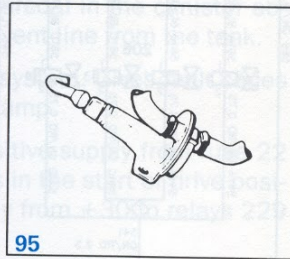
- 1 Battery
on the right-hand side of the engine compartment
- 7 Earthing point, radiator cross-member
- 9 Earthing point in the luggage compartment
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 31 Reversing light switch
under the centre console, at the selector lever
- 47P CHECK ENGINE warning lamp
in the combined instrument in the instrument panel
- 57 3-pole connector (I16, I16 Lambda)
in the engine compartment, on the right-hand side, at the air intake
- 59 2-pole connector
two at the fuel pump, under the luggage compartment floor
at the control unit, forward of the right-hand front door, below the facia (under the trim)
one (for the Lambda sensor) in the engine compartment, on the right-hand wheel housing, next to the distribution block for the positive supply from the battery
- 60 Single-pole connector
one (for the Lambda sensor) in the engine compartment, on the right-hand wheel housing, next to the distribution block for the positive supply from the battery
one (AIC test connector) in the engine compartment, behind the right-hand wheel housing
one, for connecting the main relay and the fuel pump relay (I16, I16 Lambda)
one in the electrical distribution box
two for boost pressure switch 144 (T16, T16 Lambda) and two for the automatic transmission, at the control unit, forward of the right-hand front door, below the facia (behind the trim)
one under the centre console, at the selector lever (auto.)
- 67 6-pole connector
in the engine compartment, on the right-hand side at the air intake
- 75 Distribution block
in the engine compartment, on the right-hand side

- | | | | |
|------|--|-----|--|
| 76 | Switch for raising the idling speed, auto. transm.
under the centre console, at the selector lever | 201 | Engine earthing point
at the engine lifting lug |
| 95 | Auxiliary air valve (I16, T16)
at the extreme front of the engine intake manifold | 202 | Engine temperature transmitter
on the intake manifold flange, between cylinders 2 and 3 |
| 101 | Fuel feed pump (US, CA, JP, AU, ME, FE)
in the fuel tank, under the luggage compartment floor | 203 | Throttle angle transmitter
on the engine throttle housing |
| 102 | Fuel pump relay
at the control unit, forward of the right-hand front door, below the facia (behind the trim) | 204 | Test connector
in the engine compartment, behind the right-hand wheel housing |
| 103 | Fuel pump
in the fuel tank, under the luggage compartment floor | 205 | Air mass meter
on the air hose at the air cleaner |
| 136 | Lambda sensor (I16, T16 Lambda)
on the exhaust manifold, beside the turbocharger | 206 | Fuel injection valves
on the engine intake manifold |
| 144 | Boost pressure switch (T16, T16 Lambda)
under the facia, to the left of the steering column (behind the knee shield) | 211 | Earthing point on the gearbox |
| 146 | Amplifier for the electronic ignition system (T16, T16 Lambda)
in the engine compartment, forward of the left-hand wheel housing | 229 | Main relay for the fuel injection system
forward of the right-hand front door, below the facia (behind the trim) |
| 147 | Ignition pulse amplifier
in the electrical distribution box in the engine compartment, on the left-hand wheel housing | 271 | Preheater (I16 Lambda, T16 Lambda)
in the Lambda sensor, on the exhaust manifold |
| 152A | 29-pole white connector | 272 | Idling speed adjustment motor (I16 Lambda, T16 Lambda)
at the extreme front, on the left-hand side of the cylinder head |
| 152B | 29-pole red connector | 285 | Fuse for Lambda sensor (I16 Lambda, T16 Lambda)
in the engine compartment, on the right-hand side, at the air intake |
| 152C | 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connectors are accessible from the interior of the car | | |
| 156 | Relay for the AC compressor (I16 Lambda, T16 Lambda)
in the electrical distribution box in the engine compartment, on the left-hand wheel housing | | |
| 159 | Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | | |
| 176 | Control unit for EZK ignition system (I16, I16 Lambda)
in the engine compartment, forward of the left-hand wheel housing | | |
| 200 | Control unit for the LH system
forward of the right-hand front door, below the facia (behind the trim) | | |

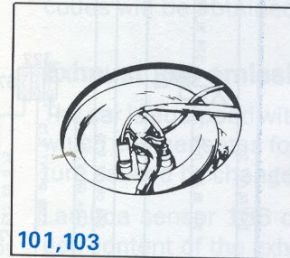
Components



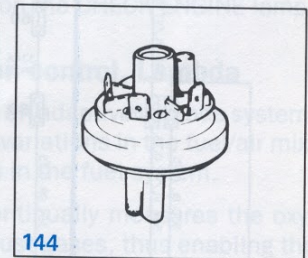
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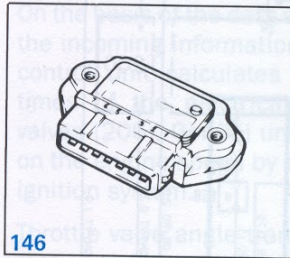
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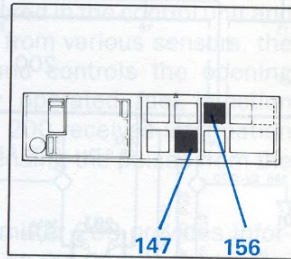
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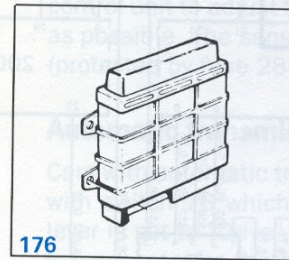
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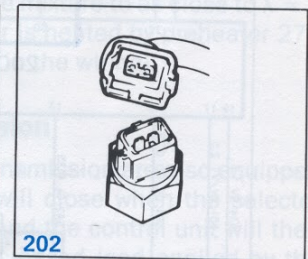
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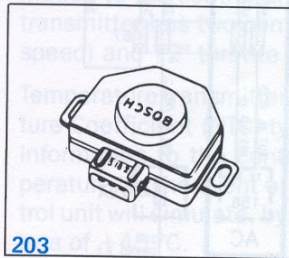
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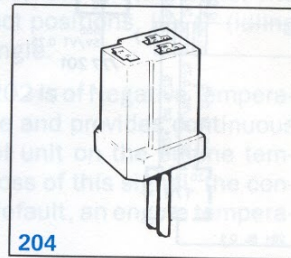
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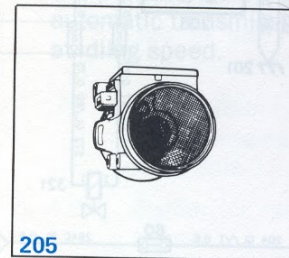
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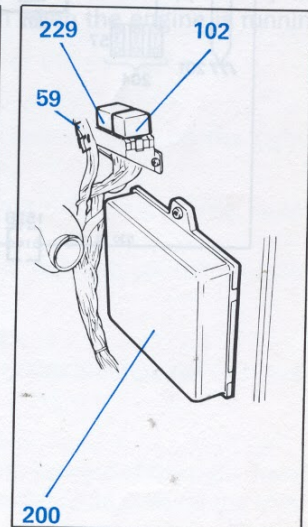
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204

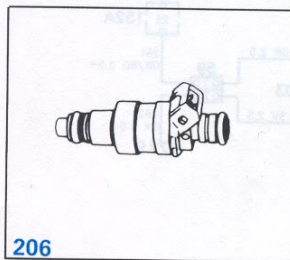


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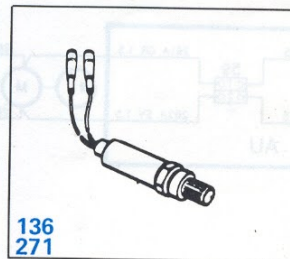


229 102 59

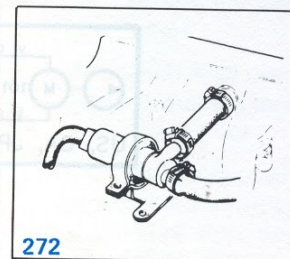
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206

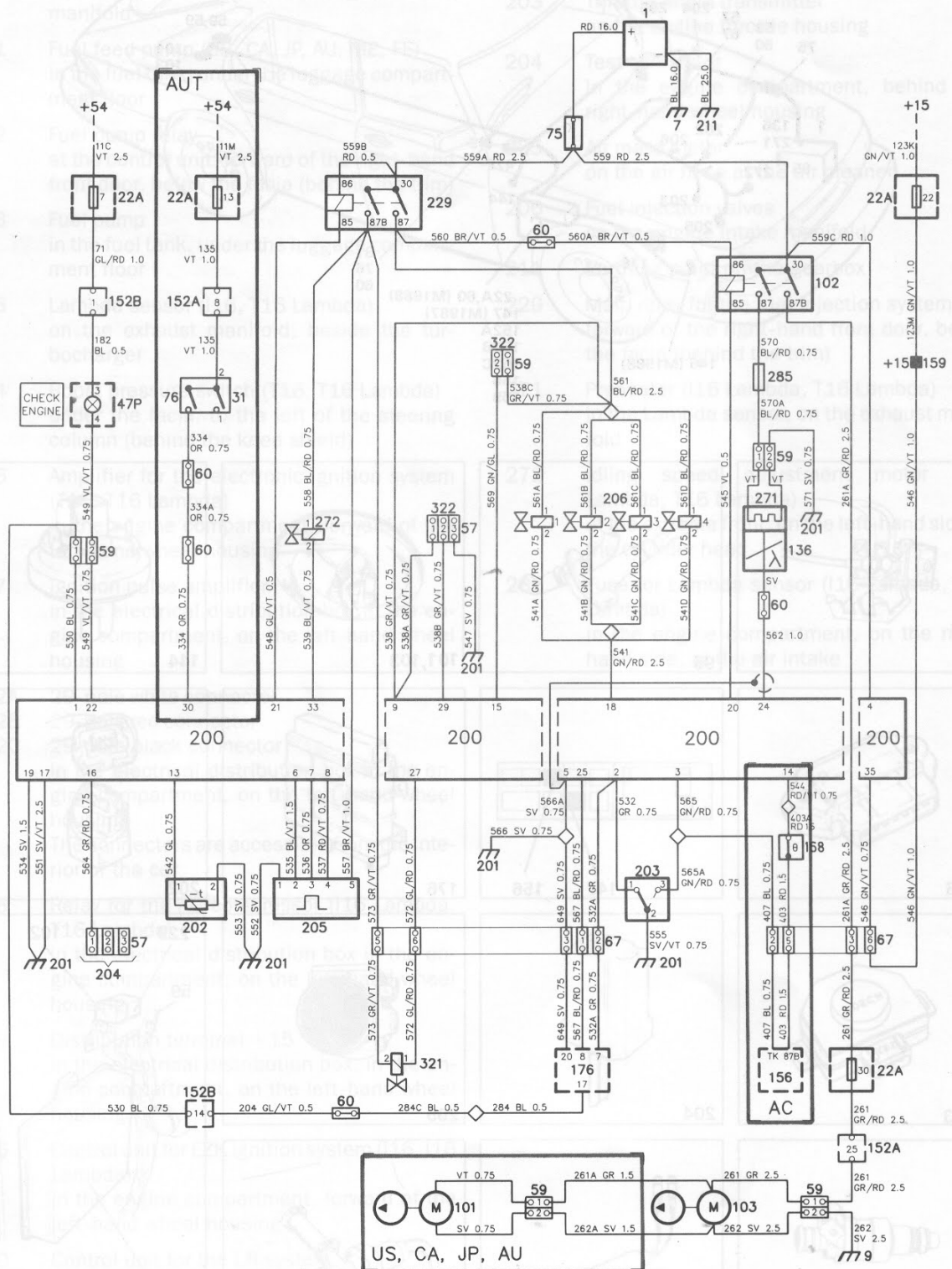


136 271



272

LH fuel system 2.4: I16 Lambda, 1988, US, CA, JP, SE, EU, AU



Operation

Sixteen-valve engines with Lambda are equipped with version 2.4 of the Bosch LH Jetronic fuel injection system, which is an update of version 2.2. LH is an abbreviation of Luftmassenmesser Hitzdraht (Air mass meter with hot filament). The fuel injection system is controlled and monitored by control unit 200, which includes a microprocessor.

A number of new features have been introduced, such as:

- Adaptive Lambda control system
- AIC (Automatic Idle Control) valve with built-in "limp-home" function. When necessary, the valve provides a high, fixed idling speed of 1200 r/min.
- Adaptive idle control system. Normal changes are compensated for automatically. The idling speed is controlled by means of valve 272.
- Built-in deceleration function. During overrun braking, it cuts off the fuel supply within certain engine speed ranges.
- A new, electrically-operated relief valve (321) for the charcoal canister. Controlled by signals from the control unit. The charcoal in the canister absorbs fuel fumes in the vent line from the tank.
- Built-in fault diagnosis system. Gives fault codes via the CHECK ENGINE lamp.

The system receives a positive supply from fuse 22 when the ignition switch is in the start or drive position, and a constant supply from +30 to relays 229 and 102.

On the basis of the data stored in the control unit and the incoming information from various sensors, the control unit calculates and controls the opening times of the electrically operated fuel injection valves (206). Control unit 200 receives information on the engine speed by sensing the pulses from the ignition system.

Throttle valve angle transmitter 203 provides information to the control unit on the throttle angle. The transmitter has two contact positions, i.e. 0° (idling speed) and 72° throttle angle.

Temperature transmitter 202 is of Negative Temperature Coefficient (NTC) type and provides continuous information to the control unit on the engine temperature. In the event of loss of this signal, the control unit will simulate, by default, an engine temperature of +45 °C.

Air mass meter 205 is built into a plastic housing. In the event of a loss of signal from the air mass meter, e.g. if the filament should fail, an emergency system known as the "Limp-home" function in the control unit will come into operation. The car can then be driven, although its driveability will be limited. When the "Limp-home" function is operative, warning lamp 47P, CHECK ENGINE, will light up. It is located in the combined instrument, and is supplied from fuse 7. (The lamp can also be energised from EZK-type ignition systems.)

The engine is supplied with fuel by electrically driven fuel pump 103 and feed pump 101 drawing fuel from the fuel tank and building up a pressure in the fuel system.

The control unit is connected to the air-conditioning system via pin 16, "AC 156". When the AC compressor is running, the control unit will compensate for the increased load applied by the compressor at engine idling speed. A signal (earth) is applied from pin 3 at full throttle, which disconnects the AC compressor.

Test connector 204 should be used for all fault tracing. When pin 2 in the socket is earthed, flashing codes will be obtained on the CHECK ENGINE lamp.

Exhaust gas emission control, Lambda

The car is equipped with an adaptive Lambda system, which compensates for variations in the fuel/air mixture caused by changes in the fuel system.

Lambda sensor 136 continually measures the oxygen content of the exhaust gases, thus enabling the control unit to adjust the mixture to as close to $\lambda = 1$ as possible. The sensor is heated by preheater 271 (protected by fuse 285 in the wiring).

Automatic transmission

Cars with automatic transmission are also equipped with switch 76 which will close when the selector lever is set to "Drive", and the control unit will then compensate for the increased load applied by the automatic transmission when the engine is running at idling speed.

75 Distribution block
in the engine compartment, on the right-hand side

76 Switch for raising the idling speed, auto. trans.
under the centre console, at the selector lever

101 Fuel feed pump
in the fuel tank, under the luggage compartment floor

102 Fuel pump relay
at the control unit, forward of the right-hand front door, below the fascia (behind the trim)

Fault-tracing hints

When fault-tracing in the wiring for the fuel system, always observe the following:

1. Always disconnect the 35-pole connector on the control unit and the connector on the air mass meter. N.B. These two components can easily be seriously damaged if measurements are carried out on their terminal pins.
2. Always disconnect the connection to the suspected component.
3. Use an ohmmeter — not a buzzer — for checking the wiring.

Before checking the wiring, always start by checking fuse 22 and checking that the supply to it is live. Also check fuse 7 and the fuse in the wiring for the Lambda sensor preheater.

For comprehensive fault-tracing instructions for the system, see the Service Manual, Group 2:3, Fuel system, fuel injection.

Earthing point 201 on the engine lifting lug is important for correct operation of the fuel system. If the location of the earthing point is altered, such as when other work is being carried out on the engine, the performance of the system may be disturbed.

Sixteen valve engines with Lambda are equipped with version 2.4 of the Bosch LH injection system, which is an update of version 2.3. The injection system is controlled and monitored by control unit 200, which includes a microprocessor. A number of new features have been introduced, such as:

- Adaptive Lambda control system
- AIC (Automatic Idle Control) valve with coils in "limp-home" function. When necessary, the valve provides a high, fixed idling speed of 1200 rpm.
- Adaptive idle control system. Normal changes are compensated for automatically. The idling speed is controlled by means of valve 212.
- Built-in deceleration function. During overrun, the fuel supply is cut off within certain engine speed ranges.
- A new, electrically operated relief valve (321) for the charcoal canister. Controlled by signal from the control unit, the charcoal in the canister adsorbs fuel fumes in the vent line from the tank.
- Built-in fault diagnosis system. Code is inputted via the CHECK ENGINE lamp.

The system receives a positive supply from fuse 22 when the ignition switch is in the start or drive position, and a constant supply from +30 to relay 229 and 102.

On the basis of the data stored in the control unit and the incoming information from various sensors, the control unit calculates and controls the opening times of the electrically operated fuel injection valves (200). Control unit 200 receives information on the engine speed by sensing the pulses from the ignition system. Throttle valve angle transmitter 205 provides information to the control unit on the throttle angle. The transmitter has two contact positions: 15° idling speed and 75° throttle angle.

Temperature transmitter 202 is of negative temperature Coefficient (NTC) type and provides continuous information to the control unit on the engine temperature. In the event of loss of this signal, the control unit will calculate, by default, an engine temperature of +125°C.



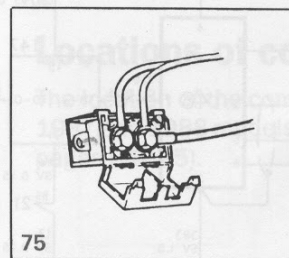
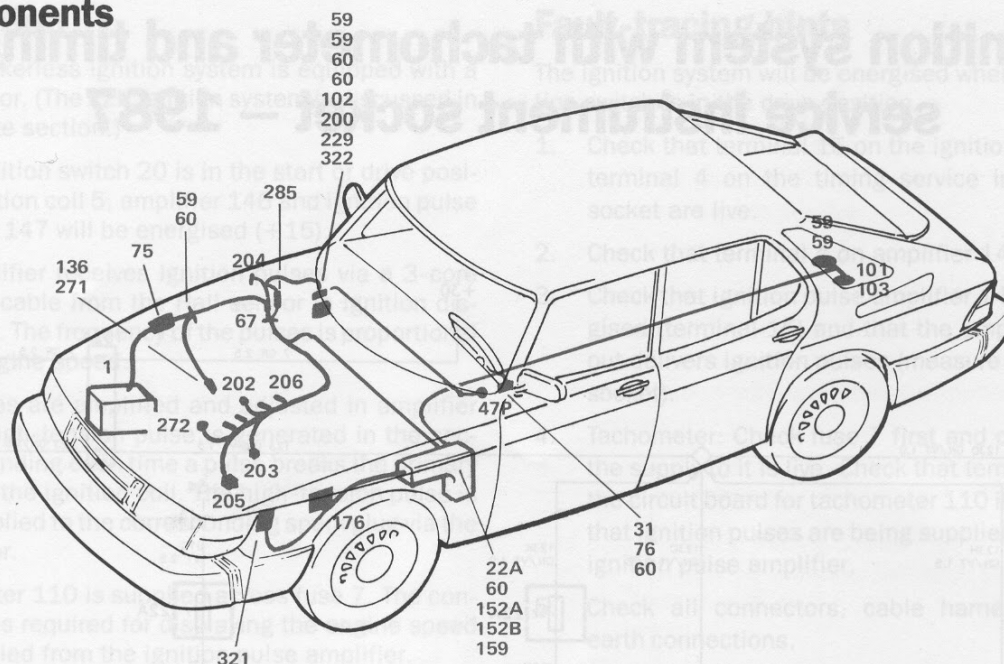
Components

Locations of components

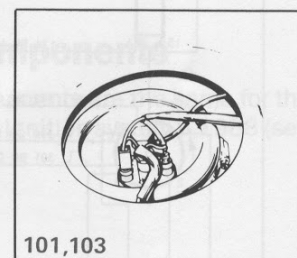
- 1 Battery
on the right-hand side of the engine compartment
- 7 Earthing point, radiator cross-member
- 9 Earthing point in the luggage compartment
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 31 Reversing light switch
under the centre console, at the selector lever
- 47P CHECK ENGINE warning lamp
in the combined instrument in the instrument panel
- 59 2-pole connector
two at the fuel pump, under the luggage compartment floor
one at the control unit, forward of the right-hand front door, below the facia (under the trim)
one (for the Lambda sensor) in the engine compartment, on the right-hand wheel housing, next to the distribution block for the positive supply from the battery
- 60 Single-pole connector
one (for the Lambda sensor) in the engine compartment, on the right-hand wheel housing, next to the distribution block for the positive supply from the battery
one, for connecting the main relay and the fuel pump relay
and one for the automatic transmission, at the control unit, forward of the right-hand front door, below the facia (behind the trim)
one under the centre console, at the selector lever (auto.)
one in the electrical distribution box
- 67 6-pole connector
two in the engine compartment, on the right-hand side at the air intake
- 75 Distribution block
in the engine compartment, on the right-hand side
- 76 Switch for raising the idling speed, auto. transm.
under the centre console, at the selector lever
- 101 Fuel feed pump
in the fuel tank, under the luggage compartment floor
- 102 Fuel pump relay
at the control unit, forward of the right-hand front door, below the facia (behind the trim)

- | | |
|--|---|
| <p>103 Fuel pump
in the fuel tank, under the luggage compartment floor</p> <p>136 Lambda sensor
on the exhaust manifold</p> <p>152A 29-pole white connector</p> <p>152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connectors are accessible from the interior of the car</p> <p>156 Relay for the AC compressor
in the electrical distribution box in the engine compartment, on the left-hand wheel housing</p> <p>159 Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing</p> <p>176 Control unit for EZK ignition system
in the engine compartment, forward of the left-hand wheel housing</p> <p>200 Control unit for the LH system
forward of the right-hand front door, below the facia (behind the trim)</p> <p>201 Engine earthing point
at the engine lifting lug</p> <p>202 Engine temperature transmitter
on the intake manifold flange, between cylinders 2 and 3</p> <p>203 Throttle angle transmitter
on the engine throttle housing</p> <p>204 Test connector
in the engine compartment, behind the right-hand wheel housing</p> <p>205 Air mass meter
on the air hose at the air cleaner</p> <p>206 Fuel injection valves
on the engine intake manifold</p> <p>211 Earthing point on the gearbox</p> <p>229 Main relay for the fuel injection system
forward of the right-hand front door, below the facia (behind the trim)</p> <p>271 Preheater
in the Lambda sensor, on the exhaust manifold</p> <p>272 Idling speed adjustment motor
at the extreme front, on the left-hand side of the cylinder head</p> <p>285 Fuse for Lambda sensor
in the engine compartment, on the right-hand side, at the air intake</p> | <p>321 Valve for charcoal cannister
in the engine compartment, forward of the left-hand wheel housing, between the wheel housing member and the outer wing</p> <p>322 Connector, Auto/Man, LH 2.4
at the control unit, forward of the right-hand front door, below the facia (under the trim)</p> |
|--|---|

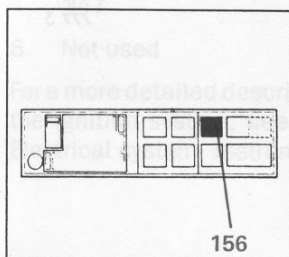
Components



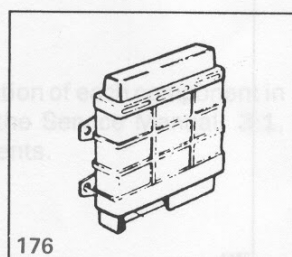
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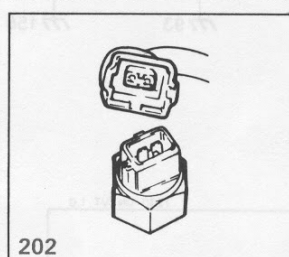
101,103



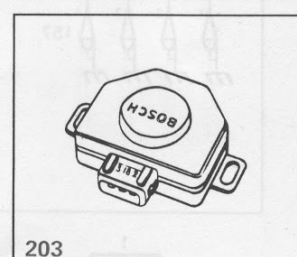
156



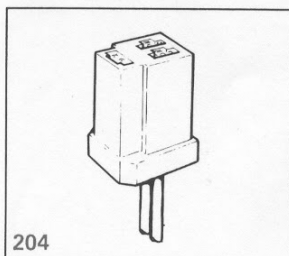
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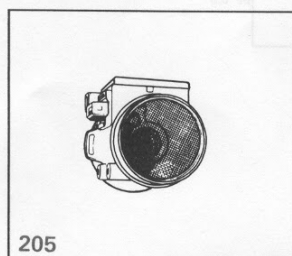
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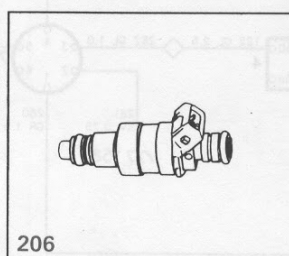
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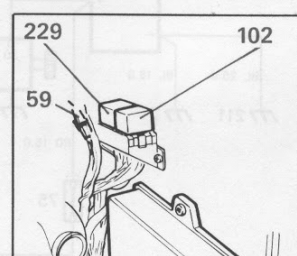
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205

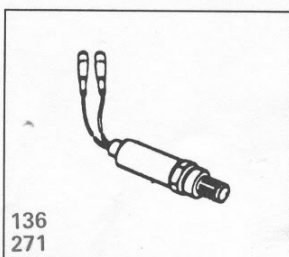
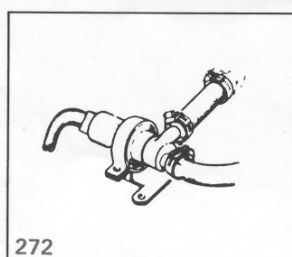


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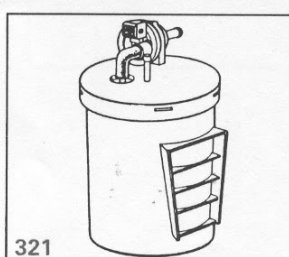


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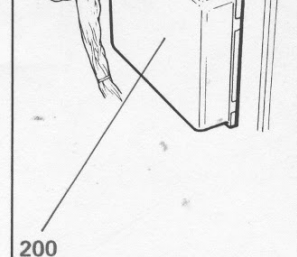
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136
271


272

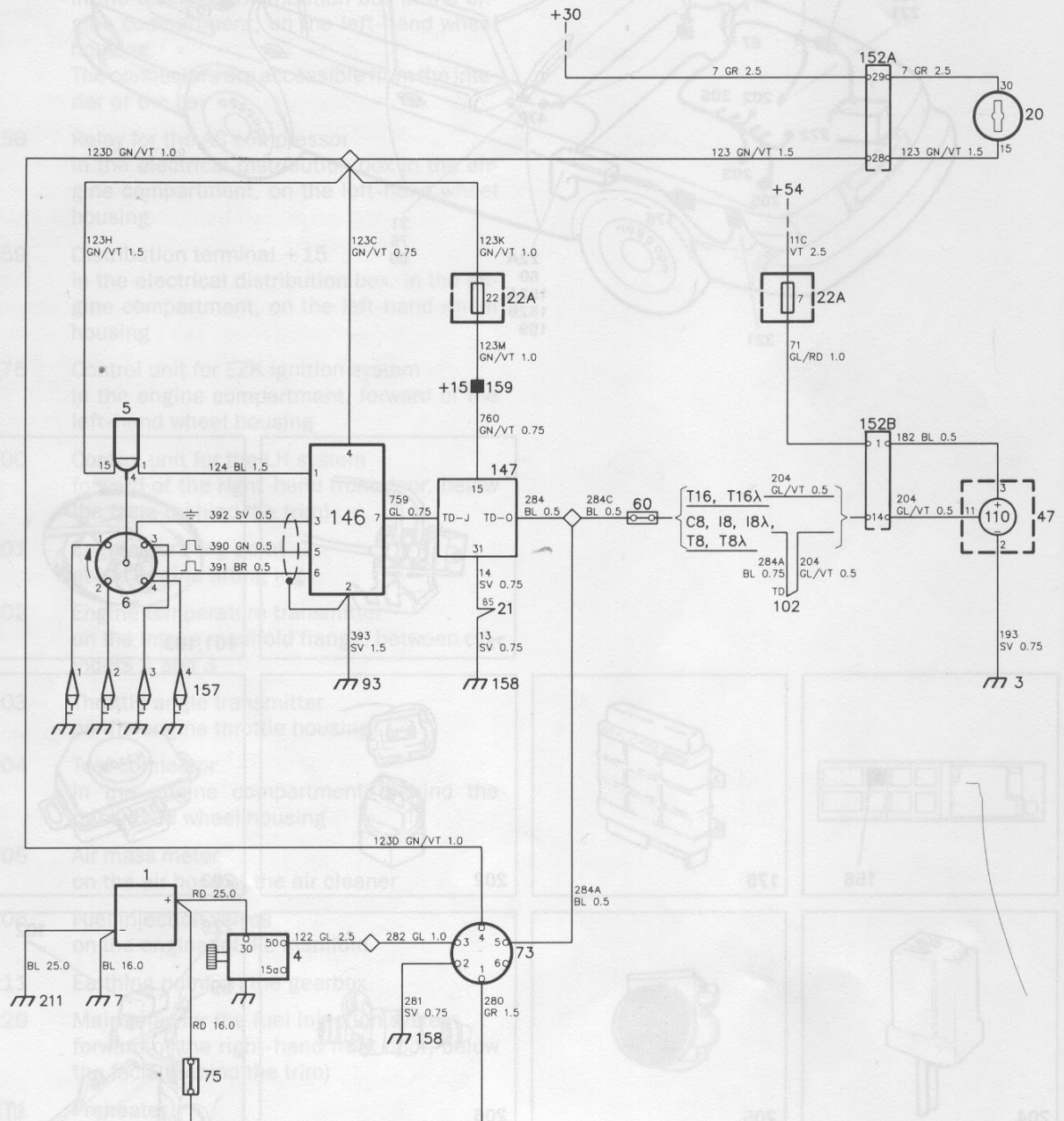


321



200

Ignition system with tachometer and timing service instrument socket – 1987



Operation

This breakerless ignition system is equipped with a Hall sensor. (The EZK ignition system is discussed in a separate section.)

When ignition switch 20 is in the start or drive position, ignition coil 5, amplifier 146 and ignition pulse amplifier 147 will be energised (+15).

The amplifier receives ignition pulses via a 3-core shielded cable from the Hall sensor in ignition distributor 6. The frequency of the pulses is proportional to the engine speed.

The pulses are amplified and adjusted in amplifier 146. A high-tension pulse is generated in the secondary winding each time a pulse breaks the primary circuit of the ignition coil. The high-tension pulse is then supplied to the corresponding spark plug via the distributor.

Tachometer 110 is supplied across fuse 7. The control pulses required for displaying the engine speed are supplied from the ignition pulse amplifier.

Timing service instrument (TSI) socket 73 is intended for a special ignition service instrument and has the following terminals:

1. Positive supply direct from battery 1
2. Earth
3. Solenoid (terminal 50) on starter motor 4
4. Positive supply (+15) from the ignition switch when the latter is in the start or drive position
5. Ignition pulses from ignition pulse amplifier 147
6. Not used

For a more detailed description of each component in the ignition system, see the Service Manual, 3:1, Electrical system, Instruments.

Fault-tracing hints

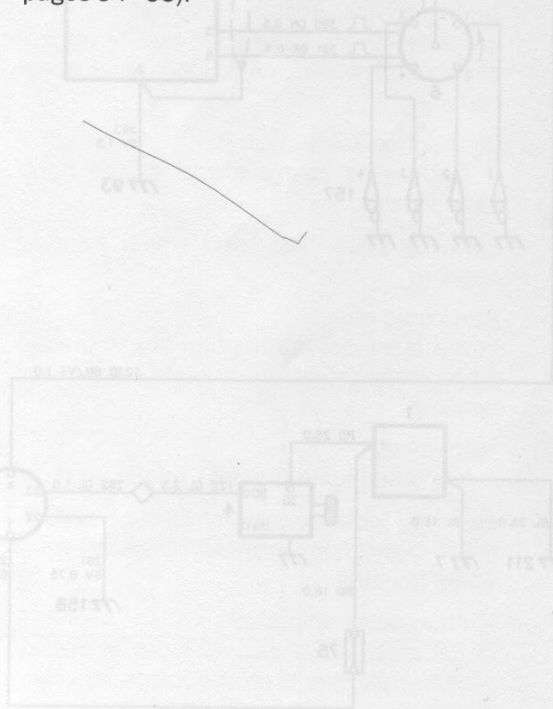
The ignition system will be energised when the ignition switch is in the drive position.

1. Check that terminal 15 on the ignition coil and terminal 4 on the timing service instrument socket are live.
2. Check that terminal 4 on amplifier 146 is live.
3. Check that ignition pulse amplifier 147 is energised (terminal 15) and that the amplifier output delivers ignition pulses (measure at the TSI socket).
4. Tachometer: Check fuse 7 first and check that the supply to it is live. Check that terminal 3 on the circuit board for tachometer 110 is live, and that ignition pulses are being supplied from the ignition pulse amplifier.
5. Check all connectors, cable harnesses and earth connections.

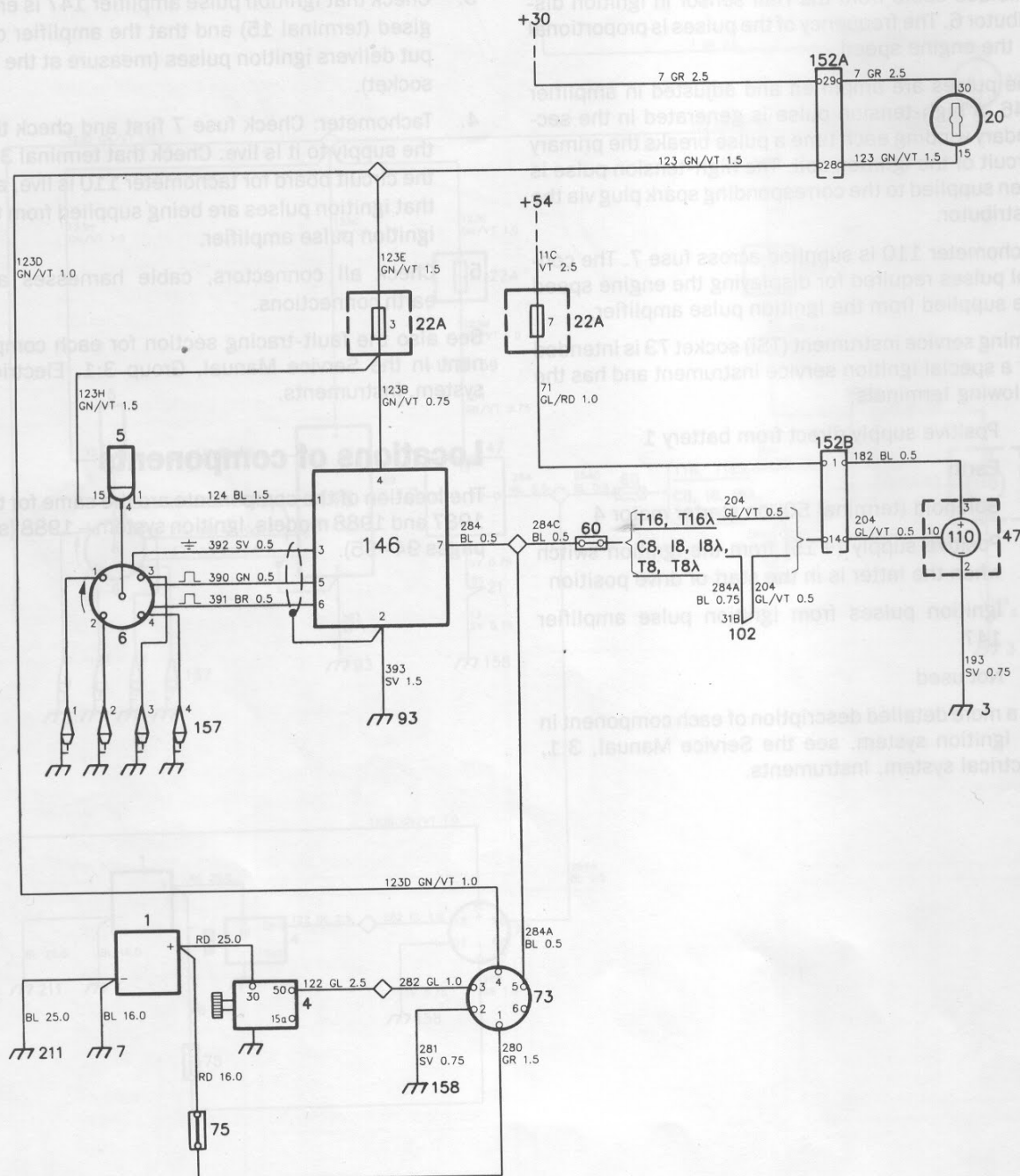
See also the fault-tracing section for each component in the Service Manual, Group 3:1, Electrical system, Instruments.

Locations of components

The location of the components are the same for the 1987 and 1988 models, Ignition system — 1988 (see pages 94–95).



terminal 4 on the timing service instrument



Operation

This breakerless ignition system is equipped with a Hall sensor. (The EZK ignition system is discussed in a separate section.)

When ignition switch 20 is in the start or drive position, ignition coil 5 and amplifier 146 will be energised (+15).

The amplifier receives ignition pulses via a 3-core shielded cable from the Hall sensor in ignition distributor 6. The frequency of the pulses is proportional to the engine speed.

The pulses are amplified and adjusted in amplifier 146. A high-tension pulse is generated in the secondary winding each time a pulse breaks the primary circuit of the ignition coil. The high-tension pulse is then supplied to the corresponding spark plug via the distributor.

Tachometer 110 is supplied across fuse 7. The control pulses required for displaying the engine speed are supplied from the amplifier.

Timing service instrument (TSI) socket 73 is intended for a special ignition service instrument and has the following terminals:

1. Positive supply direct from battery 1
2. Earth
3. Solenoid (terminal 50) on starter motor 4
4. Positive supply (+15) from the ignition switch when the latter is in the start or drive position
5. Ignition pulses from ignition system amplifier 146
6. Not used

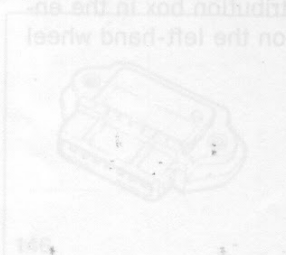
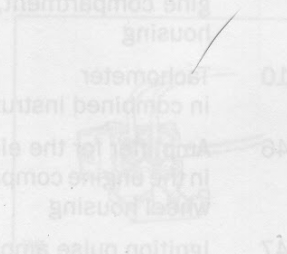
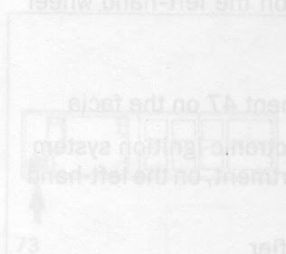
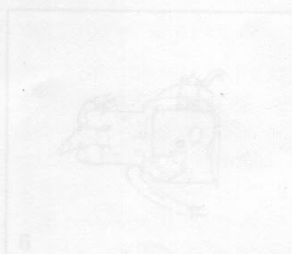
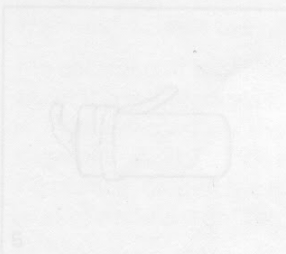
For a more detailed description of each component in the ignition system, see the Service Manual, 3:1, Electrical system, Instruments.

Fault-tracing hints

The ignition system will be energised when the ignition switch is in the drive position.

1. Check that fuse 3, terminal 15 on the ignition coil and terminal 4 on the timing service instrument socket are live.
2. Check that terminal 4 on amplifier 146 is live.
3. Tachometer: Check fuse 7 first and check that the supply to it is live. Check that terminal 3 on the circuit board for tachometer 110 is live, and that ignition pulses are being supplied from the amplifier.
4. Check all connectors, cable harnesses and earth connections.

See also the fault-tracing section for each component in the Service Manual, Group 3:1, Electrical system, Instruments.

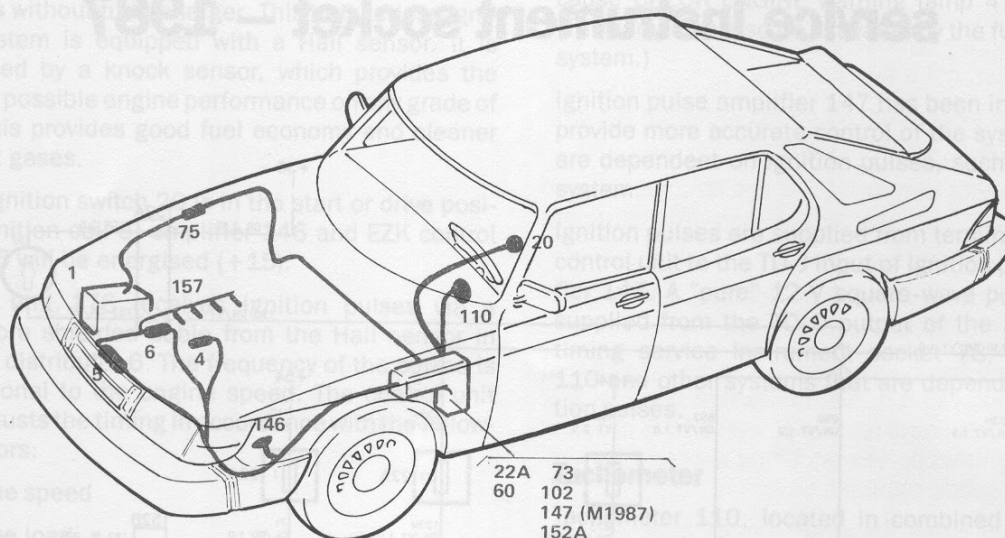


Locations of components

The locations of the components listed below are the same for the 1987 and 1988 models.

- | | | | |
|-----|---|------|---|
| 1 | Battery | 152A | 29-pole white connector |
| | on the right-hand side of the engine compartment | 152B | 29-pole red connector |
| 3 | Earthing point in the fascia | | in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car. |
| 4 | Starter motor | 157 | Spark plug |
| | on the left-hand side of the engine (intake side) | | on the engine |
| 5 | Ignition coil | 158 | Negative distribution terminal |
| | on the cross-member above the radiator | | in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 6 | Ignition distributor | 159 | Distribution terminal +15 |
| | at the front of the engine | | in the electrical distribution box, in the engine compartment, on the left-hand wheel housing |
| 7 | Earthing point, radiator cross-member | 211 | Earthing point on the gearbox |
| 20 | Ignition switch | | |
| | on the centre console between the front seats | | |
| 22A | Fuse holder | | |
| | in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | | |
| 60 | Single-pole connector | | |
| | in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | | |
| 73 | Timing service instrument socket | | |
| | in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | | |
| 75 | Distribution block | | |
| | in the engine compartment, on the right-hand side | | |
| 93 | Earthing point, left-hand wheel housing member | | |
| 102 | Fuel pump relay | | |
| | in the electrical distribution box in the engine compartment, on the left-hand wheel housing | | |
| 110 | Tachometer | | |
| | in combined instrument 47 on the fascia | | |
| 146 | Amplifier for the electronic ignition system | | |
| | in the engine compartment, on the left-hand wheel housing | | |
| 147 | Ignition pulse amplifier | | |
| | in the electrical distribution box in the engine compartment, on the left-hand wheel housing | | |

Components



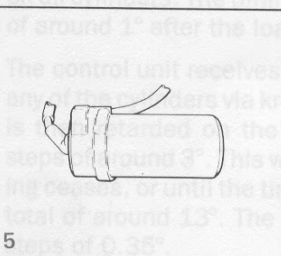
22A 73
60 102
147 (M1987)
152A
152B
158
159 (M1987)

- engine speed
- engine load
- any knocking tendencies

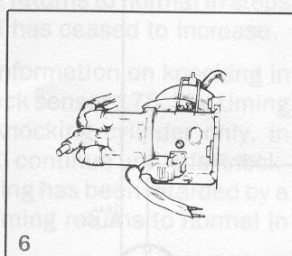
The control unit receives information on engine speed from terminal 15 of the control unit and is adjusted in detail in amplifier 146. A high-voltage pulse is generated in the secondary winding each time a pulse breaks the primary circuit of the ignition coil. This pulse is then supplied to the corresponding spark plug (152) via distributor 6.

The ignition is set at 5° when the engine is started. This ignition setting is based on the speed of the engine, and adjustment starts at around 700 rpm. It is adjusted in accordance with the values stored in the control unit. (The distributor has no centrifugal or vacuum advance mechanisms.)

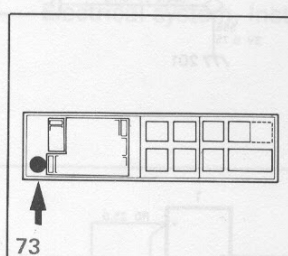
Fuel system control unit 200 provides the ignition system with information on the engine load. Throttle angle transmitter 203 is connected (earthed) when the throttle is closed, i.e. when the engine is idling. When the load has exceeded the value stored in the control unit, the timing will be retarded by around 6° on all cylinders. The timing returns to normal in steps of around 1° after the load has ceased to increase.



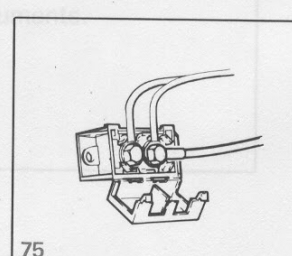
5



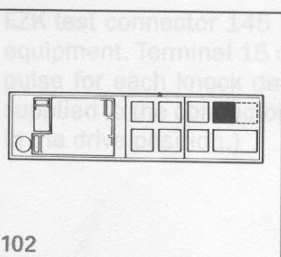
6



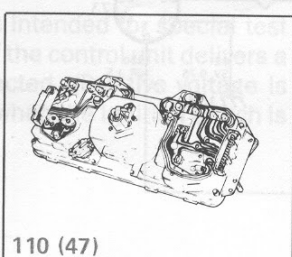
73



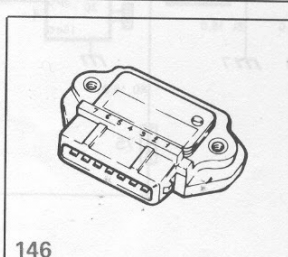
75



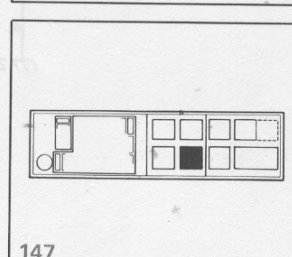
102



110 (47)

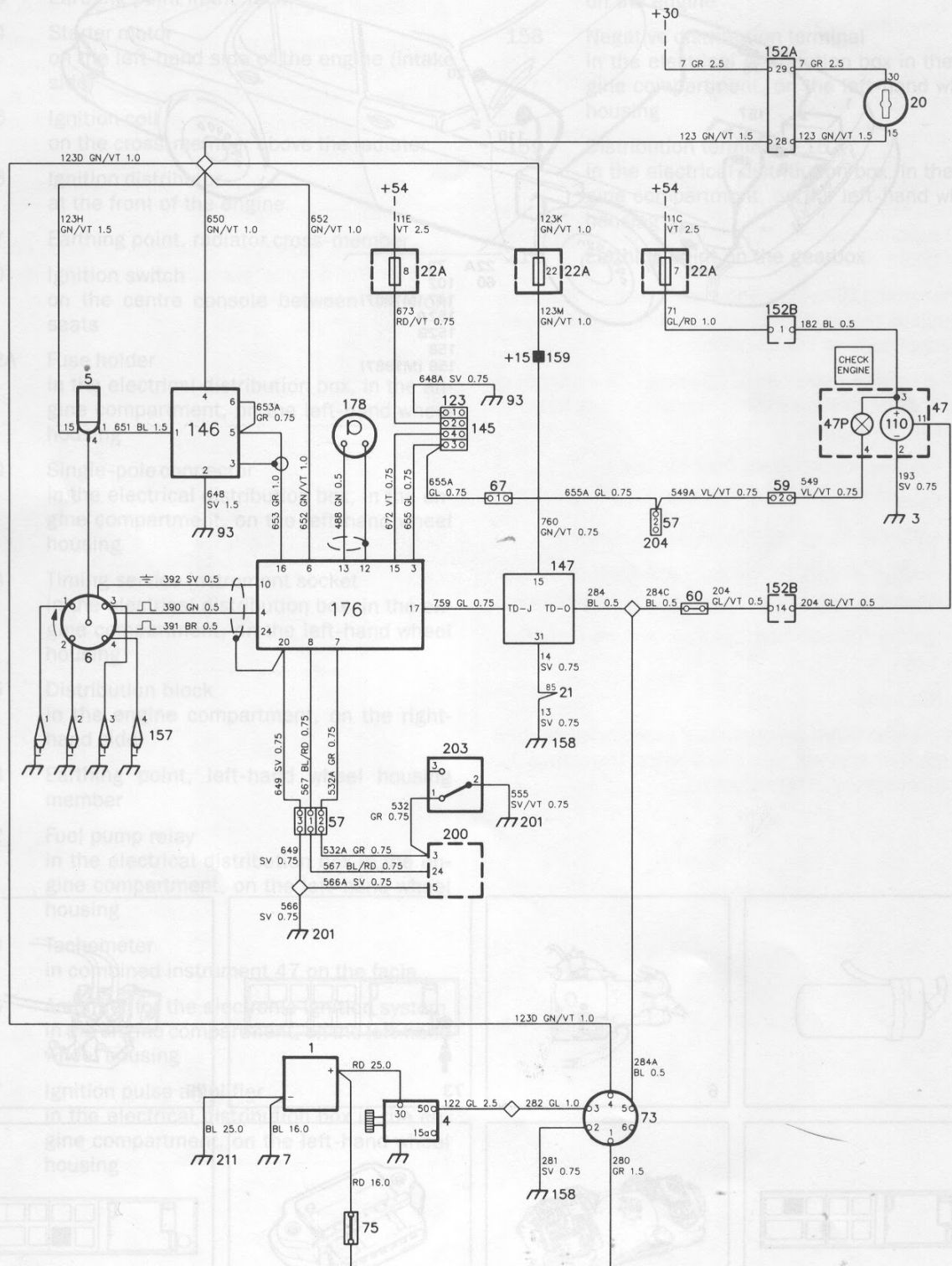


146



147

EZK ignition system with tachometer and timing service instrument socket – 1987



ning

Operation

The EZK ignition system is fitted only to 16-valve engines without turbocharger. This breakerless ignition system is equipped with a Hall sensor. It is controlled by a knock sensor, which provides the highest possible engine performance on any grade of fuel. This provides good fuel economy and cleaner exhaust gases.

When ignition switch 20 is in the start or drive position, ignition coil 5, amplifier 146 and EZK control unit 176 will be energised (+15).

Control unit 176 receives ignition pulses via a three-core shielded cable from the Hall sensor in ignition distributor 6. The frequency of the pulses is proportional to the engine speed. The control unit then adjusts the timing in accordance with the following factors:

- engine speed
- engine load
- any knocking tendencies

The pulses supplied from terminal 16 of the control unit are amplified and adjusted in amplifier 146. A high-tension pulse is generated in the secondary winding each time a pulse breaks the primary circuit of the ignition coil. The high-tension pulse is then supplied to the corresponding spark plug (157) via distributor 6.

The ignition is set at 5° when the engine is started. This ignition setting is dependent on the speed of the engine, and adjustment starts at around 700 rpm. It is adjusted in accordance with the values stored in the control unit. (The distributor has no centrifugal or vacuum advance mechanisms.)

Fuel system control unit 200 provides the ignition system with information on the engine load. Throttle angle transmitter 203 is connected (earthed) when the throttle is closed, i.e. when the engine is idling. When the load has exceeded the value stored in the control unit, the timing will be retarded by around 6° on all cylinders. The timing returns to normal in steps of around 1° after the load has ceased to increase.

The control unit receives information on knocking in any of the cylinders via knock sensor 178. The timing is then retarded on the knocking cylinder only, in steps of around 3°. This will continue until the knocking ceases, or until the timing has been retarded by a total of around 13°. The timing returns to normal in steps of 0.35°.

EZK test connector 145 is intended for special test equipment. Terminal 15 of the control unit delivers a pulse for each knock detected. (Positive voltage is supplied to the connector when the ignition switch is in the drive position.)

Should a fault occur in the control unit, a signal (earth) will be delivered from terminal 3, which will cause CHECK ENGINE warning lamp 47P to flash. (This lamp can also be activated by the fuel injection system.)

Ignition pulse amplifier 147 has been introduced to provide more accurate control of the systems which are dependent on ignition pulses, such as the fuel system.

Ignition pulses are supplied from terminal 16 of the control unit to the TD-J input of ignition pulse amplifier 147. A "pure" 12 V square-wave pulse is then supplied from the TD-O output of the amplifier to timing service instrument socket 73, tachometer 110 and other systems that are dependent on ignition pulses.

Tachometer

Tachometer 110, located in combined instrument 47, is supplied across fuse 7 and 29-pole red connector 152B. The control pulses required for displaying the engine speed are supplied from ignition pulse amplifier 147.

Timing service instrument socket

Timing service instrument (TSI) socket 73 is intended for a special ignition service instrument and has the following terminals:

1. Positive supply direct from battery 1
2. Earth
3. Solenoid (terminal 50) of starter motor 4
4. Positive supply from the ignition switch when the latter is in the start or drive position
5. Ignition pulses from ignition pulse amplifier 147
6. Not used

For a more detailed description of each component in the ignition system, see the Service Manual, 3:1, Electrical system, Instruments.

Fault-tracing hints

As a general rule, the connector to the control unit should always be disconnected when measurements are made on the ignition system cable harness. Use an ohmmeter, not a buzzer.

The ignition system will be energised when the ignition switch is in the drive-position.

1. Check that terminal 15 of the ignition coil and terminal 4 of the timing service instrument socket are live.
2. Check that terminal 4 of amplifier 146 and terminal 6 of control unit 176 are live.
3. **Tachometer:** Check fuse 7 first and check that the supply to it is live. Check that terminal 3 of the circuit board for tachometer 110 is live, and that ignition pulses are being supplied from ignition pulse amplifier 147.
4. **Ignition pulse amplifier:** Check fuse 22, and check that terminal 15 of the ignition pulse amplifier is live, and that ignition pulses are being supplied from the amplifier output. (Measure in the TSI socket.)
5. Check all connectors, cable harnesses and earth connections.

See also the fault-tracing section for each component in the Service Manual, Group 3:1, Electrical system, Instruments.

Locations of components

The locations of the components are the same for the 1987 and 1988 models, EZK ignition system — 1988 (see pages 104–105).

EZK ignition system with tachometer and timing service instrument socket – 1988

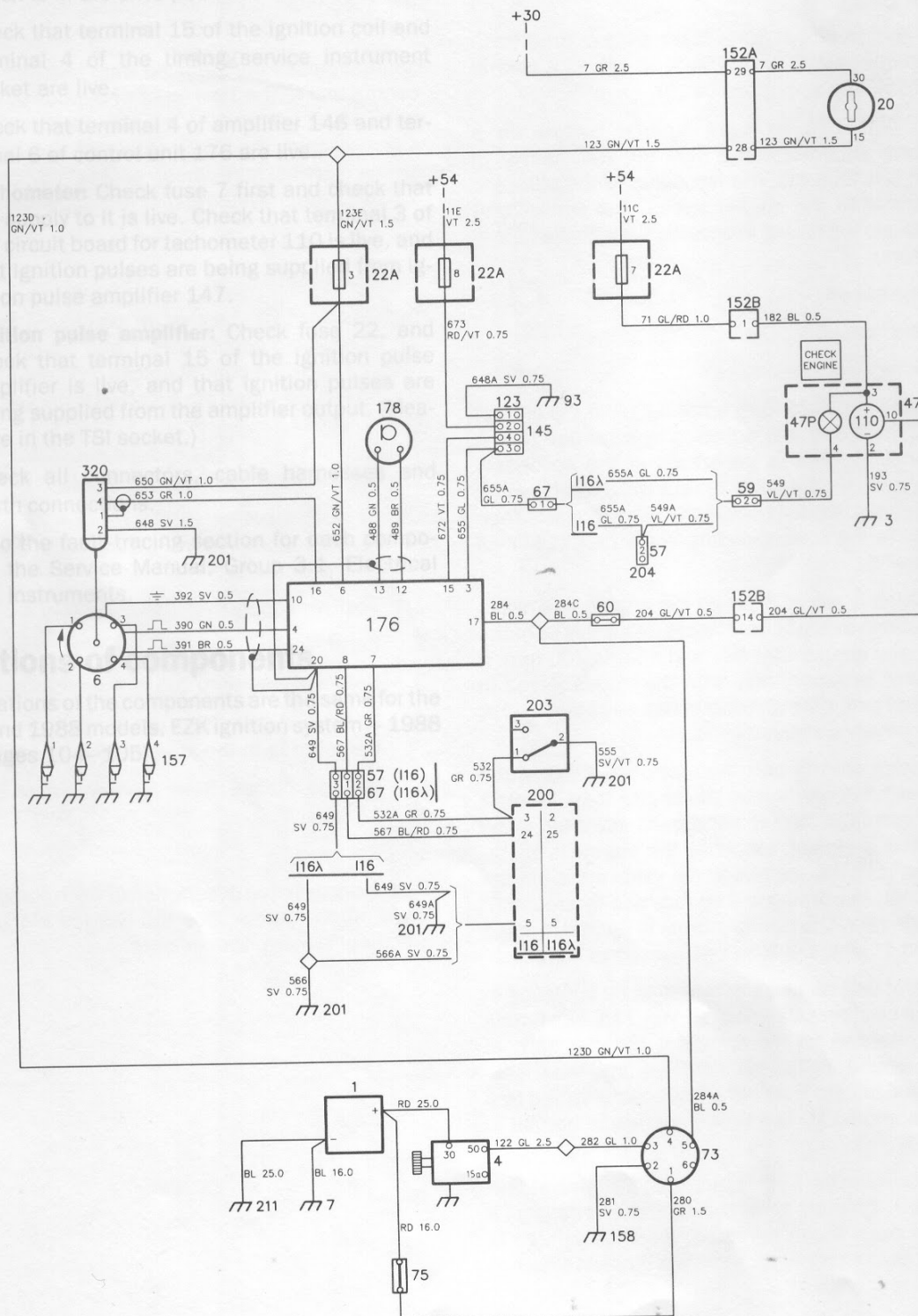
2. Check that terminal 4 of amplifier 146 and terminal 2 of amplifier 145 are live.

- 123D
GN/VT 1.0
- 123E
GN/VT 1.5
- 22A

4. Ignition pulse amplifier: Check Fig. 22, and check that terminal 15 of the ignition pulse amplifier is +ve, and that ignition pulses are being supplied from the amplifier output (as shown in the TSI socket.)

- 320 650 GN/VT 1.0
3 653 GR 1.0
4

Figure 10 is a schematic diagram of a control system. It features a circular component with points 2, 4, and 6. A line from point 6 connects to a junction labeled "391 BR 0.5". From this junction, a line leads to a switch labeled "24". The switch "24" is connected to a terminal block with terminals labeled "20", "8", and "7".

[illegible]

ing

Operation

The EZK ignition system is fitted only to 16-valve engines without turbocharger. This breakerless ignition system is equipped with a Hall sensor. It is controlled by a knock sensor, which provides the highest possible engine performance on any grade of fuel. This provides good fuel economy and cleaner exhaust gases.

When the ignition switch is in the start or drive position, ignition coil 320 with integrated amplifier, and EZK control unit 176 will be energised (+15).

Control unit 176 receives ignition pulses via a three-core shielded cable from the Hall sensor in ignition distributor 6. The frequency of the pulses is proportional to the engine speed. The control unit then adjusts the timing in accordance with the following factors:

- engine speed
- engine load
- any knocking tendencies

The pulses supplied from terminal 16 of the control unit are amplified and adjusted in ignition coil 320 with integrated amplifier. A high-tension pulse is generated in the secondary winding each time a pulse breaks the primary circuit of the ignition coil. The high-tension pulse is then supplied to the corresponding spark plug (157) via distributor 6.

The ignition is set at 5° when the engine is started. This ignition setting is dependent on the speed of the engine, and adjustment starts at around 700 rpm. It is adjusted in accordance with the values stored in the control unit. (The distributor has no centrifugal or vacuum advance mechanisms.)

Fuel system control unit 200 provides the ignition system with information on the engine load. Throttle angle transmitter 203 is connected (earthed) when the throttle is closed, i.e. when the engine is idling. When the load has exceeded the value stored in the control unit, the timing will be retarded by around 6° on all cylinders. The timing returns to normal in steps of around 1° after the load has ceased to increase.

The control unit receives information on knocking in any of the cylinders via knock sensor 178. The timing is then retarded on the knocking cylinder only, in steps of around 3°. This will continue until the knocking ceases, or until the timing has been retarded by a total of around 13°. The timing returns to normal in steps of 0.35°.

EZK test connector 145 is intended for special test equipment. Terminal 15 of the control unit delivers a pulse for each knock detected. (Positive voltage is supplied to the connector when the ignition switch is in the drive position.)

Should a fault occur in the control unit, a signal (earth) will be delivered from terminal 3, which will cause CHECK ENGINE warning lamp 47P to flash. (This lamp can also be activated by the fuel injection system.)

Ignition pulses are supplied from terminal 16 of the control unit to timing service instrument socket 73, tachometer 110 and other systems that are dependent on ignition pulses.

Tachometer

Tachometer 110, located in combined instrument 47, is supplied across fuse 7 and 29-pole red connector 152B. The control pulses required for displaying the engine speed are supplied from EZK control unit 176.

Timing service instrument socket

Timing service instrument (TSI) socket 73 is intended for a special ignition service instrument and has the following terminals:

1. Positive supply direct from battery 1
2. Earth
3. Solenoid (terminal 50) of starter motor 4
4. Positive supply from the ignition switch when the latter is in the start or drive position
5. Ignition pulses from EZK control unit 176
6. Not used

For a more detailed description of each component in the ignition system, see the Service Manual, 3:1, Electrical system, Instruments.

Fault-tracing hints

As a general rule, the connector to the control unit should always be disconnected when measurements are made on the ignition system cable harness. Use an ohmmeter, not a buzzer.

The ignition system will be energised when the ignition switch is in the drive position.

1. Check that fuse 3, terminal 3 on the ignition coil and terminal 4 on the timing service instrument socket are live.
2. Check that terminal 6 on control unit 176 is live.
3. **Tachometer:** Check fuse 7 first and check that the supply to it is live. Check that terminal 3 on the circuit board for tachometer 110 is live, and that ignition pulses are being supplied from control unit 176.
4. Check all connectors, cable harnesses and earth connections.

See also the fault-tracing section for each component in the Service Manual, Group 3:1, Electrical system, Instruments.

Locations of components

The locations of the components presented below are the same for the EZK ignition system on 1987 and 1988 models.

- | | | | |
|-----|---|------|---|
| 1 | Battery
on the right-hand side of the engine compartment | 146 | Amplifier for the electronic ignition system in the engine compartment, on the left-hand wheel housing |
| 3 | Earthing point in the fascia | 147 | Ignition pulse amplifier in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 4 | Starter motor
on the left-hand side of the engine (intake side) | 152A | 29-pole white connector |
| 5 | Ignition coil
on the cross-member above the radiator | 152B | 29-pole red connector in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car. |
| 6 | Ignition distributor
at the front of the engine | 157 | Spark plug
on the engine |
| 7 | Earthing point, radiator cross-member | 158 | Negative distribution terminal in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 20 | Ignition switch
on the centre console between the front seats | 159 | Distribution terminal +15 in the electrical distribution box, in the engine compartment, on the left-hand wheel housing |
| 22A | Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 176 | Control unit for EZK ignition system in the engine compartment, forward of the left-hand wheel housing |
| 47P | CHECK ENGINE warning lamp
in the combined instrument on the fascia | 178 | Knock sensor for the EZK system on the engine, between the two centre intake ports |
| 57 | 3-pole connector (I16)
in the engine compartment, on the right-hand side, at the air intake | 200 | Control unit for the LH system forward of the right-hand front door, below the fascia (behind the trim) |
| 59 | 2-pole connector
in the engine compartment, on the right-hand side, at the air intake | 201 | Earthing point on the engine at the engine lifting lug |
| 60 | Single-pole connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing | 203 | Throttle angle transmitter - LH system on the throttle housing |
| 67 | 6-pole connector
one in the engine compartment, on the right-hand side, at the air intake (two on the 1988 I16 Lambda) | 204 | Test connector - LH system in the engine compartment, behind the right-hand wheel housing |
| 73 | Timing service instrument socket
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 211 | Earthing point on the gearbox |
| 75 | Distribution block
in the engine compartment, on the right-hand side | 320 | Ignition coil with integrated amplifier in the engine compartment on the right-hand side, above the battery |
| 93 | Earthing point, left-hand wheel housing member | | |
| 110 | Tachometer
in combined instrument 47 on the fascia | | |
| 145 | Test tapping, EZK
in the engine compartment, on the left-hand wheel housing, forward of the electrical distribution box | | |

Components

The charging warning lamp is connected to terminal 152B of the 29-pole connector 152B to check that the supply to it is live.

When the ignition switch is in the 'ON' position, a positive voltage will be supplied via the 29-pole connector 152B to the charging warning lamp 47E in the combined instrument cluster. Check that the lamp is in fact lit.

When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.

When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.

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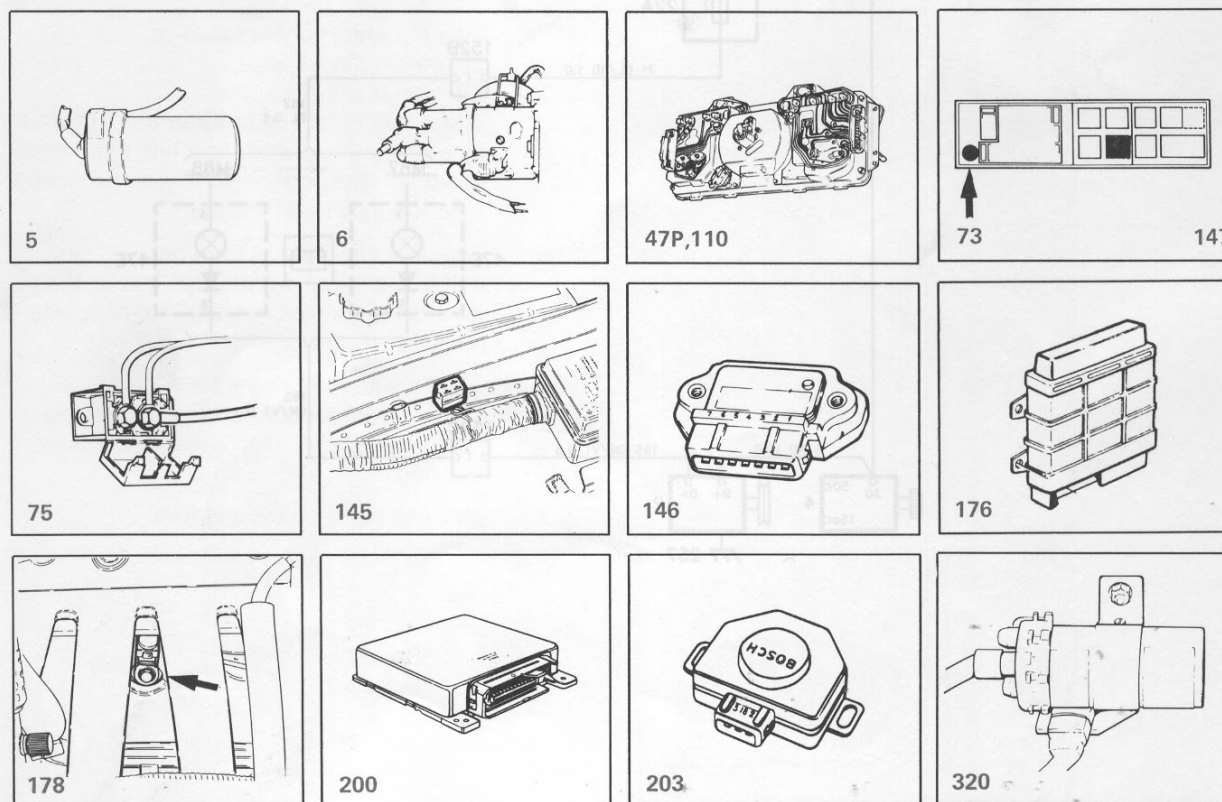
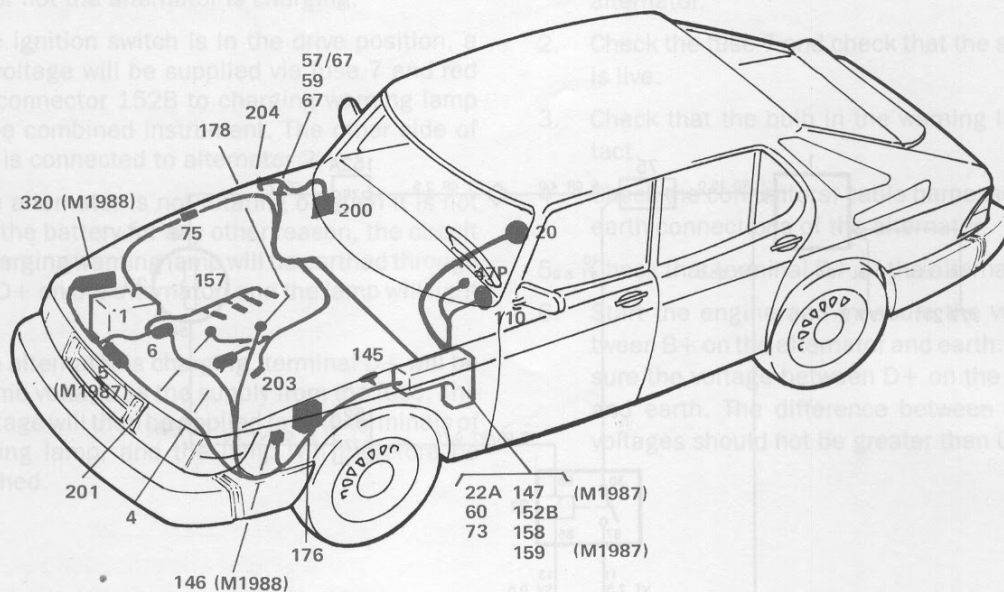
When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.

When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.

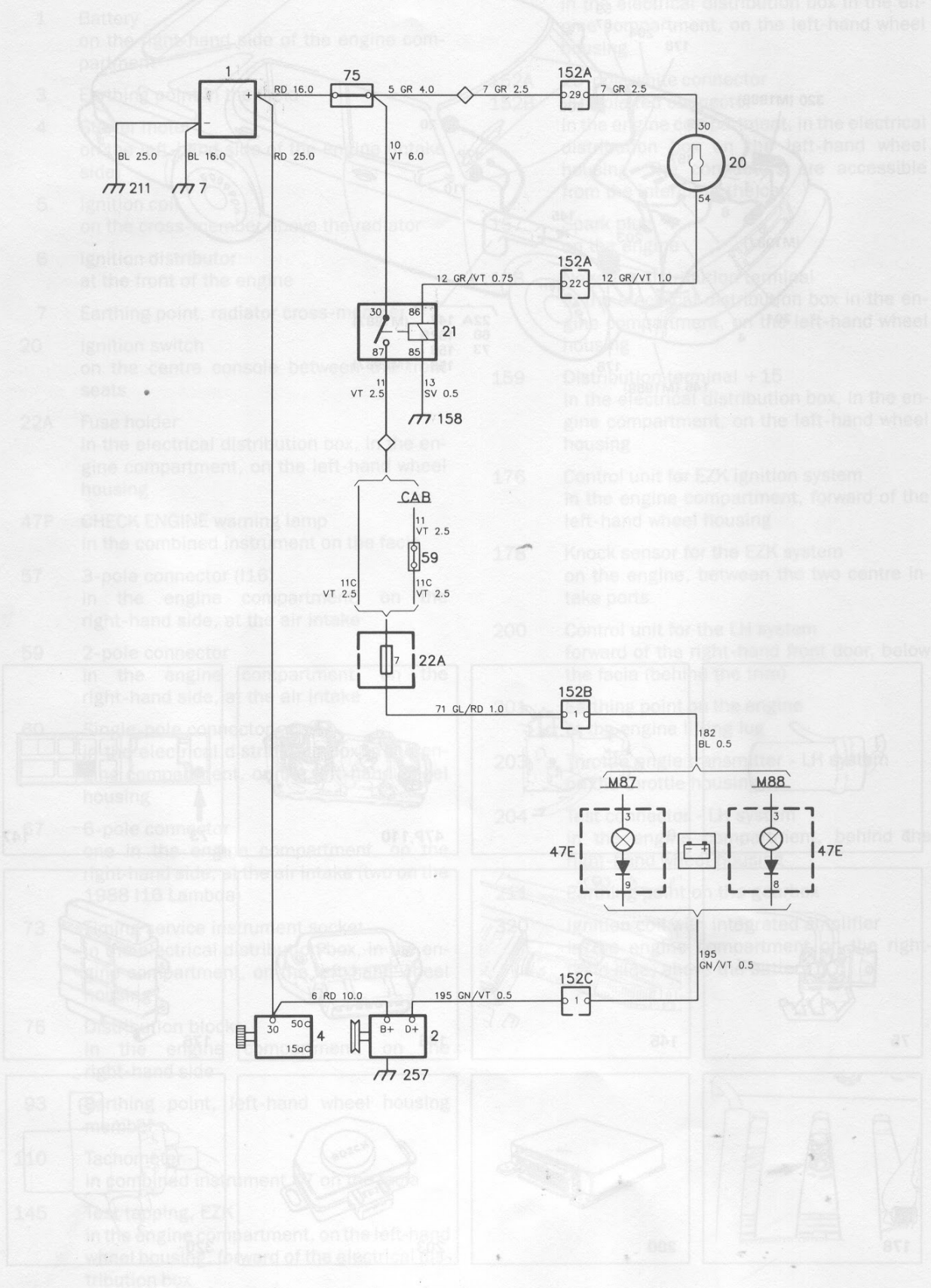
When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.

When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.

When the engine is running, the voltage between the engine earth and the alternator terminal D+ on the alternator should be 0.7 V. Also measure the voltage between the engine earth and the warning lamp 47E. The difference between these two voltages should not be greater than 0.7 V.



Battery-charging system



Operation

The charging warning lamp informs the driver of whether or not the alternator is charging.

When the ignition switch is in the drive position, a positive voltage will be supplied via fuse 7 and red 29-pole connector 152B to charging warning lamp 47E in the combined instrument. The other side of the lamp is connected to alternator 2.

When the alternator is not rotating or when it is not charging the battery for any other reason, the circuit for the charging warning lamp will be earthed through terminal D+ on the alternator, and the lamp will light up.

When the alternator is charging, terminal D+ will be at the same voltage as the supply from the fuse. The same voltage will then be applied to both terminals of the warning lamp, and the lamp will therefore be extinguished.

Fault-tracing hints

1. Check the battery voltage at terminal B+ of the alternator.
2. Check the fuse 7 and check that the supply to it is live.
3. Check that the bulb in the warning lamp is intact.
4. Check the connectors, cable harnesses and the earth connections of the alternator.
5. Check that terminal D+ of the alternator is live.
6. Start the engine and measure the voltage between B+ on the alternator and earth. Also measure the voltage between D+ on the alternator and earth. The difference between these two voltages should not be greater than 0.7 V.

Locations of components

211 Earthing point on the gearbox

159 Distribution terminal +15 in the electrical distribution box in the engine compartment, on the left-hand wheel housing

158 Negative distribution terminal in the electrical distribution box in the engine compartment, on the left-hand wheel housing

152C 29-pole black connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing

152B 29-pole red connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing

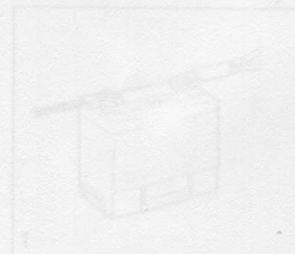
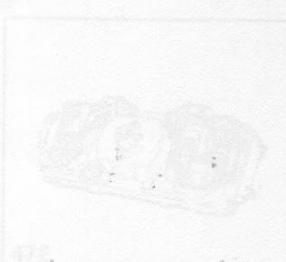
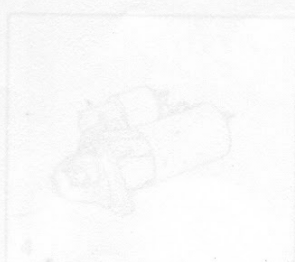
152A 29-pole white connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing

75 Distribution block in the engine compartment, on the right-hand side

59 2-pole connector (CAB) in the electrical distribution box in the engine compartment, on the left-hand wheel housing

47E Charging warning lamp in the combined instrument

23A Fuseholder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing



Locations of components

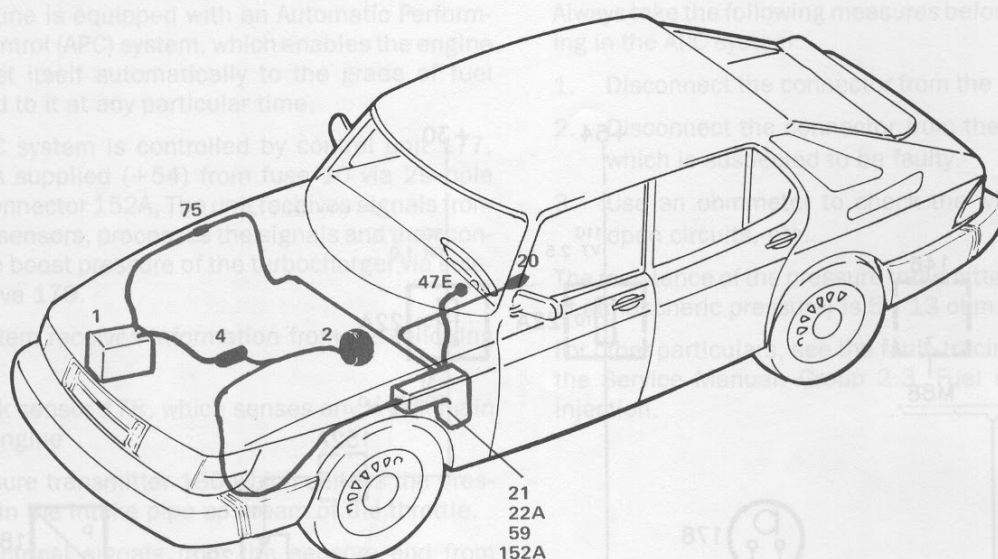
- 1 Battery
on the right-hand side of the engine compartment
- 2 Alternator
on the left-hand side of the engine
- 4 Starter motor
on the left-hand side of the engine (intake side)
- 7 Earthing point, radiator cross-member
- 20 Ignition switch
on the centre console between the front seats
- 21 Ignition switch relay
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 47E Charging warning lamp
in the combined instrument
- 59 2-pole connector (CAB)
one in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 75 Distribution block
in the engine compartment, on the right-hand side
- 152A 29-pole white connector
- 152B 29-pole red connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.
- 158 Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 159 Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 211 Earthing point on the gearbox

Components

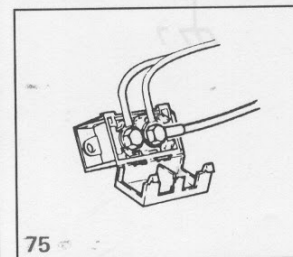
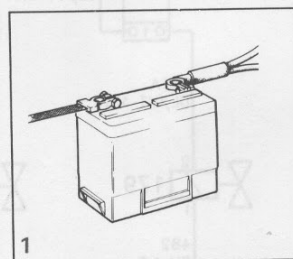
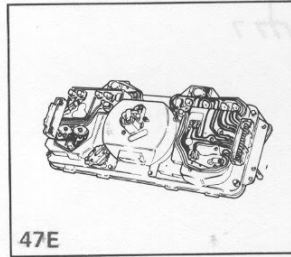
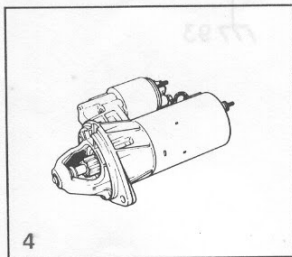
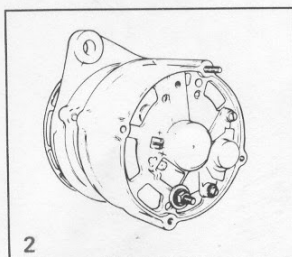
The engine is equipped with an Automatic Performance Control (APC) system, which enables the engine to adjust itself automatically to the grade and fuel supplied to it at any particular time.

75

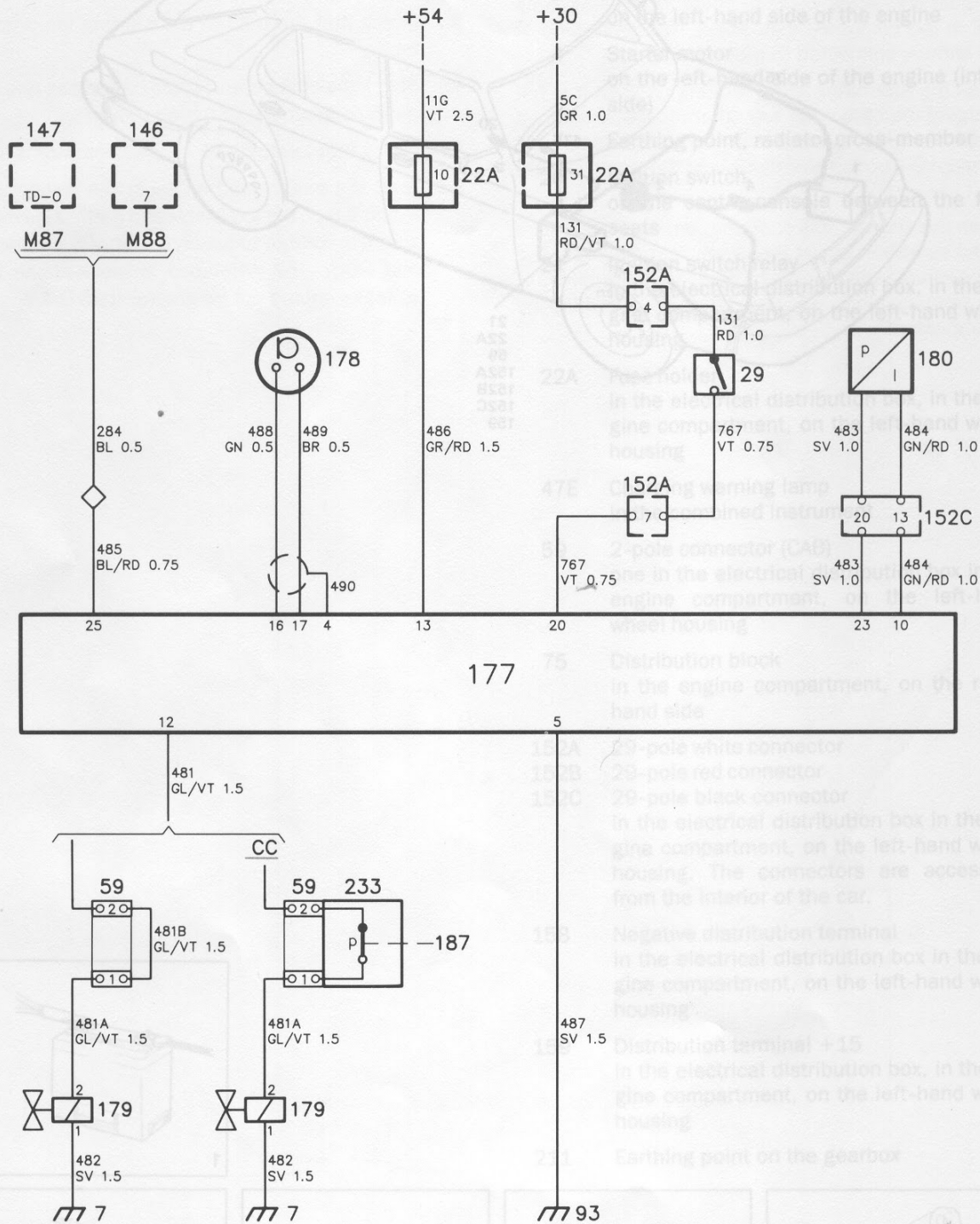
The electrical signals from the crankshaft position sensor and from ignition pulse amplifier 147 (1987) or ignition system amplifier 148 (1988) are fed continuously into



21
22A
59
152A
152B
152C
159



APC system



Operation

The engine is equipped with an Automatic Performance Control (APC) system, which enables the engine to adjust itself automatically to the grade of fuel supplied to it at any particular time.

The APC system is controlled by control unit 177, which is supplied (+54) from fuse 10 via 29-pole white connector 152A. The unit receives signals from several sensors, processes the signals and then controls the boost pressure of the turbocharger via solenoid valve 179.

The system receives information from the following sensors:

- Knock sensor 178, which senses any knocking in the engine
- Pressure transmitter 180 which senses the pressure in the intake pipe upstream of the throttle.

The electrical signals from the sensors and from ignition pulse amplifier 147 (1987) or ignition system amplifier 146 (1988) are fed continuously into the control unit. On the basis of the electrical signals received, the unit then controls the solenoid valve and thus the boost pressure from the turbocharger. In addition, it receives a signal from brake light switch 29 when the foot brake is applied, which enables the control unit to reduce the basic boost pressure. Since the boost pressure is continuously adjusted to the octane rating of the fuel and the running conditions of the engine, it has proved unnecessary to provide the adjustment margins that must normally be allowed to avoid damage to the engine. As a result, maximum energy can be extracted from the fuel used on any particular occasion.

Cars with the Turbo engine and Cruise Control are equipped with vacuum switch 233, which is actuated by vacuum pump 187 via a vacuum hose. When the contacts open, the control unit reduces the boost pressure to the basic value.

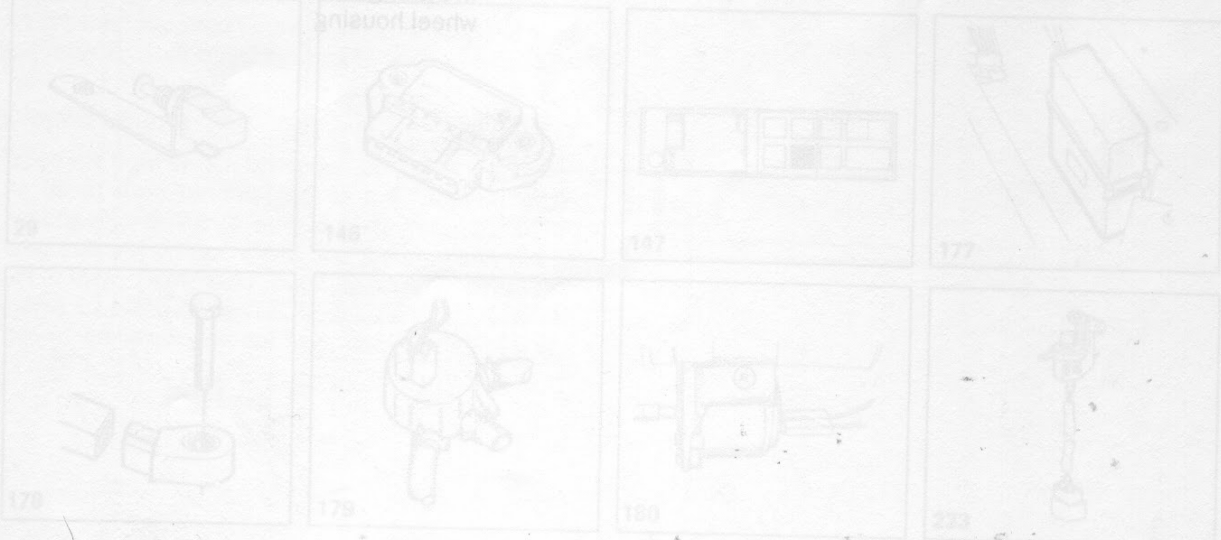
Fault-tracing hints

Always take the following measures before fault-tracing in the APC system:

1. Disconnect the connector from the control unit.
2. Disconnect the connector from the component which is suspected to be faulty.
3. Use an ohmmeter to check the wiring for any open circuits, etc.

The resistance of the pressure transmitter (measured at atmospheric pressure) is 5 - 13 ohm.

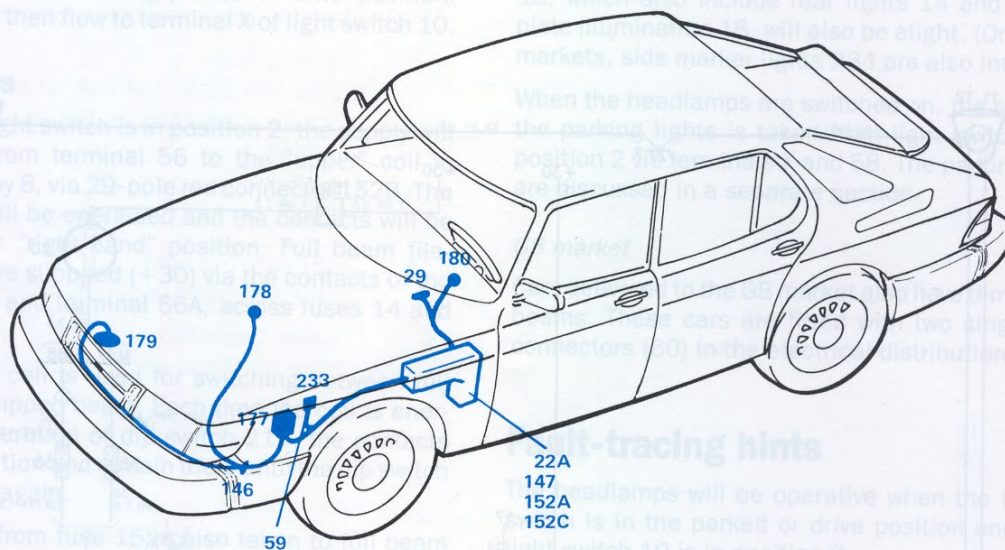
For other particulars, see the fault-tracing section in the Service Manual, Group 2:3, Fuel system, fuel injection.



Locations of components

- 7 Earthing point, radiator cross-member
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 29 Brake light switch
at the brake pedal
- 59 2-pole connector
in the engine compartment, on the left-hand wheel housing
- 93 Earthing point, left-hand wheel housing member
- 146 Amplifier for the electronic ignition system
in the engine compartment, forward of the left-hand wheel housing
- 147 Ignition pulse amplifier
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 152A 29-pole white connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment on the left-hand wheel housing. The connectors are accessible from the interior of the car.
- 177 Control unit for the APC system
in the engine compartment, forward of the left-hand wheel housing
- 178 Knock sensor
on the engine, below the intake manifold
- 179 Solenoid valve
on the radiator fan casing
- 180 Pressure transmitter
under the fascia, to the left of the steering column (behind the knee shield)
- 233 Vacuum switch
in the engine compartment, on the left-hand wheel housing

Components



Headlamp flasher

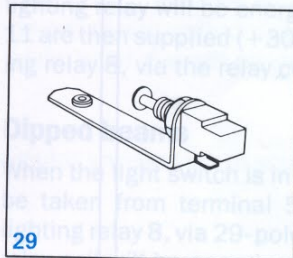
The full beams can also be switched on by means of dip switch 215, regardless of whether the ignition switch and the light switch

1987 model

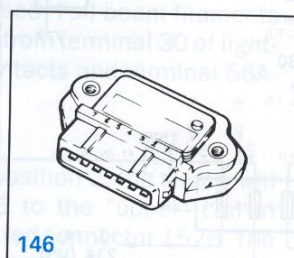
When the dip switch is operated, the "lower" coil of the lighting relay will be energised. The supply to the lighting relay is then supplied (+30) from terminal 30 of the lighting relay, via the "left-hand" contact of the "lower" coil and terminal 56A.

1988 model

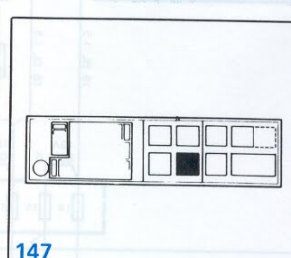
When the dip switch is operated, the "lower" coil of the lighting relay will be energised. The supply to the lighting relay is then supplied (+30) from terminal 30 of the lighting relay, via the "left-hand" contact of the "lower" coil and terminal 56A.



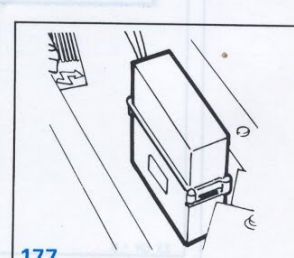
29



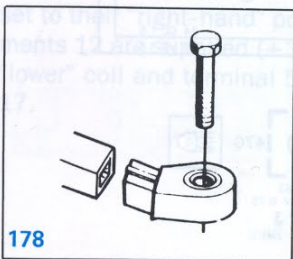
146



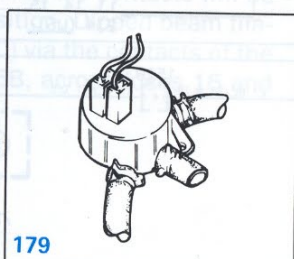
147



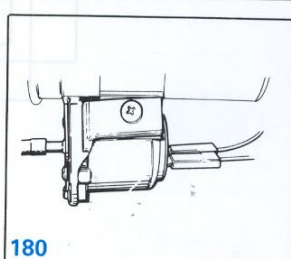
177



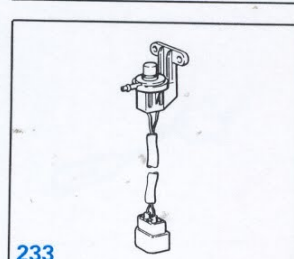
178



179



180



233



Operation

The headlamps can only be switched on when ignition switch 20 is in the parked or drive position. Current will then flow to terminal X of light switch 10.

Full beams

When the light switch is in position 2, the supply will be taken from terminal 56 to the "upper" coil in lighting relay 8, via 29-pole red connector 152B. The relay coil will be energised and the contacts will be set to their "right-hand" position. Full beam filaments 11 are supplied (+30) via the contacts of the "lower" coil and terminal 56A, across fuses 14 and 15.

The "lower" coil is used for switching between full beam and dipped beam. Each time the coil is energised by operation of dip switch 215, the contacts change position and remain there until the dip switch is operated again.

The supply from fuse 15 is also taken to full beam warning lamp 47G, located in the combined instrument.

For particulars of the lighting wiring in light switch 10 on cars destined for US, CA and JP, see the section entitled "Lighting for controls, US, CA, JP".

Headlamp flasher

The full beams can also be switched on by means of dip switch 215, regardless of the setting of the ignition switch and the light switch.

1987 model

When the dip switch is operated, the "lower" coil in the lighting relay will be energised. Full beam filaments 11 are then supplied (+30) from terminal 30 of the lighting relay, via the "left-hand" contacts of the "lower" coil and terminal 56A.

1988 model

When the dip switch is operated, both coils in the lighting relay will be energised. Full beam filaments 11 are then supplied (+30) from terminal 30 of lighting relay 8, via the relay contacts and terminal 56A.

Dipped beams

When the light switch is in position 2, the supply will be taken from terminal 56 to the "upper" coil in lighting relay 8, via 29-pole red connector 152B. The relay coil will be energised and the contacts will be set to their "right-hand" position. Dipped beam filaments 12 are supplied (+30) via the contacts of the "lower" coil and terminal 56B, across fuses 16 and 17.

Parking lights

When the headlamps are switched on, parking lights 13, which also include rear lights 14 and number plate illumination 15, will also be alight. (On certain markets, side marker lights 234 are also included.)

When the headlamps are switched on, the supply to the parking lights is taken from light switch 10 in position 2 via terminals X and 58. The parking lights are discussed in a separate section.

GB market

Cars delivered to the GB market also have dim dipped beams. These cars are fitted with two single-pole connectors (60) in the electrical distribution box.

Fault-tracing hints

The headlamps will be operative when the ignition switch is in the parked or drive position and when light switch 10 is in position 2.

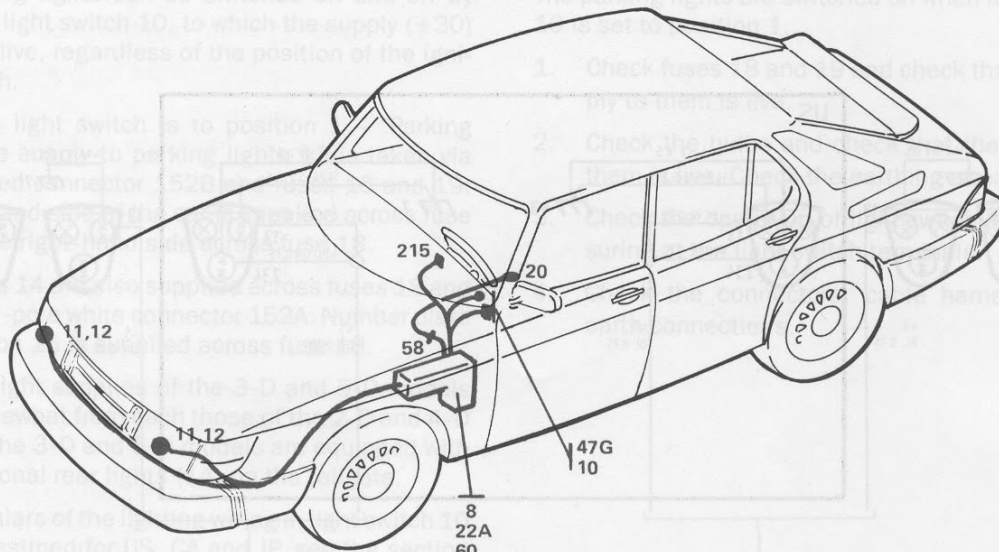
1. Check fuses 14 and 15 (full beams) and fuses 16 and 17 (dipped beams) and check that the supply to them is live.
2. Check the bulbs and check that the supply to them is live. Check the earthing at each lamp.
3. Check the light switch, the lighting relay and the terminals of the dip switch.
4. Check the connectors, cable harnesses and earth connections.

For particulars of fault-tracing on the parking lights, see the section entitled "Parking lights".

Locations of components

- 3 Earthing point in the facia
- 7 Earthing point, radiator cross-member
- 8 Lighting relay
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 10 Light switch
on the left-hand side of the facia
- 11 Full beam filament
in the left-hand and right-hand headlamps
- 12 Dipped beam filament
in the left-hand and right-hand headlamps
- 20 Ignition switch
on the centre console between the front seats
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 47G Full beam warning lamp
in the combined instrument in the instrument panel
- 58 12-pole connector
on the angle bracket, under the facia on the left-hand side (behind the knee shield)
- 60 Single-pole connector (GB)
two in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 152A 29-pole white connector
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connectors are accessible from the interior of the car
- 158 Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 215 Dip switch
on the left-hand side of the steering column

Components



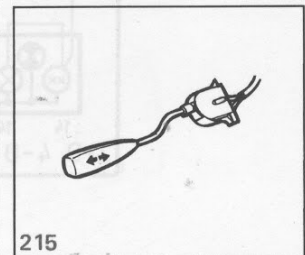
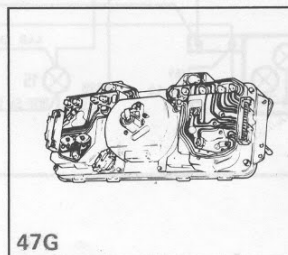
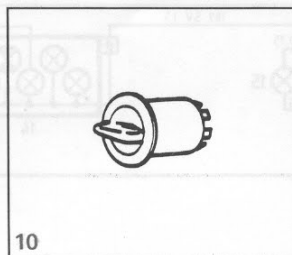
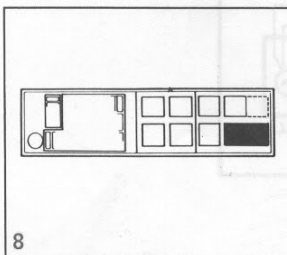
8
22A
60
60
152A
152B
158

U.S.A. market

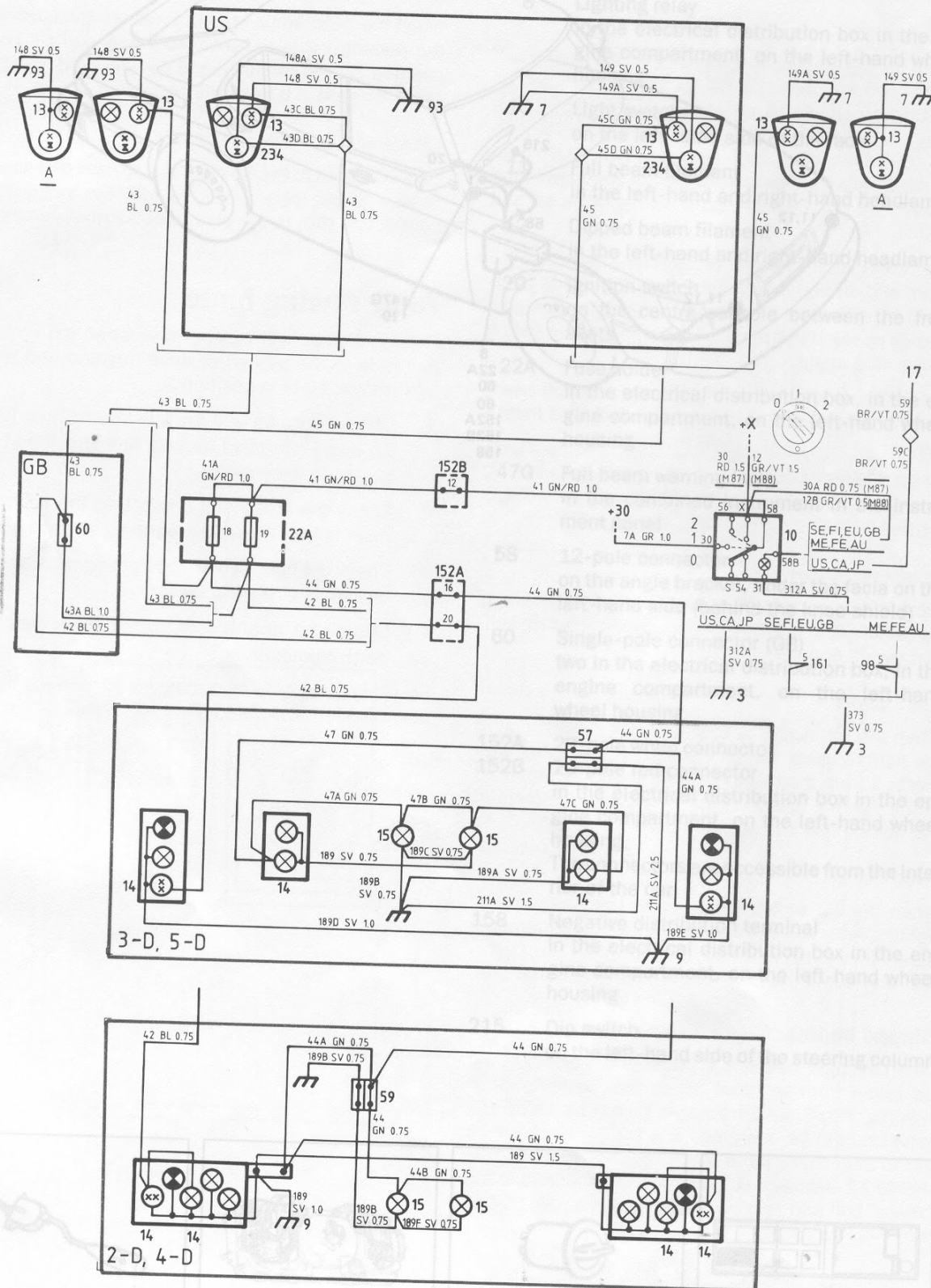
Cars for the U.S.A. market are also equipped with side marker lights 22A which are supplied via parking lights 12. One half of the bulb for each direction indicator is used for the corresponding side marker light.

GB market

Cars delivered to the GB market have dipped beams. These cars are also equipped with a single-pole connector 60 in the electrical distribution box.



Parking lights



Operation

The parking lights can be switched on and off by means of light switch 10, to which the supply (+30) is always live, regardless of the position of the ignition switch.

When the light switch is to position 1 - "Parking lights" the supply to parking lights 13 is taken via 29-pole red connector 152B and fuses 18 and 19. The left-hand side of the car is supplied across fuse 19 and the right-hand side across fuse 18.

Rear lights 14 are also supplied across fuses 18 and 19, via 29-pole white connector 152A. Number plate illumination 15 is supplied across fuse 18.

The rear-light supplies of the 3-D and 5-D models differ somewhat from each those of the 2-D and 4-D models. The 3-D and 5-D models are equipped with two additional rear lights (14) on the tailgate.

For particulars of the lighting wiring in light switch 10 on cars destined for US, CA and JP, see the section entitled "Lighting for controls, US, CA, JP".

Light fittings marked "A" are for cars without integrated bumpers.

U.S.A. market

Cars for the U.S.A. market are also equipped with side marker lights 234, which are supplied via parking lights 13. One-half of the bulb for each direction indicator is used for the corresponding side marker light.

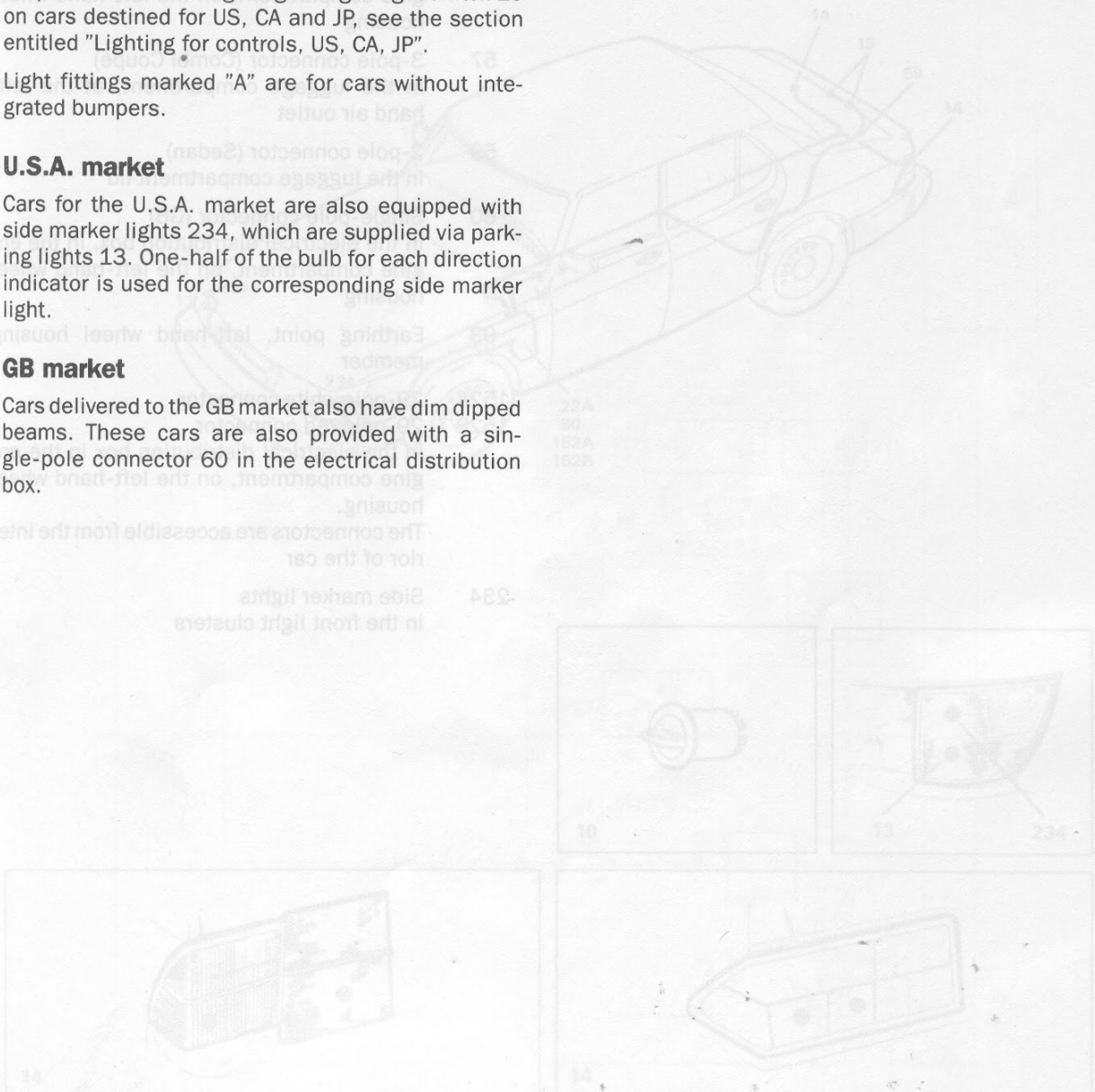
GB market

Cars delivered to the GB market also have dim dipped beams. These cars are also provided with a single-pole connector 60 in the electrical distribution box.

Fault-tracing hints

The parking lights are switched on when light switch 10 is set to position 1.

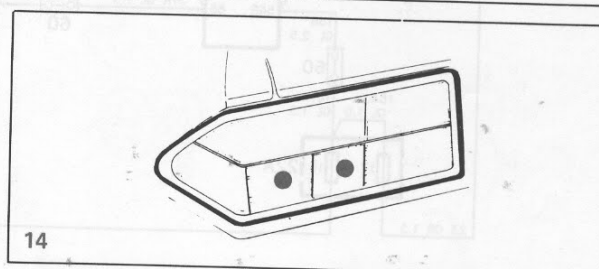
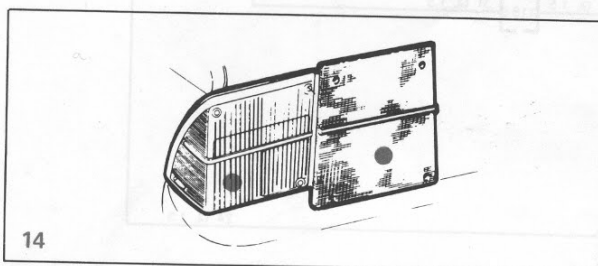
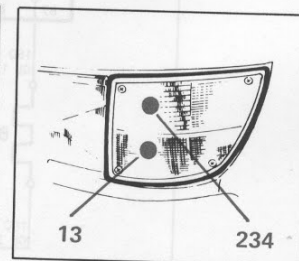
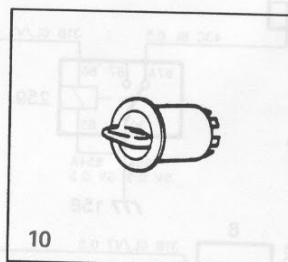
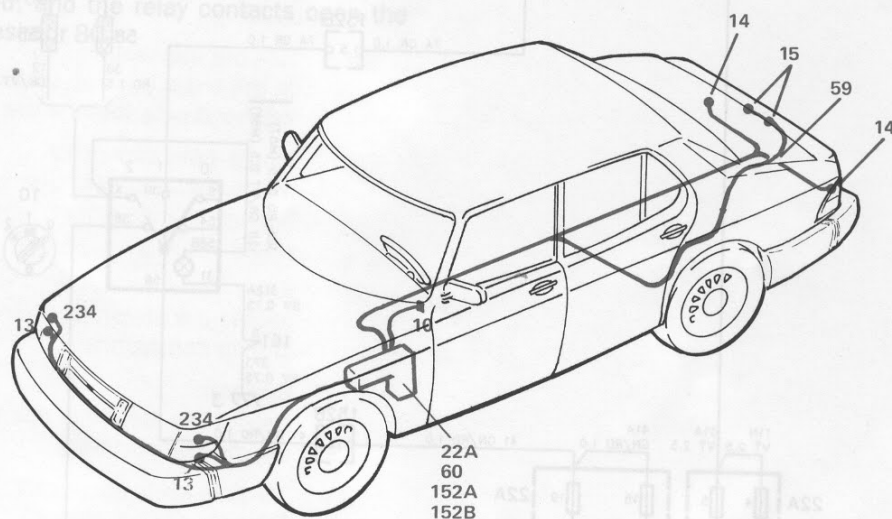
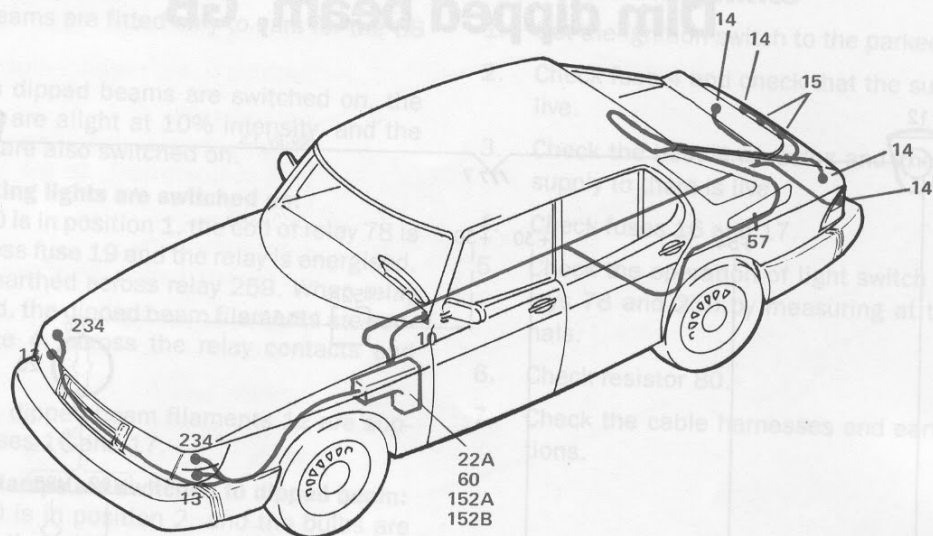
1. Check fuses 18 and 19 and check that the supply to them is live.
2. Check the bulbs and check that the supply to them is live. Check the earthing at each lamp.
3. Check the operation of light switch 10 by measuring at the light switch terminals.
4. Check the connectors, cable harnesses and earth connections.



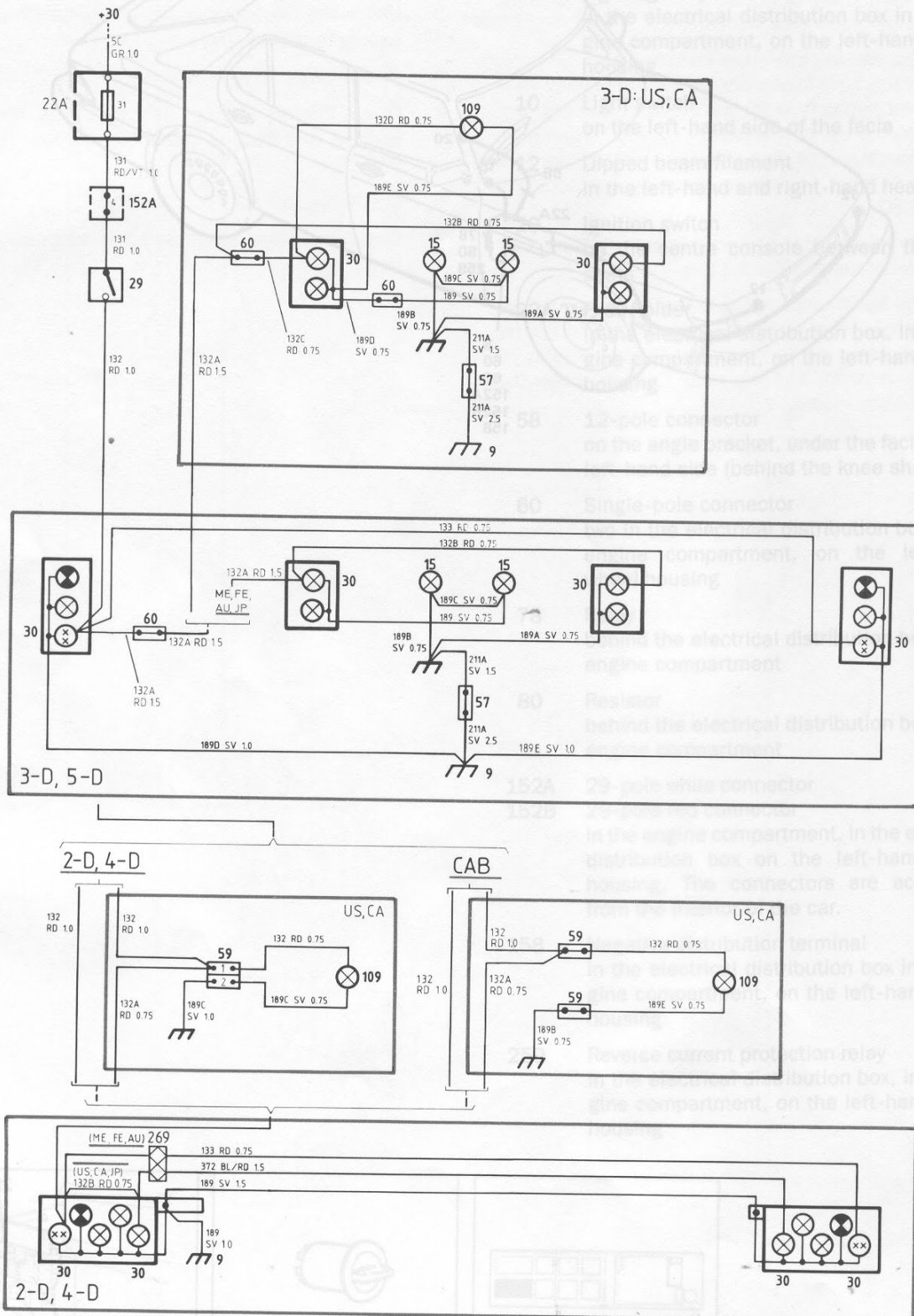
Locations of components

- 3 Earthing point in the facia
- 7 Earthing point, radiator cross-member
- 9 Earthing point in the luggage compartment
- 10 Light switch
on the left-hand side of the facia
- 13 Parking lights
in the front light clusters
- 14 Rear lights
Combi Coupé: in the rear light clusters and
on the tailgate
Sedan: in the rear light clusters
- 15 Number plate illumination
on the luggage compartment lid
- 22A Fuse holder
in the electrical distribution box, in the en-
gine compartment, on the left-hand wheel
housing
- 57 3-pole connector (Combi Coupé)
in the luggage compartment, at the left-
hand air outlet
- 59 2-pole connector (Sedan)
in the luggage compartment lid
- 60 Single-pole connector (GB)
in the electrical distribution box, in the en-
gine compartment, on the left-hand wheel
housing
- 93 Earthing point, left-hand wheel housing
member
- 152A 29-pole white connector
- 152B 29-pole red connector
in the electrical distribution box in the en-
gine compartment, on the left-hand wheel
housing.
The connectors are accessible from the inte-
rior of the car
- 234 Side marker lights
in the front light clusters

Components



Brake lights



Operation

The supply to brake light switch 29 is taken from fuse 31, via the 29-pole white connector 152A. When the car is braked, the contacts will close and brake lamps 30 will be energised.

Depending on the market, one or two lamps (30) are used on each side for the brake lights. When two lamps are used, the second lamp is connected by means of cable 132A, cable 132B or connector 269.

European market (3-D, 5-D)

Cable 132A (3-D, 5-D) is not used and connector 269 (2-D, 4-D) is not fitted. Only one lamp on each side will light up when the brakes are applied. (The extra lamps are used for the rear fog lights instead.)

Australian, Middle-Eastern and Far-Eastern markets

Cable 132A (3-D, 5-D) is used and connector 269 (2-D, 4-D) is fitted, so two lamps light up on each side of the car.

U.S.A., Canadian and Japanese markets

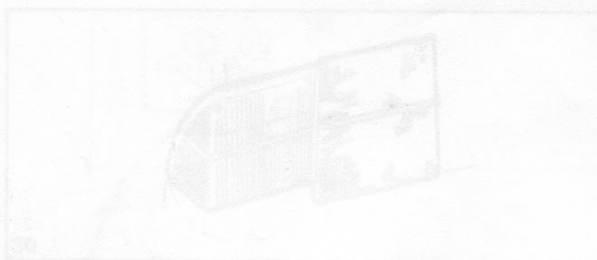
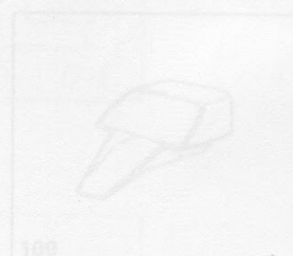
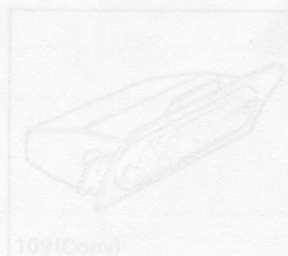
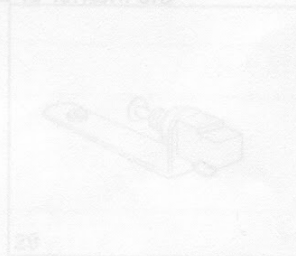
On cars for these markets, cable 132A (3-D) and cable 138B (2-D, 4-D) is used, so two lamps light up on each side of the car.

These cars are also equipped with high-level brake light 109 (US, CA) which is located at the bottom of the rear window. On the 3-D model, the brake lights are connected to the left-hand rear light fittings in the tailgate via two single-pole connectors, and on the 2-D and 4-D models (US, CA) via one 2-pole connector (59).

On the Convertible, high-level brake light 109 (US, CA) is located in the spoiler and is connected by means of two 2-pole connectors 59. The connectors are located at the left-hand hinge of the boot lid.

Fault-tracing hints

1. Check fuse 31 and check that the supply to it is live.
2. Check that the supply to brake light switch 29 is live.
3. Operate the brake light switch. Check the bulbs and check that the supplies to them are live. Check the earthing at each lamp.
4. Check the connectors, cable harnesses and earth connections.



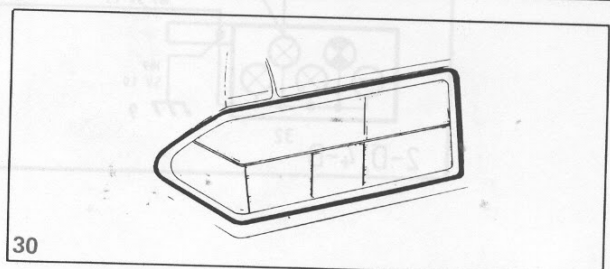
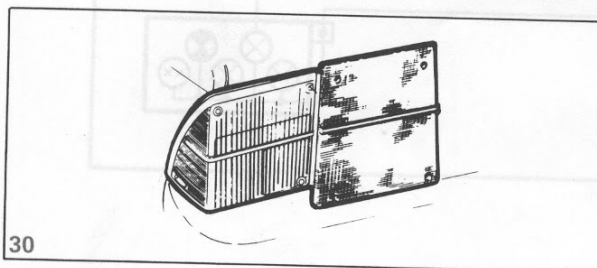
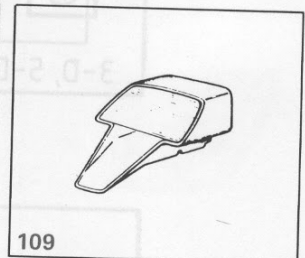
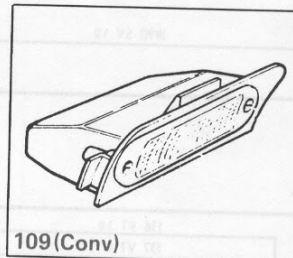
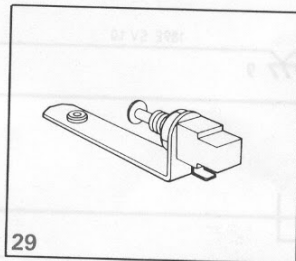
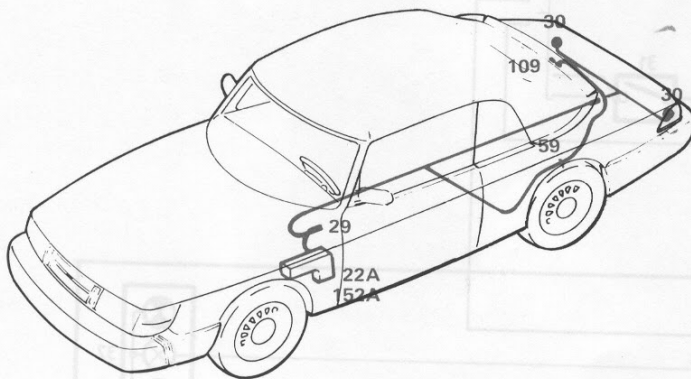
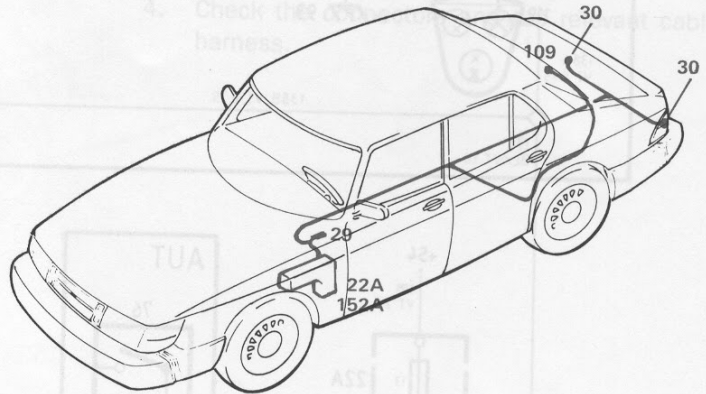
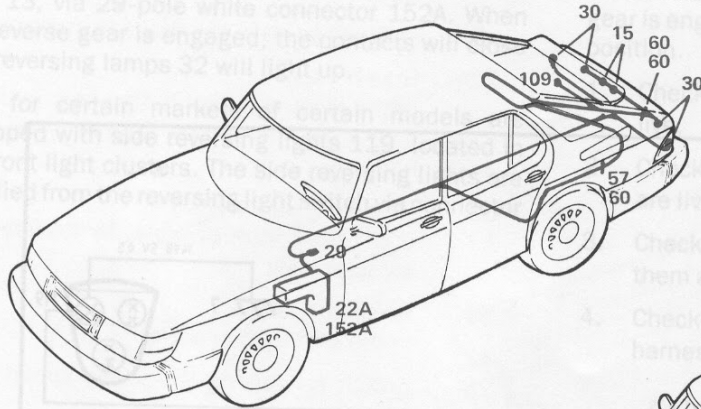
Locations of components

- 9 Earthing point in the luggage compartment
- 15 Number plate illumination on the luggage compartment lid
- 22A Fuse holder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 29 Brake light switch at the brake pedal
- 30 Brake lamps
3-D, 5-D: in the rear light clusters and, on certain markets, in the tailgate
2-D, 4-D: in the rear light clusters
- 57 3-pole connector - 3-D, 5-D only in the luggage compartment, at the left-hand air outlet
- 59 2-pole connector on the 2-D, 4-D (U.S.A., etc. only): in the luggage compartment, on the left-hand side, under the parcel shelf
on the Convertible: two in the luggage compartment at the left-hand lid hinge, behind the trim
- 60 Single-pole connector - 3-D, 5-D only one in the luggage compartment, at the left-hand air outlet
two in the luggage compartment, at the left-hand rear light fitting (U.S.A., etc. only)
- 109 High-level brake light - U.S.A., Canada at the bottom of the rear window (2-D, 4-D and 3-D)
in the spoiler, on the luggage compartment lid (Convertible)
- 152A 29-pole white connector in the electrical distribution box in the engine compartment on the left-hand wheel housing. The connector is accessible from the interior of the car.

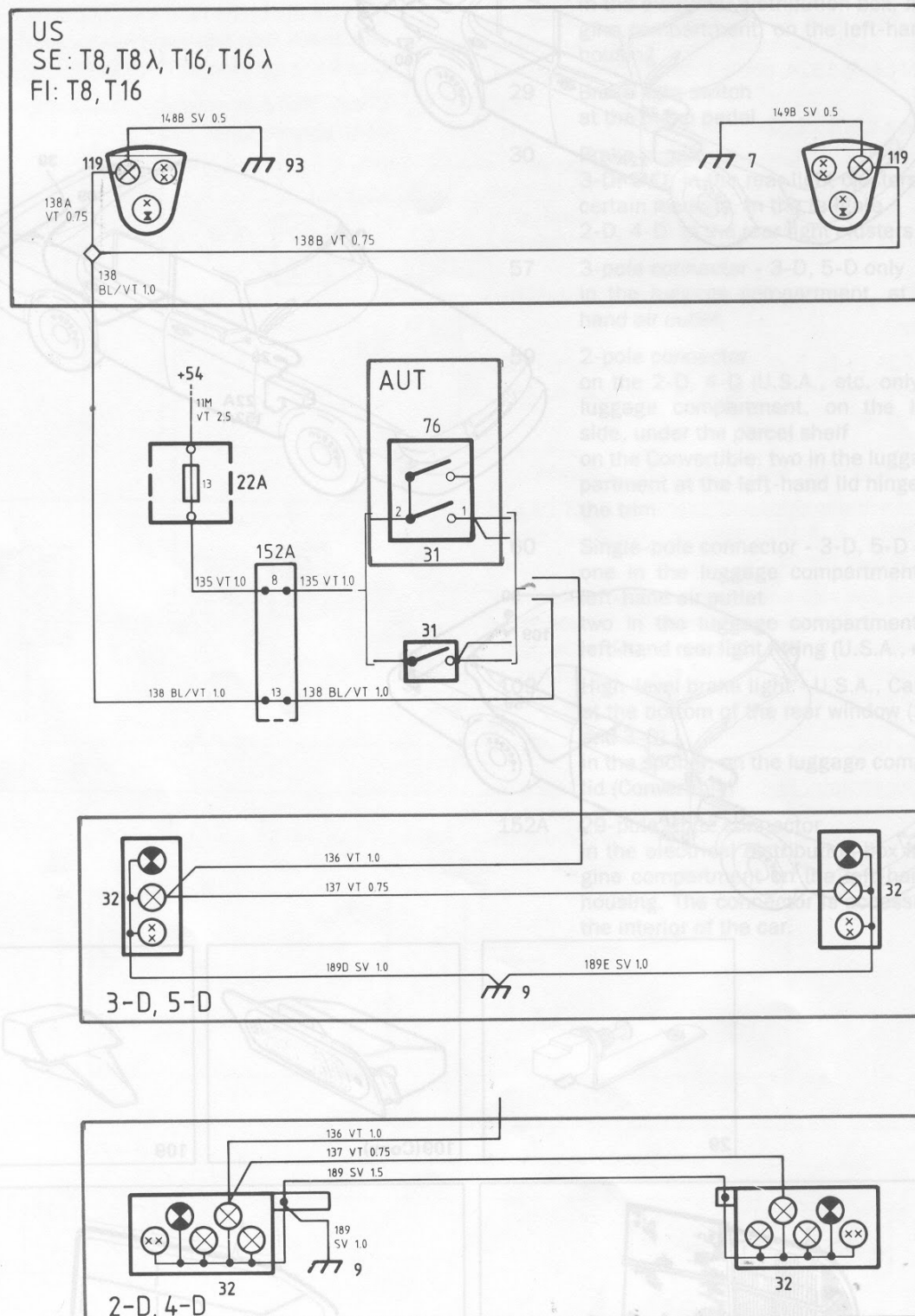
Components

The supply to reversing light switch 31 is taken from fuse 13, via 29-pole white connector 152A. When the reverse gear is engaged, the contacts within the switch are closed and the ignition switch is in the drive position, the reversing lights are switched on when reverse gear is engaged and the ignition switch is in the drive position.

Cars for certain markets are equipped with side-impact protection. The reversing light switch 31 is supplied from the reversing light fuse 13 and check that the supply to it is correct. Check the bulbs and check that the supplies to them are live. Check the earthing at each lamp.



Reversing lights



Operation

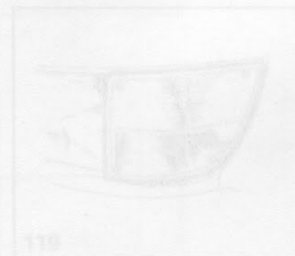
The supply to reversing light switch 31 is taken from fuse 13, via 29-pole white connector 152A. When the reverse gear is engaged, the contacts will close and reversing lamps 32 will light up.

Cars for certain markets of certain models are equipped with side reversing lights 119, located in the front light clusters. The side reversing lights are supplied from the reversing light switch via connector 152A.

Fault-tracing hints

The reversing lights are switched on when reverse gear is engaged and the ignition switch is in the drive position.

1. Check fuse 13 and check that the supply to it is live.
2. Check that the reversing light switch terminals are live.
3. Check the bulbs and check that the supplies to them are live. Check the earthing at each lamp.
4. Check the connectors and the relevant cable harness.



Locations of components

- 7 Earthing point, radiator cross-member
- 9 Earthing point in the luggage compartment
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 31 Reversing light switch
under the centre console, to the left of the selector lever
- 32 Reversing lamps
in the rear light clusters
- 76 Switch for raising the idling speed, auto. transm.
under the centre console, at the selector lever
- 93 Earthing point, left-hand wheel housing member
- 119 Side reversing lights
in the front light clusters
- 152A 29-pole white connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connector is accessible from the interior of the car.



Components

Cars for certain markets only, including the European market, are equipped with rear fog lights.

The supply (+X) is taken from the ignition switch light switch 10. This must be in position 3 (the rear fog lights can be switched on the lights on full or dipped beam). The supply is then run via 181 for the rear fog lights via 29-pole connector 181 and fuse 21.

When the switch is in the rear fog light position the two rear fog lights 32 will light up. On the 3-D model the lamps for the rear fog lights are located on the rear of the car.

Switches for certain markets are located on the 181-pole connector.

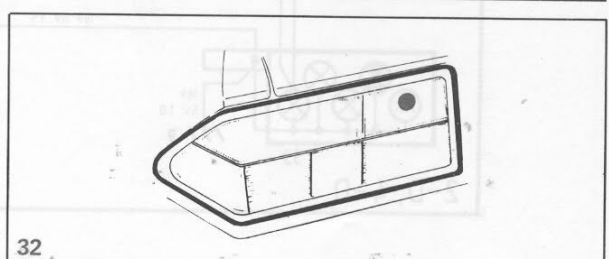
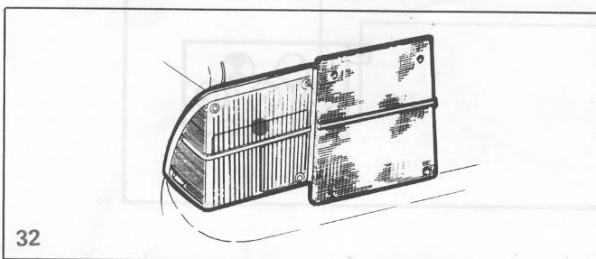
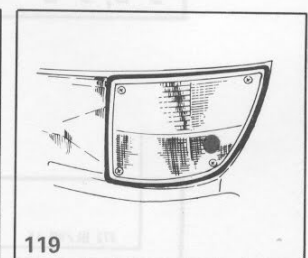
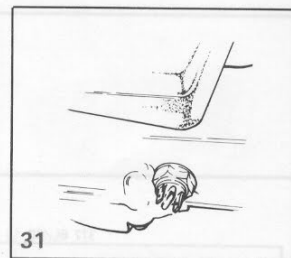
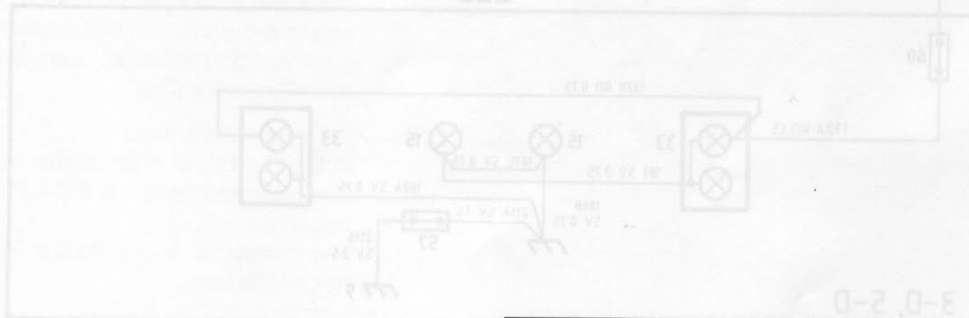
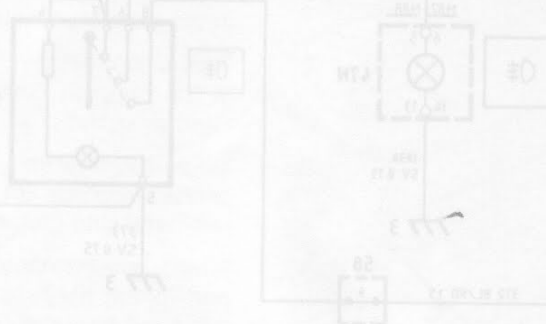
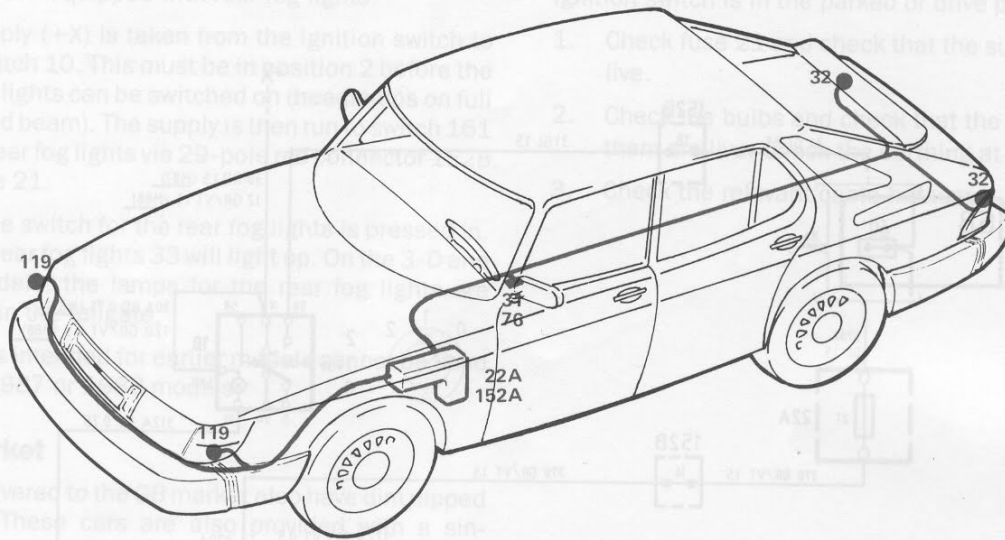
GB market

Cars delivered to the GB market are equipped with beams. These cars are also provided with a single-pole connector 60 in the electrical distribution box.

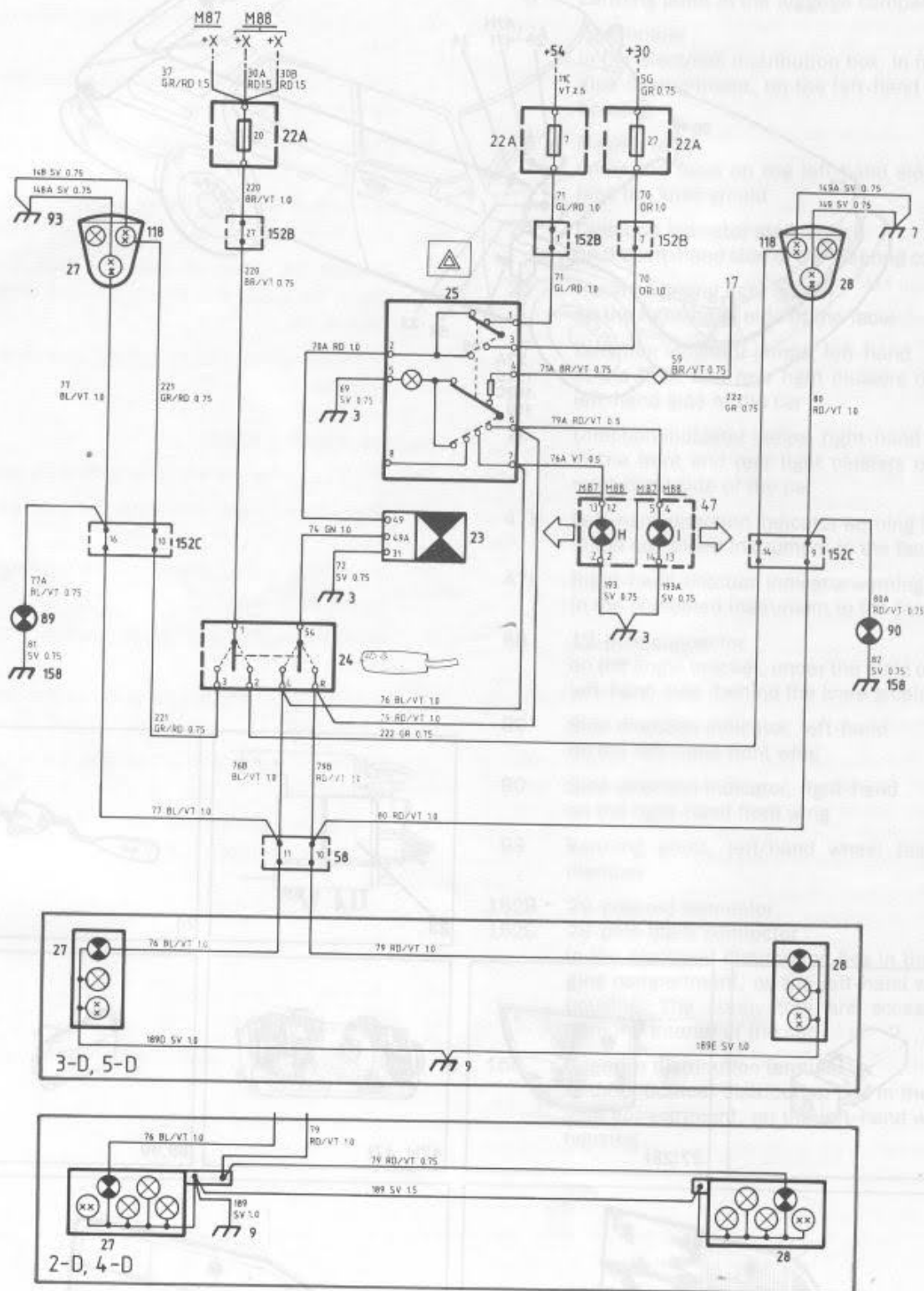
The rear fog lights can only be switched on when the ignition switch is in the parked or drive position.

1. Check that the supply to it is live.

2. Check the bulb and the supplies to each lamp.



Direction indicators, hazard warning lights, US, CA, JP



Operation

Direction indicators

This section covers cars for the U.S.A., Canadian and Japanese markets only.

The supply is taken from fuse 7 to hazard warning light switch 25 via 29-pole red connector 152B. It is then taken through this switch (in the unactuated position) to flasher relay 23.

When direction indicator stalk switch 24 is moved from the neutral position, current pulses are supplied from flasher relay 23 to left-hand direction indicator lamps 27 or right-hand direction indicator lamps 28 (terminal L or R), via connector 58, and pin 11 (left) or pin 10 (right). The front lamps are also supplied via 29-pole black connector 152C.

In addition, the two direction indicator warning lamps, 47H (left) and 47I (right) are connected in parallel with the direction indicator lamps for the relevant side of the car.

The front light clusters of cars for these markets are also equipped with corner lights 118, which light up with a steady white light when the corresponding direction indicator flashes. The corner lights are supplied directly from fuse 20 (not through the flasher relay). Fuse 20 is live when the ignition switch is in the parked or drive position.

The respective lamp 118 is supplied from terminal 3 (left-hand) or 2 (right-hand) of direction indicator stalk switch 24, via 29-pole black connector 152C.

Side direction indicators 89 and 90 are located on the left-hand and right-hand front wings respectively. The lamps are supplied in parallel with the direction indicator lamps in the front light clusters.

Hazard warning lights

The supply is taken from fuse 27 to hazard warning light switch 25 via 29-pole red connector 152B. When this switch is depressed, the current continues to flasher relay 23 via terminal 2.

From the flasher relay, the current pulses return to switch 25. Since the switch is closed, the current pulses continue to terminals 8 (left-hand) and 7 (right-hand). Current pulses are obtained only when the flasher relay is energised.

Front and rear left-hand direction indicator lamps 27 are then supplied with current pulses via terminal L on direction indicator stalk switch 24, across pin 11 of connector 58.

Lamps 28 on the right-hand side of the car are supplied in the same way from pin 7 of the hazard warning light switch, across pin 10 of connector 58.

The two direction indicator warning lamps, 47H (left-hand) and 47I (right-hand) will also flash. Since switch 25 is closed, the lamp in the switch will also flash.

Fault-tracing hints

Direction indicators

The direction indicators are operative when the ignition switch is in the drive position.

1. Check fuse 7 and check that the supply to it is live.
2. Check that terminals 1 and 2 of hazard warning light switch 25 are live.
3. Check that terminals 49 and 49A of flasher relay 23 are live.
4. Check that terminal 54 of direction indicator stalk switch 24 is live.
5. Operate the direction indicator stalk switch. Check the bulbs and check that the supply to them is live.
6. Check the relevant cable harness and earth connections.

Hazard warning lights

The supply to the hazard warning lights is always live.

1. Check fuse 27 and check that the supply to it is live.
2. Check that the supply to hazard warning light switch 25 is live.
3. Press the switch and check that terminal 2 is live.
4. Check that terminals 49 and 49A of flasher relay 23 are live.
5. Check the bulbs and check that the supply to them is live.
6. Check the connectors, cable harnesses and earth connections.

To check the corner lights

Activate this system by turning the ignition switch to the drive position.

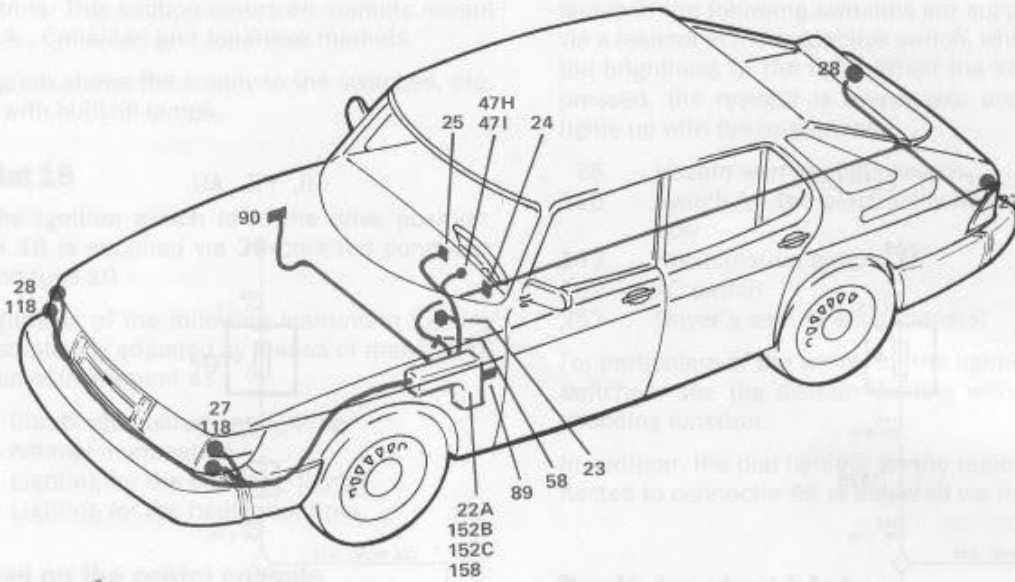
1. Check fuse 20 and check that the supply to it is live.
2. Check that terminal 1 of switch 24 is live.
3. Operate the direction indicator stalk switch. Check the bulbs and check that the supply to them is live.
4. Check the relevant cable harness and earth connections.



Locations of components

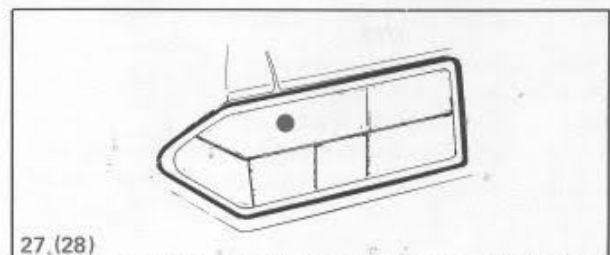
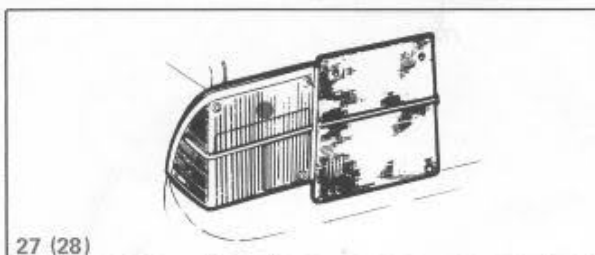
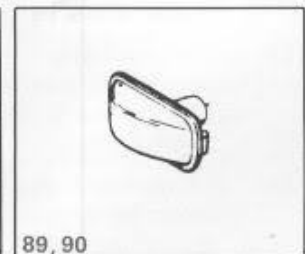
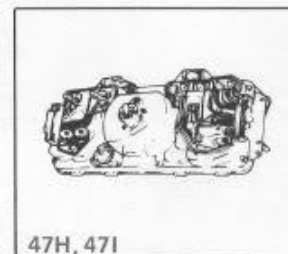
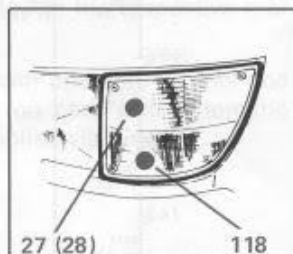
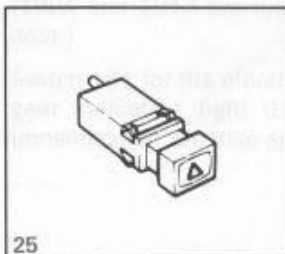
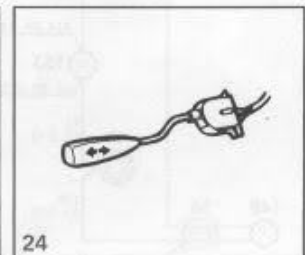
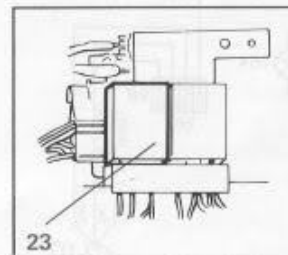
- 3 Earthing point in the facia
- 7 Earthing point, radiator cross-member
- 9 Earthing point in the luggage compartment
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 23 Flasher relay
under the facia on the left-hand side, behind the knee shield
- 24 Direction indicator stalk switch
on the left-hand side of the steering column
- 25 Hazard warning light switch
on the right-hand side of the facia
- 27 Direction indicator lamps, left-hand
in the front and rear light clusters on the left-hand side of the car
- 28 Direction indicator lamps, right-hand
in the front and rear light clusters on the right-hand side of the car
- 47H Left-hand direction indicator warning lamp
in the combined instrument in the facia
- 47I Right-hand direction indicator warning lamp
in the combined instrument in the facia
- 58 12-pole connector
on the angle bracket, under the facia on the left-hand side (behind the knee shield)
- 89 Side direction indicator, left-hand
on the left-hand front wing
- 90 Side direction indicator, right-hand
on the right-hand front wing
- 93 Earthing point, left-hand wheel housing member
- 118 Corner lights
in the front light clusters
- 152B 29-pole red connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.
- 158 Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing

Components

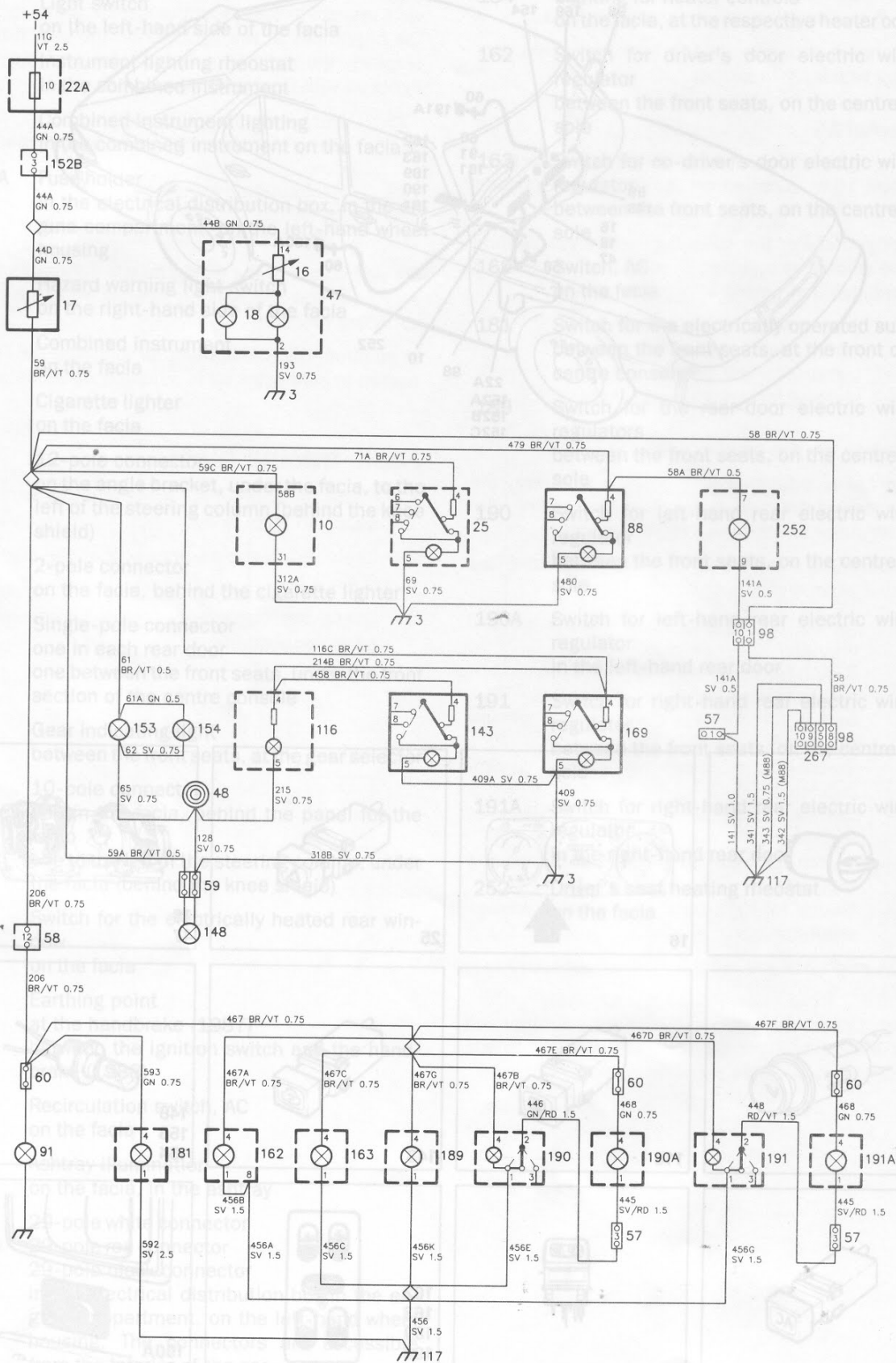


Fault-finding hints

1. Check the operation of the main and side lights. Apply to them 12V.
2. Check the operation of the main and side lights. Apply to them 12V.
3. Check the operation of the main and side lights. Apply to them 12V.



Lighting for controls, US, CA, JP



Operation

The diagram shows the supply to the switches, etc. which have built-in lamps.

The supply to rheostats 16 and 17 is live when the ignition switch is in the drive position. The supply is taken from fuse 10 via 29-pole red connector 152B.

Rheostat 16

The brightness of instrument lighting 18 can be steplessly adjusted by means of rheostat 16 in combined instrument 47.

Rheostat 17

In addition, the following instrument lighting can be controlled by means of rheostat 17:

Switches and lighting on the centre console

- 91 Gear indicating light (cars with automatic transmission)
- 162 Switch for driver's door electric window regulator
- 163 Switch for co-driver's door electric window regulator
- 181 Switch for the electrically operated sunroof
- 189 Switch for the rear-door electric window regulators
- 190 Switch for left-hand rear electric window-regulator
- 190A Switch for left-hand rear electric window regulator
- 191 Switch for right-hand rear electric window regulator
- 191A Switch for right-hand rear electric window regulator

Switches and lighting on the facia

- 10 Light switch
- 25 Hazard warning light switch
- 88 Switch for extra fog lamps
- 116 Switch for the electrically heated rear window
- 143 Recirculation switch, AC
- 148 Ashtray illumination
- 153 Lighting for the cigarette lighter
- 154 Lighting for the heater controls
- 169 Switch, AC
- 252 Driver's seat heating rheostat

Fault-tracing hints

The supply to the lighting for the controls is live when the light switch is in position 1.

1. Check fuse 10 and check that the supply to it is live.
2. Check that the input and output of rheostat 17 are live.
3. Check the bulbs and check that the supply to them is live.
4. Check the connectors, cable harnesses and earth connections.

Locations of components

3	Earthing point in the facia	148	Ashtray illumination on the facia, in the ashtray
10	Light switch on the left-hand side of the facia	152A	29-pole white connector
16	Instrument lighting rheostat in the combined instrument	152B	29-pole red connector
17	Extra rheostat for the lighting of switches and controls on the left-hand side of the facia	152C	29-pole black connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.
18	Combined instrument lighting in the combined instrument on the facia	153	Lighting for the cigarette lighter on the facia, at the cigarette lighter
22A	Fuse holder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing	154	Lighting for heater controls on the facia, at the respective heater control
25	Hazard warning light switch on the right-hand side of the facia	162	Switch for driver's door electric window regulator between the front seats, on the centre console
47	Combined instrument on the facia	163	Switch for co-driver's door electric window regulator between the front seats, on the centre console
48	Cigarette lighter on the facia	169	Switch, AC on the facia
57	3-pole connector one at the left-hand B pillar, behind the trim one at the right-hand B pillar, behind the trim one one under the driver's seat	181	Switch for the electrically operated sunroof between the front seats, at the front of the centre console
58	12-pole connector on the angle bracket, under the facia, to the left of the steering column (behind the knee shield)	189	Switch for the rear-door electric window regulators between the front seats, on the centre console
59	2-pole connector one on the facia, behind the cigarette lighter	190	Switch for left-hand rear electric window regulator between the front seats, on the centre console
60	Single-pole connector one in each rear door one between the front seats, under the front section of the centre console	190A	Switch for left-hand rear electric window regulator in the left-hand rear door
88	Switch for extra fog lamps on the facia	191	Switch for right-hand rear electric window regulator between the front seats, on the centre console
91	Gear indicating light between the front seats, at the gear selector	191A	Switch for right-hand rear electric window regulator in the right-hand rear door
98	10-pole connector (for radio 267) one in the facia, in the radio contact box one to the left of the steering column, under the facia (behind the knee shield)	252	Driver's seat heating rheostat on the facia
116	Switch for the electrically heated rear window on the facia		
117	Earthing point at the handbrake (1987) between the ignition switch and the handbrake (1988)		
143	Recirculation switch, AC on the facia		

Components

There are two versions of the interior lighting - one with a time delay and one without. Check the interior lighting and check that the supply to it is live.

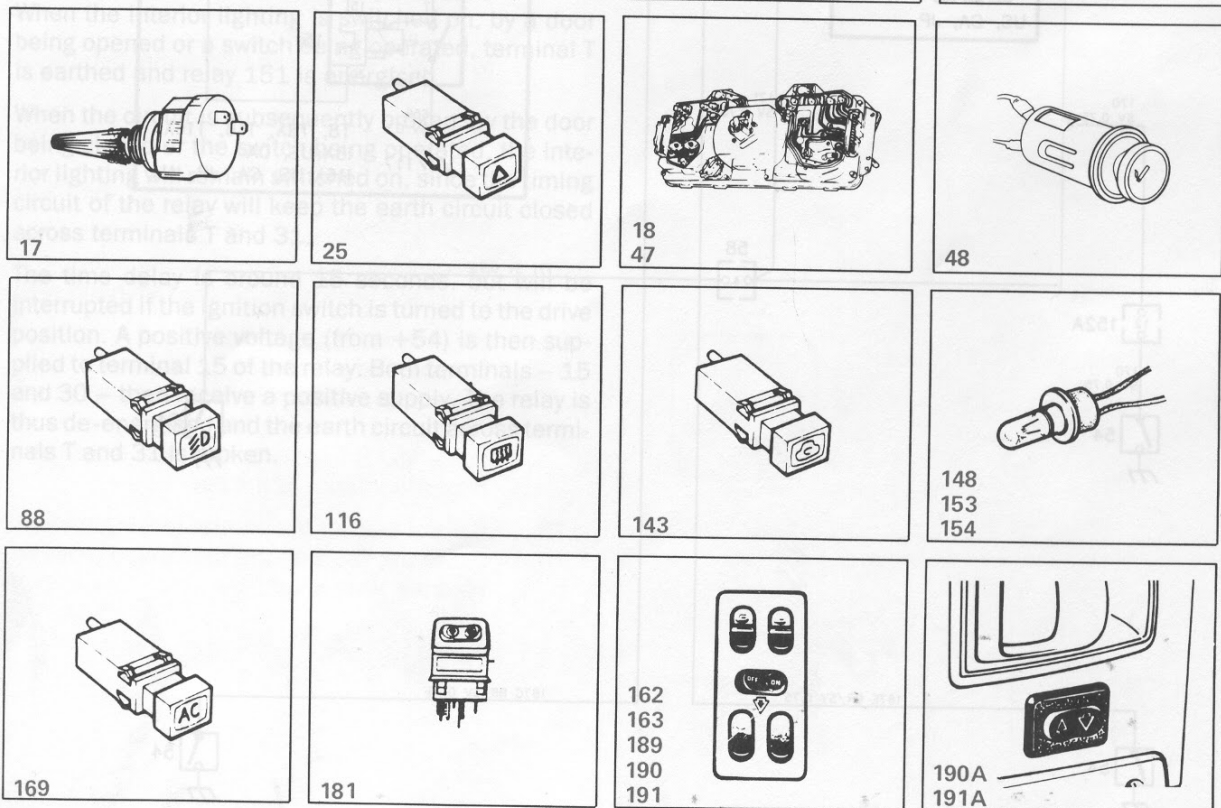
The lights are supplied across fuse 25A, regardless of the position of the ignition switch. Check the switch and check that the supply to it is live.

When switch is in position 2 (for drive) the centre roof lamp 58 is switched on. Check the switch and check that the supply to it is live.

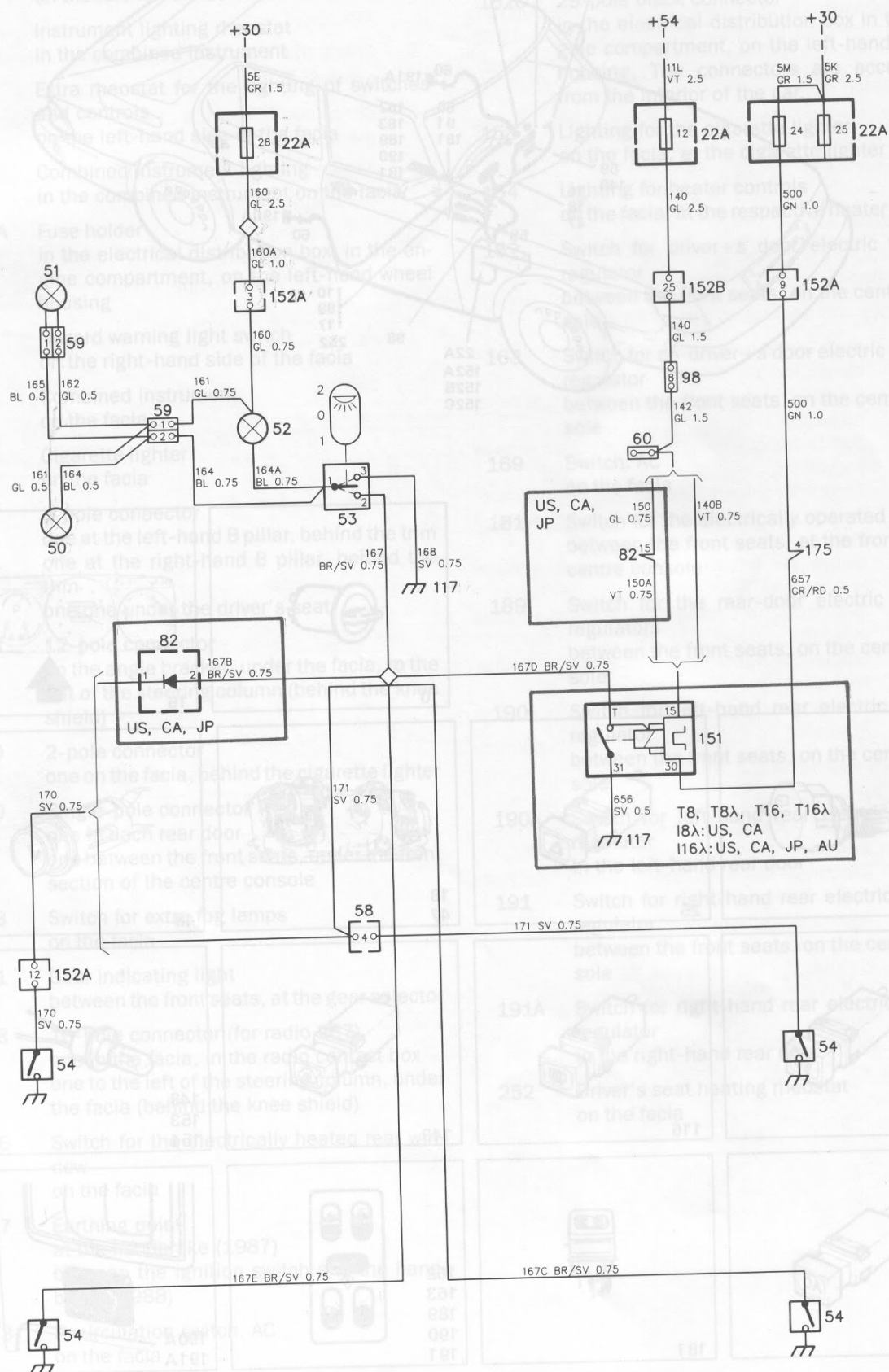
On cars for the U.S.A., Canadian and Japanese markets, door switch 24 for the left-hand front door is supplied via seat belt/ignition switch warning relay 82.

Time delay

Cars with the interior lighting delay are equipped with time-delay relay 151, which is supplied across fuse 12 when the ignition switch is in the drive position, and with a constant supply from distribution terminal +30, regardless of the position of the ignition switch.



Interior lighting



Operation

There are two versions of the interior lighting system – one with a time delay and one without. Cars with delayed extinguishing of the interior lighting are equipped with an extra relay 151 (see the special section below).

The lights are supplied across fuse 28 and 29-pole white connector 152A, regardless of the position of the ignition switch.

The interior lights can be switched on and off by means of interior lighting switch 53, at the ignition switch.

When switch 53 is in position 2 (forward position), centre roof lamp 50, front roof lamp 51 and ignition switch lamp 52 are always switched on.

In position 1 (rear position), the interior lighting will be switched on if one of the door switches (54) is closed, i.e. if a door is opened. In position 0 (centre position), the interior lights are always off.

On cars for the U.S.A., Canadian and Japanese markets, door switch 54 for the left-hand front door is supplied via seat belt/ignition switch warning relay 82.

Time delay

Cars with the interior lighting delay are equipped with time-delay relay 151, which is supplied across fuse 12 when the ignition switch is in the drive position, and with a constant supply from distribution terminal +30, regardless of the position of the ignition switch.

When the interior lighting is switched on, by a door being opened or a switch being operated, terminal T is earthed and relay 151 is energised.

When the circuit is subsequently broken, by the door being closed or the switch being operated, the interior lighting will remain switched on, since the timing circuit of the relay will keep the earth circuit closed across terminals T and 31.

The time delay is around 15 seconds, but will be interrupted if the ignition switch is turned to the drive position. A positive voltage (from +54) is then supplied to terminal 15 of the relay. Both terminals – 15 and 30 – then receive a positive supply. The relay is thus de-energised and the earth circuit across terminals T and 31 is broken.

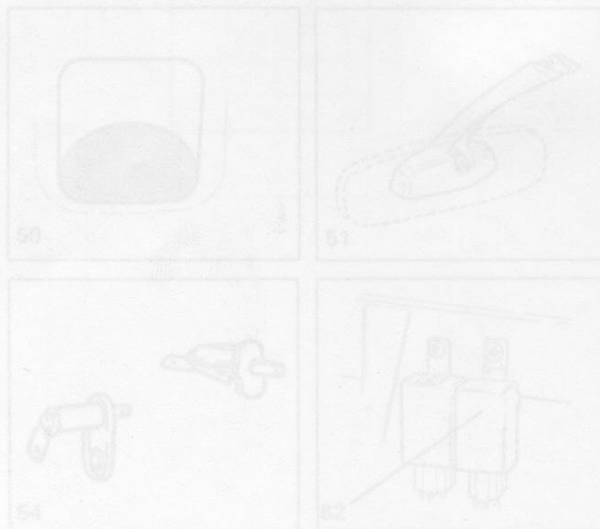
Fault-tracing hints

1. Check fuse 28 and check that the supply to it is live.
2. Check the bulbs for the interior lighting and check that the supply to them is live.
3. Check the switches and door switches.
4. Check the connectors, cable harnesses and earth connections.

Time delay

On cars with time delay, check also the following points:

1. Turn the ignition switch to the drive position. Check fuse 12 and check that the supply to it is live.
2. Check that terminals 15 and 30 of relay 151 are live.



Locations of components

- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 50 Roof lamp, centre
in the centre of the roof lining
- 51 Roof lamp, front
on the roof, behind the inner rear-view mirror
- 52 Ignition switch lighting
between the front seats, at the ignition switch
- 53 Interior lighting switch
between the front seats, at the gear lever
- 54 Door switches, interior lighting
in each door pillar
- 58 12-pole connector
on the angle bracket, under the facia on the left-hand side (behind the knee shield)
- 59 2-pole connector
one in the luggage compartment, above the left-hand wheel housing, behind the trim
one behind the roof lining, at the rear-view mirror
- 60 Single-pole connector
between the front seats, under the centre console
- 82 Seat belt/ignition switch warning relay
under the back seat, on the left-hand side
- 98 10-pole connector
to the left of the steering column, behind the knee shield below the facia
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 151 Time-delay relay for the interior lighting
under the back seat, on the left-hand side
- 152A 29-pole white connector
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car
- 175 Control unit for the central locking system
under the facia on the right-hand side, behind the knee shield

Components

The lighting is supplied across fuse 28 and 29-pole white connector 152A, regardless of the position of the ignition switch.

The interior lights can be switched on and off by means of interior lighting switch 53 and door switches.

When the switch is in the 'off' position, the interior lights are switched off. When the switch is in the 'on' position, the interior lights are switched on. The interior lights are also switched on when the door is opened.

Door switch 54 is connected to the interior lighting circuit via a time-delay relay 151.

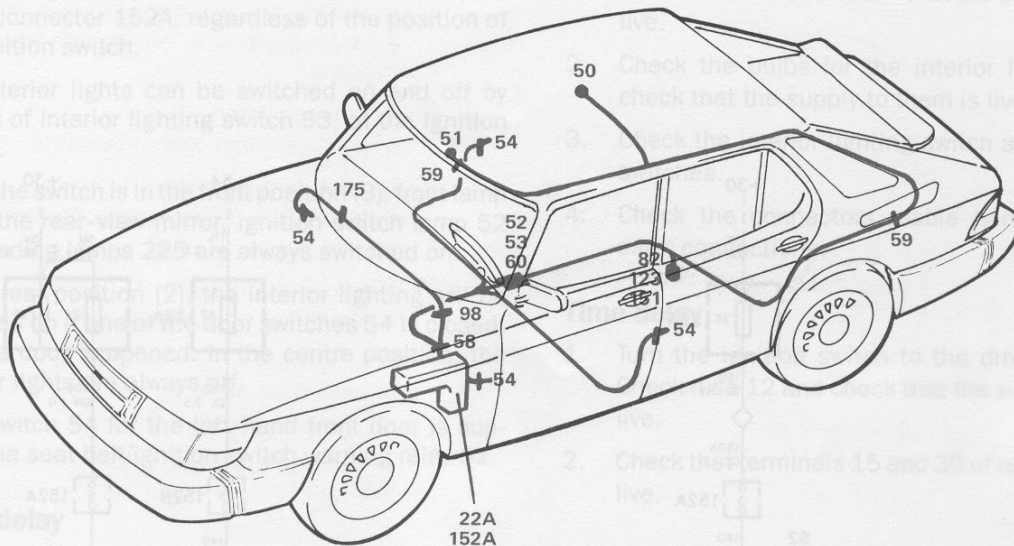
Time delay

Time-delay relay 151 is used to delay the interior lighting when the ignition switch is in the drive position, and with a constant supply from distribution terminal +30, regardless of the position of the ignition switch.

When the interior lighting is switched on by a door being opened, terminal 15 of relay 151 is energised.

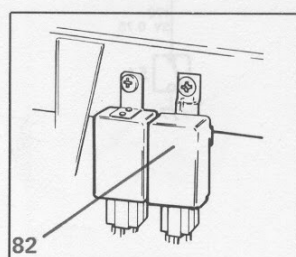
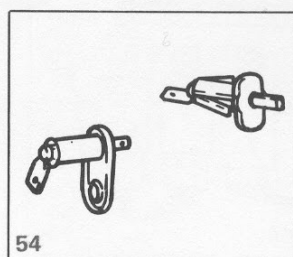
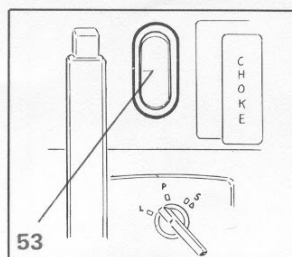
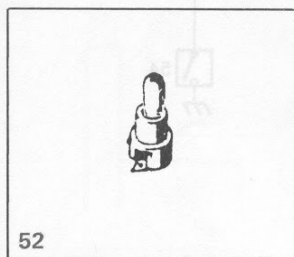
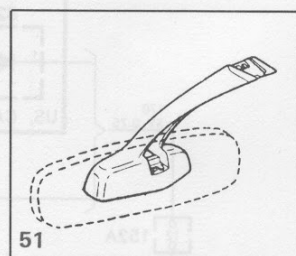
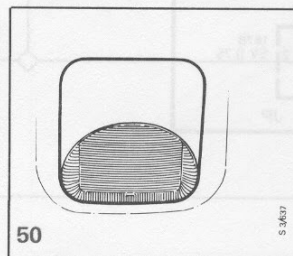
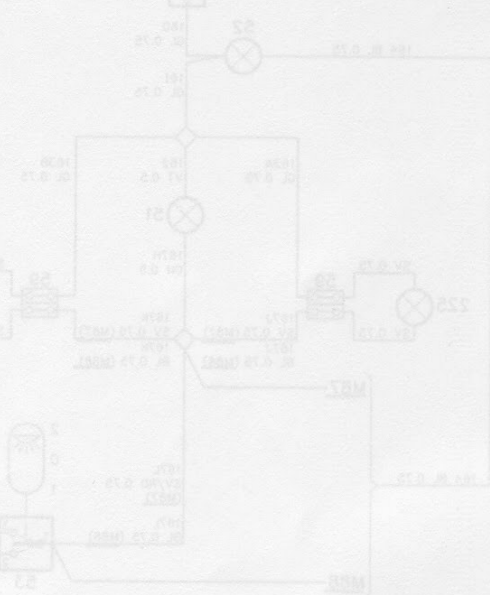
When the circuit is subsequently broken by the door being closed, the interior lighting will remain switched on, since the timing circuit of the relay will keep the earth circuit closed across terminals 7 and 31.

The time delay is around 15 seconds, but will be interrupted if the ignition switch is turned to the drive position. A positive voltage is then supplied to terminal 15 of the relay. Both terminals 15 and 30 then receive a positive supply. The relay is thus de-energised and the earth circuit across terminals 7 and 31 is broken.

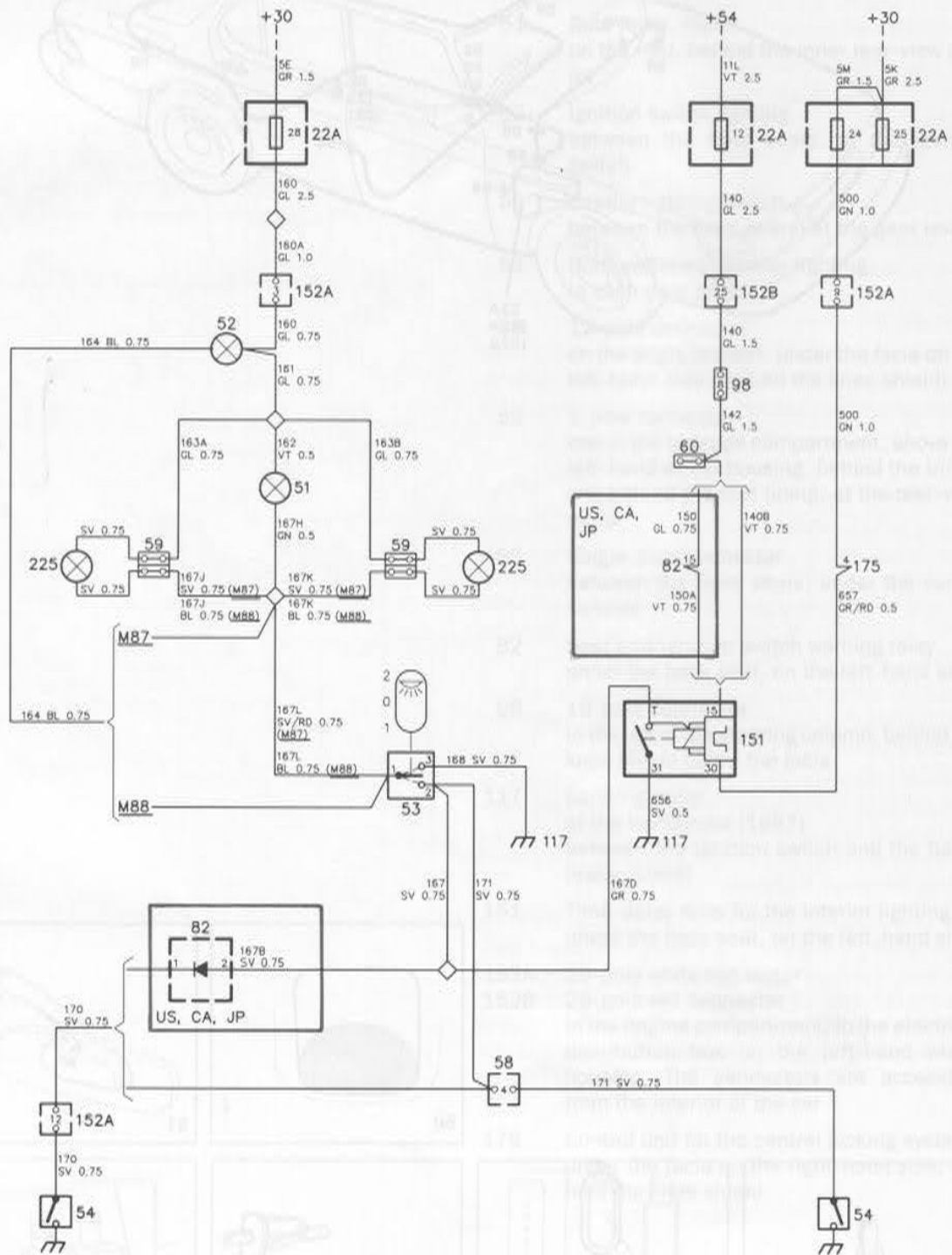


1. Check fuse 28 and check that the supply to it is live.
2. Check the interior lighting switch 53 and the door switches 54.
3. Check the time-delay relay 151 and the door switch 54.

2. Check that terminals 15 and 30 of relay 151 are live. AS21



Interior lighting – Convertible



Operation

The lighting is supplied across fuse 28 and 29-pole white connector 152A, regardless of the position of the ignition switch.

The interior lights can be switched on and off by means of interior lighting switch 53, at the ignition switch.

When the switch is in the front position (3), front lamp 51 at the rear-view mirror, ignition switch lamp 52 and reading lamps 225 are always switched on.

In the rear position (2), the interior lighting will be switched on if one of the door switches 54 is closed, i.e. if a door is opened. In the centre position, the interior lights are always off.

Door switch 54 for the left-hand front door is supplied via seat belt/ignition switch warning relay 82.

Time delay

Time-delay relay 151 for the delayed interior lighting is supplied across fuse 12 when the ignition switch is in the drive position, and with a constant supply from distribution terminal +30, regardless of the position of the ignition switch.

When the interior lighting is switched on by a door being opened, terminal T is earthed and relay 151 is energised.

When the circuit is subsequently broken by the door being closed, the interior lighting will remain switched on, since the timing circuit of the relay will keep the earth circuit closed across terminals T and 31.

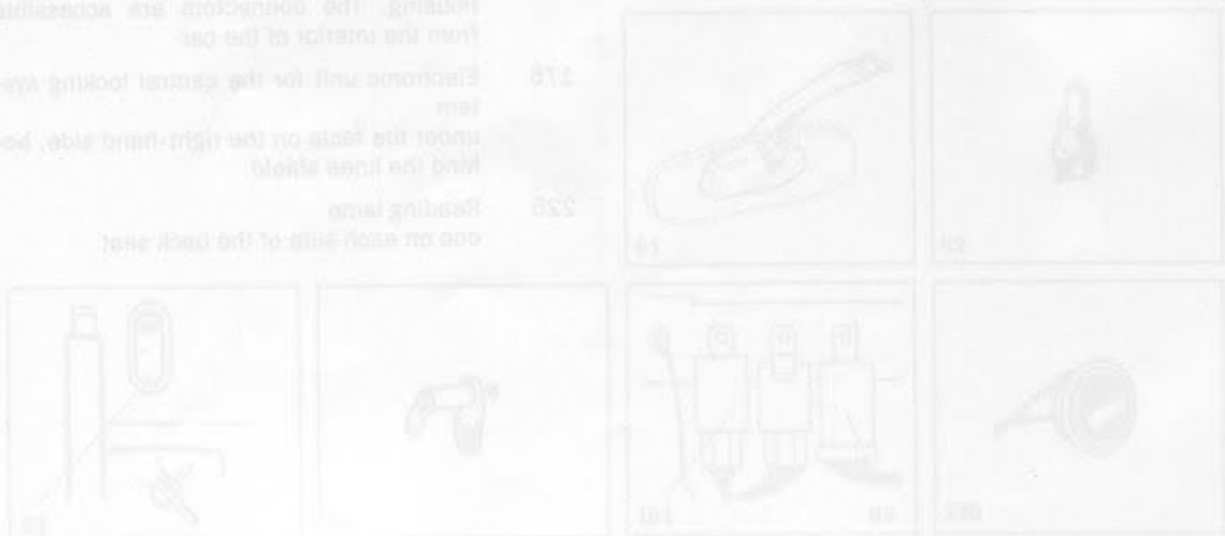
The time delay is around 15 seconds, but will be interrupted if the ignition switch is turned to the drive position. A positive voltage (from +54) is then supplied to terminal 15 of the relay. Both terminals – 15 and 30 – then receive a positive supply. The relay is thus de-energised and the earth circuit across terminals T and 31 is broken.

Fault-tracing hints

1. Check fuse 28 and check that the supply to it is live.
2. Check the bulbs for the interior lighting and check that the supply to them is live.
3. Check the interior lighting switch and the door switches.
4. Check the connectors, cable harnesses and earth connections.

Time delay

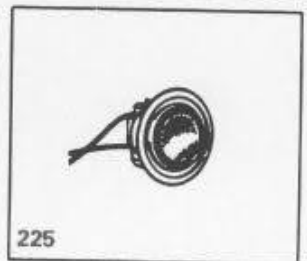
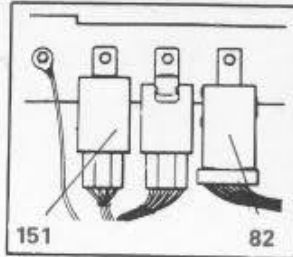
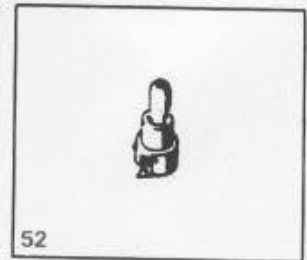
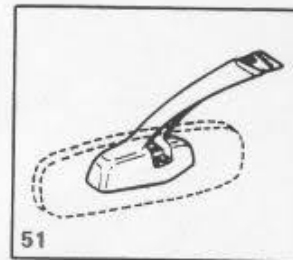
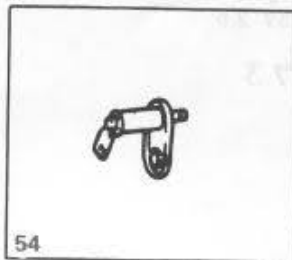
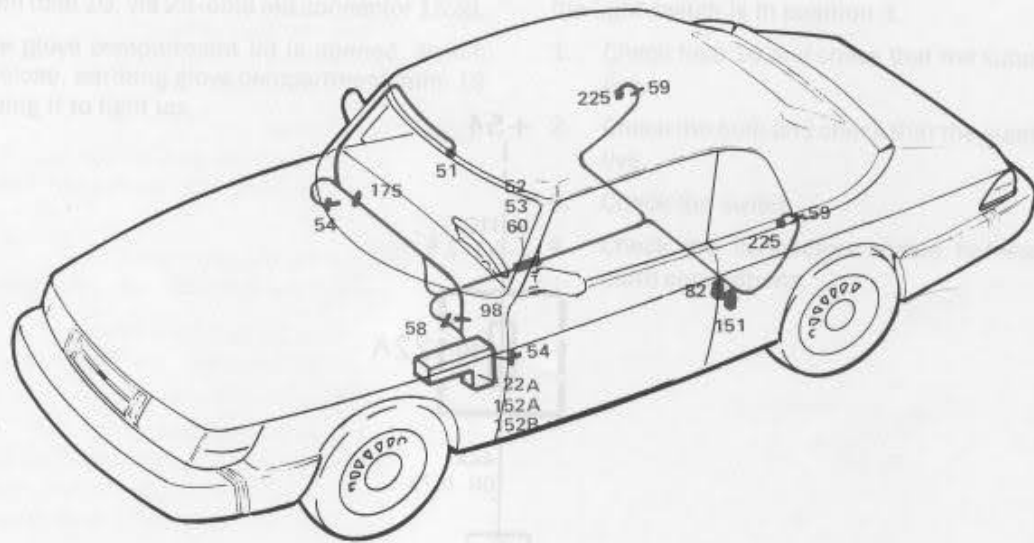
1. Turn the ignition switch to the drive position. Check fuse 12 and check that the supply to it is live.
2. Check that terminals 15 and 30 of relay 151 are live.



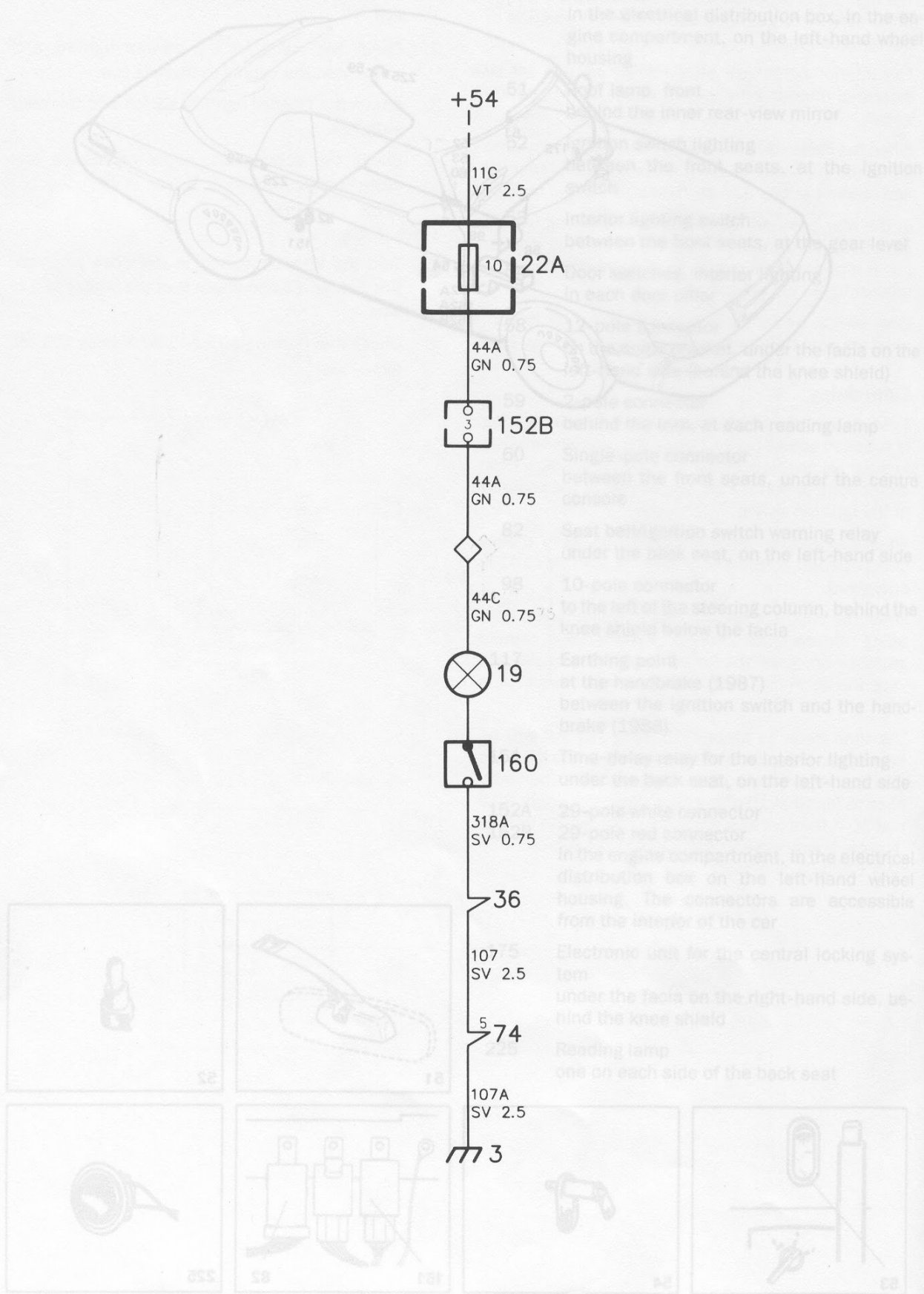
Locations of components

- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 51 Roof lamp, front
behind the inner rear-view mirror
- 52 Ignition switch lighting
between the front seats, at the ignition switch
- 53 Interior lighting switch
between the front seats, at the gear lever
- 54 Door switches, interior lighting
in each door pillar
- 58 12-pole connector
on the angle bracket, under the facia on the left-hand side (behind the knee shield)
- 59 2-pole connector
behind the trim, at each reading lamp
- 60 Single-pole connector
between the front seats, under the centre console
- 82 Seat belt/ignition switch warning relay
under the back seat, on the left-hand side
- 98 10-pole connector
to the left of the steering column, behind the knee shield below the facia
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 151 Time-delay relay for the interior lighting
under the back seat, on the left-hand side
- 152A 29-pole white connector
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car
- 175 Electronic unit for the central locking system
under the facia on the right-hand side, behind the knee shield
- 225 Reading lamp
one on each side of the back seat

Components



Glove compartment illumination



Operation

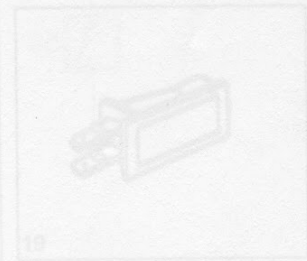
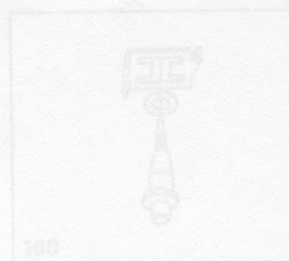
The supply for the glove compartment illumination is taken from fuse 10, via 29-pole red connector 152B.

When the glove compartment lid is opened, switch 160 will close, earthing glove compartment lamp 19 and causing it to light up.

Fault-tracing hints

The glove compartment illumination operates when the light switch is in position 1.

1. Check fuse 10 and check that the supply to it is live.
2. Check the bulb and check that the supply to it is live.
3. Check the switch.
4. Check the connectors, cable harnesses and earth connections.



Locations of components

- 3 Earthing point in the fascia
- 19 Glove compartment lamp
in the glove compartment, on the right-hand
side of the fascia
- 22A Fuse holder
in the electrical distribution box, in the en-
gine compartment, on the left-hand wheel
housing
- 36 Motor for the ventilation fan
behind the right-hand speaker grille
- 74 Resistor for ventilation fan
accessible under the left-hand speaker
grille
- 152B 29-pole red connector
in the electrical distribution box in the en-
gine compartment, on the left-hand wheel
housing. The connector is accessible from
the interior of the car.
- 160 Switch for glove compartment illumination
on the right-hand side of the glove compart-
ment

19

160

318A
SV 0.75

36

107
SV 2.5

74

107A
SV 2.5

m3

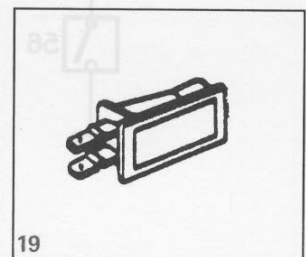
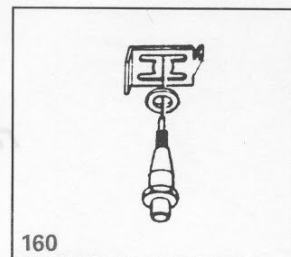
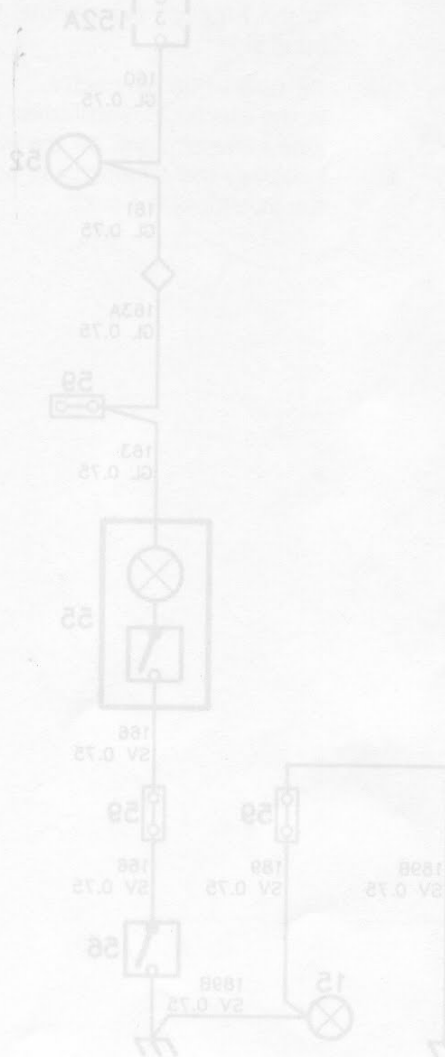
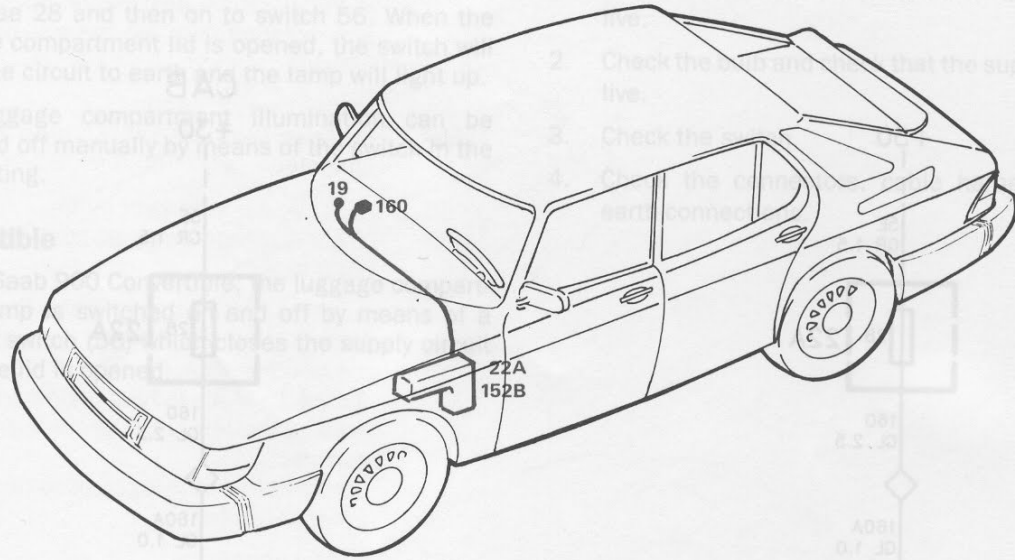
Components

The supply to luggage compartment lamp 55 is taken from fuse 28 and then on to switch 56. When the luggage compartment lid is opened, the switch closes the circuit to earth and the lamp will light up.

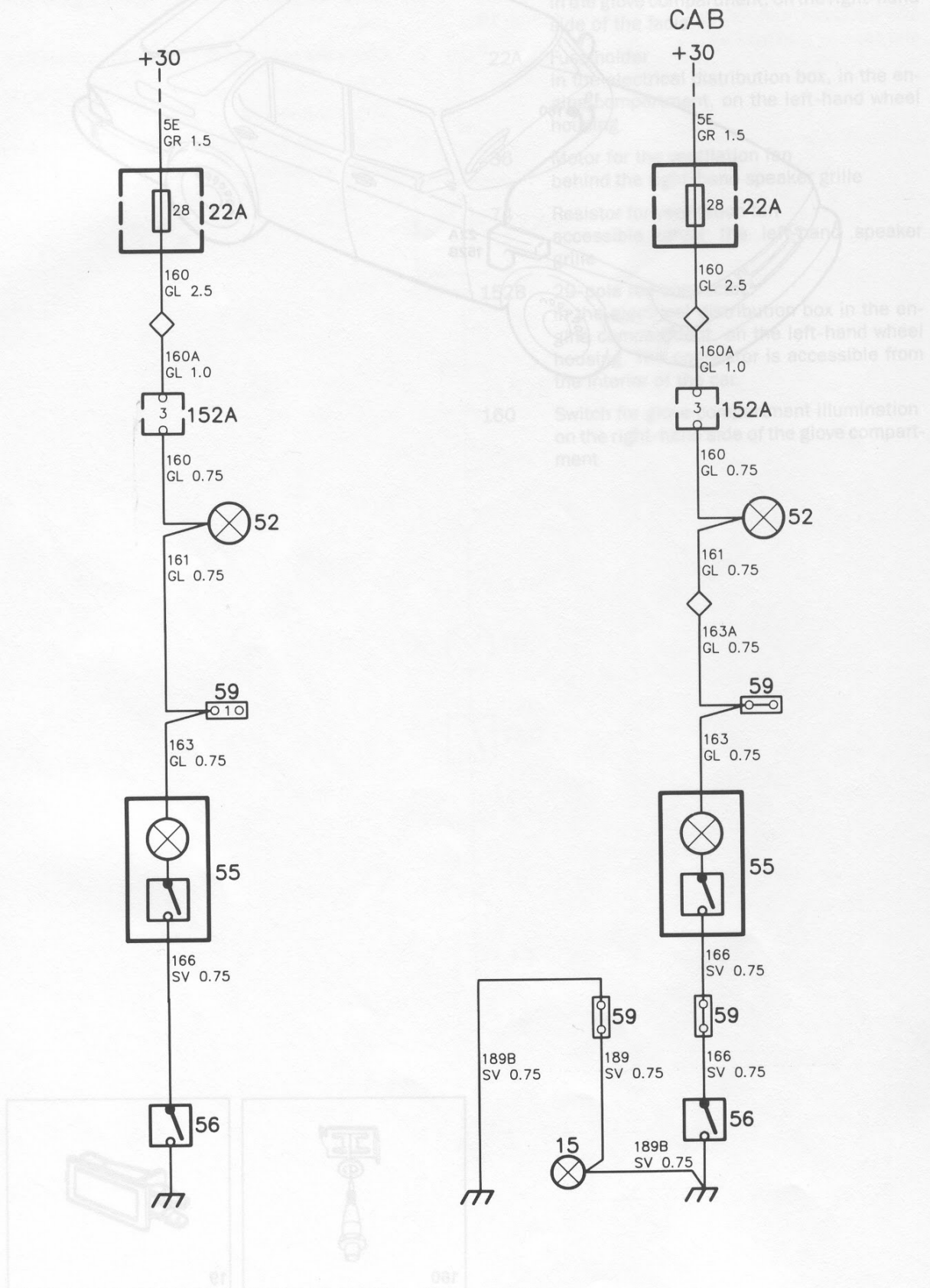
The luggage compartment illumination can be switched off manually by means of the switch 56 when the lid is closed.

Convertible

On the Saab 900 Convertible, the luggage compartment lamp is switched on and off by means of a mercury switch 56 which closes the supply to the lamp fitting.



Luggage compartment illumination



Operation

The supply to luggage compartment lamp 55 is taken from fuse 28 and then on to switch 56. When the luggage compartment lid is opened, the switch will close the circuit to earth and the lamp will light up.

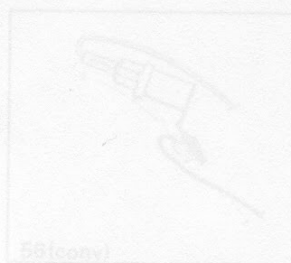
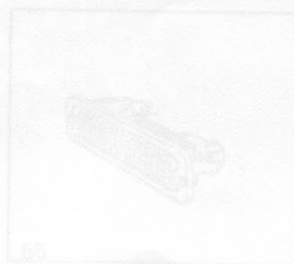
The luggage compartment illumination can be switched off manually by means of the switch in the lamp fitting.

Convertible

On the Saab 900 Convertible, the luggage compartment lamp is switched on and off by means of a mercury switch (56) which closes the supply circuit when the lid is opened.

Fault-tracing hints

1. Check fuse 28 and check that the supply to it is live.
2. Check the bulb and check that the supply to it is live.
3. Check the switch.
4. Check the connectors, cable harnesses and earth connections.



Locations of components

- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 52 Ignition switch lighting
between the front seats, under the centre console
- 55 Luggage compartment lamp
in the luggage compartment, on the left-hand side
- 56 Luggage compartment light switch
3-D, 5-D: in the luggage compartment, at the tailgate striker plate.
2-D, 4-D: in the luggage compartment, forward of the left hinge of the luggage compartment lid.
Convertible: in the luggage compartment lid (mercury switch)
- 59 2-pole connector
in the luggage compartment, on the left-hand side
- 152A 29-pole white connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connector is accessible from the interior of the car.

Components

Extra fog lamps are fitted only to cars for certain markets.

The fog lamps are wired so that they can be switched on only when the parking light or dipped beam is on.

When light switch 10 is in position 1 or 2 (full beam or 2 (full beam) fog lamps are supplied with 12V and fuse 10 (full beam) is in the right-hand side of the car.

When light switch 10 is in position 3 (fog lamps) the switch is depressed, the fog lamps are supplied with 12V and fuse 10 (fog lamps) is in the left-hand side of the car.

Both extra fog lamps 85 then receive a 12V supply across fuse 21, via the relay 107.

When the full beams are switched on, the fog lamps are de-energised, as the fog lamps will be switched on even if the switch is depressed, as a positive voltage is then being supplied to the sides of the relay coil.

The extra fog lamps can be switched on by setting light switch 10 to position 1 or 2, while switch 88 is depressed.

Check fuses 10 and 21 and check that the supply to them is live.

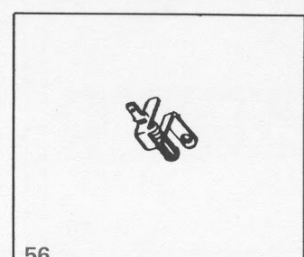
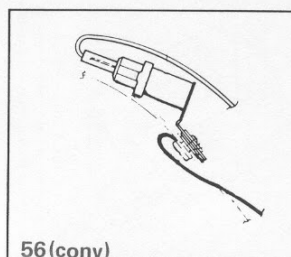
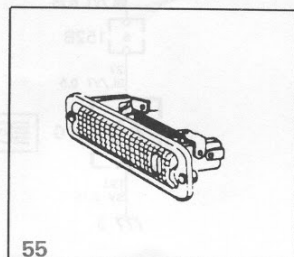
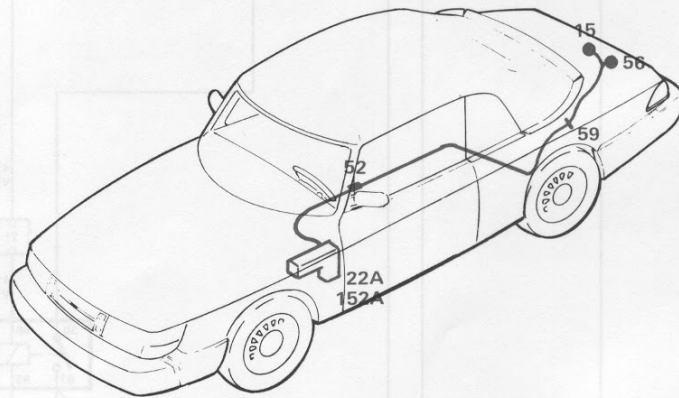
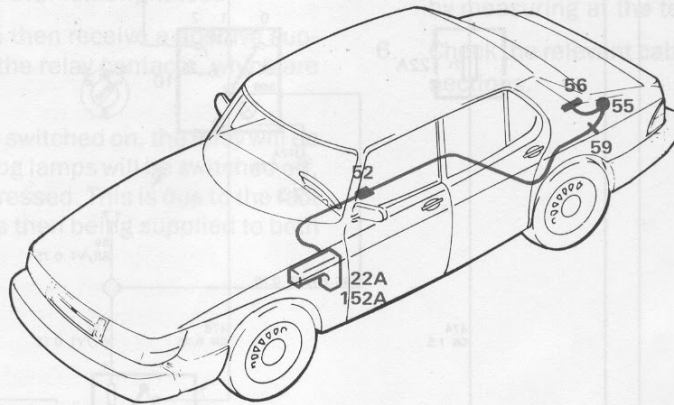
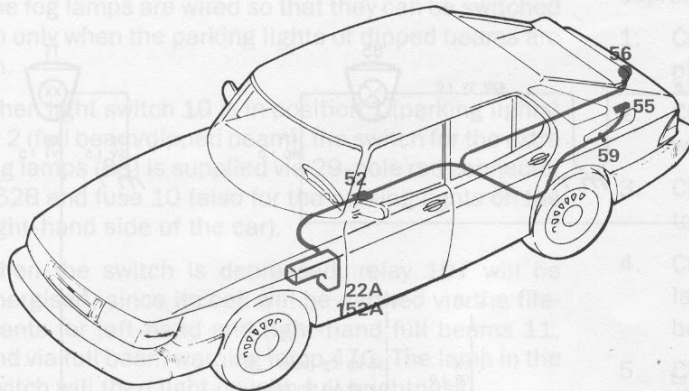
Check full beam elements 11 and full beam fog lamp 47.

Check each fog lamp and check that the supply to it is live. Check the earthing at the lamp.

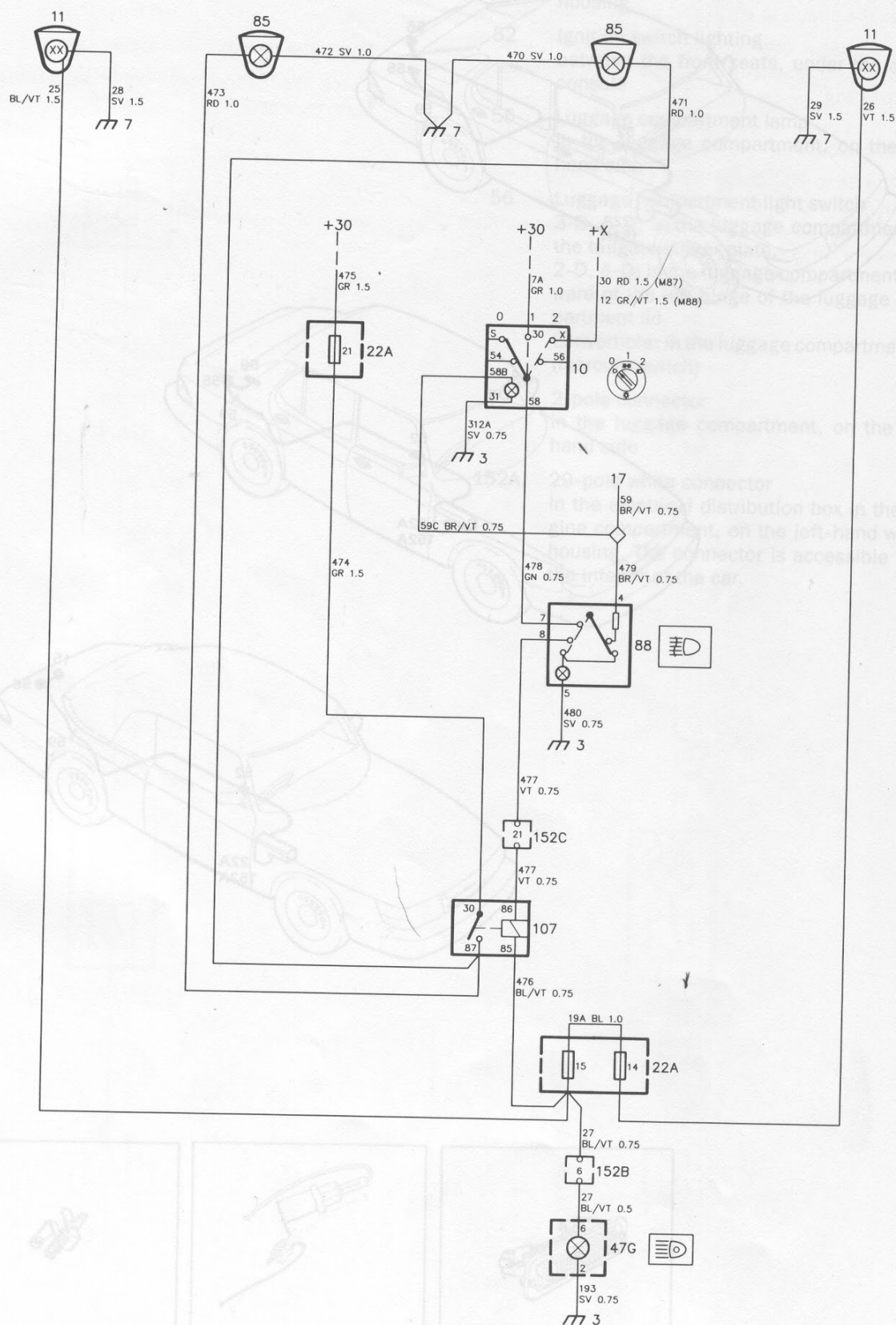
Check fuse 15. If the fuse has blown, the fog lamps will not be extinguished when the full beams are switched on.

Check relay 107, light switch 10 and switch 88, and check the terminals.

Check the cable harness and earth connection.



Extra fog lamps



Operation

Extra fog lamps are fitted only to cars for certain markets.

The fog lamps are wired so that they can be switched on only when the parking lights or dipped beams are on.

When light switch 10 is in position 1 (parking lights) or 2 (full beam/dipped beam), the switch for the extra fog lamps (88) is supplied via 29-pole red connector 152B and fuse 10 (also for the parking lights on the right-hand side of the car).

When the switch is depressed, relay 107 will be energised, since its coil will be earthed via the filaments for left-hand and right-hand full beams 11, and via full beam warning lamp 47G. The lamp in the switch will then light up with full brightness.

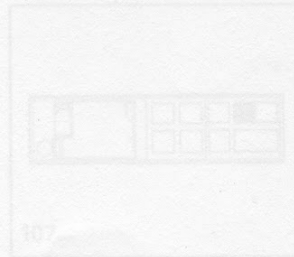
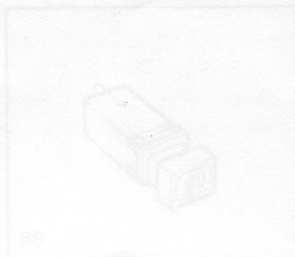
Both extra fog lamps 85 then receive a positive supply across fuse 21, via the relay contacts, which are closed.

When the full beams are switched on, the relay will be de-energised, and the fog lamps will be switched off, even if the switch is depressed. This is due to the fact that a positive voltage is then being supplied to both sides of the relay coil.

Fault-tracing hints

The extra fog lamps can be switched on by setting light switch 10 to position 1 or 2, while switch 88 is depressed.

1. Check fuses 10 and 21 and check that the supply to them is live.
2. Check full beam filaments 11 and full beam warning lamp 47G.
3. Check each fog lamp and check that the supply to it is live. Check the earthing at the lamp.
4. Check fuse 15. If the fuse has blown, the fog lamps will not be extinguished when the full beams are switched on.
5. Check relay 107, light switch 10 and switch 88, by measuring at the terminals.
6. Check the relevant cable harness and earth connections.



Locations of components

- 3 Earthing point in the facia
- 7 Earthing point, radiator cross-member
- 10 Light switch
on the left-hand side of the facia
- 11 Full beam filament
in the left-hand headlamp
- 17 Extra rheostat for the lighting of switches
and controls
on the facia
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 47G Full beam warning lamp
in the combined instrument in the instrument panel
- 85 Extra fog lamps
under the front bumper
- 88 Switch for extra fog lamps
on the facia
- 107 Relay for extra fog lamps
on cars with 8-valve engine: in the engine compartment, in the Lambda relay box, forward of the left-hand wheel housing
on cars with 16-valve engine: in the electrical distribution box on the left-hand front wheel housing
- 152B 29-pole red connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.

Components

The windscreen wipers of the car can run at two speeds and have an intermittent operation function. The system also includes the windscreen washer.

When the ignition switch is in the drive position,

- Windscreen wiper stalk switch 61
- Relay 83 for intermittent operation of the screen wipers

are supplied with 6 and 29-pole connector 152B.

When the switch is in position II (low speed), terminal 53 of the stalk switch is connected from terminal 107 of the wiper motor.

When the wiper motor is in position I, terminal 107 of the wiper motor is connected to terminal 107 of the stalk switch. The motor will now run at low speed.

When the switch is in position III (intermittent operation), current flows from terminal 53 of the stalk switch through the relay and from terminal 152C of the stalk switch to terminal 54 of the wiper motor. The wiper motor will now run intermittently. The frequency of the intermittent operation of the wiper motor is determined by the relay.

The relay connects with close, and current flows from terminal 53 of the stalk switch through the switch and from terminal 152C of the stalk switch to terminal 54 of the wiper motor. The wiper motor will now run intermittently. The frequency of the intermittent operation of the wiper motor is determined by the relay.

The relay connects with close, and current flows from terminal 53 of the stalk switch through the switch and from terminal 152C of the stalk switch to terminal 54 of the wiper motor. The wiper motor will now run intermittently. The frequency of the intermittent operation of the wiper motor is determined by the relay.

The wiper motor has a built-in switch, to which the supply is live regardless of the position of the stalk switch. The switch operates the supply to the wiper motor unit. The wiper motor will always return to the parked position after the circuit has been opened by the stalk switch.

This is due to the fact that the wiper motor is then supplied from terminal 53A, and from terminal 31B, across the built-in switch. The current flows through the intermittent operation relay and the stalk switch, and then back to terminal 53 of the windscreen wiper motor.

When the wiper motor unit reaches the parked position, the mechanically actuated switch will open and the motor will stop.

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When the wiper motor unit reaches the parked position, the mechanically actuated switch will open and the motor will stop.

The windscreen wipers will be operative when the ignition switch is in the drive position.

1. Check that the supply to it is live.
2. Check that the relay 83 and relay 83 are live.

Operate the stalk switch. The windscreen wipers will now run at low speed.

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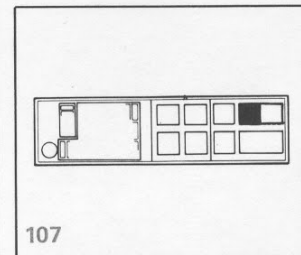
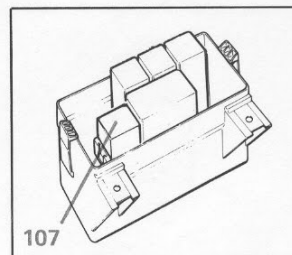
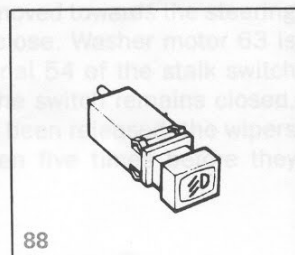
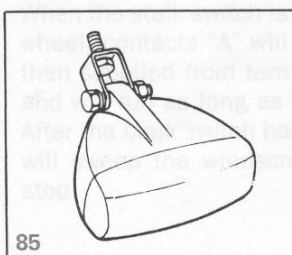
Operate the stalk switch. The windscreen wipers will now run at low speed.

Operate the stalk switch. The windscreen wipers will now run at low speed.

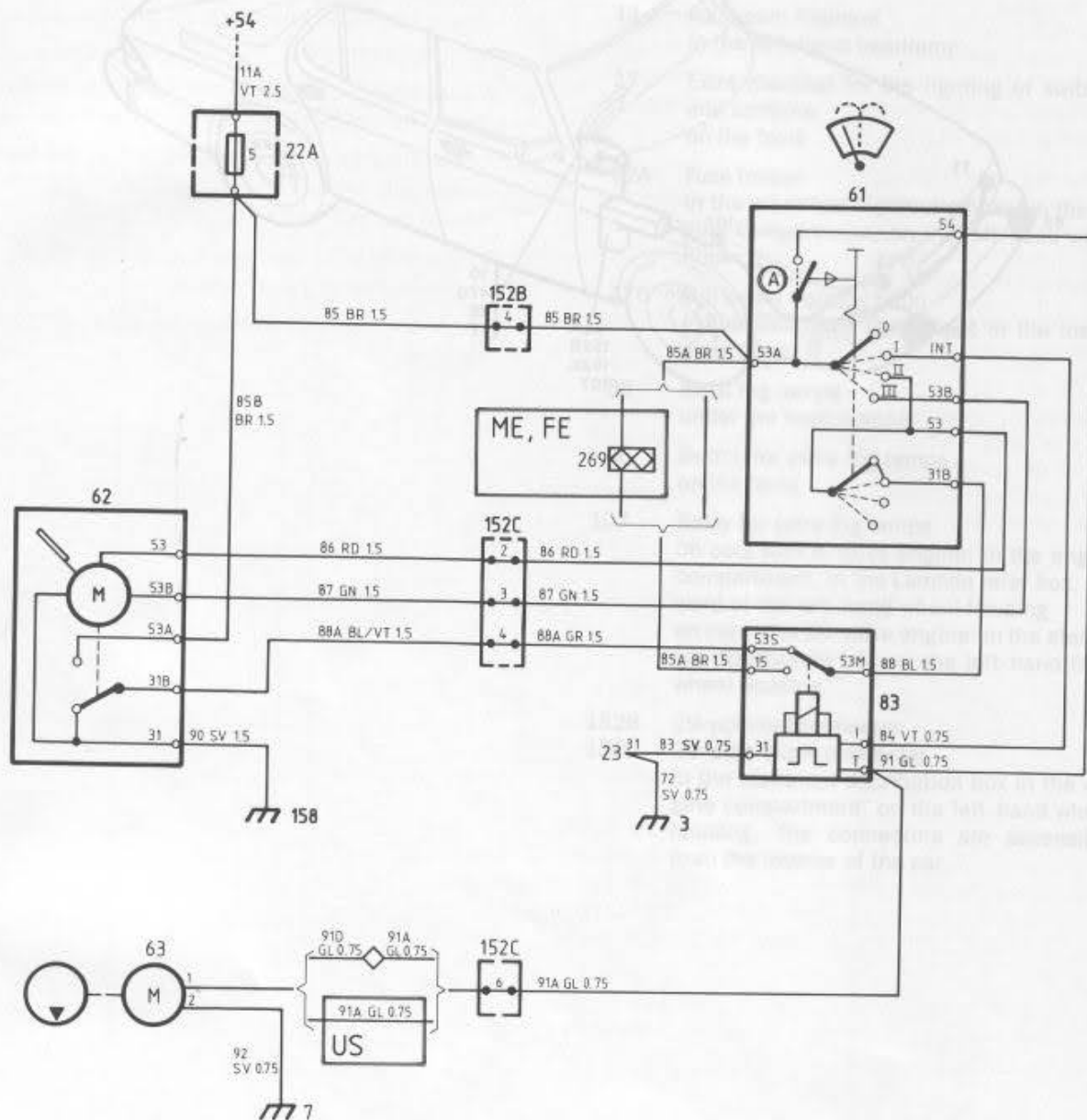
Operate the stalk switch. The windscreen wipers will now run at low speed.

Operate the stalk switch. The windscreen wipers will now run at low speed.

Operate the stalk switch. The windscreen wipers will now run at low speed.



Windscreen wipers



Operation

The windscreen wipers of the car can run at two speeds and have an intermittent operation function. The system also includes the windscreen washers.

When the ignition switch is in the drive position,

- Windscreen wiper stalk switch 61 and
- Relay 83 for intermittent operation of the windscreen wipers

are supplied via fuse 5 and 29-pole red connector 152B.

When the switch is in position II (low speed), terminal 53 of the wiper motor is supplied from terminal 53 of the switch, and the motor will run at low speed.

When the switch is in position III, terminal 53B of the wiper motor is supplied from terminal 53B of the switch. The motor will now run at high speed.

When the switch is in position I (intermittent operation), current will flow from terminal INT to intermittent operation relay 83, which will thus be energised.

The relay contacts will close, and current will flow from terminal 53M to terminal 31B of the switch, through the switch and from terminal 53 of the switch to terminal 53 of the wiper motor. The wiper motor will now run intermittently. The frequency of the intermittent operation of the wiper motor is determined by the relay.

The wiper motor incorporates a mechanically actuated switch, to which the supply is live regardless of the position of the stalk switch. The switch controls the supply so that the wiper motor unit will always return to the parked position after the circuit has been opened by the stalk switch.

This is due to the fact that the wiper motor is then supplied from terminal 53A, and from terminal 31B, across the built-in switch. The current flows through the intermittent operation relay and the stalk switch, and then back to terminal 53 of the windscreen wiper motor.

When the wiper motor unit reaches the parked position, the mechanically actuated switch will open and the motor will stop.

Windscreen washers

Washing will start when the stalk switch is moved towards the steering wheel rim, regardless of whether switch 61 is in position I, II or III.

When the stalk switch is moved towards the steering wheel, contacts "A" will close. Washer motor 63 is then supplied from terminal 54 of the stalk switch and will run as long as the switch remains closed. After the stalk switch has been released, the wipers will sweep the windscreen five times before they stop.

Fault-tracing hints

The windscreen wipers will be operative when the ignition switch is in the drive position.

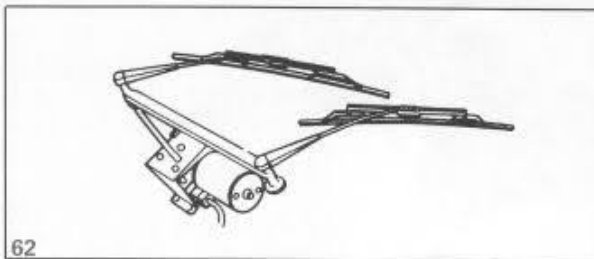
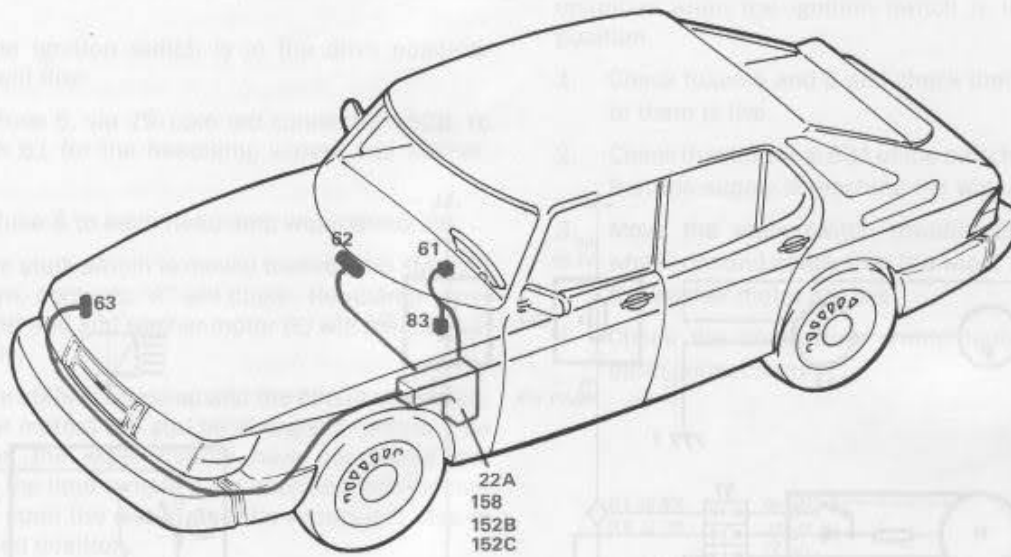
1. Check fuse 5 and check that the supply to it is live.
2. Check that motor 62, switch 61 and relay 83 are live.
3. Operate the switch and check that the windscreen wiper motor and the washer motor are live.
4. Check the connectors, cable harnesses and earth connections.



Locations of components

- 3 Earthing point in the facia
- 7 Earthing point, radiator cross-member
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 23 Flasher relay
under the facia on the left-hand side, behind the knee shield
- 61 Windscreen wiper stalk switch
on the right-hand side of the steering column
- 62 Windscreen wiper motor
in the engine compartment, on the bulk-head
- 63 Washer motor
in the washer fluid container, forward of the right-hand wheel housing
- 83 Relay for intermittent operation of the windscreen wipers
under the facia, to the left of the steering column (behind the knee shield)
- 152B 29-pole red connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.
- 158 Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 269 Two-pole connector (ME and FE only)

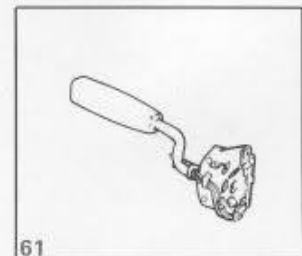
Components



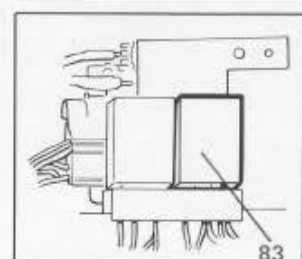
62



63

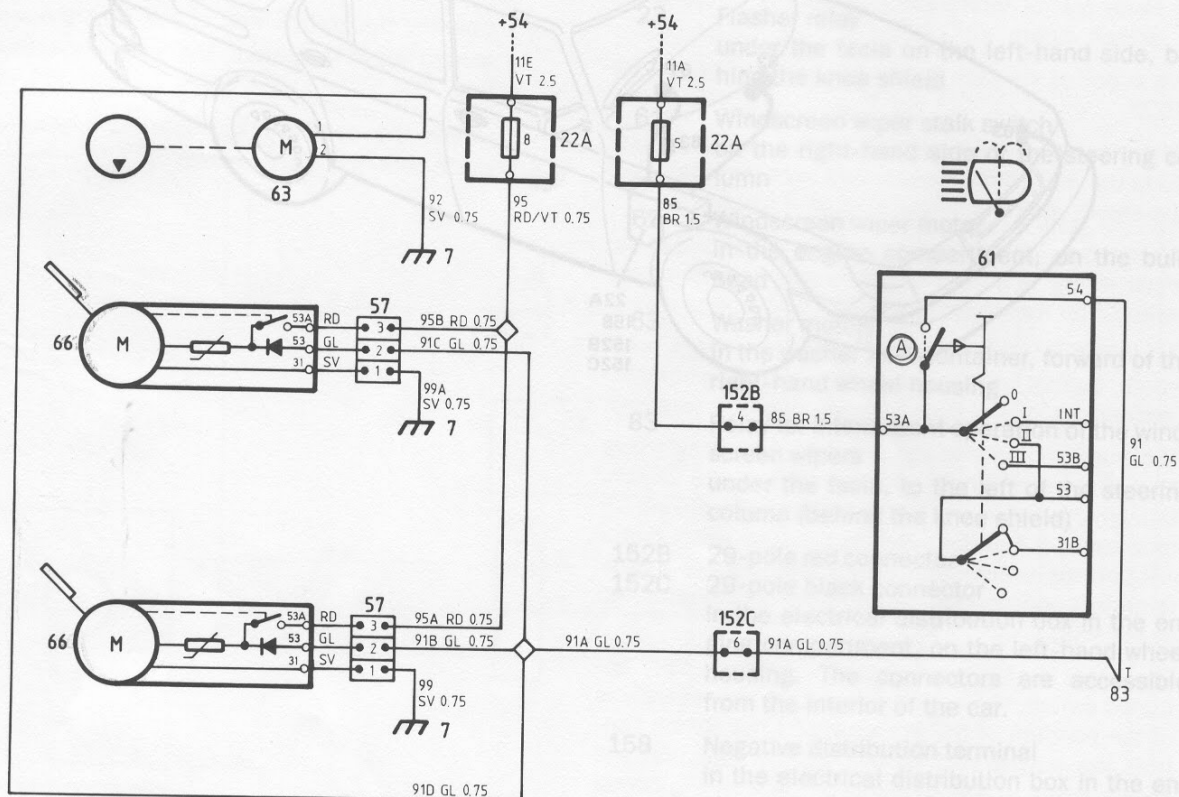


61



83

Headlamp wipers



Operation

Headlamp wipers are available on certain markets only.

When the ignition switch is in the drive position, current will flow:

- from fuse 5, via 29-pole red connector 152B, to switch 61 for the headlamp wipers and washer, and
- from fuse 8 to each headlamp wiper motor 66.

When the stalk switch is moved towards the steering wheel rim, contacts "A" will close. Headlamp wiper motors 66 and washer motor 63 will start simultaneously.

When the stalk is released and the circuit is opened, the wiper motors will still be energised (across fuse 8). When the wiper motors have completed five strokes, the limit switches incorporated into the motors will open the circuit and the wipers will stop in the parked position.

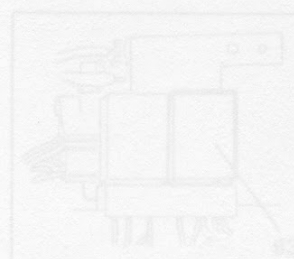
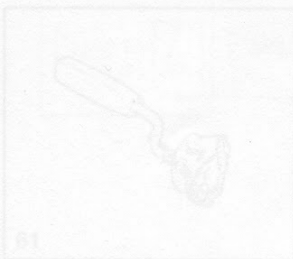
A diode in each motor prevents the current from the feedback circuit of the motor from flowing back to the washer motor.

Each wiper motor incorporates overload protection with a protective switch which is actuated by a resistor. The switch is in series with the motor and will trip if the load should exceed a predetermined value (e.g. if the wiper blades have frozen to the lenses).

Fault-tracing hints

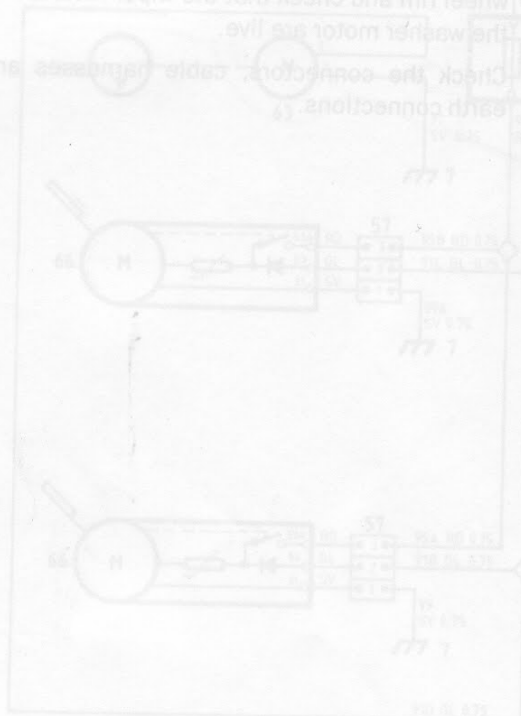
The headlamp wipers and the washer motor will be operative when the ignition switch is in the drive position.

1. Check fuses 5 and 8 and check that the supply to them is live.
2. Check that terminal 53A of the switch is live, and that the supply is reaching the wiper motors.
3. Move the stalk switch towards the steering wheel rim and check that the wiper motors and the washer motor are live.
4. Check the connectors, cable harnesses and earth connections.

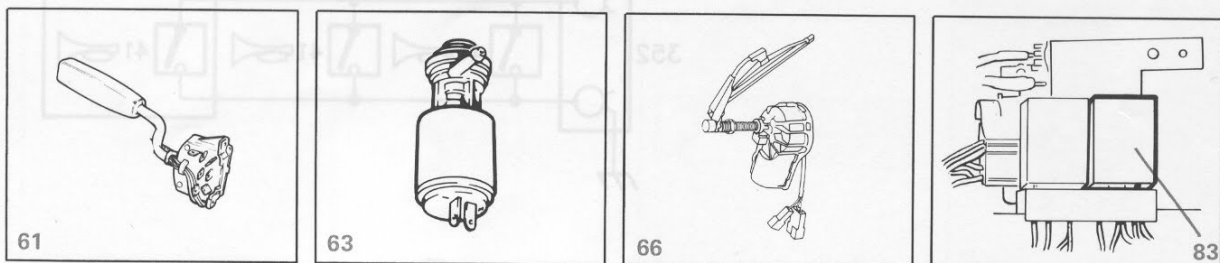
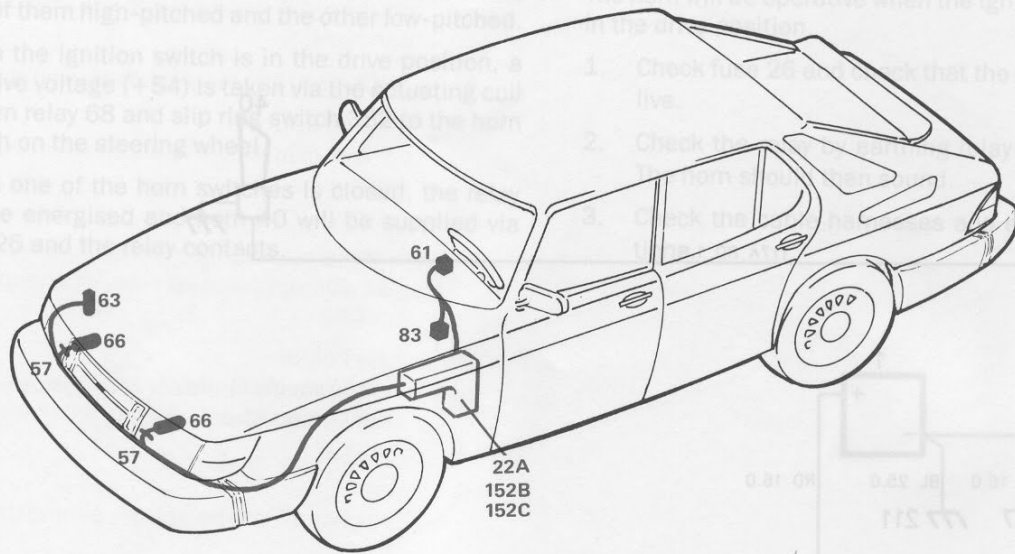


Locations of components

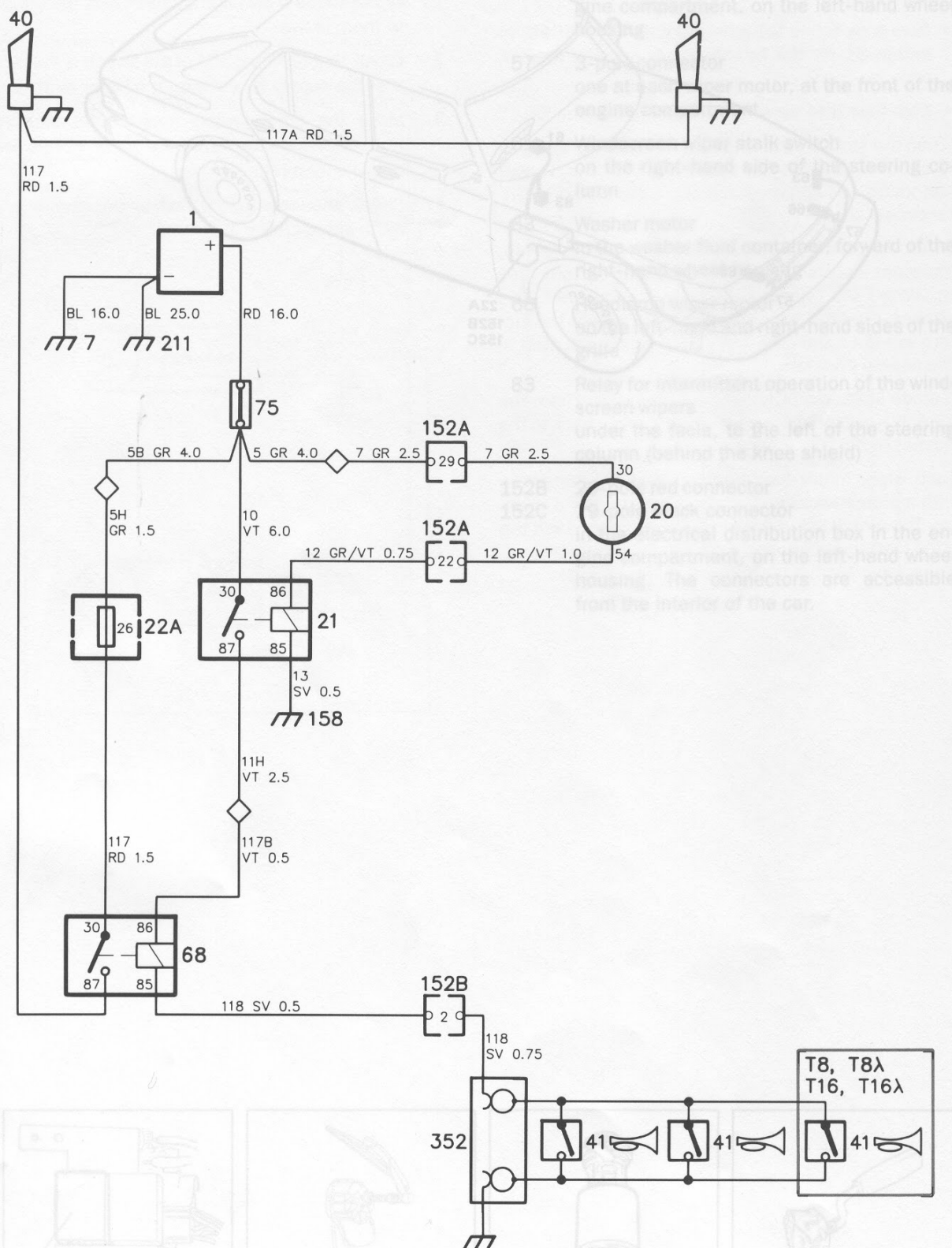
- 7 Earthing point, radiator cross-member
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 57 3-pole connector
one at each wiper motor, at the front of the engine compartment.
- 61 Windscreen wiper stalk switch
on the right-hand side of the steering column
- 63 Washer motor
in the washer fluid container, forward of the right-hand wheel housing
- 66 Headlamp wiper motor
on the left-hand and right-hand sides of the grille
- 83 Relay for intermittent operation of the windscreen wipers
under the facia, to the left of the steering column (behind the knee shield)
- 152B 29-pole red connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.



Components



Horn



Operation

The horn system includes two tuned loud-tone horns, one of them high-pitched and the other low-pitched.

When the ignition switch is in the drive position, a positive voltage (+54) is taken via the actuating coil in horn relay 68 and slip ring switch 352 to the horn switch on the steering wheel.

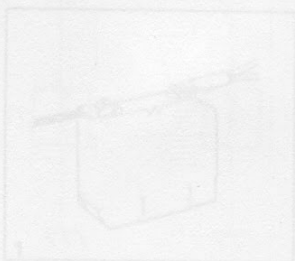
When one of the horn switches is closed, the relay will be energised and horn 40 will be supplied via fuse 26 and the relay contacts.

Fault-tracing hints

The horn will be operative when the ignition switch is in the drive position.

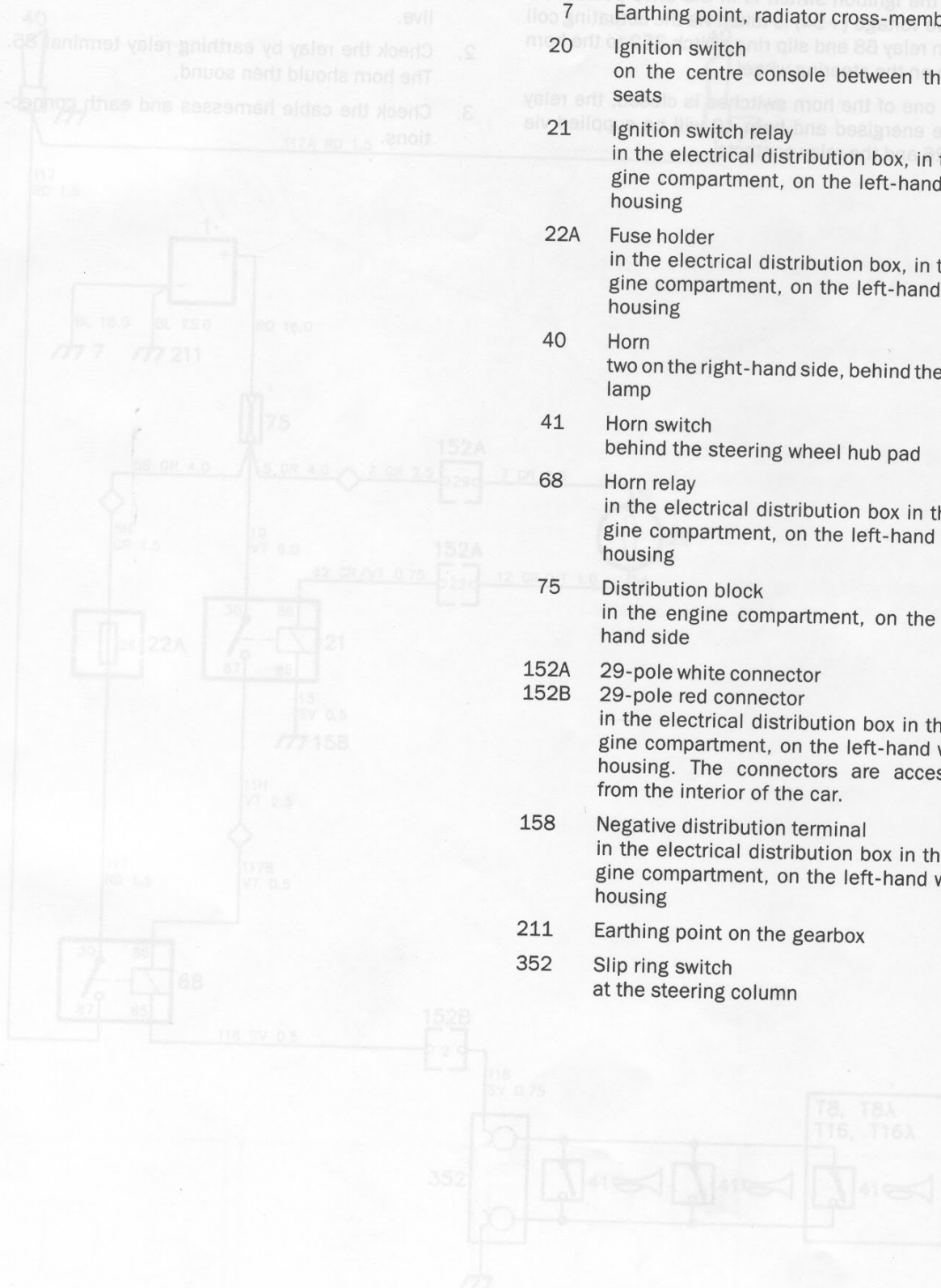
1. Check fuse 26 and check that the supply to it is live.
2. Check the relay by earthing relay terminal 85. The horn should then sound.
3. Check the cable harnesses and earth connections.

41	Horn switch	behind the steering wheel hub pad
68	Horn relay	in the electrical distribution box in the engine compartment, on the left-hand wheel housing
75	Distribution block	in the engine compartment, on the right-hand side
152A	29-pole white connector	in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.
152B	29-pole red connector	in the electrical distribution box in the engine compartment, on the left-hand wheel housing
158	Negative distribution terminal	in the electrical distribution box in the engine compartment, on the left-hand wheel housing
211	Earthing point on the gearbox	
352	Slip ring switch	at the steering column



Locations of components

- | | |
|------|---|
| 1 | Battery |
| | on the right-hand side of the engine compartment |
| 7 | Earthing point, radiator cross-member |
| 20 | Ignition switch |
| | on the centre console between the front seats |
| 21 | Ignition switch relay |
| | in the electrical distribution box, in the engine compartment, on the left-hand wheel housing |
| 22A | Fuse holder |
| | in the electrical distribution box, in the engine compartment, on the left-hand wheel housing |
| 40 | Horn |
| | two on the right-hand side, behind the headlamp |
| 41 | Horn switch |
| | behind the steering wheel hub pad |
| 68 | Horn relay |
| | in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 75 | Distribution block |
| | in the engine compartment, on the right-hand side |
| 152A | 29-pole white connector |
| 152B | 29-pole red connector |
| | in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car. |
| 158 | Negative distribution terminal |
| | in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 211 | Earthing point on the gearbox |
| 352 | Slip ring switch |
| | at the steering column |



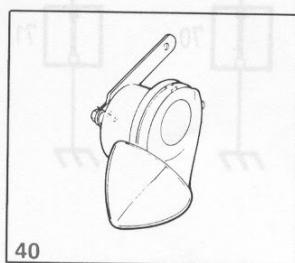
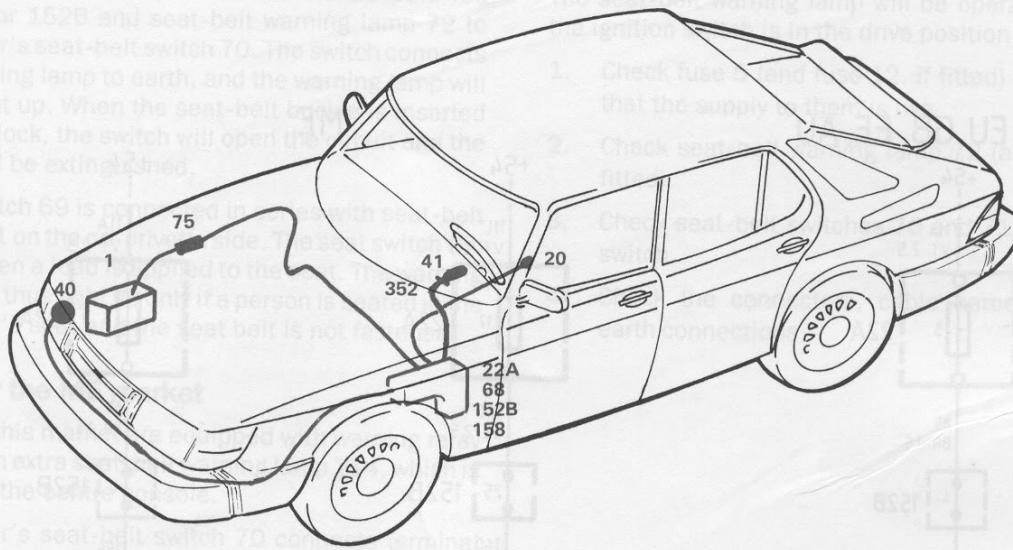
Components

The supply is taken from fuse 5 via 30-pole relay connector 152B and seat-belt warning lamp 75 to the driver's seat-belt switch 70. The switch connects the warning lamp to earth, and the warning lamp will thus light up. When the seat-belt buckle is inserted into the lock, the switch will open the circuit and the lamp will be extinguished.

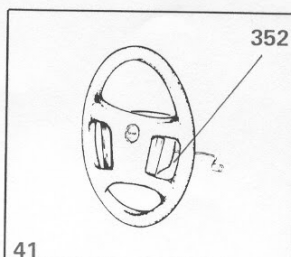
Seat switch 69 is provided with a switch terminal switch 71 on the back. The switch will be closed when the seat is occupied. If a person is not seated in the front seat, the seat belt is not fastened and the co-driver's seat belt warning lamp will be extinguished.

Cars for this system are fitted with a 30-pole relay connector 152B and an extra seat switch 69. The seat switch 69 is fitted on the back of the front seat.

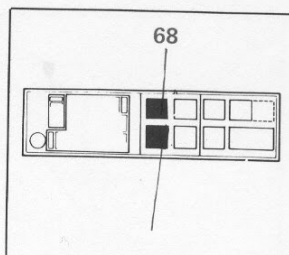
The driver's seat-belt switch 70 connects the terminal GF of the relay to earth, causing the warning lamps to light up and the buzzer to sound. When the seat-belt buckle is inserted into the lock, the switch will be closed and the lamps will be extinguished and the buzzer will be silenced.



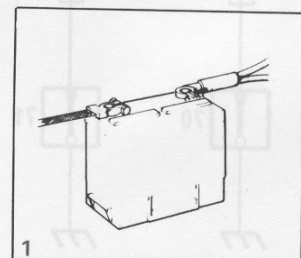
40



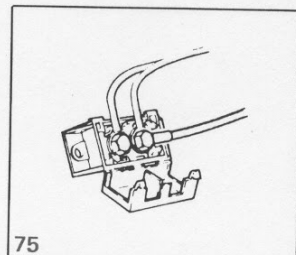
41



68



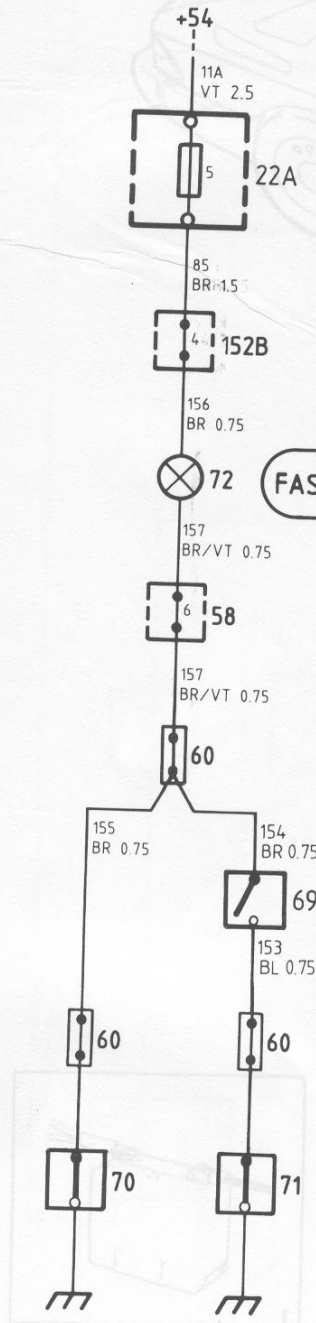
1



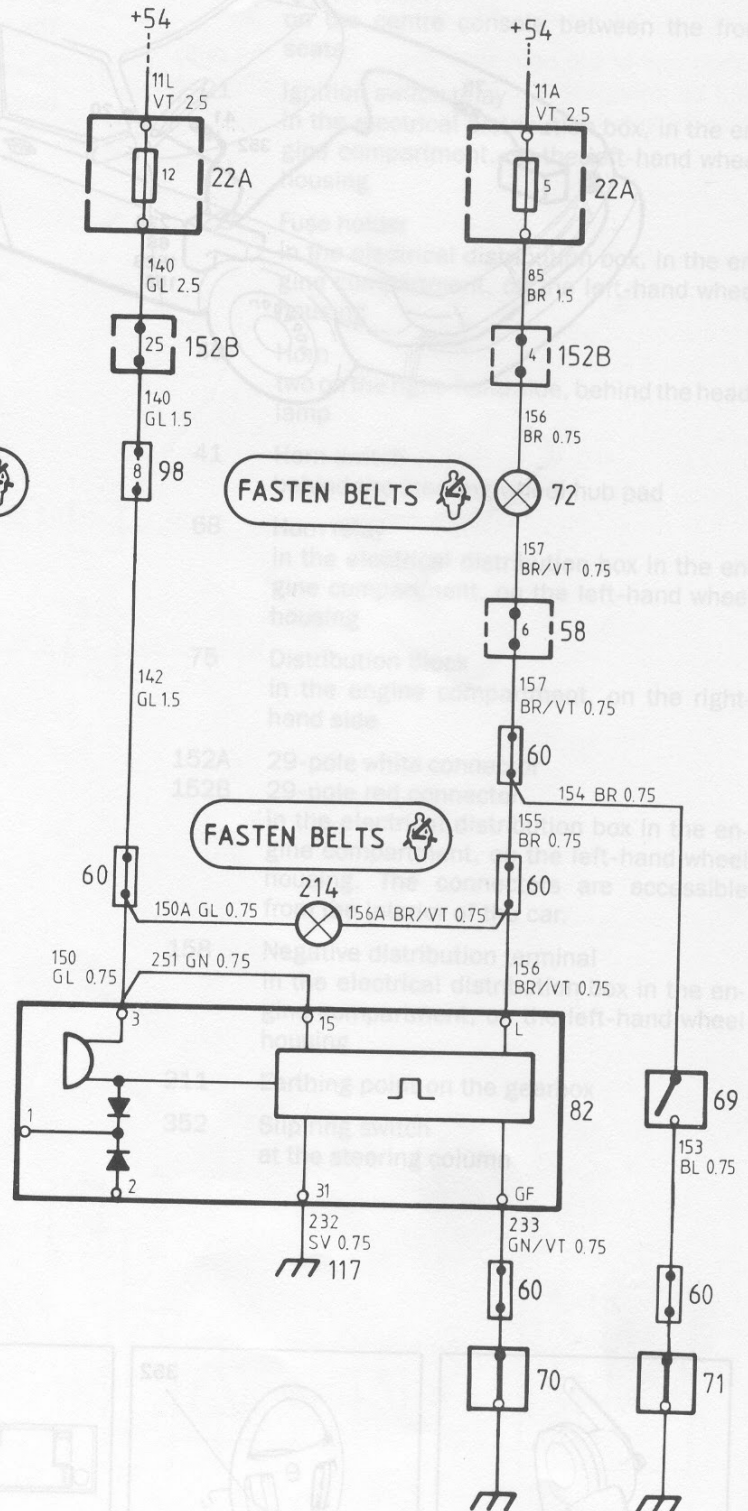
75

Seat-belt warning lamp

SE, FI, EU, GB, FE, AU



ME



Operation

The supply is taken from fuse 5 via 29-pole red connector 152B and seat-belt warning lamp 72 to the driver's seat-belt switch 70. The switch connects the warning lamp to earth, and the warning lamp will thus light up. When the seat-belt buckle is inserted into the lock, the switch will open the circuit and the lamp will be extinguished.

Seat switch 69 is connected in series with seat-belt switch 71 on the co-driver's side. The seat switch will close when a load is applied to the seat. The warning lamp will thus light up only if a person is seated in the co-driver's seat and the seat belt is not fastened.

Cars for the ME market

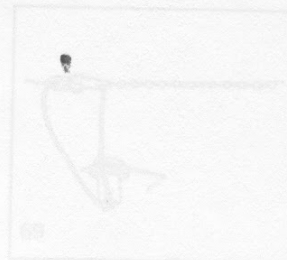
Cars for this market are equipped with warning relay 82 and an extra seat-belt warning lamp 214, which is fitted on the centre console.

The driver's seat-belt switch 70 connects terminal GF of the relay to earth, causing the warning lamps to light up and the buzzer to sound. When the seat-belt buckle is inserted into the lock, the switch will open, the lamps will be extinguished and the buzzer will be silenced.

Fault-tracing hints

The seat-belt warning lamp will be operative when the ignition switch is in the drive position.

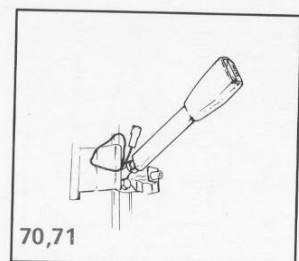
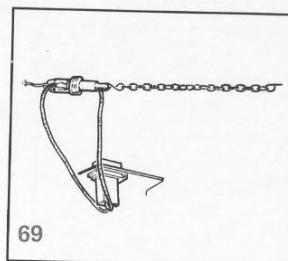
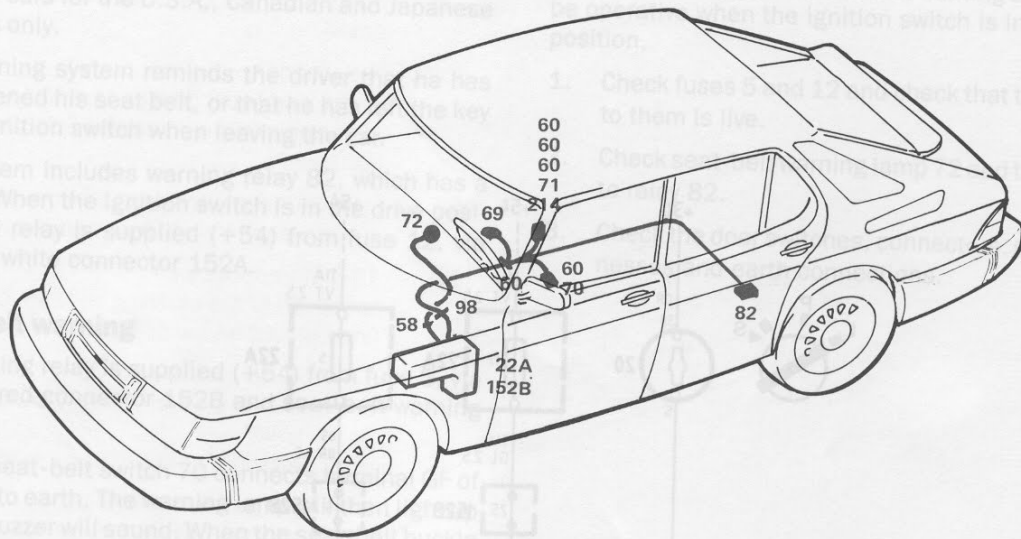
1. Check fuse 5 (and fuse 12, if fitted) and check that the supply to them is live.
2. Check seat-belt warning lamp 72 (and 214, if fitted).
3. Check seat-belt switches 70 and 71, and seat switch.
4. Check the connectors, cable harnesses and earth connections.



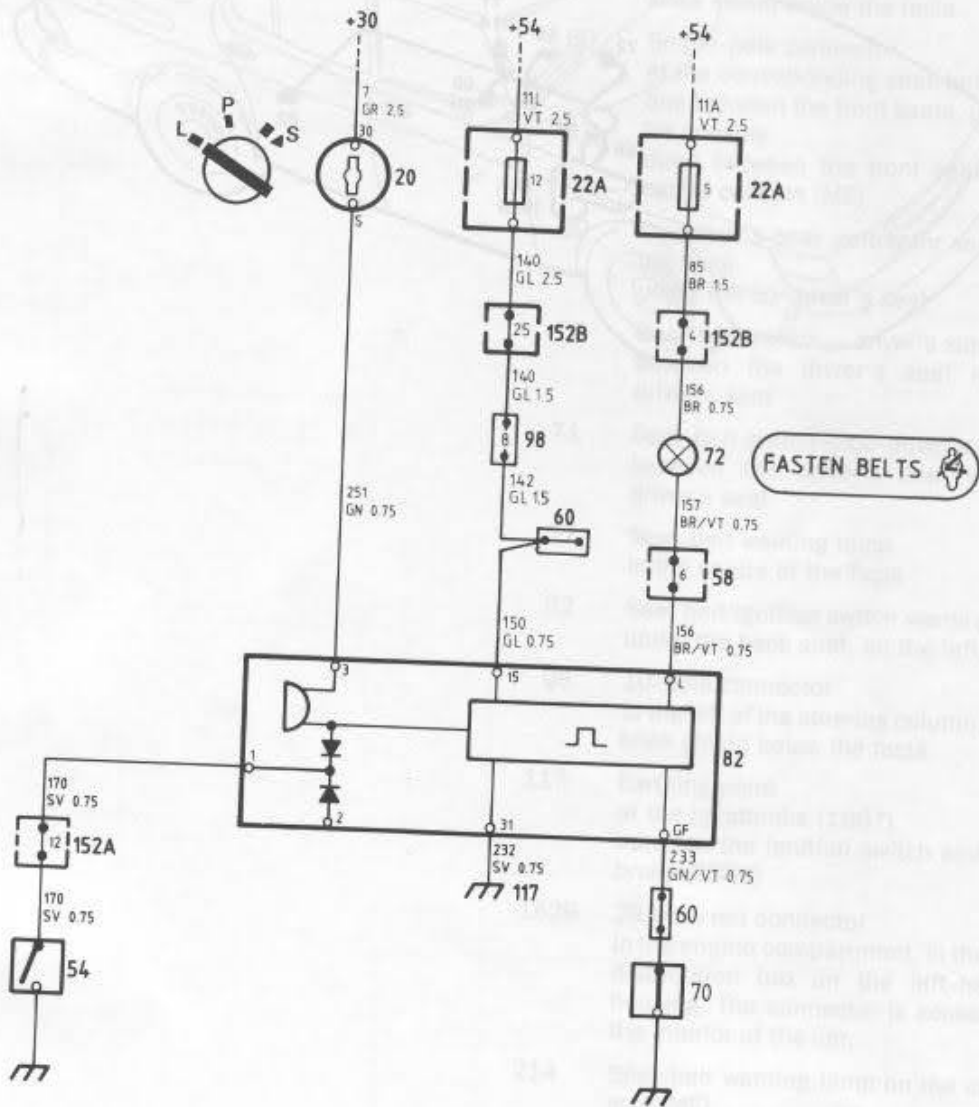
Locations of components

- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 58 12-pole connector
to the left of the steering column, behind the knee shield below the facia
- 60 Single-pole connector
at the corresponding seat-belt lock
one between the front seats, under the centre console
three between the front seats, under the centre console (ME)
- 69 Co-driver's seat switch for seat-belt warning lamp
under the co-driver's seat
- 70 Seat-belt switch — driver's side
between the driver's seat and the co-driver's seat
- 71 Seat-belt switch — co-driver's side
between the driver's seat and the co-driver's seat
- 72 Seat-belt warning lamp
in the centre of the facia
- 82 Seat belt/ignition switch warning relay
under the back seat, on the left-hand side
- 98 10-pole connector
to the left of the steering column, behind the knee shield below the facia
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car.
- 214 Seat-belt warning lamp on the centre console (ME)
on the centre console, between the front seats

Components



Seat-belt and ignition key warning



Operation

The seat-belt and ignition switch warning system is fitted to cars for the U.S.A., Canadian and Japanese markets only.

The warning system reminds the driver that he has not fastened his seat belt, or that he has left the key in the ignition switch when leaving the car.

The system includes warning relay 82, which has a buzzer. When the ignition switch is in the drive position, the relay is supplied (+54) from fuse 12, via 29-pole white connector 152A.

Seat-belt warning

The warning relay is supplied (+54) from fuse 5, via 29-pole red connector 152B and seat-belt warning lamp 72.

Driver's seat-belt switch 70 connects terminal GF of the relay to earth. The warning lamp will then light up and the buzzer will sound. When the seat-belt buckle is inserted into the lock, the switch will open, the lamp will be extinguished and the buzzer will be silenced.

Ignition switch warning

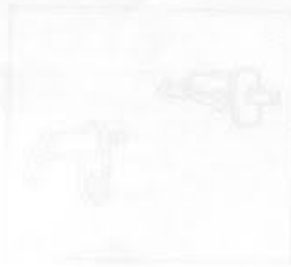
As long as the key remains in the ignition switch, the supply will be live from terminal S of the ignition switch to the warning relay.

If the key is in the ignition switch and the driver's door is opened, door switch 54 will close. Terminal 1 of the relay will then be earthed and the buzzer will sound.

Fault-tracing hints

The seat-belt and ignition switch warning system will be operative when the ignition switch is in the drive position.

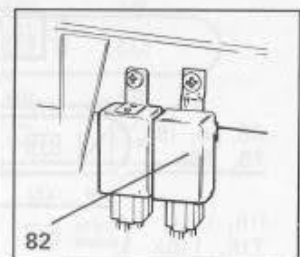
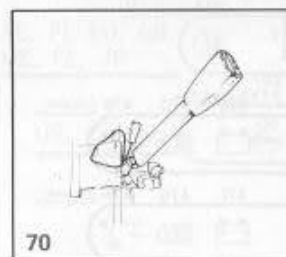
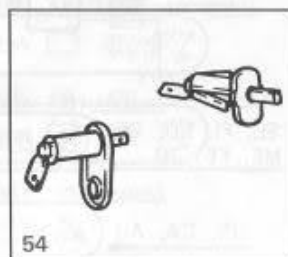
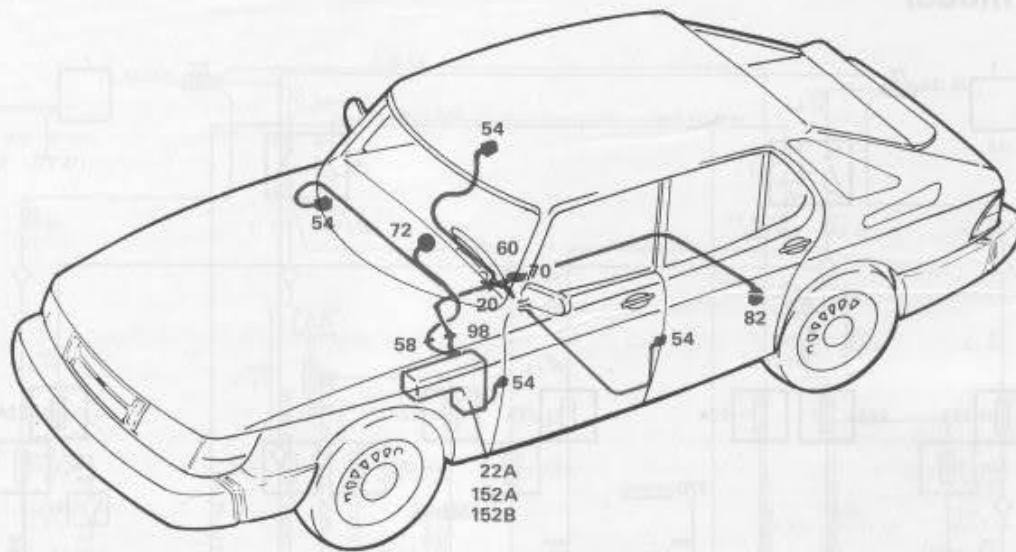
1. Check fuses 5 and 12 and check that the supply to them is live.
2. Check seat-belt warning lamp 72 and the supply to relay 82.
3. Check the door switches, connectors, cable harnesses and earth connections.



Locations of components

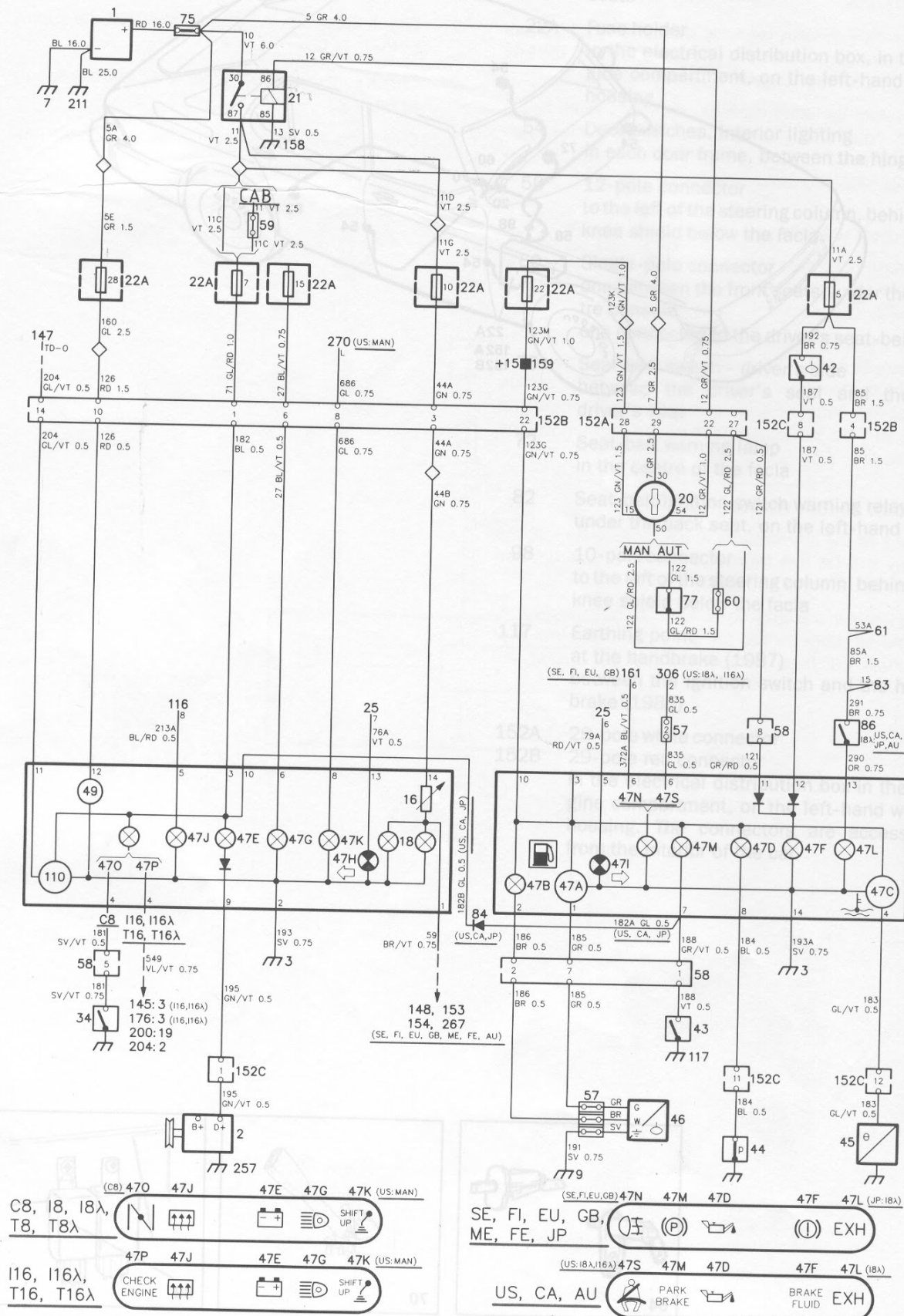
- 20 Ignition switch
on the centre console between the front seats
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 54 Door switches, interior lighting
in each door frame, between the hinges
- 58 12-pole connector
to the left of the steering column, behind the knee shield below the facia
- 60 Single-pole connector
one between the front seats, under the centre console
one connected to the driver's seat-belt lock
- 70 Seat-belt switch - driver's side
between the driver's seat and the co-driver's seat
- 72 Seat-belt warning lamp
in the centre of the facia
- 82 Seat-belt/ignition switch warning relay
under the back seat, on the left-hand side
- 98 10-pole connector
to the left of the steering column, behind the knee shield below the facia
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 152A 29-pole white connector
152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car.

Components

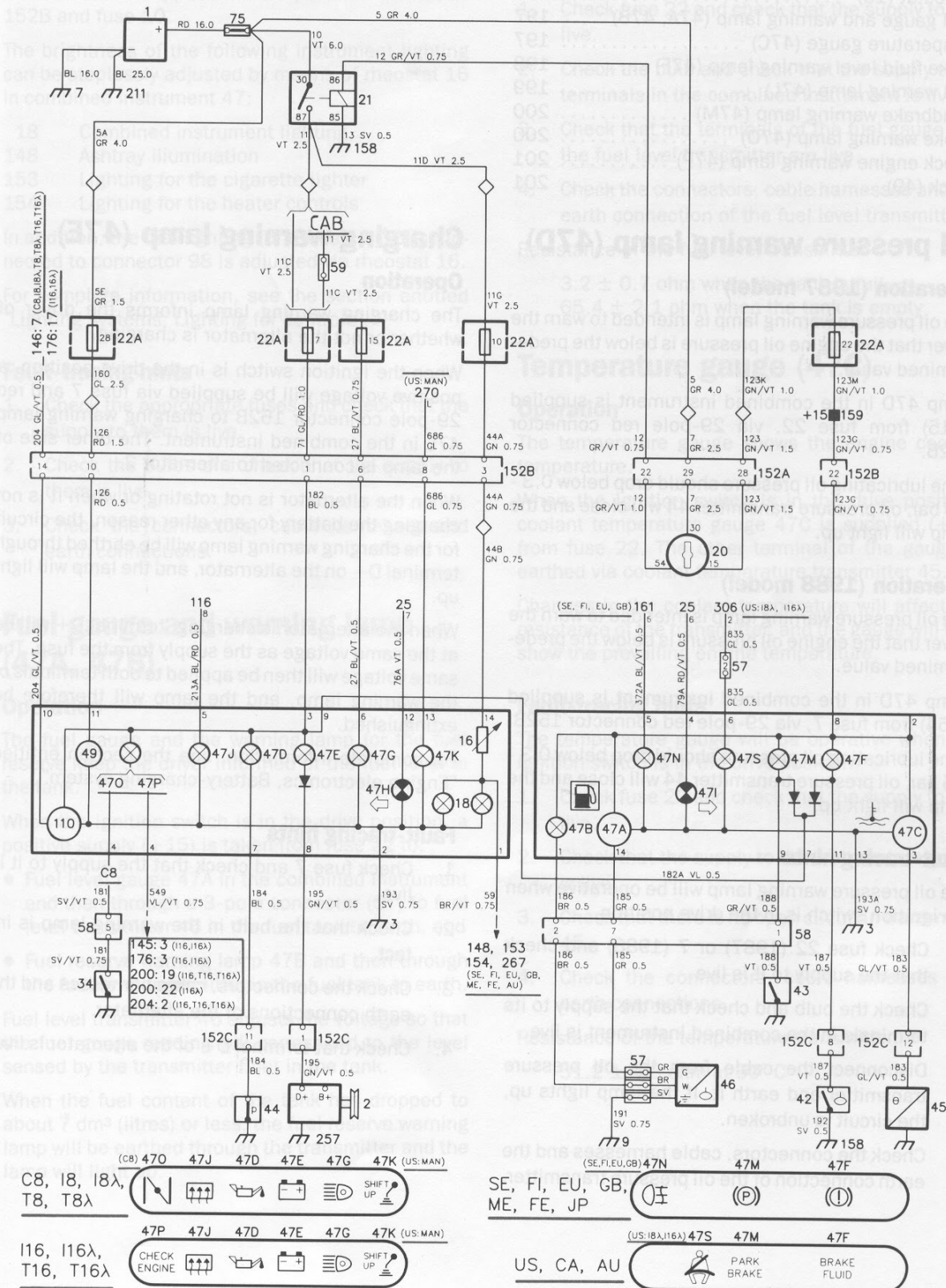


1987 model

Combined instrument



1988 model



Contents

Oil pressure warning lamp (47D)	196
Charging warning lamp (47E)	196
Rheostat (16)	197
Fuel gauge and warning lamp (47A, 47B)	197
Temperature gauge (47C)	197
Brake fluid level warning lamp (47F)	198
EXH warning lamp (47L)	199
Handbrake warning lamp (47M)	200
Choke warning lamp (47O)	200
Check engine warning lamp (47P)	201
Clock (49)	201

Oil pressure warning lamp (47D)

Operation (1987 model)

The oil pressure warning lamp is intended to warn the driver that the engine oil pressure is below the predetermined value.

Lamp 47D in the combined instrument is supplied (+15) from fuse 22, via 29-pole red connector 152B.

If the lubricating oil pressure should drop below 0.3 - 0.5 bar, oil pressure transmitter 44 will close and the lamp will light up.

Operation (1988 model)

The oil pressure warning lamp is intended to warn the driver that the engine oil pressure is below the predetermined value.

Lamp 47D in the combined instrument is supplied (+54) from fuse 7, via 29-pole red connector 152B.

If the lubricating oil pressure should drop below 0.3 - 0.5 bar, oil pressure transmitter 44 will close and the lamp will light up.

Fault-tracing hints

The oil pressure warning lamp will be operative when the ignition switch is in the drive position.

1. Check fuse 22 (1987) or 7 (1988) and check that the supply to it is live.
2. Check the bulb and check that the supply to its terminals in the combined instrument is live.
3. Disconnect the cable from the oil pressure transmitter and earth it. If the lamp lights up, the circuit is unbroken.
4. Check the connectors, cable harnesses and the earth connection of the oil pressure transmitter.

Charging warning lamp (47E)

Operation

The charging warning lamp informs the driver of whether or not the alternator is charging.

When the ignition switch is in the drive position, a positive voltage will be supplied via fuse 7 and red 29-pole connector 152B to charging warning lamp 47E in the combined instrument. The other side of the lamp is connected to alternator 2.

When the alternator is not rotating or when it is not charging the battery for any other reason, the circuit for the charging warning lamp will be earthed through terminal D+ on the alternator, and the lamp will light up.

When the alternator is charging, terminal D+ will be at the same voltage as the supply from the fuse. The same voltage will then be applied to both terminals of the warning lamp, and the lamp will therefore be extinguished.

For complete information, see the section entitled "Engine electronics, Battery-charging system".

Fault-tracing hints

1. Check fuse 7 and check that the supply to it is live.
2. Check that the bulb in the warning lamp is intact.
3. Check the connectors, cable harnesses and the earth connections of the alternator.
4. Check that terminal D+ of the alternator is live.

Rheostat 16

Operation

When the ignition switch is in the drive position, rheostat 16 is supplied via 29-pole red connector 152B and fuse 10.

The brightness of the following instrument lighting can be steplessly adjusted by means of rheostat 16 in combined instrument 47:

- 18 Combined instrument lighting
- 148 Ashtray illumination
- 153 Lighting for the cigarette lighter
- 154 Lighting for the heater controls

In addition, the dial lighting for the radio (267) connected to connector 98 is adjusted via rheostat 16.

For complete information, see the section entitled "Lighting systems, Lighting for controls".

Fault-tracing hints

1. Check the appropriate fuses and check that the supply to them is live.
2. Check the bulbs and check that the supply to them is live.
3. Check the connectors, cable harnesses and earth connections.

Fuel gauge and warning lamp (47A, 47B)

Operation

The fuel gauge and the warning lamp for the fuel reserve keep the driver informed of the fuel level in the tank.

When the ignition switch is in the drive position, a positive supply (+15) is taken from fuse 22 to:

- Fuel level gauge 47A in the combined instrument and then through a 3-pole connector (57) to fuel level transmitter 46 in the fuel tank to earth, and
- Fuel reserve warning lamp 47B and then through the fuel level transmitter in the fuel tank to earth.

Fuel level transmitter 46 adjusts the voltage so that the fuel gauge reading will correspond to the level sensed by the transmitter float in the tank.

When the fuel content of the tank has dropped to about 7 dm³ (litres) or less, the fuel reserve warning lamp will be earthed through the transmitter and the lamp will light up.

Fault-tracing hints

The fuel gauge and the warning lamp for the fuel reserve will be operative when the ignition switch is in the drive position.

1. Check fuse 22 and check that the supply to it is live.
2. Check the bulb and check that the supply to its terminals in the combined instrument is live.
3. Check that the terminals of the fuel gauge and the fuel level transmitter are live.
4. Check the connectors, cable harnesses and the earth connection of the fuel level transmitter.

Resistance of the fuel level transmitter

- 3.2 ± 0.7 ohm when the tank is full
- 65.4 ± 2.1 ohm when the tank is empty

Temperature gauge (47C)

Operation

The temperature gauge shows the engine coolant temperature.

When the ignition switch is in the drive position, coolant temperature gauge 47C is supplied (+15) from fuse 22. The other terminal of the gauge is earthed via coolant temperature transmitter 45.

Changes in the coolant temperature will affect the resistance of the transmitter, and the gauge will thus show the prevailing engine temperature.

Fault-tracing hints

The temperature gauge will be operative when the ignition switch is in the drive position.

1. Check fuse 22 and check that the supply to it is live.
2. Check that the supply to the temperature gauge is live.
3. Check that there is no open circuit in transmitter 45.
4. Check the connectors, cable harnesses and earth connections.

Resistance of the temperature transmitter:

- 51.2 ± 4.3 ohm at 90° C

Brake fluid level warning lamp (47F)

Operation (1987 model)

The brake fluid level warning lamp is intended to warn the driver that the brake fluid level in the reservoir is low. Its operation can be checked by means of a button on the brake fluid reservoir.

When the ignition switch is in the drive position, lamp 47F is supplied (+54) from fuse 5, via brake warning switch 42 and 29-pole black connector 152C.

If the fluid in the brake fluid reservoir should drop to an inadmissibly low level, switch 42 will close and the warning lamp will light up.

Lamp test

When the engine is started by the ignition switch being turned to the start position, a positive voltage is supplied from terminal 50 of ignition switch 20. The current flows through the diode, thus lighting the lamp. The diodes prevent the current from flowing back.

On cars with automatic transmission, the current also flows through start inhibitor switch 77.

Fault-tracing hints

The brake fluid level warning lamp will be operative when the ignition switch is in the drive position.

1. Check the brake fluid level warning circuit by pressing the button on the brake fluid reservoir. The circuit should close and the lamp should light up.
2. Check fuse 5 and check that the supply to it is live.
3. Check the bulb and check that the supply to its terminals in the combined instrument is live.
4. Check the connectors, cable harnesses and the earth connection.

Operation (1988 model)

The brake fluid level warning lamp is intended to warn the driver that the brake fluid level in the reservoir is low. Its operation can be checked by means of a button on the brake fluid reservoir.

When the ignition switch is in the drive position, lamp 47F is supplied (+15) from fuse 22, via 29-pole black connector 152C.

The other side of the lamp is connected to brake warning switch 42, via 29-pole black connector 152C.

If the fluid in the brake fluid reservoir should drop to an inadmissibly low level, switch 42 will close and the warning lamp will light up.

Lamp test

When the ignition switch is turned to the start position, terminal 15 of ignition switch 20 supplies pin 9 of lamp 47F, and the anode of the diode in the combined instrument.

In the starting position, the +54 circuit is open, so that the cathode of the diode in the combined instrument is earthed via pins 7, 9 and 8 of lamp 47E, and via alternator 2. The diode prevents the current from flowing back.

Fault-tracing hints

The brake fluid level warning lamp will be operative when the ignition switch is in the drive position.

1. Check the brake fluid level warning circuit by pressing the button on the brake fluid reservoir. The circuit should close and the lamp should light up.
2. Check fuse 22 and check that the supply to it is live.
3. Check the bulb and check that the supply to its terminals in the combined instrument is live.
4. Check the connectors, cable harnesses and the earth connection.

Full beam warning lamp (47G)

See the description in the section entitled "Lighting systems, Headlamps".

Direction indicator warning lamps (47H: left-hand, 47I: right-hand)

See the description in the section entitled "Lighting systems, Direction indicators".

Rear window heater warning lamp (47J)

See the description in the section entitled "Heating and ventilation systems, Electric heating for the rear window".

Shift-up warning lamp (47K)

See the description in the section entitled "Instruments and warning systems, Shift-up indicator".

EXH warning lamp (47L) – 1987 18 Lambda: US, CA, JP, AU**Operation**

Cars with 8-valve engines and the Lambda exhaust gas emission control system are equipped with a warning lamp (EXH) which reminds the driver that components of the emission control system require maintenance.

When the ignition switch is in the drive position, EGR selector 86 is supplied from fuse 5, via 29-pole red connector 152B. When the car has travelled about 48 000 km (30 000 miles), the selector will close and lamp 47L will light up. The lamp will then remain alight until the selector is reset to zero.

Fault-tracing hints

The lamp will be operative when the ignition switch is in the drive position.

1. Check fuse 5 and check that the supply to it is live.
2. Check that the selector is live.
3. Check the lamp.
4. Check the connectors, cable harnesses and earth connections.

Handbrake warning lamp (47M)

Operation

The handbrake warning lamp warns the driver that the handbrake is applied.

Lamp 47M in the combined instrument is supplied (+15) from fuse 22 via 29-pole red connector 152B.

As long as the handbrake is applied, handbrake switch 43 will be closed and the lamp will stay alight.

Lamp test (1987 model - U.S.A., Canada and Japan)

When the ignition switch is turned to the start position, terminal 15 of ignition switch 20 will be live. Current will flow to pin 7 of lamp 47M and the anode of diode 84. When the switch is in the start position, the supply from +54 is opened, and the cathode of diode 84 is therefore earthed via pins 10 and 9 of lamp 47E and alternator 2. If lamp 47M is in good condition, it should then light up. Correct indication will be obtained only if the handbrake is not applied. The diode prevents the current from flowing back.

Lamp test (1988 model)

When the ignition switch is turned to the start position, terminal 15 of ignition switch 20 will be live. Current will flow to pin 11 of lamp 47M and the anode of the diode in the combined instrument.

When the switch is in the start position, the supply from +54 is opened, and the cathode of the diode in the combined instrument is therefore earthed via pins 7, 9 and 8 of lamp 47E and alternator 2.

If lamp 47M is in good condition, it should then light up. Correct indication will be obtained only if the handbrake is not applied. The diode prevents the current from flowing back.

Fault-tracing hints

The handbrake warning lamp will be operative when the ignition switch is in the drive position.

1. Check fuse 22 and check that the supply to it is live. Check also fuse 7.
2. Check the bulb and check that the supply to its terminals in the combined instrument is live.
3. Disconnect the cable from the handbrake switch and earth it. If the lamp lights up, the circuit is unbroken.
4. Check the connectors, cable harnesses and the earth connection of the handbrake switch.

Rear fog light warning lamp (47N)

See the description in the section entitled "Lighting systems, Rear fog lights".

Choke warning lamp (47O)

Operation

The choke warning lamp lights when the choke is partially or totally withdrawn. This lamp is fitted only to cars with carburetor engines.

When the ignition switch is in the drive position, choke warning lamp 47O is supplied (+54) from fuse 7, via 29-pole red connector 152B.

When the choke control is withdrawn, switch 34 will close, and the lamp will light up.

Fault-tracing hints

Choke warning lamp 47O will be operative when the ignition switch is in the drive position.

1. Check fuse 7 and check that the supply to it is live.
2. Check the bulb and check that the supply to its terminals in the combined instrument is live.
3. Disconnect the cable from the choke control switch and earth it. If the lamp lights up, the circuit is unbroken.
4. Check the connectors, cable harnesses and earth connections.

Check engine warning lamp (47P)

Operation

Should a fault occur in the fuel system and/or ignition system, flashing codes will be obtained on warning lamp 47P. This lamp is fitted only to cars with 16-valve engines.

When the ignition switch is in the drive position, warning lamp 47P is supplied (+54) from fuse 7, via 29-pole red connector 152B. Warning lamp 47P then supplies control unit 200 for the LH system and/or control unit 176 for the EZK ignition system.

Warning lamp 47P lights up with a steady light when the ignition switch is in the drive position, before the engine is started.

For complete information, see the section entitled "Engine electronics", "LH fuel system" and "EZK ignition system".

Fault-tracing hints

Warning lamp 47P will be operative when the ignition switch is in the drive position.

1. Check fuse 7 and check that the supply to it is live.
2. Check the bulb and check that the supply to its terminals in the combined instrument is live.
3. Check the connectors, cable harnesses and earth connections.

Passive seat-belt warning lamp (47S)

See the description in the section entitled "Other systems, passive seat belts".

Clock (49)

Operation

Clock 49 is located in combined instrument 47. The positive supply to the clock is taken from fuse 28, via 29-pole red connector 152B. The supply to the clock is live (+30) regardless of the position of the ignition switch.

Fault-tracing hints

1. Check fuse 28 and check that the supply to it is live.
2. Check that the positive terminal of the clock is live, and that the negative terminal is earthed.
3. Check the connectors, cable harnesses and earth connection.

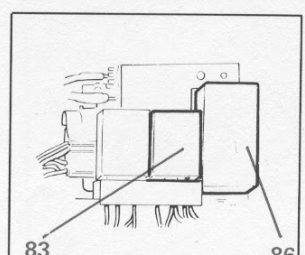
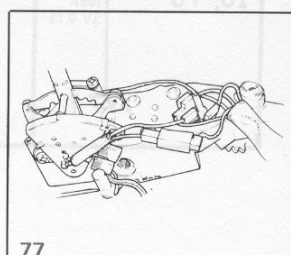
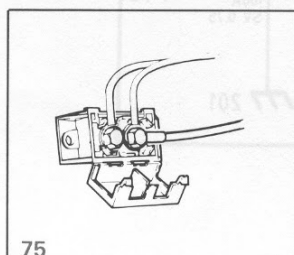
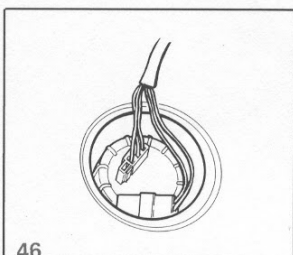
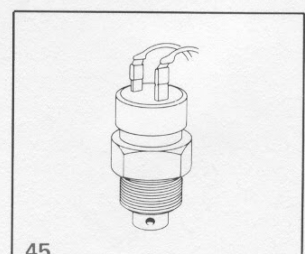
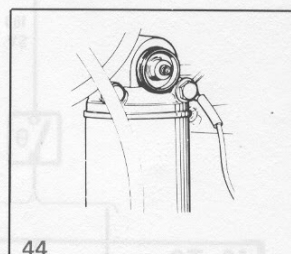
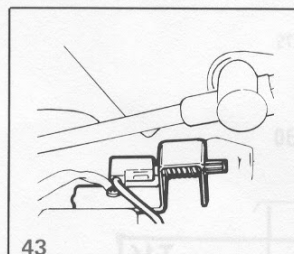
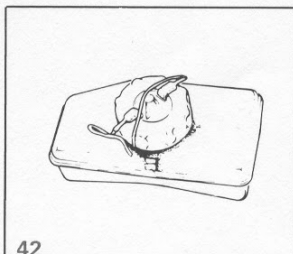
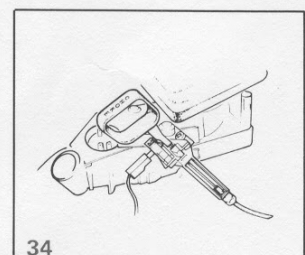
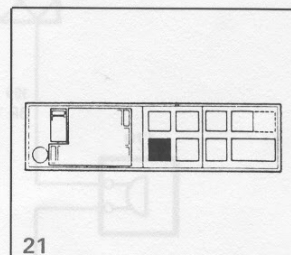
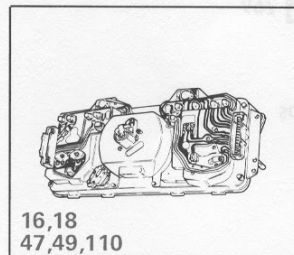
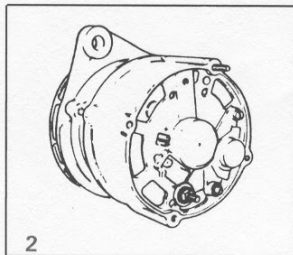
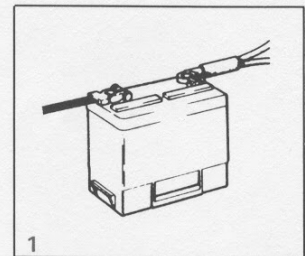
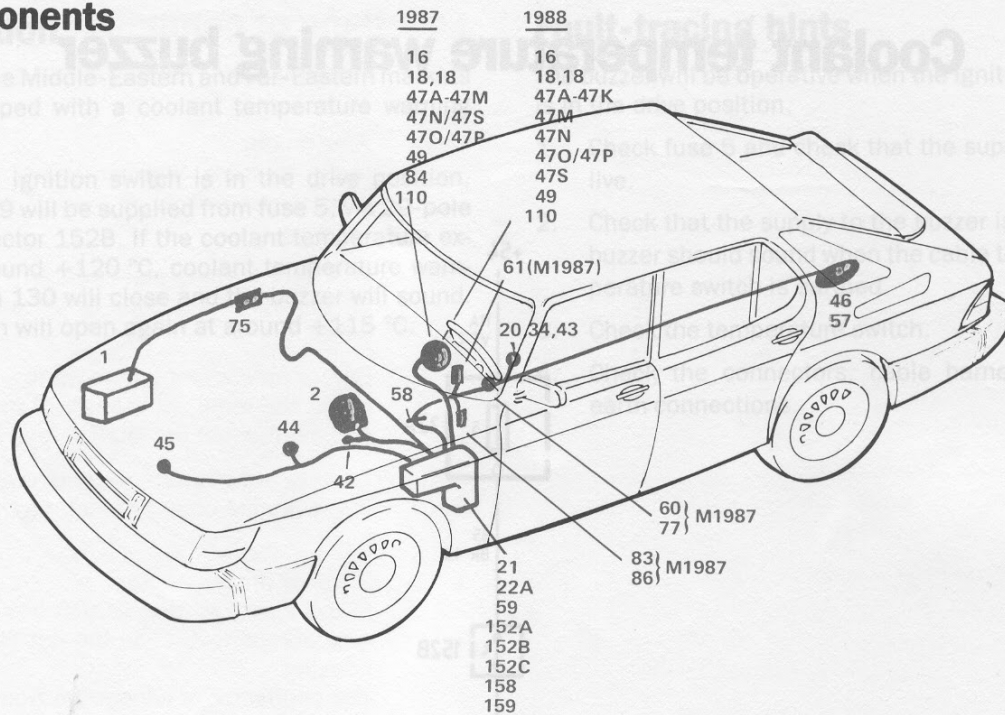
Tachometer (110)

See the description in the section entitled "Engine electronics, Ignition systems".

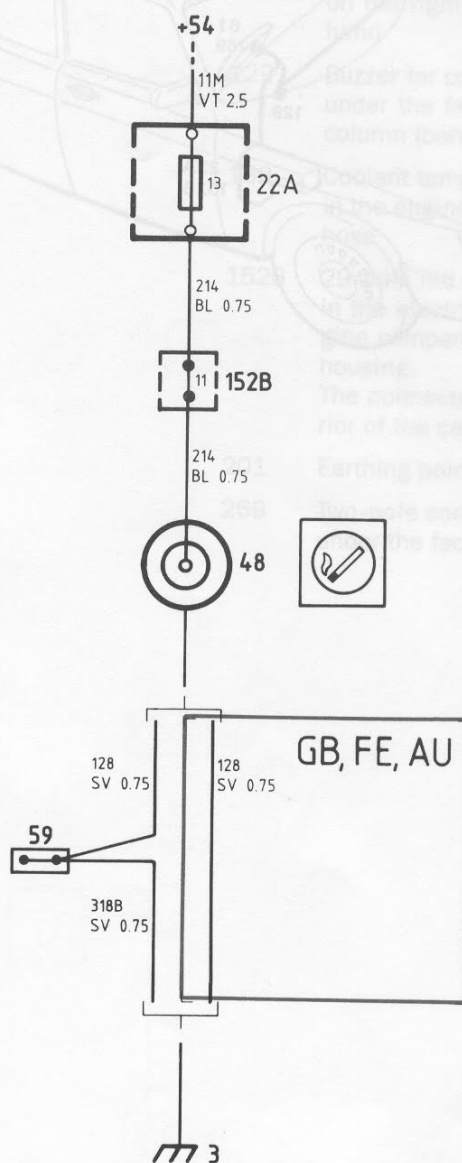
Locations of components

- | | | | |
|-----|--|------|---|
| 1 | Battery
on the right-hand side of the engine compartment | 47S | Passive seat-belt warning lamp (US: I8 Lambda, I16 Lambda) |
| 2 | Alternator
on the left-hand side of the engine | 49 | Clock |
| 3 | Earthing point in the facia | 57 | 3-pole connector
one in the luggage compartment, under the cover for the spare wheel
one under the back seat, on the left-hand side (US: I8 Lambda, I16 Lambda) |
| 7 | Earthing point, radiator cross-member | 58 | 12-pole connector
on the angle bracket, under the facia on the left-hand side (behind the knee shield) |
| 16 | Instrument lighting rheostat
in the combined instrument | 59 | 2-pole connector (Convertible)
in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 18 | Combined instrument lighting | 60 | Single-pole connector (auto.)
under the centre console, at the selector lever |
| 20 | Ignition switch
on the centre console between the front seats | 61 | Windscreen wiper stalk switch
on the right-hand side of the steering column |
| 21 | Ignition switch relay | 75 | Distribution block
in the engine compartment, on the right-hand side |
| 22A | Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 77 | Start inhibitor switch (auto.)
under the centre console, at the selector lever |
| 34 | Choke control switch
on the centre console between the front seats | 83 | Relay for intermittent operation of the windscreen wipers
under the facia, to the left of the steering column (behind the knee shield) |
| 42 | Brake warning switch
on the brake fluid reservoir | 84 | Diode for brake lamp test (US, CA, JP)
on the handbrake |
| 43 | Handbrake switch
under the plastic cover at the handbrake lever, between the seats | 86 | EGR selector
under the facia, to the left of the steering column (behind the knee shield) |
| 44 | Oil pressure transmitter
on the left-hand side of the engine block, above the oil filter | 110 | Tachometer
in the combined instrument |
| 45 | Coolant temperature transmitter
on the right-hand side of the thermostat | 117 | Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988) |
| 46 | Fuel level transmitter
in the fuel tank - the terminals are accessible from the luggage compartment | 152A | 29-pole white connector |
| 47A | Fuel level gauge | 152B | 29-pole red connector |
| 47B | Fuel reserve warning lamp | 152C | 29-pole black connector |
| 47C | Coolant temperature gauge | 158 | Negative distribution terminal |
| 47D | Oil pressure warning lamp | 159 | Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing |
| 47E | Charging warning lamp | 211 | Earthing point on the gearbox |
| 47F | Brake warning lamp | 257 | Earthing point, alternator bracket |
| 47G | Full beam warning lamp | | |
| 47H | Left-hand direction indicator warning lamp | | |
| 47I | Right-hand direction indicator warning lamp | | |
| 47J | Rear window heater warning lamp | | |
| 47K | Shift-up warning lamp (US, manual) | | |
| 47L | EXH warning lamp (1987 I8 Lambda: US, CA, JP, AU) | | |
| 47M | Handbrake warning lamp | | |
| 47N | Rear fog light warning lamp (SE, FI, EU, GB) | | |
| 47O | Choke warning lamp (C8) | | |
| 47P | CHECK ENGINE warning lamp (I16, I16 Lambda, T16, T16 Lambda) | | |

Components



Cigarette lighter

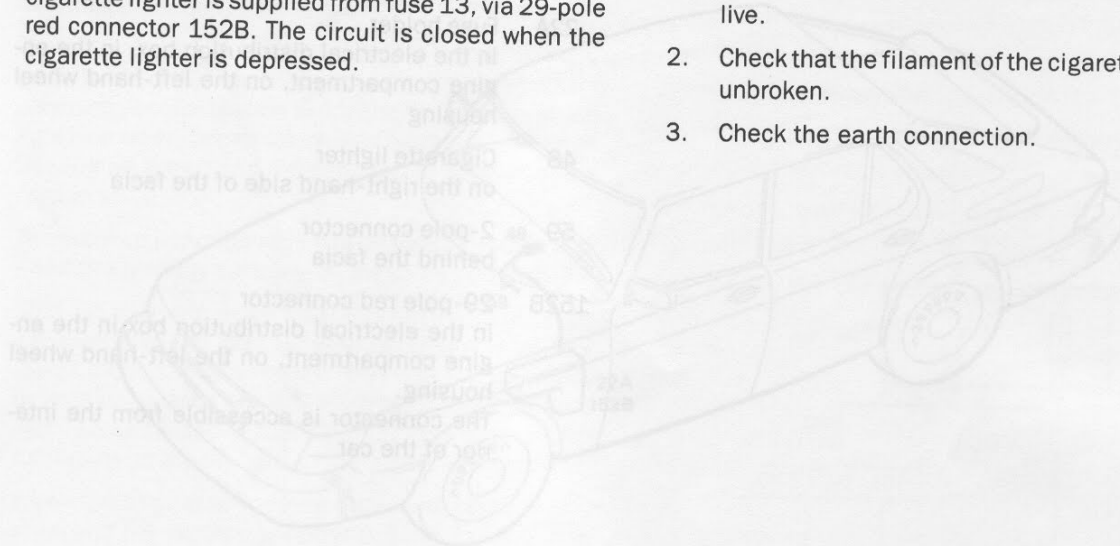


Operation

When the ignition switch is in the drive position, the cigarette lighter is supplied from fuse 13, via 29-pole red connector 152B. The circuit is closed when the cigarette lighter is depressed.

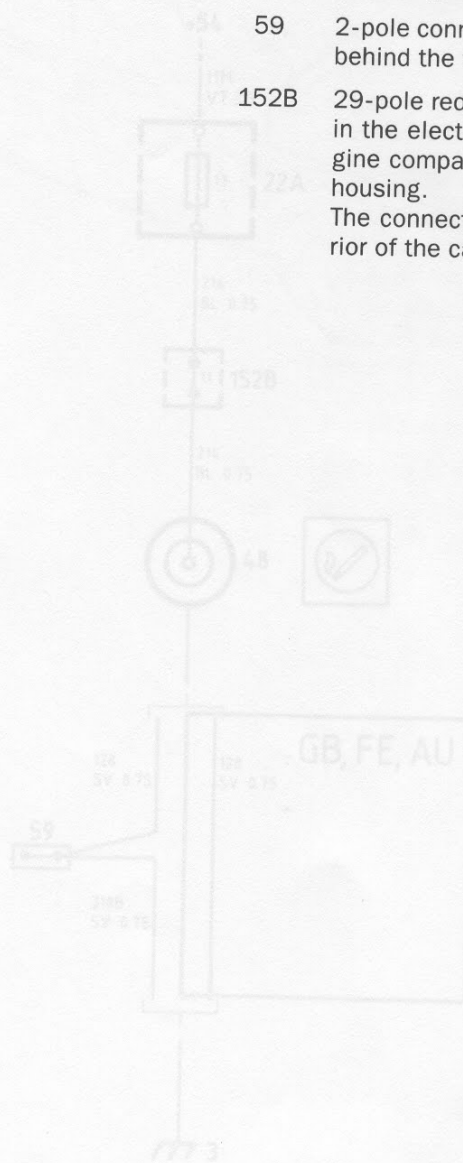
Fault-tracing hints

1. Check fuse 13 and check that the supply to it is live.
2. Check that the filament of the cigarette lighter is unbroken.
3. Check the earth connection.



Locations of components

- 3 Earthing point in the facia
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 48 Cigarette lighter
on the right-hand side of the facia
- 59 2-pole connector
behind the facia
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connector is accessible from the interior of the car



Components

The shift-up indicator is fitted to cars with manual transmissions delivered to the U.S.A. market.

Enables the driver to use the engine characteristics in the best possible manner, thus minimizing the fuel consumption. Indication is provided by a lamp which lights up when the driver should shift up when the engine speed and throttle are at certain values.

The shift-up indicator receives its supply when the ignition switch is in the drive position and the engine is running.

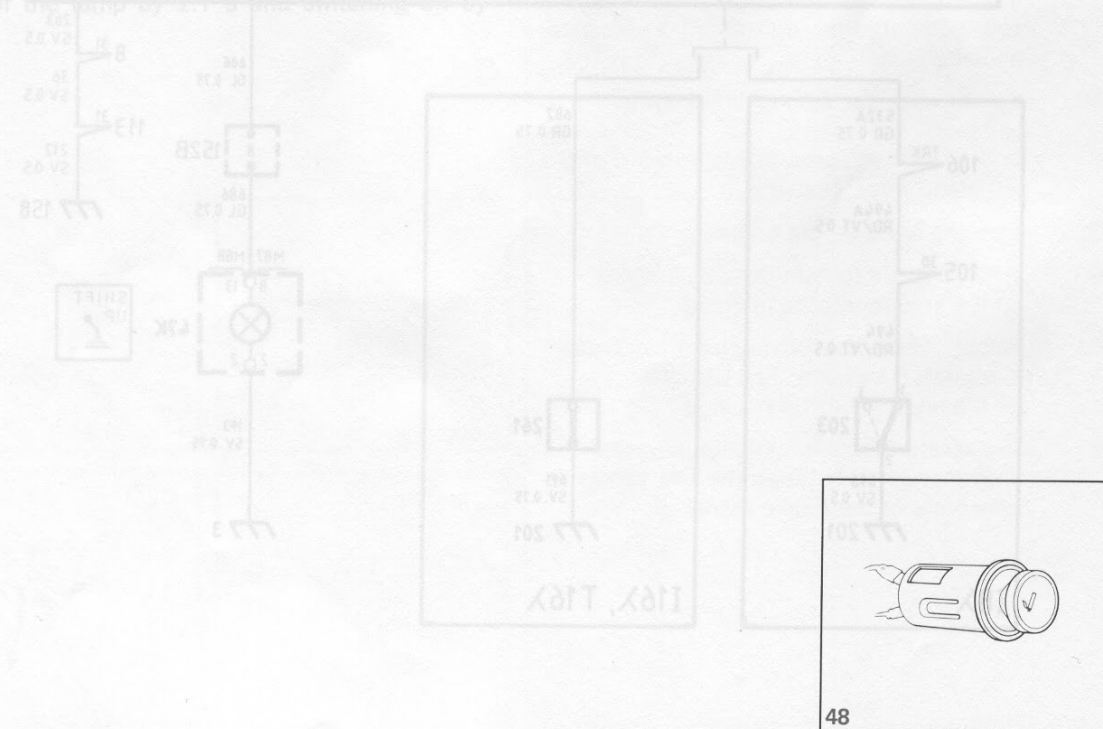
Shift-up indicator relay 201 receives information from the engine speed sensor 22A and 152B (1987 model) or from the ignition switch amplifier (1987 model) and 152B (1987 model) or from the ignition switch amplifier (1987 model) and 152B (1987 model) or from the ignition switch amplifier (1987 model) and 152B (1987 model).

When the engine speed is about 1500 rpm and the vacuum is about 0.3 bar, the combined instrument will light up.

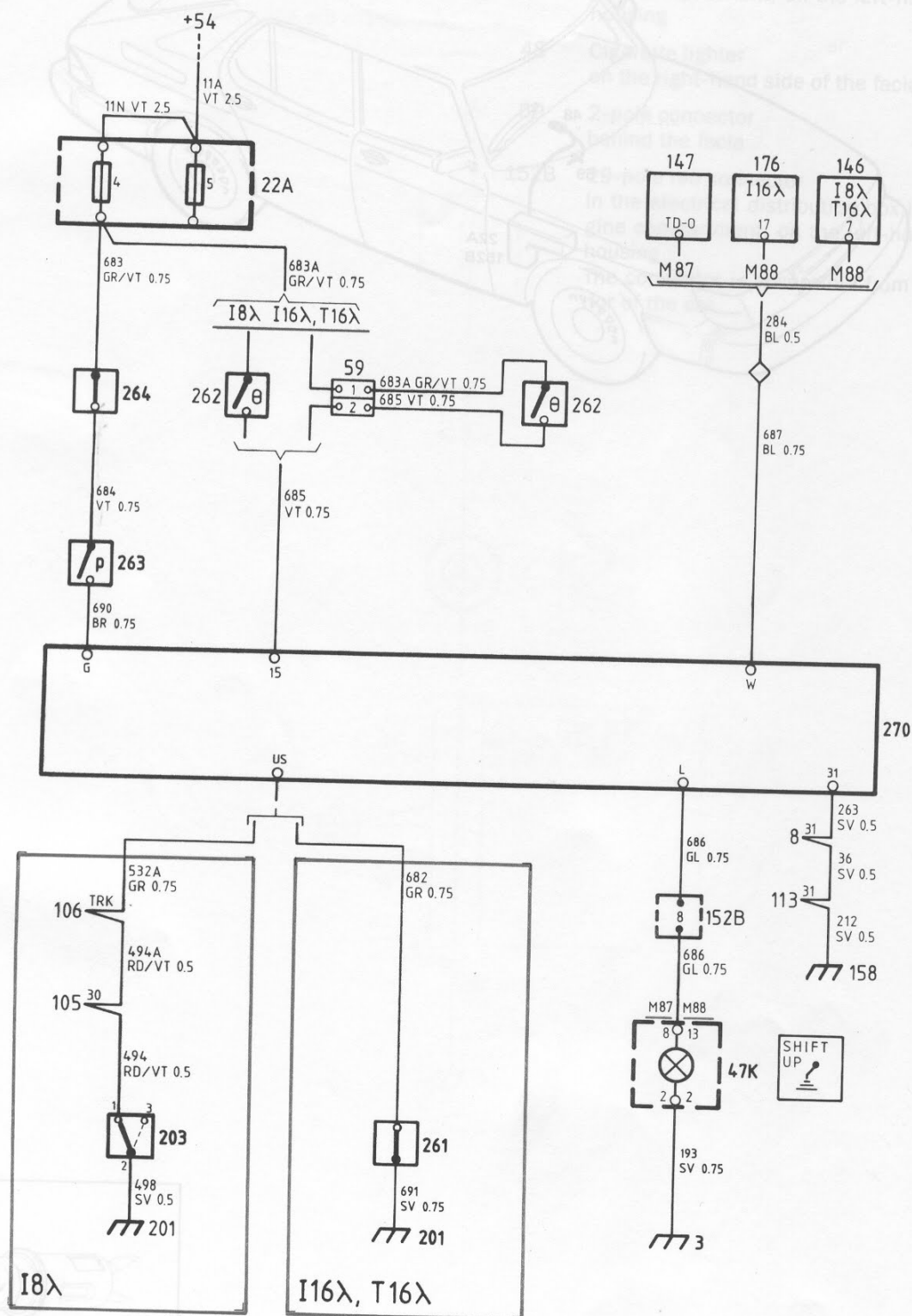
To avoid incorrect indications, the system is equipped with the following switches:

- Switch 264, which switches out the system when 5th gear is engaged.
- Temperature switch 262, which switches out the system when the engine temperature is below about +35 °C.
- Throttle contacts 203/201, which switch out the system when the throttle is in the rest position.

In order to avoid irritating flashing of the lamp on sudden changes in the engine loading, the relay includes a time-delay function which delays lighting-up of the lamp by 1.7 s and switching-off by 1.5 s.



Shift-up indicator



Operation

The shift-up indicator is fitted to cars with manual transmissions delivered to the U.S.A. market.

It enables the driver to use the engine characteristics in the best possible manner, thus minimising the fuel consumption. Indication is provided by a lamp which lights up when the driver should shift up, i.e. when the engine speed and throttle setting have attained certain values.

The shift-up indicator receives its supply from fuse 4 when the ignition switch is in the drive position.

Shift-up indicator relay 270 receives information on the engine speed from ignition pulse amplifier 147 (1987 model), control unit 176 (1988 I16 Lambda), or ignition system amplifier 146 (1988 I8 Lambda and T16 Lambda). Vacuum switch 263 provides information on the vacuum in the intake manifold.

When the engine speed has exceeded 1800 ± 100 r/min and the vacuum is about 0.3 bar, lamp 47K in the combined instrument will light up.

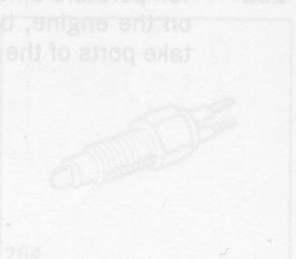
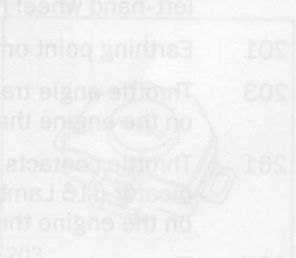
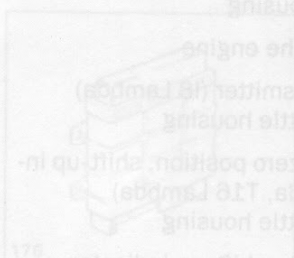
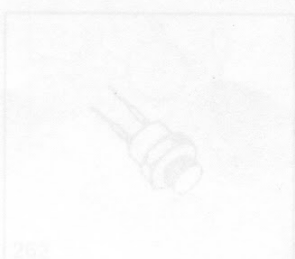
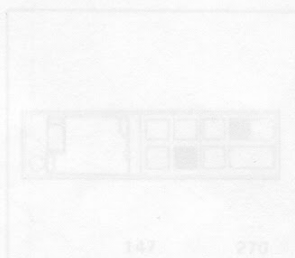
To avoid incorrect indications, the system is equipped with the following switches:

- Switch 264, which switches out the system when 5th gear is engaged.
- Temperature switch 262, which switches out the system when the engine temperature is below about $+35^\circ\text{C}$.
- Throttle contacts 203/261, which switch out the system when the throttle is in the rest position

In order to avoid irritating flashing of the lamp on sudden changes in the engine loading, the relay includes a time-delay function which delays lighting-up of the lamp by 1.7 s and switching-off by 1.5 s.

Fault-tracing hints

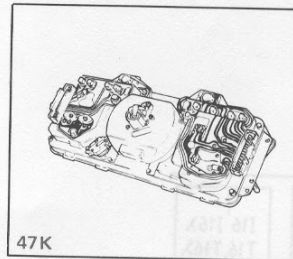
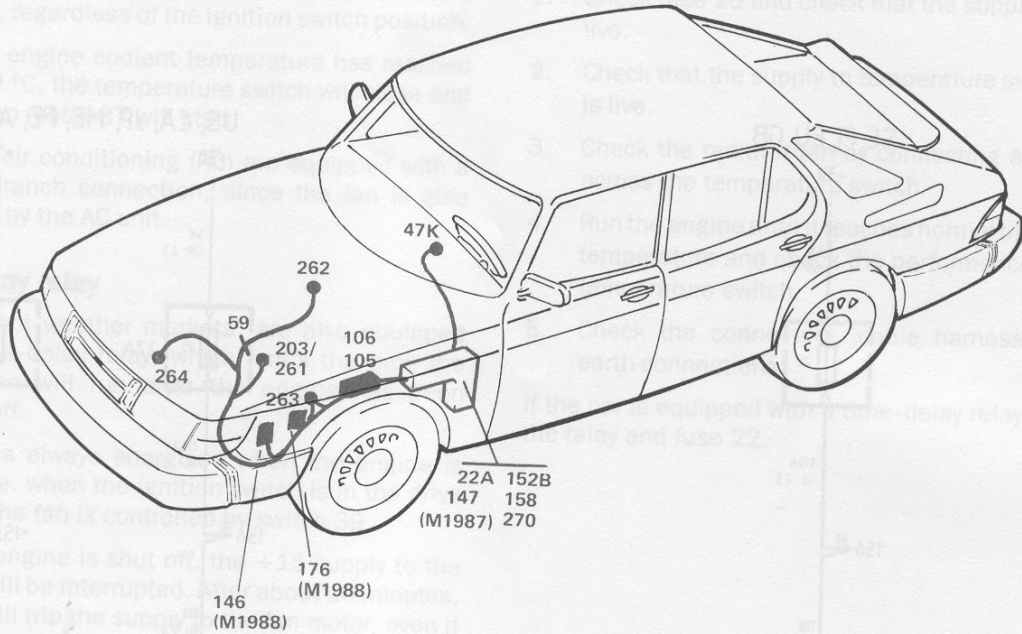
1. Turn the ignition switch to the drive position and check fuse 4. Check also that the supply to the fuse is live.
2. Check shift-up warning lamp 47K.
3. Check that the switches in the system close and open the circuit under the specified conditions.
4. Check that ignition pulses are received by shift-up indicator relay 270.
5. Check the connectors and earth connections.



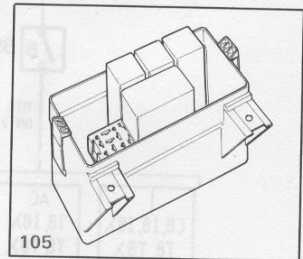
Locations of components

- 3 Earthing point in the fascia
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 47K Shift-up warning lamp
in the combined instrument
- 59 2-pole connector (I16 Lambda, T16 Lambda)
on the clutch housing
- 105 Engine speed relay (I8 Lambda)
in the Lambda relay box, at the left-hand front wheel housing
- 106 Time-delay relay (I8 Lambda)
in the Lambda relay box, at the left-hand front wheel housing
- 146 Amplifier for the electronic ignition system (I8 Lambda, T16 Lambda)
in the engine compartment, on the left-hand wheel housing
- 147 Ignition pulse amplifier
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connector is accessible from the interior of the car
- 158 Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 176 Control unit for EZK ignition system (I16 Lambda)
in the engine compartment, forward of the left-hand wheel housing
- 201 Earthing point on the engine
- 203 Throttle angle transmitter (I8 Lambda)
on the engine throttle housing
- 261 Throttle contacts, zero position, shift-up indicator (I16 Lambda, T16 Lambda)
on the engine throttle housing
- 262 Temperature switch, shift-up indicator
on the engine, between the two centre intake ports of the intake manifold
- 263 Vacuum switch, shift-up indicator
in the engine compartment, at the left-hand front wheel housing
- 264 Switch (5-speed gearbox)
in the front side cover of the gearbox
- 270 Shift-up indicator relay
in the electrical distribution box in the engine compartment, on the left-hand wheel housing

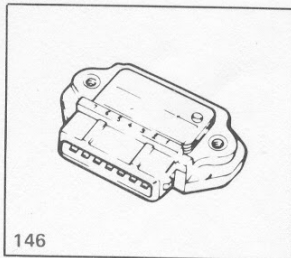
Components



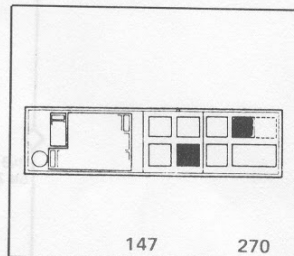
47K



105

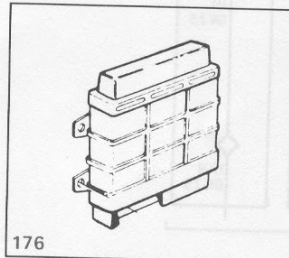


146

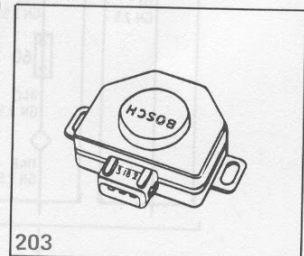


147

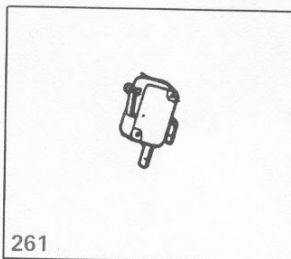
270



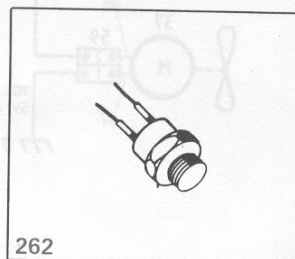
176



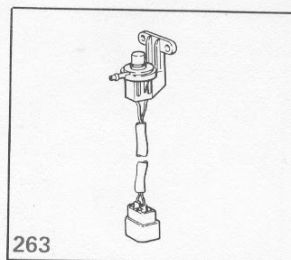
203



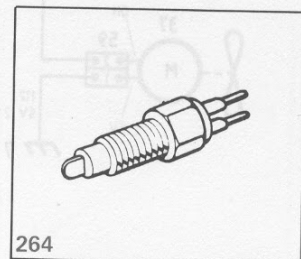
261



262



263



264



Operation

The supply is taken from fuse 25 to temperature switch 39, regardless of the ignition switch position.

When the engine coolant temperature has reached around 92 °C, the temperature switch will close and radiator fan motor 37 will start.

Cars with air conditioning (AC) are equipped with a crimped branch connection, since the fan is also controlled by the AC unit.

Time-delay relay

Cars for "hot-weather markets" are also equipped with a time-delay relay, which limits the time the radiator fan will run after the engine has been switched off.

Relay 26 is always energised when the engine is running, i.e. when the ignition switch is in the drive position. The fan is controlled by switch 39.

When the engine is shut off, the +15 supply to the relay coil will be interrupted. After about 10 minutes, the relay will trip the supply to the fan motor, even if temperature switch 39 is still closed.

Cars for SE, FI, EU and GB markets

On these markets, the wiring for the AC is not fitted as standard to cars with I8 and T8 engines. An AC cable harness must be fitted when the AC is installed.

Fault-tracing hints

1. Check fuse 25 and check that the supply to it is live.
2. Check that the supply to temperature switch 39 is live.
3. Check the radiator fan by connecting a jumper across the temperature switch.
4. Run the engine until it reaches normal operating temperature and check the performance of the temperature switch.
5. Check the connectors, cable harnesses and earth connections.

If the car is equipped with a time-delay relay, check the relay and fuse 22.



Locations of components

- 7 Earthing point, radiator cross-member
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 26 Time delay relay for the radiator fan
in the engine compartment, at the front of the left-hand wheel housing member
- 37 Radiator fan motor
at the front of the engine compartment
- 39 Temperature switch for radiator fan
on the left-hand side of the radiator
- 59 2-pole connector
at the radiator fan motor
- 60 Single-pole connector (AC)
in the engine compartment, behind the radiator
- 93 Earthing point left-hand wheel housing member
- 156 Relay for the AC compressor
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 159 Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing

Components

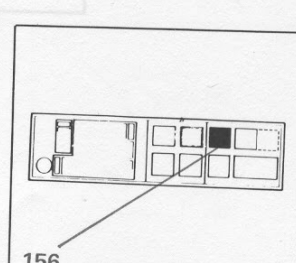
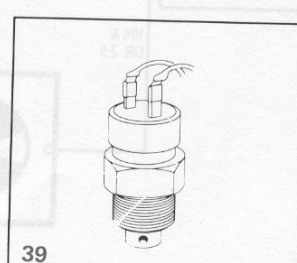
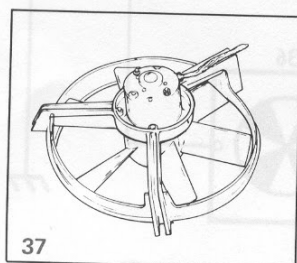
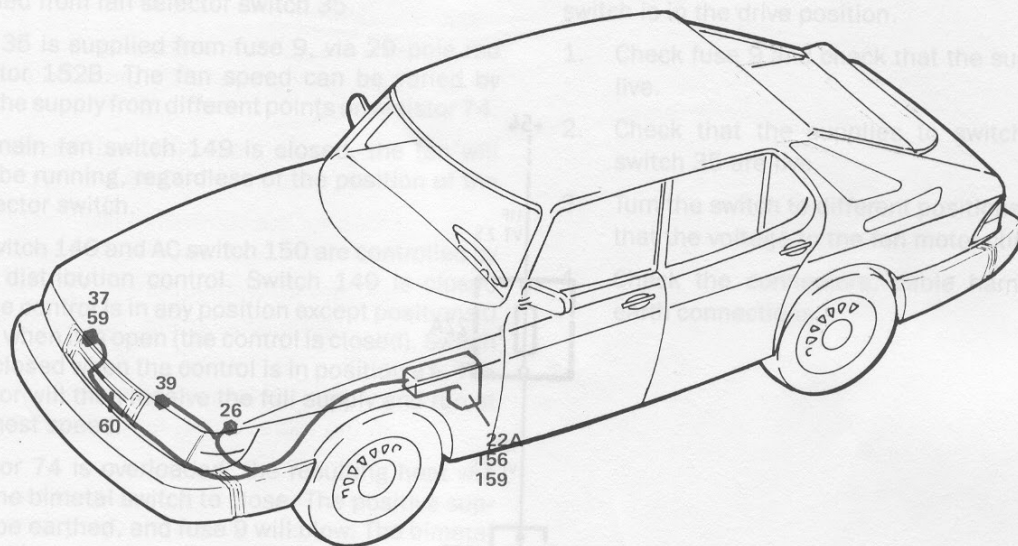
Ventilation fan motor 36 has three speeds controlled from fan selector switch 35.

Switch 36 is supplied from fuse 9, via 20-amp connector 152B. The fan speed can be controlled by taking the supply from different points on the fan selector switch.

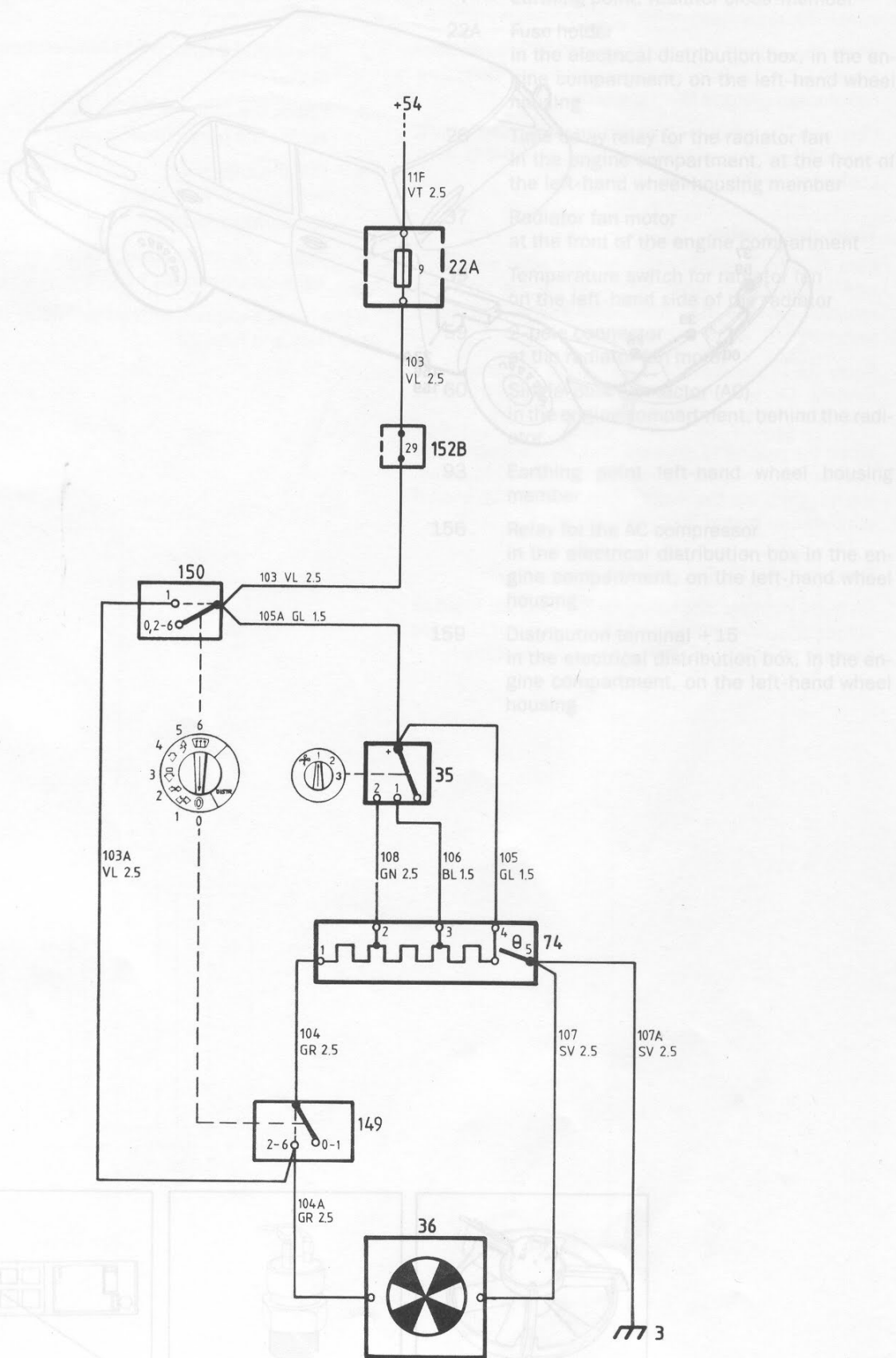
When main fan switch 149 is closed, the fan will always be running, regardless of the position of the fan selector switch.

Main switch 149 and AC switch 150 are controlled by the air distribution control. Switch 149 is closed when the fan selector switch is in position 1, 2, 3 and 4. Switch 150 is closed when the fan selector switch is in position 1. The fan motor will run at the highest speed when the fan selector switch is in position 1.

If resistor 74 is closed, the fan motor will run at the highest speed. If resistor 74 is open, the fan motor will run at the lowest speed. The fan motor will be earthed, and the fan selector switch will open when it has cooled.



Ventilation fan



Operation

Ventilation fan motor 36 has three speeds and is controlled from fan selector switch 35.

Switch 35 is supplied from fuse 9, via 29-pole red connector 152B. The fan speed can be varied by taking the supply from different points on resistor 74.

When main fan switch 149 is closed, the fan will always be running, regardless of the position of the fan selector switch.

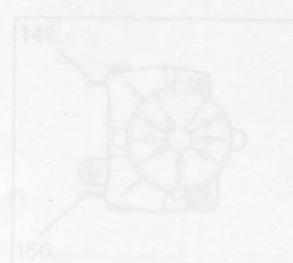
Main switch 149 and AC switch 150 are controlled by the air distribution control. Switch 149 is closed when the control is in any position except positions 0 and $\blacklozenge$, when it is open (the control is closed). Switch 150 is closed when the control is in position $\blacklozenge$. The fan motor will then receive the full supply and run at the highest speed.

If resistor 74 is overloaded, the resulting heat will cause the bimetal switch to close. The positive supply will be earthed, and fuse 9 will blow. The bimetal switch will open when it has cooled.

Fault-tracing hints

The ventilation fan will be operative when the ignition switch is in the drive position.

1. Check fuse 9 and check that the supply to it is live.
2. Check that the supplies to switch 150 and switch 35 are live.
3. Turn the switch to different positions and check that the voltage to the fan motor changes.
4. Check the connectors, cable harnesses and earth connections.



Locations of components

- 3 Earthing point in the facia
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 35 Selector switch for the ventilation fan in the centre of the facia
- 36 Motor for the ventilation fan
behind the right-hand speaker grille
- 74 Resistor for ventilation fan
accessible under the left-hand speaker grille
- 149 Main switch for ventilation fan
on the facia, in the air distribution control (upper contact)
- 150 Air distribution switch, AC position
on the facia, in the air distribution control (lower contact)
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connector is accessible from the interior of the car

Components

Certain components are common to all models (AC). For a complete description of the wiring for the lighting of switches on cars for the US, CA and other markets, see the section entitled "Lighting".

Compressor and radiator fan

The AC can be switched on and off by means of switch 169, which is supplied from fuse 29. A 29-pole black connector 152C, when depressed, a lamp built into the button will light up with full intensity. (When the switch is depressed, the lamp is supplied from the inductive contact of the reostat).

Compressor 171 is connected via relay 150. The relay is supplied from fuse 25. The following conditions are satisfied:

- Pressure switch 168 is closed, i.e. the refrigerant pressure is at least 2.8 bar.
- Anti-freeze thermostat (cycling clutch contact) 171 is closed, i.e. the ambient temperature is at least about $+6^{\circ}\text{C}$.

When the relay is energised, the compressor will be supplied only if temperature switch 168 is closed. (The switch will open if the engine temperature should exceed around $+115^{\circ}\text{C}$).

Diode 173, which is connected in parallel with the compressor, reduces the voltage transients at the instant when the compressor is switched off.

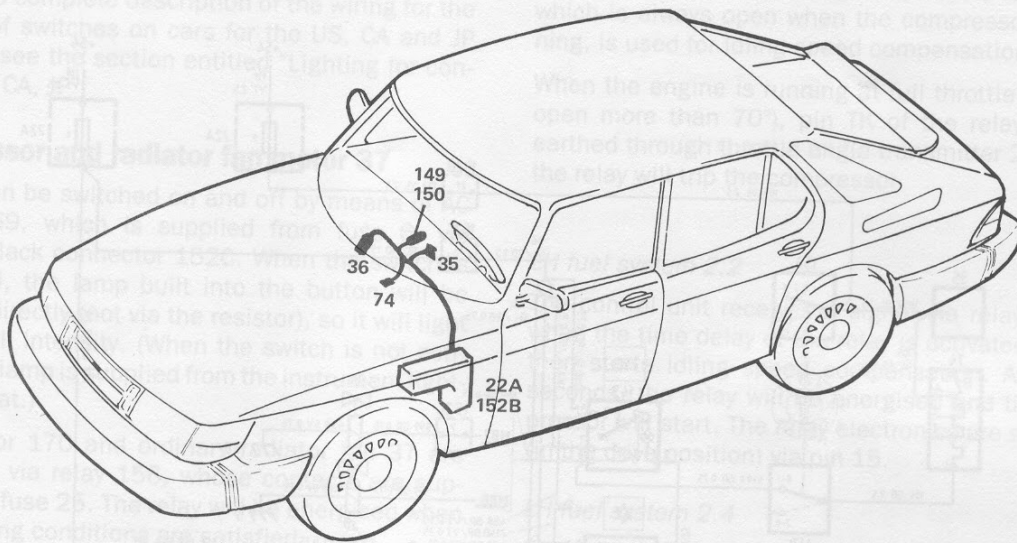
Delayed connection when starting

Relay 150 is equipped with two relay functions. One of them is activated whenever the engine is being started. Ignition switch 200 (in the start position) supplies pin 50 and if switch 169 is then depressed, the energising of the relay and thus starting of the compressor will be delayed for around 20 seconds, to avoid an excessive load on the battery.

Idling speed compensation and start-up compensation

There are two systems, i.e. one for cars equipped with the 16-valve engine and the other for cars with the 8-valve engine.

On cars with the 16-valve engine, idling speed adjustment motor 272, which is controlled by control unit 200 for the LH fuel injection system, adjusts the idling speed compensation. To prevent the engine speed from falling when the compensation is adjusted, the engine idling speed is controlled by the electronics is delayed, to give the engine time to adjust the idling speed.



which is used when the compressor is running. It is used for compensation.

When the engine is running, the throttle (throttle) open more than 70%, the relay will be earthed through the relay pin 203, and the relay will be energised.

After 0.5 seconds, the relay will be energised, and the compressor will start. The relay electronics are supplied in the 0.5 position via pin 15.

Relay system 24

Relay 200 receives a signal via relay pin 87B. When the relay is energised, it then starts idling speed compensation. The relay electronics are supplied in the 0.5 position via pin 15.

AC radiator fan 172

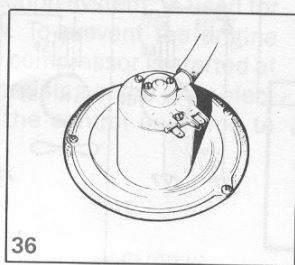
Extra radiator fan 172 for the AC is connected via relay 150 and is supplied from fuse 25.

The relay coil is supplied from the contacts of relay 150 and from pressure switch 168. The AC radiator fan thus runs when AC switch 169 is depressed and pressure switch 168 is closed.

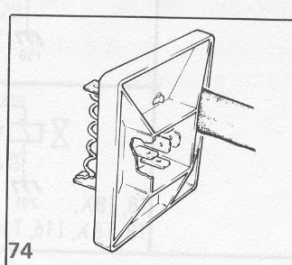
Recirculation valve 38

Recirculation valve 38, which controls the recirculation damper, will be switched on when recirculation switch 143 is depressed. The switch is supplied from fuse 6. When the switch is depressed, the lamp built into the switch will light up with full intensity.

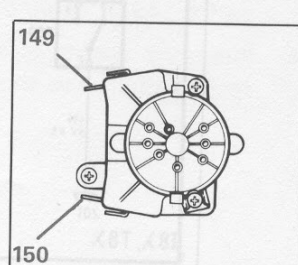
The recirculation valve is also connected across main switch 143, when the air distribution control is in position 0 or 1 (regardless of the position of switch 143). The supply is taken from fuse 9, via ventilation resistor 74.



36

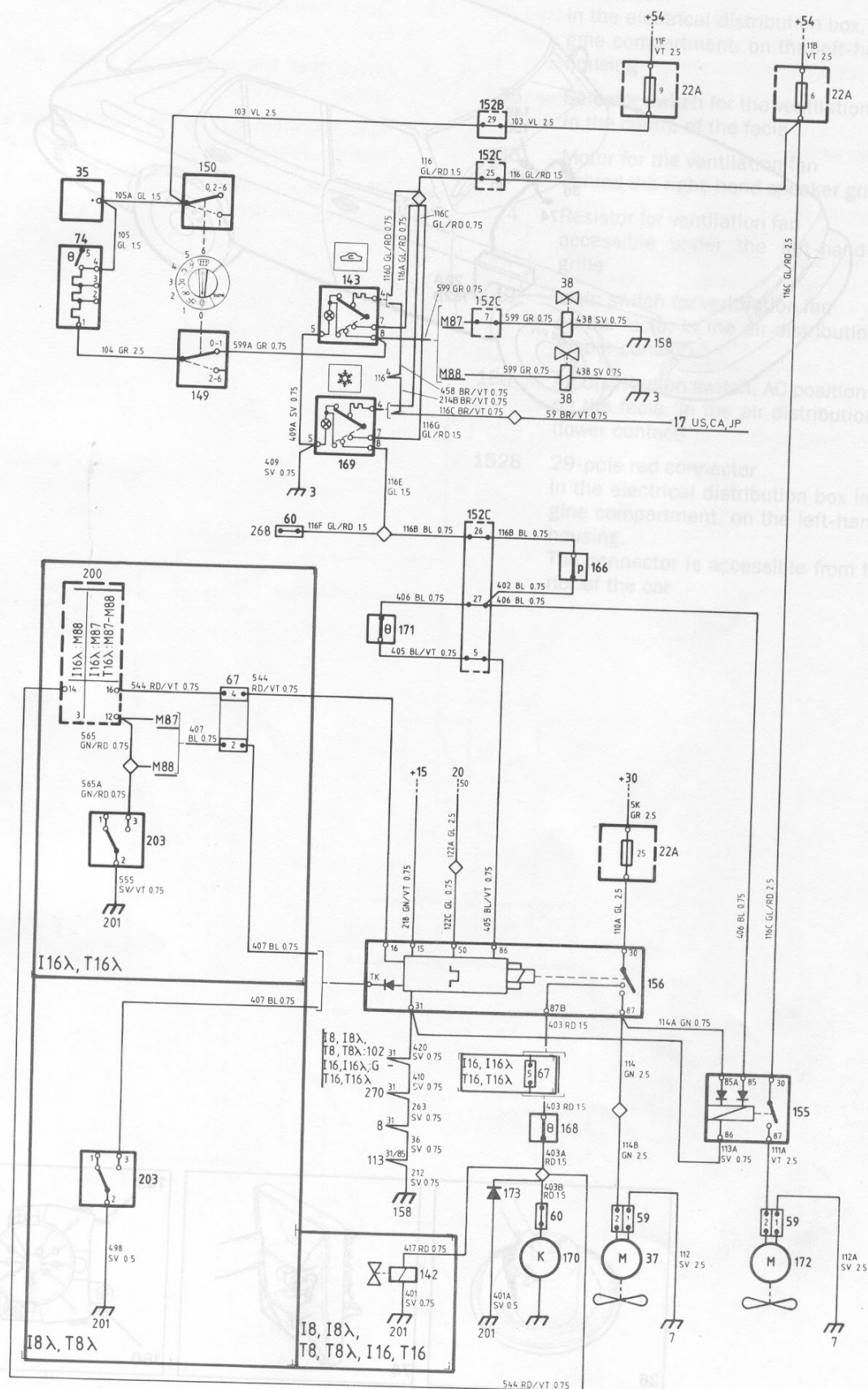


74



150

Air Conditioner (AC) with time-delay relay



Operation

Certain cars are equipped with an Air Conditioner (AC). For a complete description of the wiring for the lighting of switches on cars for the US, CA and JP markets, see the section entitled "Lighting for controls, US, CA, JP".

Compressor and radiator fan motor 37

The AC can be switched on and off by means of AC switch 169, which is supplied from fuse 6, via 29-pole black connector 152C. When the switch is depressed, the lamp built into the button will be supplied directly (not via the resistor), so it will light up with full intensity. (When the switch is not activated, the lamp is supplied from the instrument lighting rheostat.)

Compressor 170 and ordinary radiator fan 37 are connected via relay 156, whose contacts are supplied from fuse 25. The relay will be energised when the following conditions are satisfied:

- Pressure switch 166 is closed, i.e. the refrigerant pressure is at least 2.8 bar.
- Anti-freeze thermostat (cycling clutch contact) 171 is closed, i.e. the ambient temperature is at least about +6 °C.

When the relay is energised, the compressor will be supplied only if temperature switch 168 is closed. (The switch will open if the engine temperature should exceed around +115 °C.)

Diode 173, which is connected in parallel with the compressor, reduces the voltage transients at the instant when the compressor is switched off.

Delayed connection when starting

Relay 156 is equipped with two time delay functions. One of them is activated whenever the engine is being started. Ignition switch 20 (in the start position) supplies pin 50, and if switch 169 is then depressed, the energising of the relay and thus starting of the compressor will be delayed for around 10 seconds, to avoid an excessive load on the battery.

Idling speed compensation and cut-out at full load

There are two systems, i.e. one for cars equipped with the 16-valve engine and the other for cars with the 8-valve engine.

On cars with the 16-valve engine, idling speed adjustment motor 272, which is controlled by control unit 200 for the LH fuel injection system, is used for idling speed compensation. To prevent the engine speed from falling when the compressor is started at engine idling speed, the energising of the relay electronics is delayed, to give the control unit time to adjust the idling speed.

On cars with the 8-valve engine, solenoid valve 142, which is always open when the compressor is running, is used for idling speed compensation.

When the engine is running at full throttle (throttle open more than 70°), pin TK of the relay will be earthed through throttle angle transmitter 203, and the relay will trip the compressor.

LH fuel system 2.2

The control unit receives a signal via relay pin 16 when the time delay of the relay is activated, and it then starts idling speed compensation. After 0.6 seconds, the relay will be energised and the compressor will start. The relay electronics are supplied (in the drive position) via pin 15.

LH fuel system 2.4

Control unit 200 receives a signal via relay pin 87B when the relay is energised, and it then starts idling speed compensation. The relay electronics are supplied (in the drive position) via pin 15.

AC radiator fan 172

Extra radiator fan 172 for the AC is connected via relay 155 and is supplied from fuse 6.

The relay coil is supplied from the contacts of relay 156 and from pressure switch 166. The AC radiator fan thus runs when AC switch 169 is depressed and pressure switch 166 is closed.

Recirculation valve 38

Recirculation valve 38, which controls the recirculation damper, will be switched on when recirculation switch 143 is depressed. The switch is supplied from fuse 6. When the switch is depressed, the lamp built into the switch will light up with full intensity.

The recirculation valve is also connected across main switch 149, when the air distribution control is in position 0 or 4 (regardless of the position of switch 143). The supply is taken from fuse 9, via ventilation fan resistor 74.

Fault-tracing hints

As a general rule, the supply to the unit is live when the ignition switch is in the drive position. If none of the components are faulty, check the cable harnesses, connectors and earth connections.

Compressor and radiator fan motor 37

1. Check fuses 6 and 25 and check that the supplies to AC switch 169 and relay 156 are live.
2. Press the AC switch. Measure the voltage across pressure switch 166 (the pressure switch should be closed). Note that refrigerant will spray out when the pressure switch is disconnected. Caution: Risk of frostbite.
3. Check cycling clutch contact 171. (It should close at $+6^{\circ}\text{C}$.)
4. Check that the relay is energised and that the relay contacts (87 and 87A) are live. If not, check that the coil/electronics are being supplied from thermostat 171 and from the $+15$ distribution terminal. When the relay is energised, terminal 16 should be live. At full throttle, terminal TK should be earthed.
5. Check that the supplies to the compressor and the radiator fan are live. (Temperature switch 168 should be closed.)

AC radiator fan 172

1. Check fuse 6 and check that the supply to the AC switch and to relay 155 is live.
2. Press the AC switch. Measure the voltage across pressure switch 166 (the pressure switch should be closed). Note that refrigerant will spray out when the pressure switch is disconnected. Caution: Risk of frostbite.
3. Check that relay 155 is being energised and that the supply to the AC radiator fan is live.

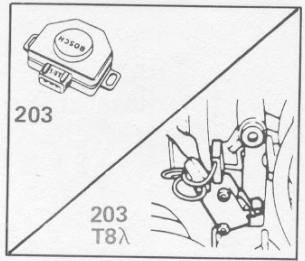
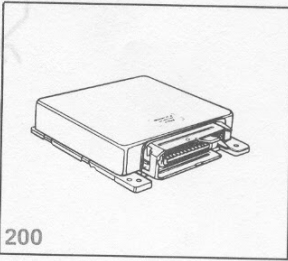
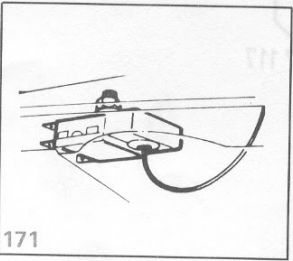
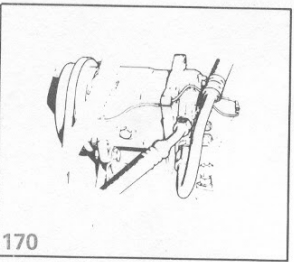
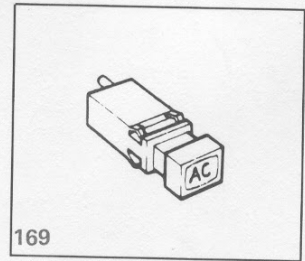
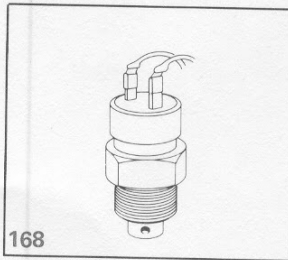
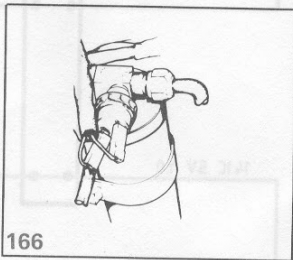
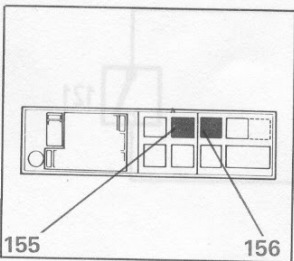
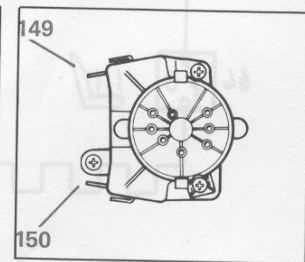
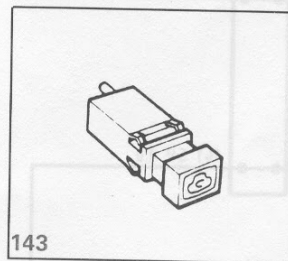
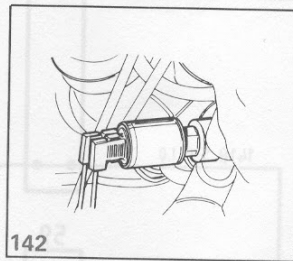
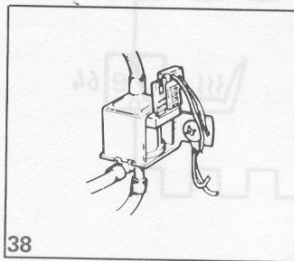
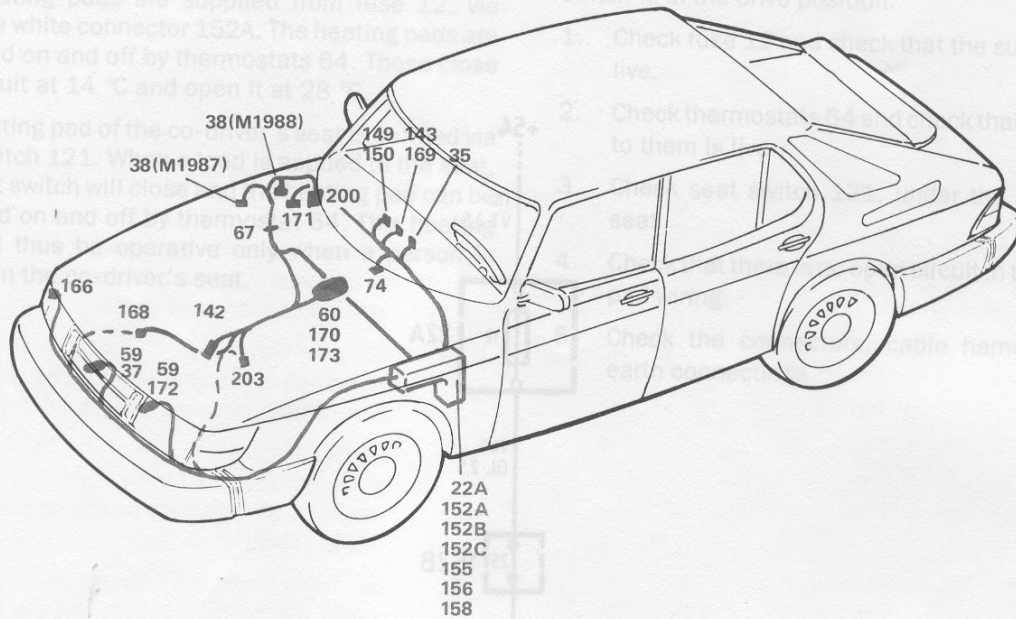
Recirculation

1. Check fuse 6 and check that the supply to recirculation switch 143 is live.
2. Press the switch and check that the recirculation valve is activated.
3. Check fuse 9 and check that the supply to main switch 149 in the air distribution control is live.
4. When the control is in position 0 or $\blacklozenge$, the recirculation valve should be activated.

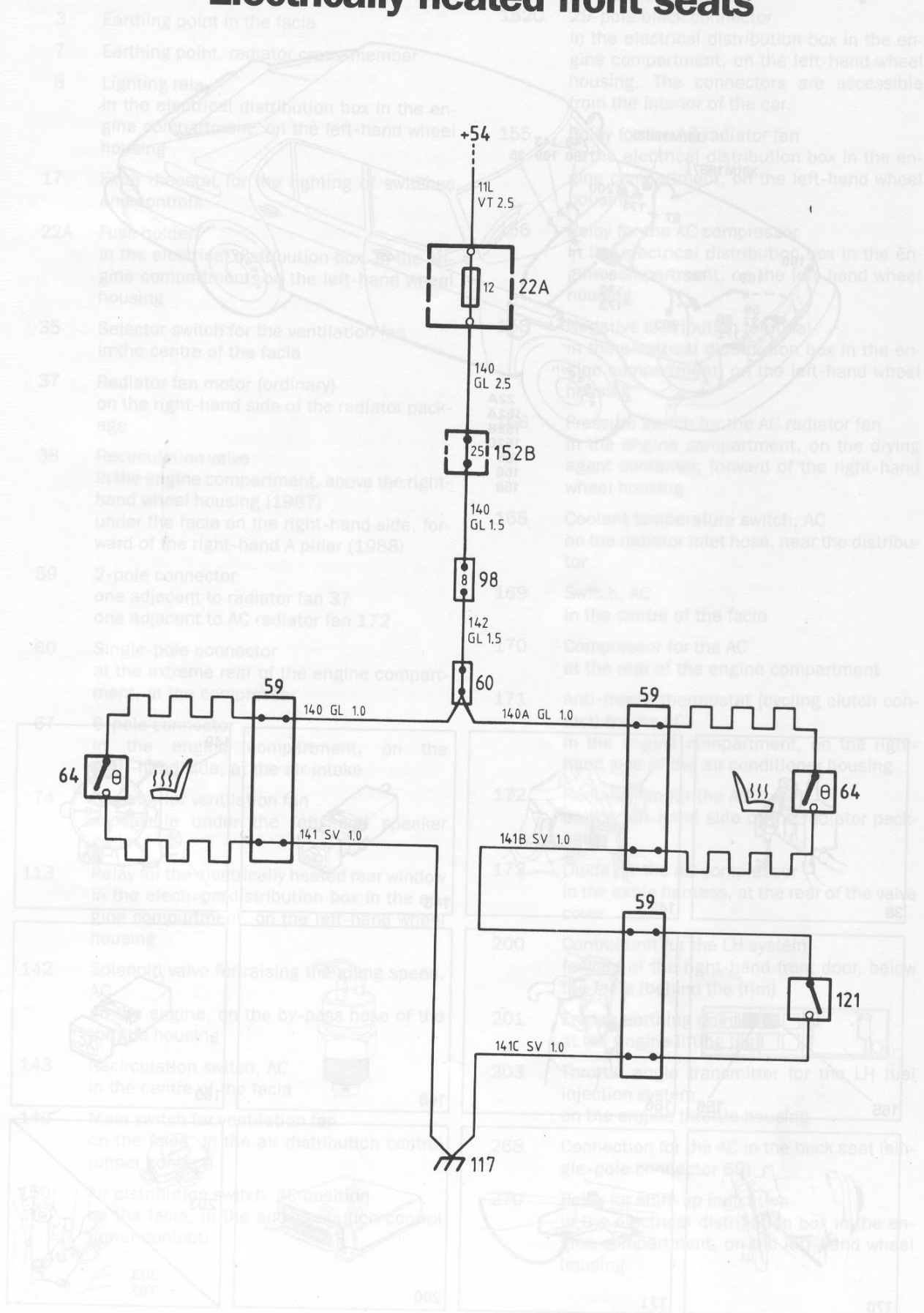
Locations of components

- | | | | |
|-----|--|------|---|
| 3 | Earthing point in the facia | 152B | 29-pole red connector |
| 7 | Earthing point, radiator cross-member | 152C | 29-pole black connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car. |
| 8 | Lighting relay in the electrical distribution box in the engine compartment, on the left-hand wheel housing | 155 | Relay for the AC radiator fan in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 17 | Extra rheostat for the lighting of switches and controls | 156 | Relay for the AC compressor in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 22A | Fuse holder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 158 | Negative distribution terminal in the electrical distribution box in the engine compartment, on the left-hand wheel housing |
| 35 | Selecter switch for the ventilation fan in the centre of the facia | 166 | Pressure switch for the AC radiator fan in the engine compartment, on the drying agent container, forward of the right-hand wheel housing |
| 37 | Radiator fan motor (ordinary) on the right-hand side of the radiator package | 168 | Coolant temperature switch, AC on the radiator inlet hose, near the distributor |
| 38 | Recirculation valve in the engine compartment, above the right-hand wheel housing (1987) under the facia on the right-hand side, forward of the right-hand A pillar (1988) | 169 | Switch, AC in the centre of the facia |
| 59 | 2-pole connector one adjacent to radiator fan 37 one adjacent to AC radiator fan 172 | 170 | Compressor for the AC at the rear of the engine compartment |
| 60 | Single-pole connector at the extreme rear of the engine compartment, at the compressor | 171 | Anti-freeze thermostat (cycling clutch contact) for the AC in the engine compartment, on the right-hand side of the air conditioner housing |
| 67 | 6-pole connector in the engine compartment, on the right-hand side, at the air intake | 172 | Radiator fan for the AC on the left-hand side of the radiator package |
| 74 | Resistor for ventilation fan accessible under the left-hand speaker grille | 173 | Diode for the AC compressor in the cable harness, at the rear of the valve cover |
| 113 | Relay for the electrically heated rear window in the electrical distribution box in the engine compartment, on the left-hand wheel housing | 200 | Control unit for the LH system forward of the right-hand front door, below the facia (behind the trim) |
| 142 | Solenoid valve for raising the idling speed, AC on the engine, on the by-pass hose of the throttle housing | 201 | Engine earthing point at the engine lifting lug |
| 143 | Recirculation switch, AC in the centre of the facia | 203 | Throttle angle transmitter for the LH fuel injection system on the engine throttle housing |
| 149 | Main switch for ventilation fan on the facia, in the air distribution control (upper contact) | 268 | Connection for the AC in the back seat (single-pole connector 60) |
| 150 | Air distribution switch, AC position on the facia, in the air distribution control (lower contact) | 270 | Relay for shift-up indication in the electrical distribution box in the engine compartment, on the left-hand wheel housing |

Components



Electrically heated front seats



Operation

Both front seats of the car are electrically heated.

The heating pads are supplied from fuse 12, via 29-pole white connector 152A. The heating pads are switched on and off by thermostats 64. These close the circuit at 14 °C and open it at 28 °C.

The heating pad of the co-driver's seat is earthed via seat switch 121. When a load is applied to the seat, the seat switch will close and the heating pad can be switched on and off by thermostat 64. This heating pad will thus be operative only when a person is seated in the co-driver's seat.

Fault-tracing hints

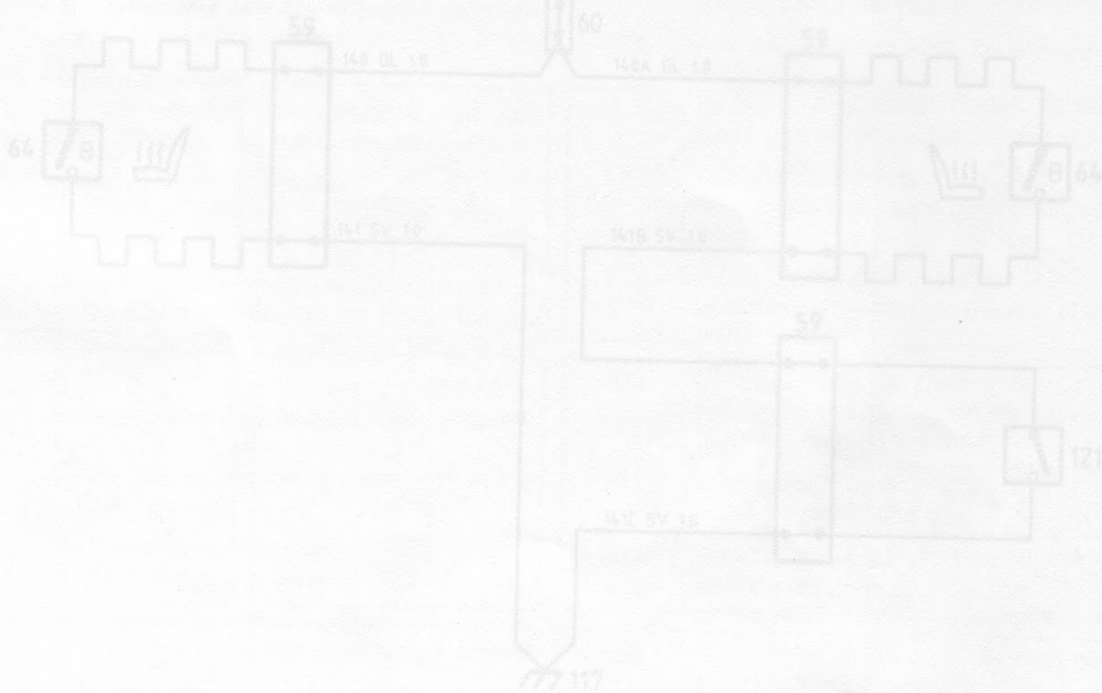
The heating pads will be operative when the ignition switch is in the drive position.

1. Check fuse 12 and check that the supply to it is live.
2. Check thermostats 64 and check that the supply to them is live.
3. Check seat switch 121, under the co-driver's seat.
4. Check that there is no open circuit in the heating pad wiring.
5. Check the connectors, cable harnesses and earth connections.

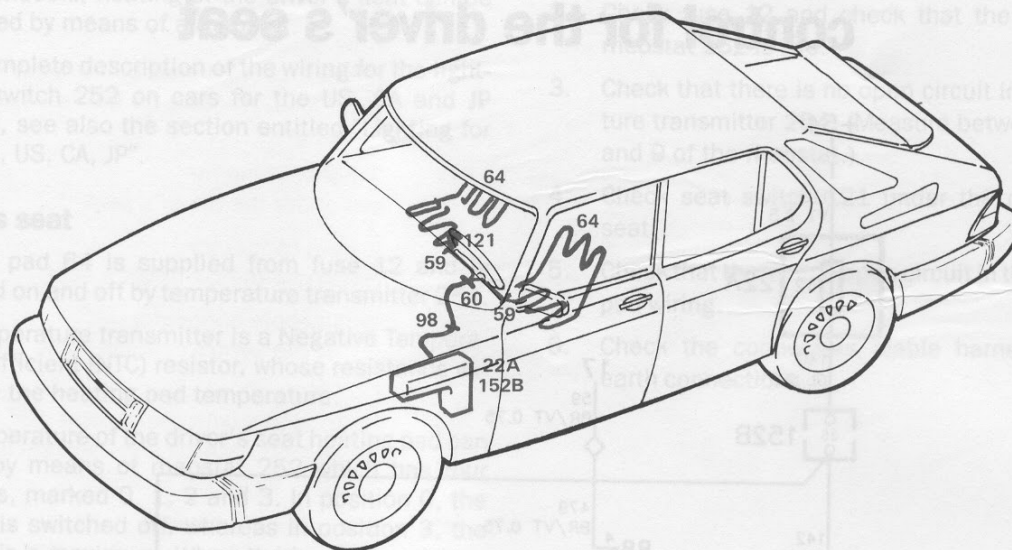


Locations of components

- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 59 2-pole connector
one under each front seat
- 60 Single-pole connector
under the centre console, near the ignition switch
- 64 Heating pad with thermostat
in the seat cushion and backrest of the driver's and co-driver's seats
- 98 10-pole connector
to the left of the steering column, behind the knee shield below the facia
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 121 Seat switch for the heating pad
under the co-driver's seat, on the left-hand side
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car.



Components



Driver's seat

Heating pad 64 is supplied from fuse 152B via switch 252 on cars for the US and JP markets, see also the section on temperature controls, US, CA, JP.

The temperature transmitter is a Negative Temperature Coefficient (NTC) resistor, whose resistance varies with temperature.

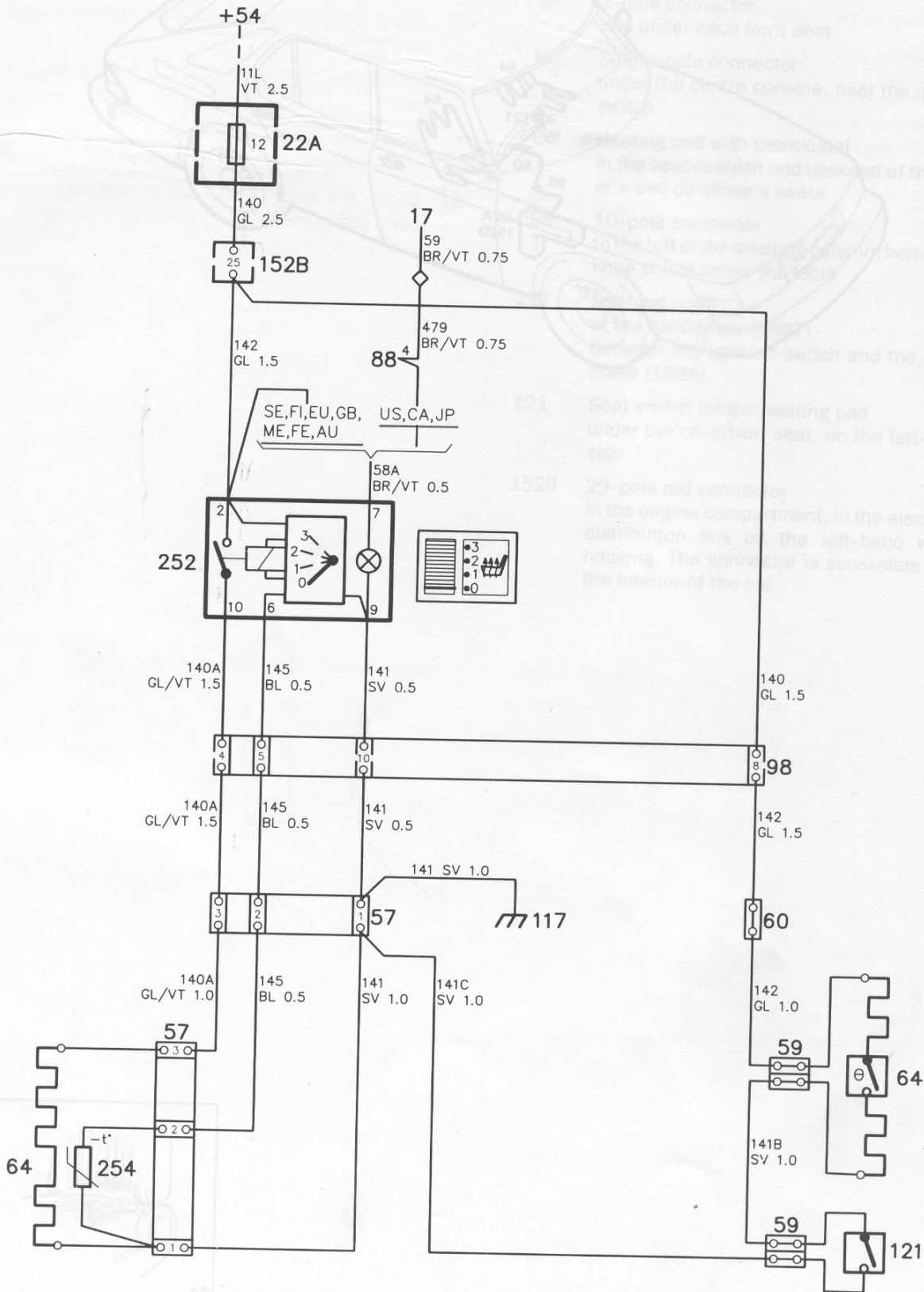
The temperature transmitter is a Negative Temperature Coefficient (NTC) resistor, whose resistance varies with temperature. The temperature transmitter is a Negative Temperature Coefficient (NTC) resistor, whose resistance varies with temperature. The temperature transmitter is a Negative Temperature Coefficient (NTC) resistor, whose resistance varies with temperature.

Co-driver's seat

The heating pad of the co-driver's seat is supplied via the same 29-pole connector as the driver's seat. The heating pad is switched on and off by thermostat 64 and is earthed via seat switch 121.

When a load is applied to the seat, the seat switch will close and the heating pad can be switched on and off by thermostat 64. This heating pad will thus be operative only when a person is seated in the co-driver's seat.

Electrically heated front seats with rheostat control for the driver's seat



Operation

Both front seats of the car are electrically heated. On certain models, heating of the driver's seat can be controlled by means of a rheostat.

For a complete description of the wiring for the lighting of switch 252 on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

Driver's seat

Heating pad 64 is supplied from fuse 12 and is switched on and off by temperature transmitter 254.

The temperature transmitter is a Negative Temperature Coefficient (NTC) resistor, whose resistance varies with the heating pad temperature.

The temperature of the driver's seat heating pad can be set by means of rheostat 252 which has four positions, marked 0, 1, 2 and 3. In position 0, the heating is switched off, whereas in position 3, the heating is a maximum. When the heating pad temperature has reached the preset value for a given rheostat setting, the heating pad will be switched off, but will be switched on again when the temperature has dropped to the lower limit for that particular rheostat setting.

Co-driver's seat

The heating pad of the co-driver's seat is supplied via the same 29-pole connector as the driver's seat. The heating pad is switched on and off by thermostats 64 and is earthed via seat switch 121.

When a load is applied to the seat, the seat switch will close and the heating pad can be switched on and off by thermostat 64. This heating pad will thus be operative only when a person is seated in the co-driver's seat.

Fault-tracing hints

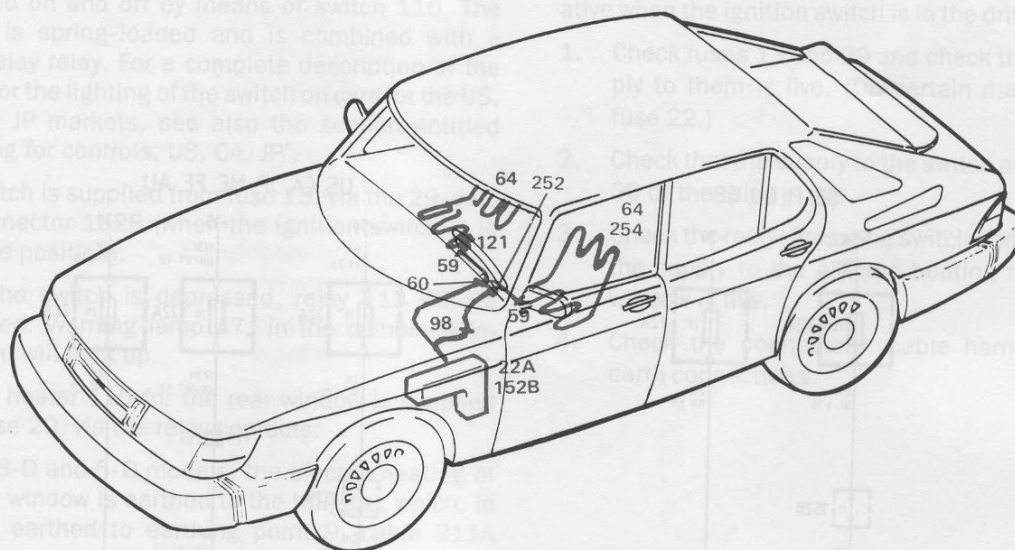
1. Set the ignition switch to the drive position.
2. Check fuse 12 and check that the supply to rheostat 252 is live.
3. Check that there is no open circuit in temperature transmitter 254. (Measure between pins 6 and 9 of the rheostat.)
4. Check seat switch 121 under the co-driver's seat.
5. Check that there is no open circuit in the heating pad wiring.
6. Check the connectors, cable harnesses and earth connections.



Locations of components

- 17 Extra rheostat for the lighting of switches and controls
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 57 3-pole connector
two under the driver's seat
- 59 2-pole connector
two under the co-driver's seat
- 60 Single-pole connector
under the centre console, near the ignition switch
- 64 Heating pad with thermostat
in the seat cushion and backrest of the driver's and co-driver's seats
- 98 10-pole connector
to the left of the steering column, behind the knee shield below the facia
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 121 Seat switch for the heating pad
under the co-driver's seat, on the left-hand side
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car.
- 252 Driver's seat heating rheostat
on the facia
- 254 Temperature transmitter for the driver's seat heating pad
in the driver's seat

Components



Time-delay relay

On the following markets, relay 113 is replaced by a time-delay relay and spring-loaded switch 114:
U.S.A., Canada, Japan, Middle East, Australia.

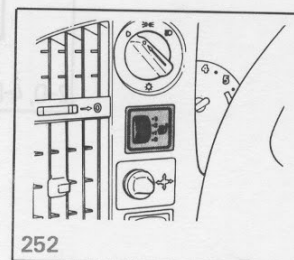
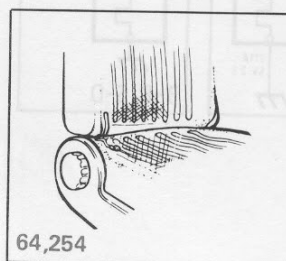
After the switch has been depressed and the relay has been energized, the time circuit in the relay will be supplied (terminal 15) from fuse 22. After about 10 minutes, the relay will switch off the supply to the electric heating for the rear window. If the switch is depressed when the heating is on, the relay will switch off the supply to the heating element.

When the electric heating for the rear window is switched on, warning lamp 47 will be supplied from terminal E of the relay.

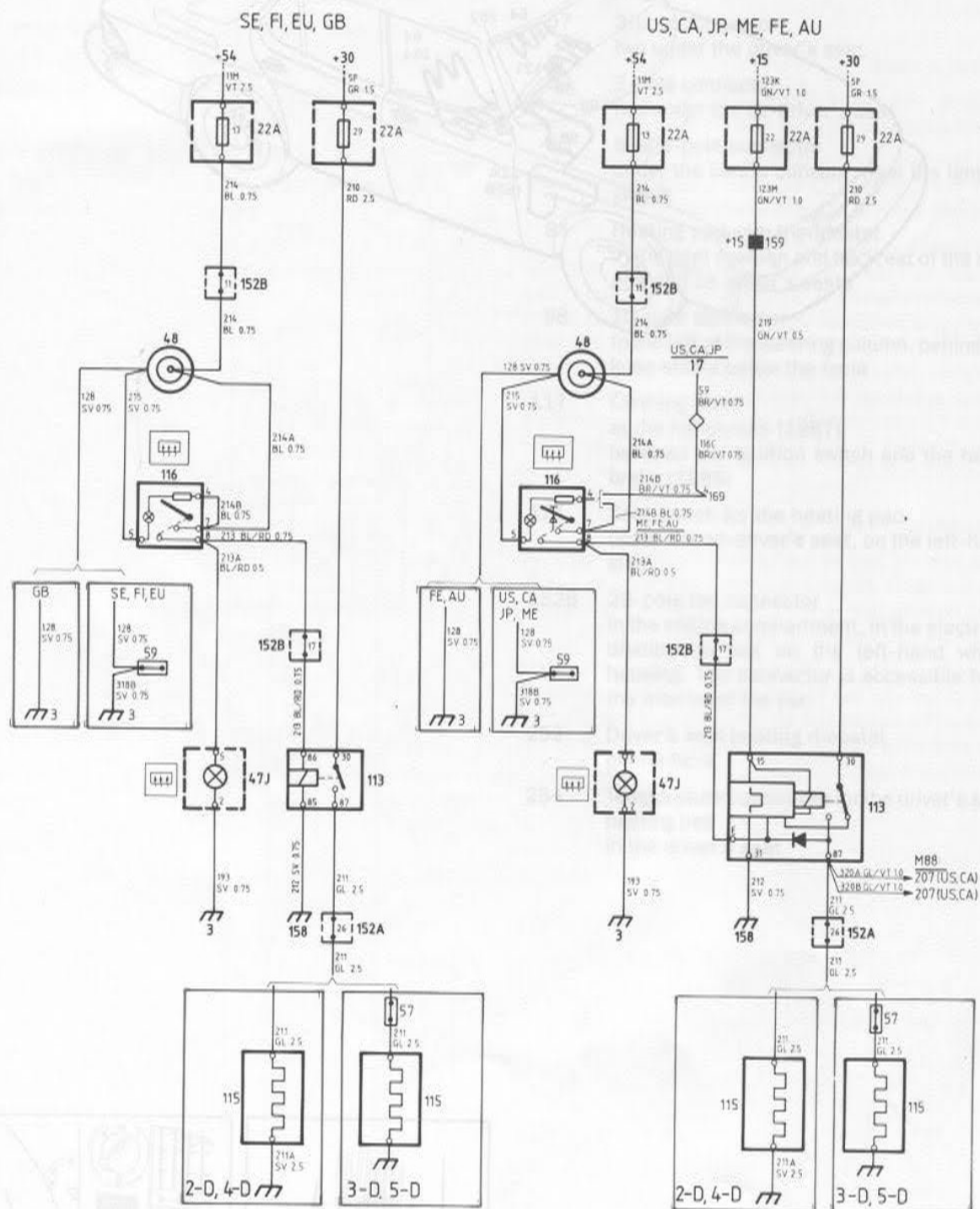
If the ignition is switched off while the electric heating for the rear window is switched on, the supply to terminal 15 will be removed and the relay will immediately switch off the supply to the heating element for the rear window.

US and CA markets (1988 model)

The time-delay relay also controls the heating of the rear-view mirrors.



Electric heating for the rear window



Operation

The electric heating of the rear window can be switched on and off by means of switch 116. The switch is spring-loaded and is combined with a time-delay relay. For a complete description of the wiring for the lighting of the switch on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

The switch is supplied from fuse 13, via the 29-pole red connector 152B (when the ignition switch is in the drive position).

When the switch is depressed, relay 113 will be energised. Warning lamp 47J in the combined instrument will light up.

Electric heater 115 for the rear window is supplied from fuse 29, via the relay contacts.

On the 3-D and 5-D models, the electric heating of the rear window is earthed to the tailgate, which, in turn, is earthed to earthing point 9 (cable 211A black).

Time-delay relay

On the following markets, relay 113 is replaced by a time-delay relay and spring-loaded switch 116.

U.S.A., Canada, Japan, Middle East, Far East and Australia.

After the switch has been depressed and the relay has been energised, the time circuit in the relay will be supplied (terminal 15) from fuse 22. After around 10 minutes, the relay will switch off the supply to the electric heating for the rear window. If the switch is depressed when the heating is on, the relay will trip.

When the electric heating for the rear window is switched on, warning lamp 47J will be supplied from terminal E of the relay.

If the ignition is switched off while the electric heating for the rear window is switched on, the supply to terminal 15 will be opened, and the relay will immediately switch off the supply to the heating element for the rear window.

US and CA markets (1988 model)

The time-delay relay also controls the heating of the rear-view mirrors.

Fault-tracing hints

The electric heating for the rear window will be operative when the ignition switch is in the drive position.

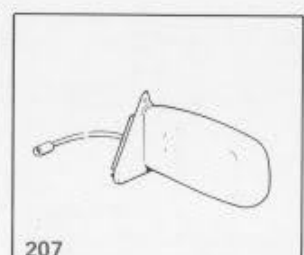
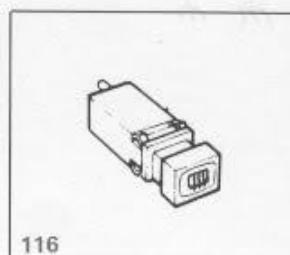
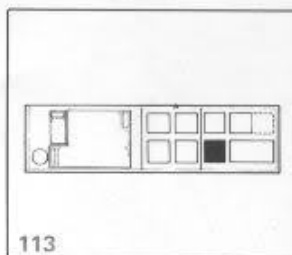
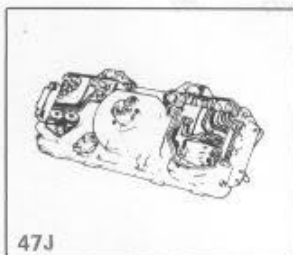
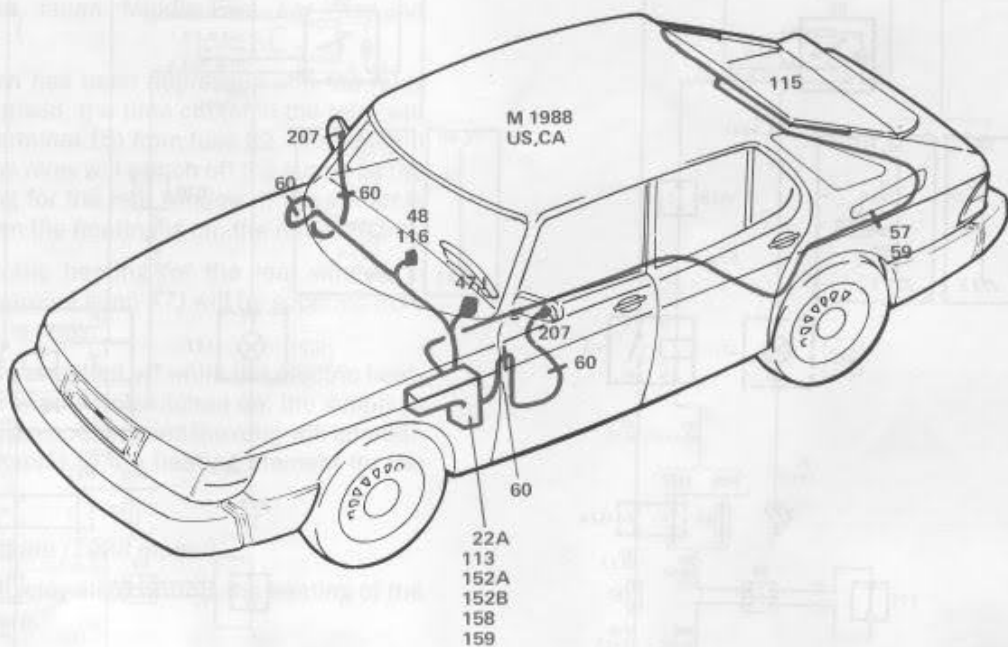
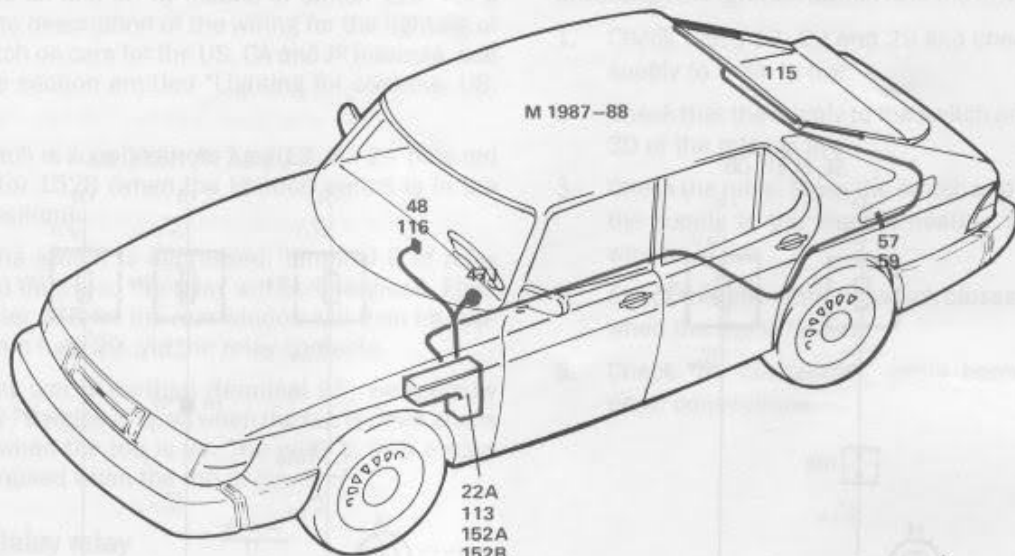
1. Check fuses 13 and 29 and check that the supply to them is live. (On certain markets, also fuse 22.)
2. Check that the supply to the switch and terminal 30 of the relay is live.
3. Check the relay: Press the switch and check that the supply to the electric heating for the rear window is live.
4. Check the connectors, cable harnesses and earth connections.



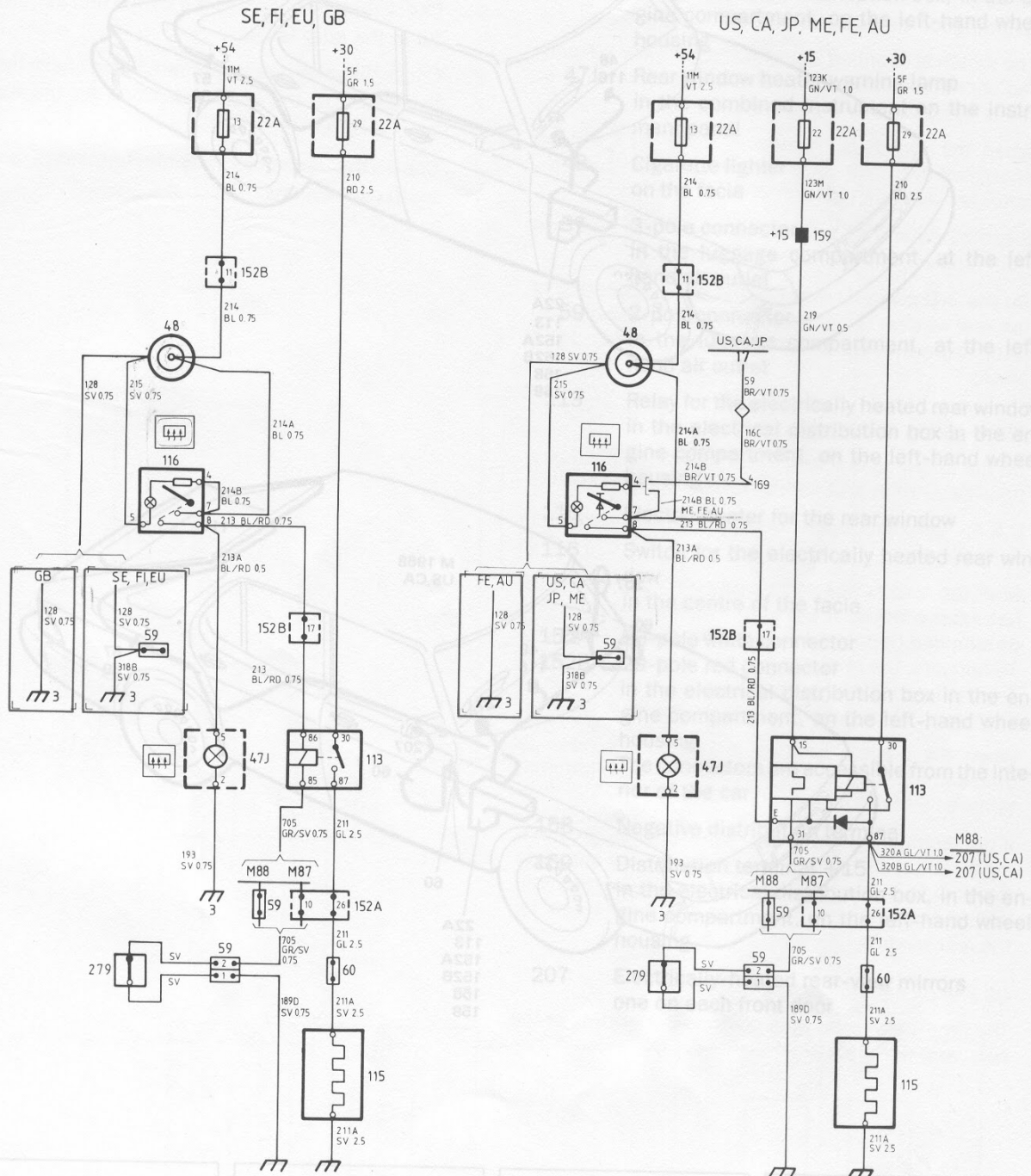
Locations of components

- 3 Earthing point in the facia
- 17 Extra rheostat for the lighting of switches and controls
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 47J Rear window heater warning lamp
in the combined instrument on the instrument panel
- 48 Cigarette lighter
on the facia
- 57 3-pole connector
in the luggage compartment, at the left-hand air outlet
- 59 2-pole connector
in the luggage compartment, at the left-hand air outlet
- 113 Relay for the electrically heated rear window
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 115 Electric heater for the rear window
- 116 Switch for the electrically heated rear window
in the centre of the facia
- 152A 29-pole white connector
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connectors are accessible from the interior of the car
- 158 Negative distribution terminal
- 159 Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 207 Electrically-heated rear-view mirrors
one on each front door

Components



Electric heating for the rear window, Convertible



Operation

The electric heating of the rear window can be switched on and off by means of switch 116. For a complete description of the wiring for the lighting of the switch on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

The switch is supplied from fuse 13, via 29-pole red connector 152B (when the ignition switch is in the drive position).

When the switch is depressed, terminal E of relay 113 and thus also the relay will be energised. Electric heater 115 for the rear window will then be supplied from fuse 29, via the relay contacts.

The relay coil is earthed (terminal 85) via mercury switch 279 which is open when the top is down and is closed when the top is up. The relay is thus always de-energised when the top is down.

Time-delay relay

On the following markets, relay 113 has been replaced by a time-delay relay and spring-loaded switch 116.

U.S.A., Canada, Japan, Middle East, Far East and Australia.

After the switch has been depressed and the relay has been energised, the time circuit in the relay will be supplied (terminal 15) from fuse 22. After around 10 minutes, the relay will switch off the supply to the electric heating for the rear window. If the switch is depressed when the heating is on, the relay will trip.

When the electric heating for the rear window is switched on, warning lamp 47J will be supplied from terminal E of the relay.

If the ignition is switched off while the electric heating for the rear window is switched on, the supply to terminal 15 will be opened, and the relay will immediately trip the supply to the heating element for the rear window.

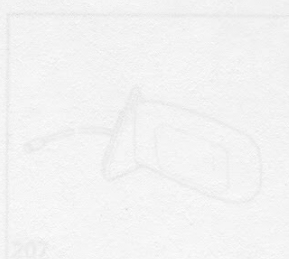
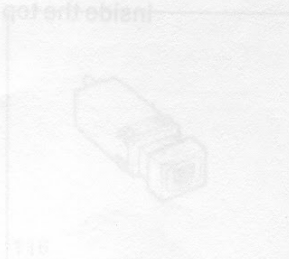
US and CA markets (1988 model)

The time-delay relay also controls the heating of the rear-view mirrors.

Fault-tracing hints

The electric heating for the rear window will be operative when the ignition switch is in the drive position.

1. Check fuses 13, 22 and 29 and check that the supply to them is live.
2. Check that the supply to the switch and terminal 30 of the relay is live.
3. Check the relay: Press the switch and check that the supply to the electric heating for the rear window is live.
4. Check that the mercury switch closes the circuit when the top is raised.
5. Check the connectors, cable harnesses and earth connections.



Locations of components

- 3 Earthing point in the facia
- 17 Extra rheostat for the lighting of switches and controls
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 47J Rear window heater warning lamp
in the combined instrument on the instrument panel
- 48 Cigarette lighter
on the facia
- 59 2-pole connector
one in the electrical distribution box in the engine compartment, on the left-hand wheel housing
one on the inside of the top, on the left-hand side
- 60 Single-pole connector
in the luggage compartment, at the left-hand lid hinge, behind the trim
- 113 Relay for the electrically heated rear window
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 115 Electric heater for the rear window
- 116 Switch for the electrically heated rear window
in the centre of the facia
- 152A 29-pole white connector
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connectors are accessible from the interior of the car
- 159 Distribution terminal +15
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 207 Electrically-heated rear-view mirrors
one on each front door
- 279 Mercury switch for the electrically heated rear window
on the top mounting on the left-hand side, inside the top

Components

All window regulators in the car can be operated by means of switches in the centre console between the front seats. Under certain circumstances, the rear window regulator in each of the rear doors can also be operated by means of a switch in the rear door.

The supply is taken from fuse 152A in the fuse box, connector 152A, to the window regulator.

• Switch 152A for switching in and out the rear window regulator in the rear doors.

• To switch 152A (driver's door), 152B (passenger's door), 152C (left-hand rear door), 152D (right-hand rear door).

If switch 152A is open, the switches in the rear doors will be inoperative. The window regulators in the rear doors can then only be operated by means of the switches on the centre console to open the rear window. To press the window regulator button.

As an example, if switch 152A is open, the rear window will be inoperative. The window regulators in the rear doors can then only be operated by means of the switches on the centre console to open the rear window. To press the window regulator button.

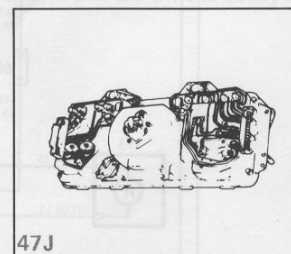
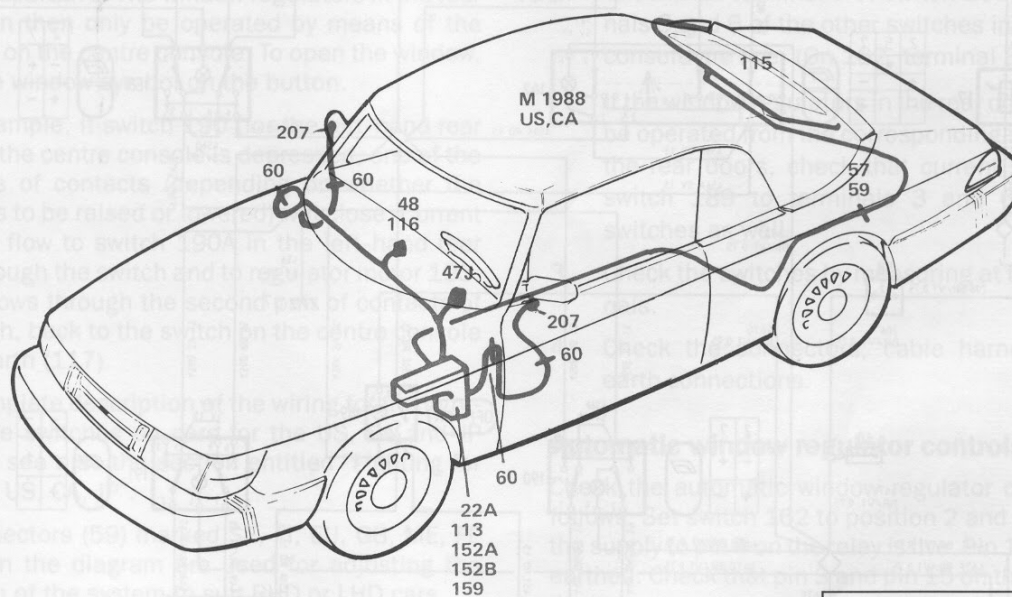
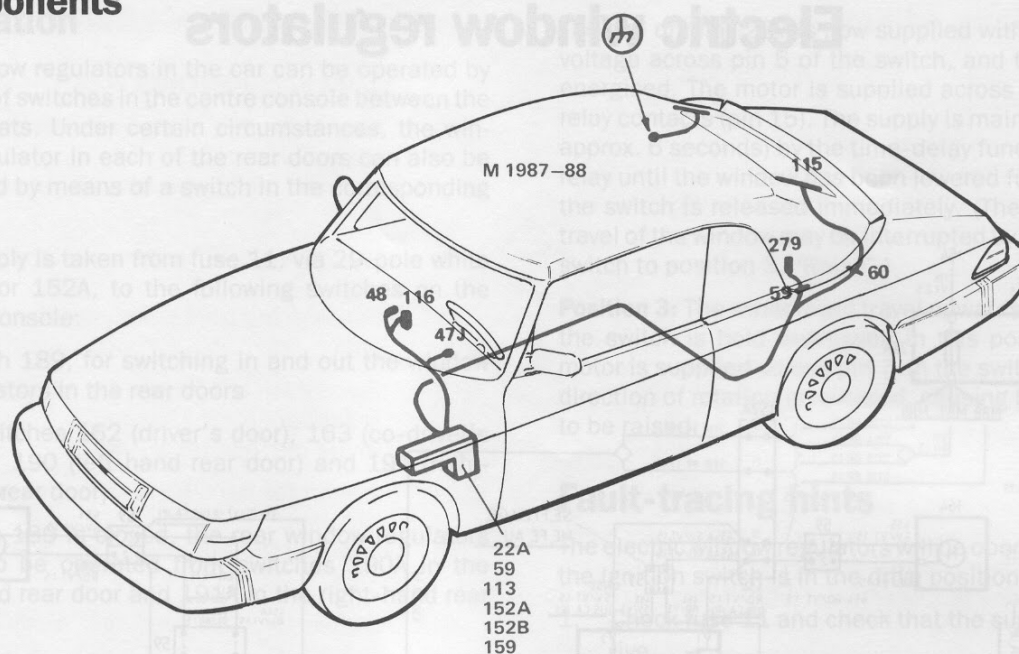
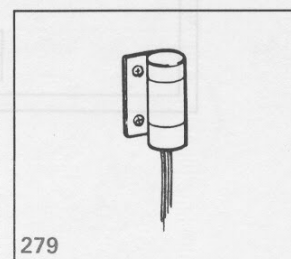
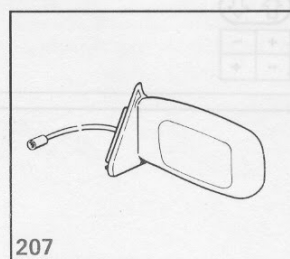
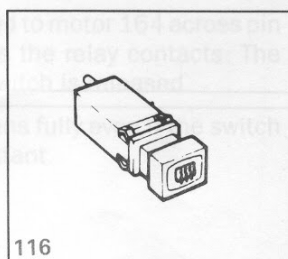
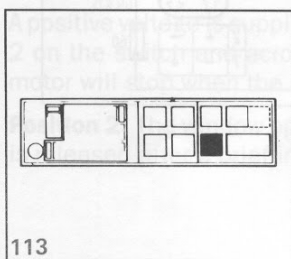
For a complete description of the wiring, see the wiring diagram of the rear window regulator controls. The connectors (152A, 152B, 152C, 152D) are shown in the diagram. The supply to the rear window regulator is taken from fuse 152A in the fuse box, connector 152A, to the window regulator.

The connectors (152A, 152B, 152C, 152D) are shown in the diagram. The supply to the rear window regulator is taken from fuse 152A in the fuse box, connector 152A, to the window regulator.

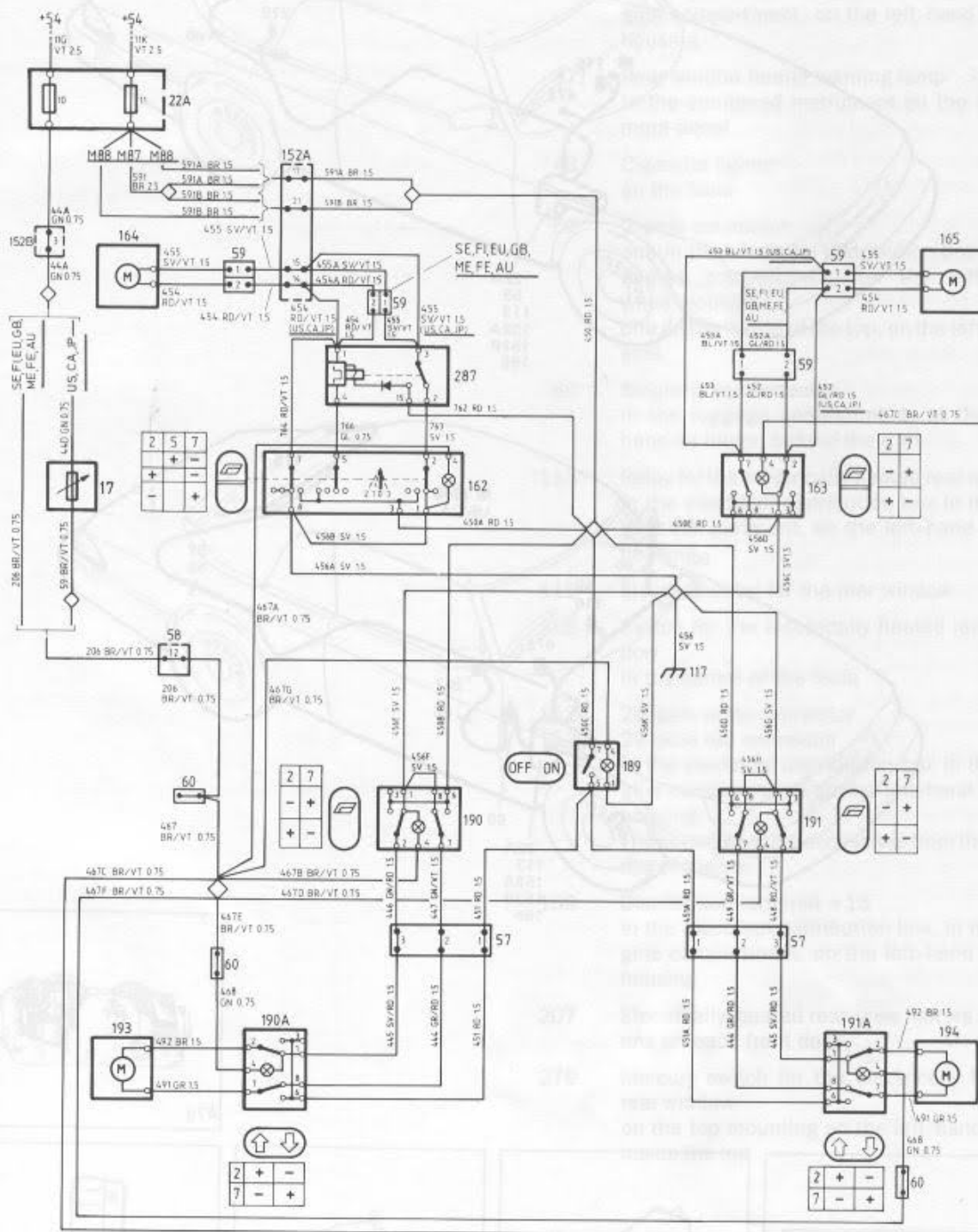
Automatic window regulator controls

On the centre console, driver's door switch 152 has two positions for opening the window. This switch is connected to time-delay relay 287.

Position 1: The window travels downwards as long as the switch is kept depressed in this position.



Electric window regulators



Operation

All window regulators in the car can be operated by means of switches in the centre console between the front seats. Under certain circumstances, the window regulator in each of the rear doors can also be operated by means of a switch in the corresponding door.

The supply is taken from fuse 11, via 29-pole white connector 152A, to the following switches on the centre console:

- Switch 189, for switching in and out the window regulators in the rear doors
- To switches 162 (driver's door), 163 (co-driver's door), 190 (left-hand rear door) and 191 (right-hand rear door)

If switch 189 is closed, the rear window regulators can also be operated from switches 190A in the left-hand rear door and 191A in the right-hand rear door.

If switch 189 is open, the switches in the rear doors will be inoperative. The window regulators in the rear doors can then only be operated by means of the switches on the centre console. To open the window, press the window symbol on the button.

As an example, if switch 190 (for the left-hand rear door) on the centre console is depressed, one of the two pairs of contacts (depending on whether the window is to be raised or lowered) will close. Current will then flow to switch 190A in the left-hand rear door, through the switch and to regulator motor 193. It then flows through the second pair of contacts of the switch, back to the switch on the centre console and to earth (117).

For a complete description of the wiring for the lighting of the switches on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

The connectors (59) marked SE, FI, EU, GB, ME, FE and AU in the diagram are used for adjusting the operation of the system to suit RHD or LHD cars.

Automatic window regulator controls

Unlike the other switches, driver's door switch 162 has two positions for lowering the window. This switch is also connected to time-delay relay 287.

Position 1: The window travels downwards as long as the switch is kept depressed in this position.

A positive voltage is supplied to motor 164 across pin 2 on the switch and across the relay contacts. The motor will stop when the switch is released.

Position 2: The window opens fully even if the switch is released after a brief instant.

The coil of relay 287 is now supplied with a positive voltage across pin 5 of the switch, and the relay is energised. The motor is supplied across the closed relay contacts (pin 15). The supply is maintained (for approx. 6 seconds) by the time-delay function of the relay until the window has been lowered fully, even if the switch is released immediately. (The downward travel of the window may be interrupted by setting the switch to position 3, "Raise".)

Position 3: The window will travel upwards as long as the switch is held depressed in this position. The motor is supplied across pin 7 on the switch and the direction of rotation is reversed, causing the window to be raised.

Fault-tracing hints

The electric window regulators will be operative when the ignition switch is in the drive position.

1. Check fuse 11 and check that the supply to it is live.
2. Check that terminal 7 of switch 189 and terminals 3 and 6 of the other switches in the centre console are live. (On 162, terminal 3 only.)

If the window regulators in the rear doors cannot be operated from the corresponding switches in the rear doors, check that current flows from switch 189 to terminals 3 and 6 of these switches as well.

3. Check the switches by measuring at their terminals.
4. Check the connectors, cable harnesses and earth connections.

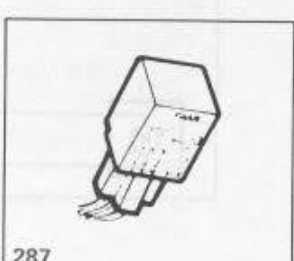
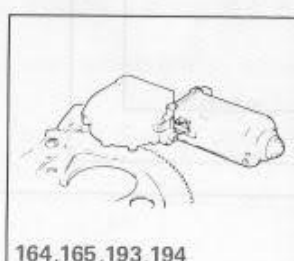
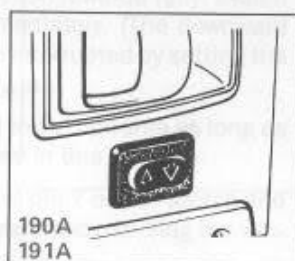
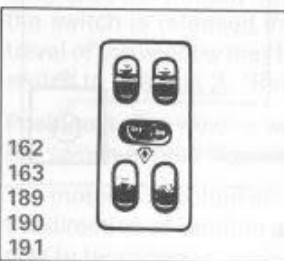
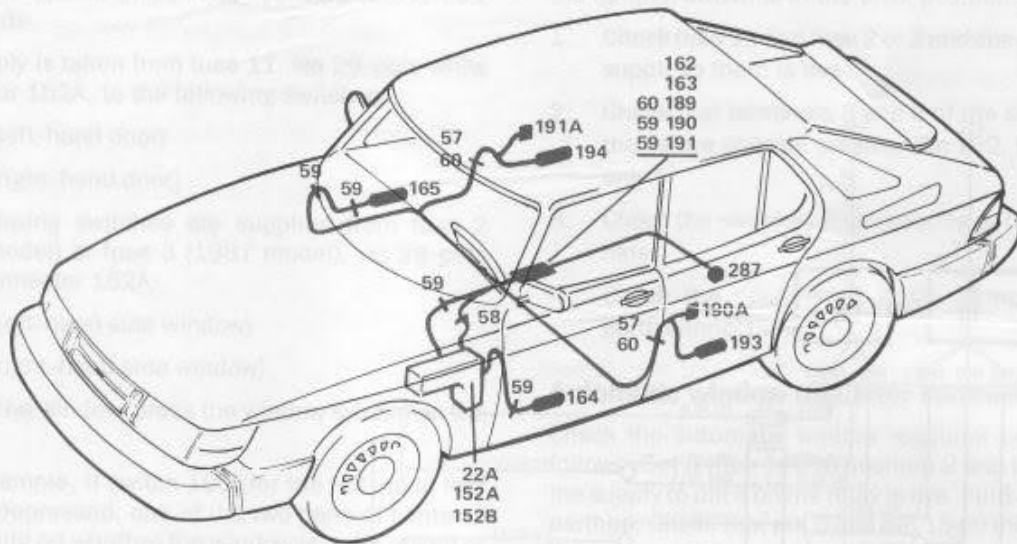
Automatic window regulator controls

Check the automatic window regulator controls as follows: Set switch 162 to position 2 and check that the supply to pin 4 on the relay is live. Pin 1 should be earthed. Check that pin 3 and pin 15 on the relay are live.

Locations of components

- | | | | |
|------|---|------|---|
| 17 | Extra rheostat for the lighting of switches and controls | 165 | Motor for right-hand front electric window regulator in the right-hand front door |
| 22A | Fuse holder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 189 | Switch for the rear-door electric window regulators between the front seats, on the centre console |
| 57 | 3-pole connector one behind the trim, at the corresponding B pillar | 190 | Switch for left-hand rear electric window regulator between the front seats, on the centre console |
| 58 | 12-pole connector on the angle bracket, under the facia to the left of the steering column | 190A | Switch for left-hand rear electric window regulator in the left-hand rear door |
| 59 | 2-pole connector one in the engine compartment, at the upper hinge of the left-hand front door, behind the electrical distribution box one in the engine compartment, at the upper hinge of the right-hand front door two under the centre console, between the front seats | 191 | Switch for right-hand rear electric window regulator between the front seats, on the centre console |
| 60 | Single-pole connector one under the centre console, between the front seats one behind the trim, at the corresponding B pillar | 191A | Switch for right-hand rear electric window regulator in the right-hand rear door |
| 117 | Earthing point at the handbrake (1987) between the ignition switch and the handbrake (1988) | 193 | Motor for left-hand rear electric window regulator in the left-hand rear door |
| 152A | 29-pole white connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connector is accessible from the interior of the car | 194 | Motor for right-hand rear electric window regulator in the right-hand rear door |
| 152B | 29-pole red connector in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car. | 287 | Relay for automatic control of window regulators under the back seat, on the left-hand side |
| 162 | Switch for driver's door electric window regulator between the front seats, on the centre console | | |
| 163 | Switch for co-driver's door electric window regulator between the front seats, on the centre console | | |
| 164 | Motor for left-hand front electric window regulator in the left-hand front door | | |

Components



The diagram shows two separate motor circuits. The first circuit, labeled 193, shows a motor connected to a 446 GN/RD 15 wire and a 447 GN/VT 15 wire. The second circuit, labeled 194, shows a motor connected to a 448 RD/VT 15 wire and a 449 GR/VT 15 wire.

Operation

The window regulators in the car can be operated by means of switches in the centre console between the front seats.

The supply is taken from fuse 11, via 29-pole white connector 152A, to the following switches:

- 162 (left-hand door)
- 163 (right-hand door)

The following switches are supplied from fuse 2 (1988 model) or fuse 3 (1987 model), via 29-pole white connector 152A:

- 190 (left-hand side window)
- 191 (right-hand side window)

To open the window, press the window symbol on the button.

As an example, if switch 190 (for the left-hand rear door) is depressed, one of the two pairs of contacts (depending on whether the window is to be raised or lowered) will close. Current will then flow to regulator motor 193. It then flows through the second pair of contacts of the switch, and to earth (117).

For a complete description of the wiring for the lighting of the switches on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

The connectors (59) marked SE, FI, EU, GB, ME, FE and AU in the diagram are used for adjusting the operation of the system to suit RHD or LHD cars.

Automatic window regulator controls

Unlike the other switches, driver's door switch 162 has two positions for lowering the window. This switch is also connected to time-delay relay 287.

Position 1: The window travels downwards as long as the switch is kept depressed in this position.

A positive voltage is supplied to motor 164 across pin 2 on the switch and across the relay contacts. The motor will stop when the switch is released.

Position 2: The window opens fully even if the switch is released after a brief instant.

The coil of relay 287 is now supplied with a positive voltage across pin 5 of the switch, and the relay is energised. The motor is supplied across the closed relay contacts (pin 15). The supply is maintained (for approx. 6 seconds) by the time-delay function of the relay until the window has been lowered fully, even if the switch is released immediately. (The downward travel of the window may be interrupted by setting the switch to position 3, "Raise".)

Position 3: The window will travel upwards as long as the switch is held depressed in this position.

The motor is supplied across pin 7 on the switch and the direction of rotation is reversed, causing the window to be raised.

Fault-tracing hints

The electric window regulators will be operative when the ignition switch is in the drive position.

1. Check fuse 11 and fuse 2 or 3 and check that the supply to them is live.
2. Check that terminals 3 and 6 of the switches in the centre console are live. (On 162, terminal 3 only.)
3. Check the switches by measuring at their terminals.
4. Check the connectors, cable harnesses and earth connections.

Automatic window regulator controls

Check the automatic window regulator controls as follows: Set switch 162 to position 2 and check that the supply to pin 4 on the relay is live. Pin 1 should be earthed. Check that pin 3 and pin 15 on the relay are live.

Locations of components

- 17 Extra rheostat for the lighting of switches and controls on the left-hand side of the facia
- 22A Fuse holder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 58 12-pole connector on the angle bracket, under the facia to the left of the steering column
- 59 2-pole connector
 - one in the engine compartment, at the upper hinge of the left-hand front door, behind the electrical distribution box
 - one in the engine compartment, at the upper hinge of the right-hand front door
 - two in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 60 Single-pole connector
 - one under the centre console, between the front seats
- 117 Earthing point
 - at the handbrake (1987)
 - between the ignition switch and the handbrake (1988)
- 152A 29-pole white connector
 - in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
 - The connector is accessible from the interior of the car
- 162 Switch for driver's door electric window regulator
 - between the front seats, on the centre console
- 163 Switch for co-driver's door electric window regulator
 - between the front seats, on the centre console
- 164 Motor for left-hand electric window regulator
 - in the left-hand door
- 165 Motor for right-hand electric window regulator
 - in the right-hand door
- 190 Switch for left-hand side-window electric regulator
 - between the front seats, on the centre console
- 191 Switch for right-hand side-window electric regulator
 - between the front seats, on the centre console
- 193 Motor for left-hand side-window electric regulator
 - on the left-hand side, at the rear
- 194 Motor for right-hand side-window electric regulator
 - on the right-hand side, at the rear
- 287 Relay for automatic control of window regulators
 - under the back seat, on the left-hand side

Components

Each of the outer rear-view mirrors is operated by means of a four-position switch.

The two switches 124 (left) and 125 (right) are supplied from fuse 8, via 29-pole red connector 152B.

Each rear-view mirror will turn in the direction in which the switch lever is moved. When the switch is in the "center" position, only the mirror motor is energized. When the switch is in the "up" or "down" position, a solenoid is energized in addition to the motor to move the mirror vertically or horizontally.

The following table lists the cables that are connected to each switch position:

Left-hand switch 124 and motor 126

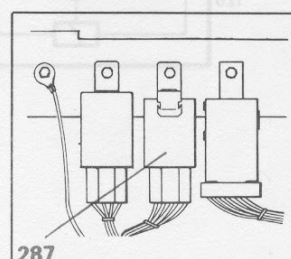
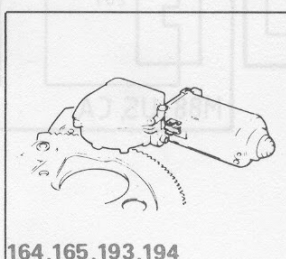
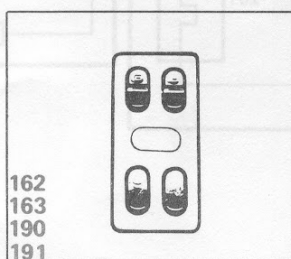
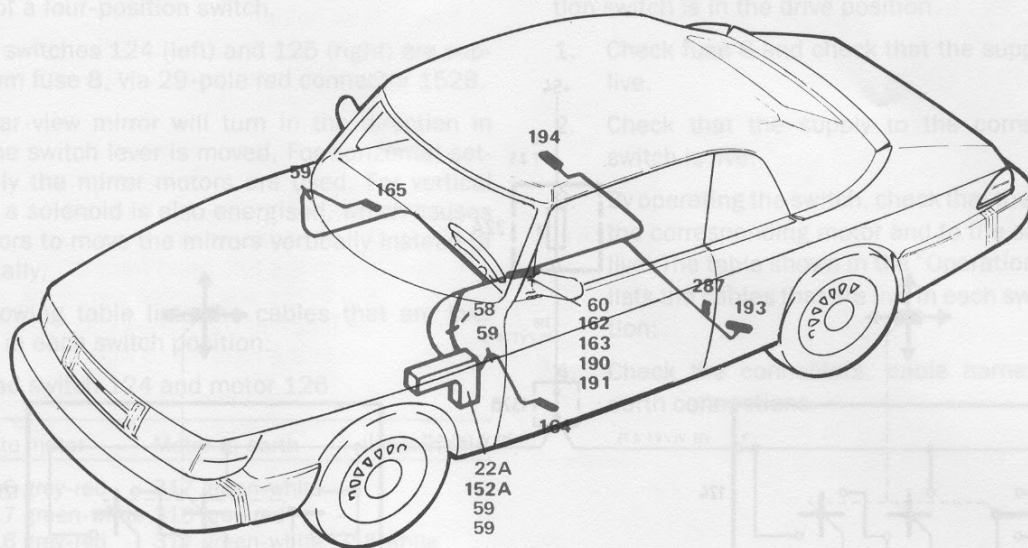
Pos.	+ to motor	Motor to earth	+ to solenoid
321	gray-red	320 green-white	
317	green-white	321 gray-red	
318	gray-red	320 green-white	319 white
317	green-white	321 gray-red	319 white

Right-hand switch 125 and motor 127

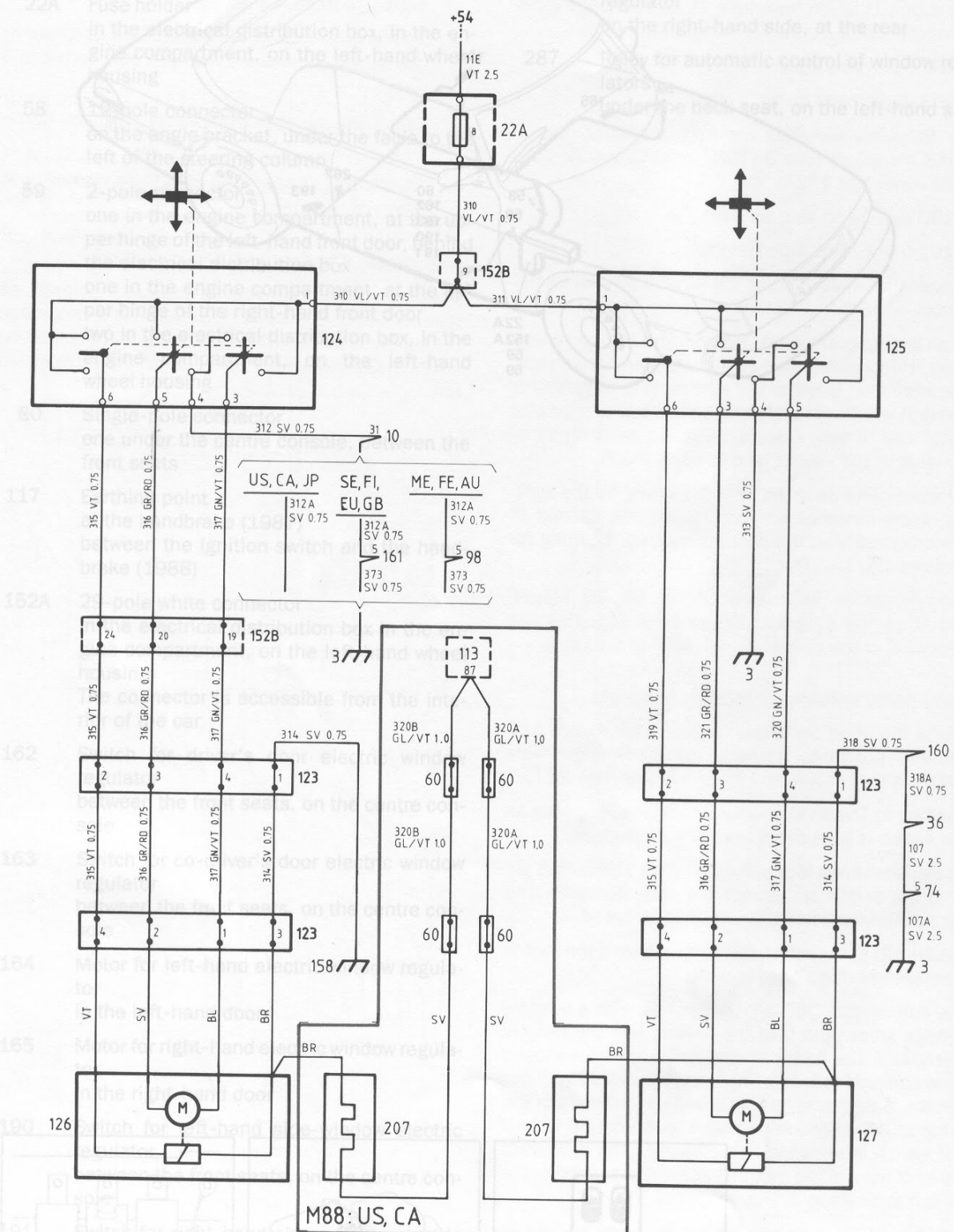
Pos.	+ to motor	Motor to earth	+ to solenoid
321	gray-red	320 green-white	
320	green-white	321 gray-red	
321	gray-red	320 green-white	319 white
320	green-white	321 gray-red	319 white

1988 model for the US and CA markets

CA markets are equipped with electrically operated rear-view mirrors 2077 which are supplied via the switch for the heating of the rear window.



Electrically operated rear-view mirrors



Operation

Each of the outer rear-view mirrors is operated by means of a four-position switch.

The two switches 124 (left) and 125 (right) are supplied from fuse 8, via 29-pole red connector 152B.

Each rear-view mirror will turn in the direction in which the switch lever is moved. For horizontal setting, only the mirror motors are used. For vertical setting, a solenoid is also energised, which causes the motors to move the mirrors vertically instead of horizontally.

The following table lists the cables that are live/earthed in each switch position:

Left-hand switch 124 and motor 126

Pos.	+ to motor	Motor to earth	+ to solenoid
←	316 grey-red	317 green-white	—
→	317 green-white	316 grey-red	—
↑	316 grey-red	317 green-white	315 white
↓	317 green-white	316 grey-red	315 white

Right-hand switch 125 and motor 127

Pos.	+ to motor	Motor to earth	+ to solenoid
←	321 grey-red	320 green-white	—
→	320 green-white	321 grey-red	—
↑	321 grey-red	320 green-white	319 white
↓	320 green-white	321 grey-red	319 white

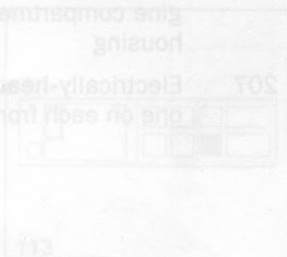
1988 model for the US and CA markets

Cars for these markets are equipped with electrically-heated rear-view mirrors 207, which are supplied via the switch for the heating of the rear window.

Fault-tracing hints

The rear-view mirrors will be operative when the ignition switch is in the drive position.

1. Check fuse 8 and check that the supply to it is live.
2. Check that the supply to the corresponding switch is live.
3. By operating the switch, check that the supply to the corresponding motor and to the solenoid is live. The table shown in the "Operation" section lists the cables that are live in each switch position:
4. Check the connectors, cable harnesses and earth connections.



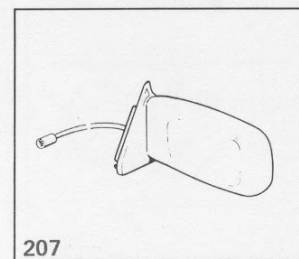
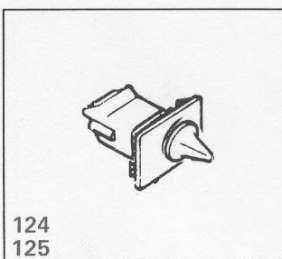
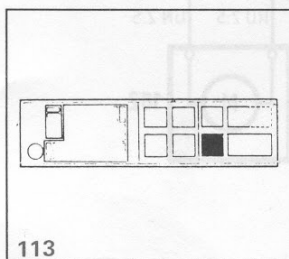
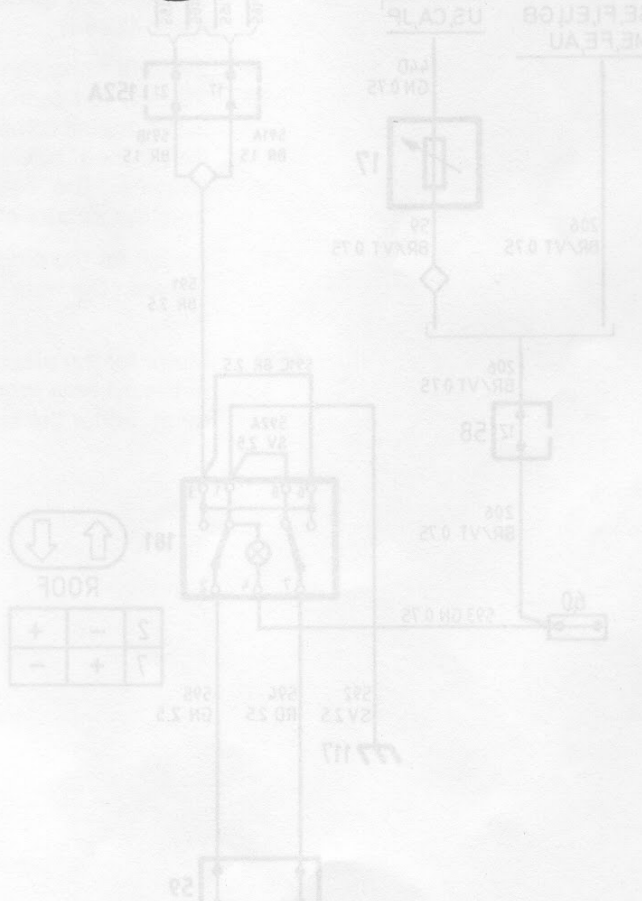
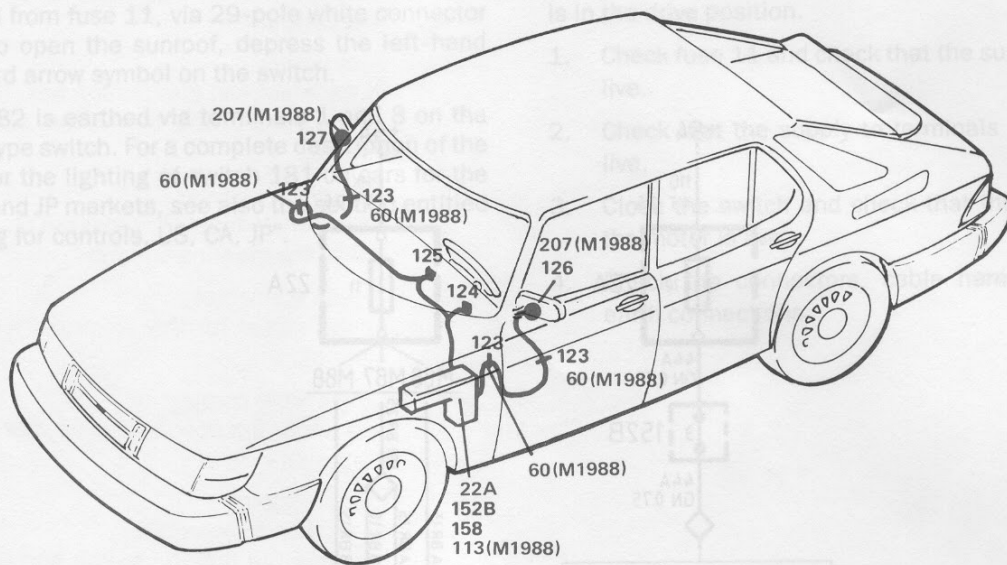
Locations of components

- 3 Earthing point in the facia
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 60 Single-pole connector
one in the engine compartment, at the upper hinge of the left-hand front door, behind the electrical distribution box
one in the left-hand front door
one in the engine compartment, at the upper hinge of the right-hand front door
one in the right-hand front door
- 113 Relay for the electrically heated rear window
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 123 4-pole connector
one in the engine compartment, at the upper hinge of the left-hand front door, behind the electrical distribution box
one in the left-hand front door
one in the engine compartment, at the upper hinge of the right-hand front door
one in the right-hand front door
- 124 Switch for the left-hand electrically operated rear-view mirror
on the facia, to the left of the steering column
- 125 Switch for the right-hand electrically operated rear-view mirror
on the facia, to the right of the steering column
- 126 Motor for the left-hand electrically operated rear-view mirror
in the left-hand rear-view mirror
- 127 Motor for the right-hand electrically operated rear-view mirror
in the right-hand rear-view mirror
- 152B 29-pole red connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connector is accessible from the interior of the car
- 158 Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing
- 207 Electrically-heated rear-view mirrors
one on each front door

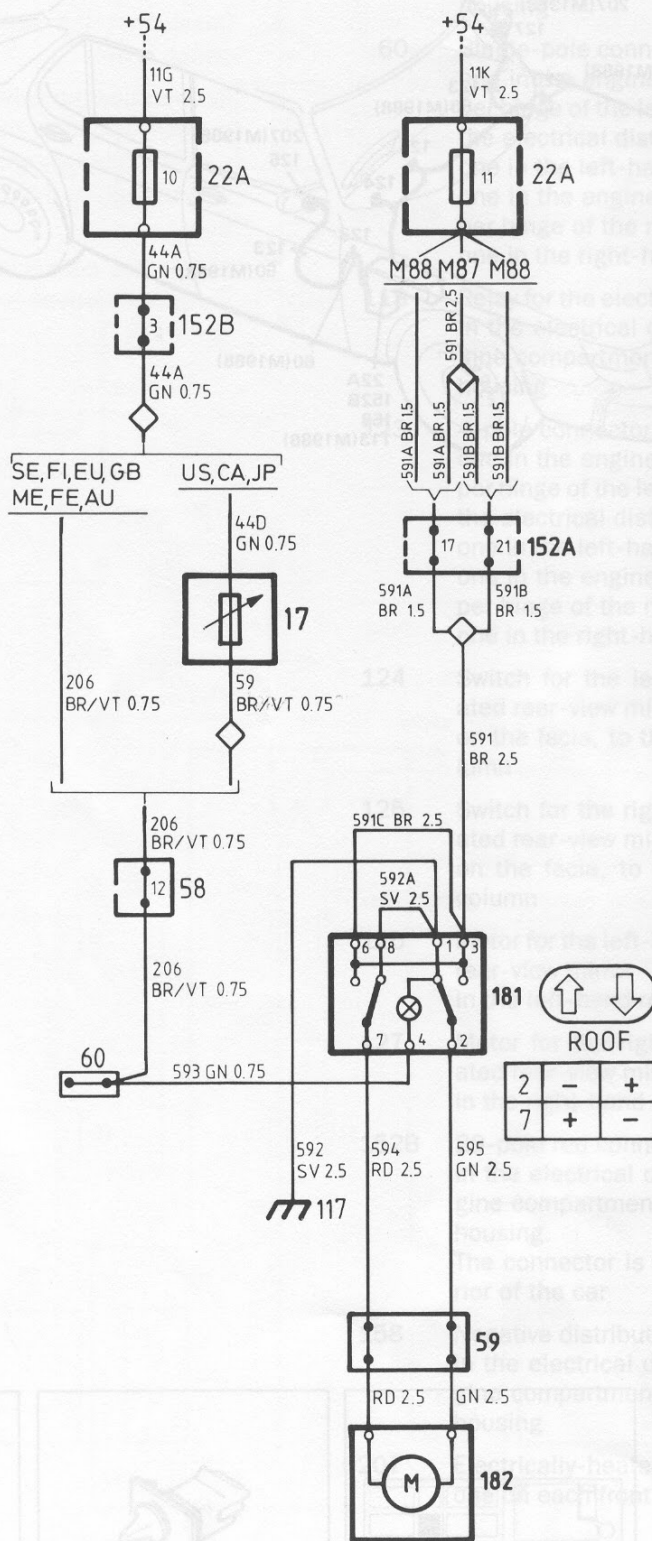
Components

Switch 181 for the electrically operated sunroof is supplied from fuse 11, via 29-pole white connector 152A. To open the sunroof, depress the left hand downward arrow symbol on the switch.

Motor 182 is earthed via 207(M1988) 127 on the rocker-type switch. For a complete wiring diagram of the wiring for the lighting system, see the "Lighting for controls" section, CA, JP.



Electrically operated sunroof



Operation

Switch 181 for the electrically operated sunroof is supplied from fuse 11, via 29-pole white connector 152A. To open the sunroof, depress the left-hand downward arrow symbol on the switch.

Motor 182 is earthed via terminals 1 and 8 on the rocker-type switch. For a complete description of the wiring for the lighting of switch 181 on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

Fault-tracing hints

The sunroof will be operative when the ignition switch is in the drive position.

1. Check fuse 11 and check that the supply to it is live.
2. Check that the supply to terminals 3 and 6 is live.
3. Close the switch and check that the supply to the motor is live.
4. Check the connectors, cable harnesses and earth connections.



Locations of components

- 17 Extra rheostat for the lighting of switches and controls
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 58 12-pole connector
on the angle bracket, under the facia, to the left of the steering column
- 59 2-pole connector
at the motor for the electrically operated sunroof
- 60 Single-pole connector
one under the centre console, between the front seats
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 152A 29-pole white connector
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car.
- 181 Switch for the electrically operated sunroof between the front seats, on the centre console
- 182 Motor for the electrically operated sunroof at the extreme rear of the luggage compartment, under the spare wheel hatch

Components

Two hydraulic cylinders actuated by oil from an electric motor driven hydraulic pump are used for raising and lowering the top.

Switch 181 for operating the top is located in the rear of the car. It is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98.

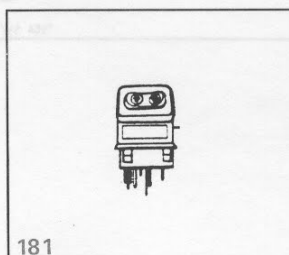
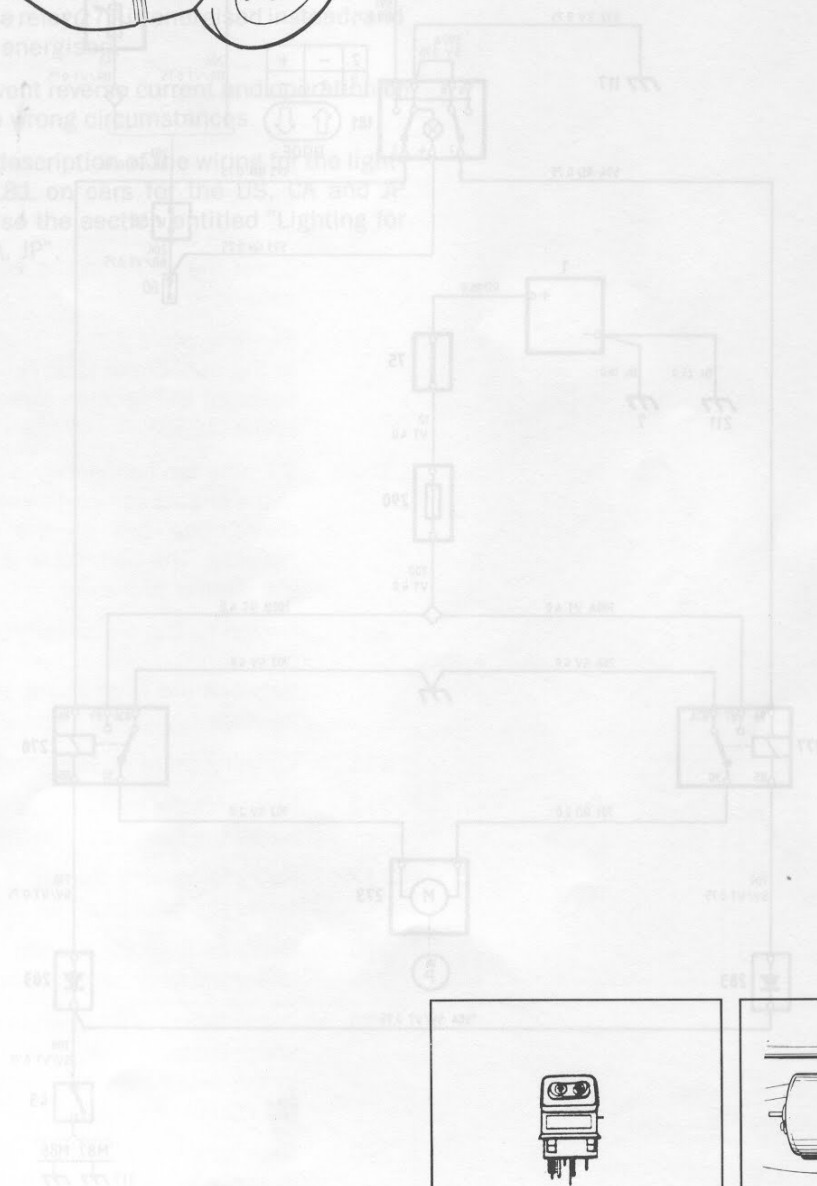
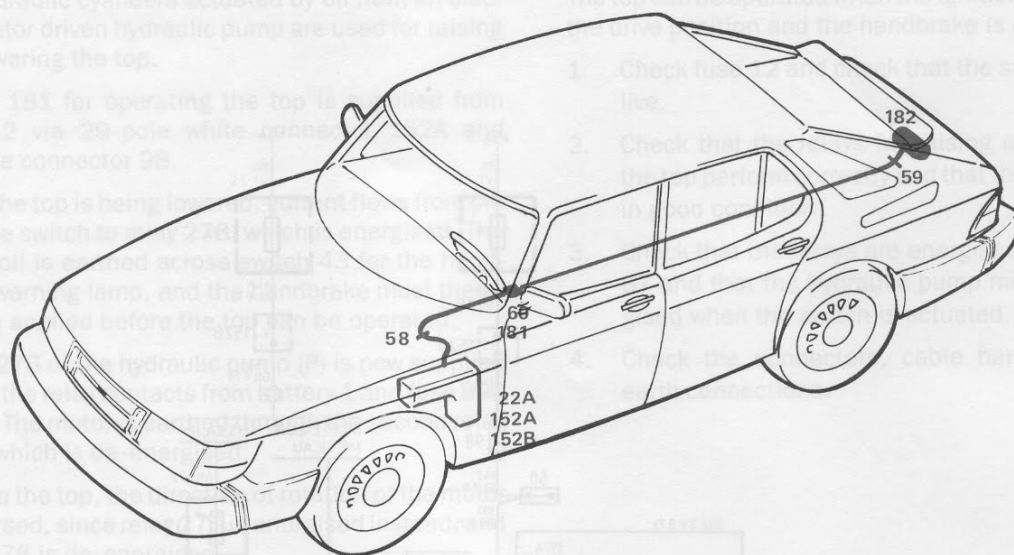
When the top is being lowered, the switch 181 is pressed. The switch 181 is a double-throw switch. The switch 181 is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98. The switch 181 is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98.

Motor 182 is a hydraulic pump (P) is connected to the hydraulic cylinders. The motor 182 is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98. The motor 182 is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98.

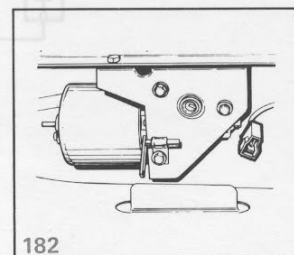
To raise the top, the switch 181 is pressed. The switch 181 is a double-throw switch. The switch 181 is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98. The switch 181 is connected to the fuse 12 via 29-pole white connector 22A and 10-pole connector 98.

Diodes 283 prevent reverse current and protect the relays in the wrong circumstances.

For a complete description of the wiring, see the lighting of switch 181 on cars for the US, CA and JP markets. see also the section entitled "Lighting for controls, US, CA, JP".

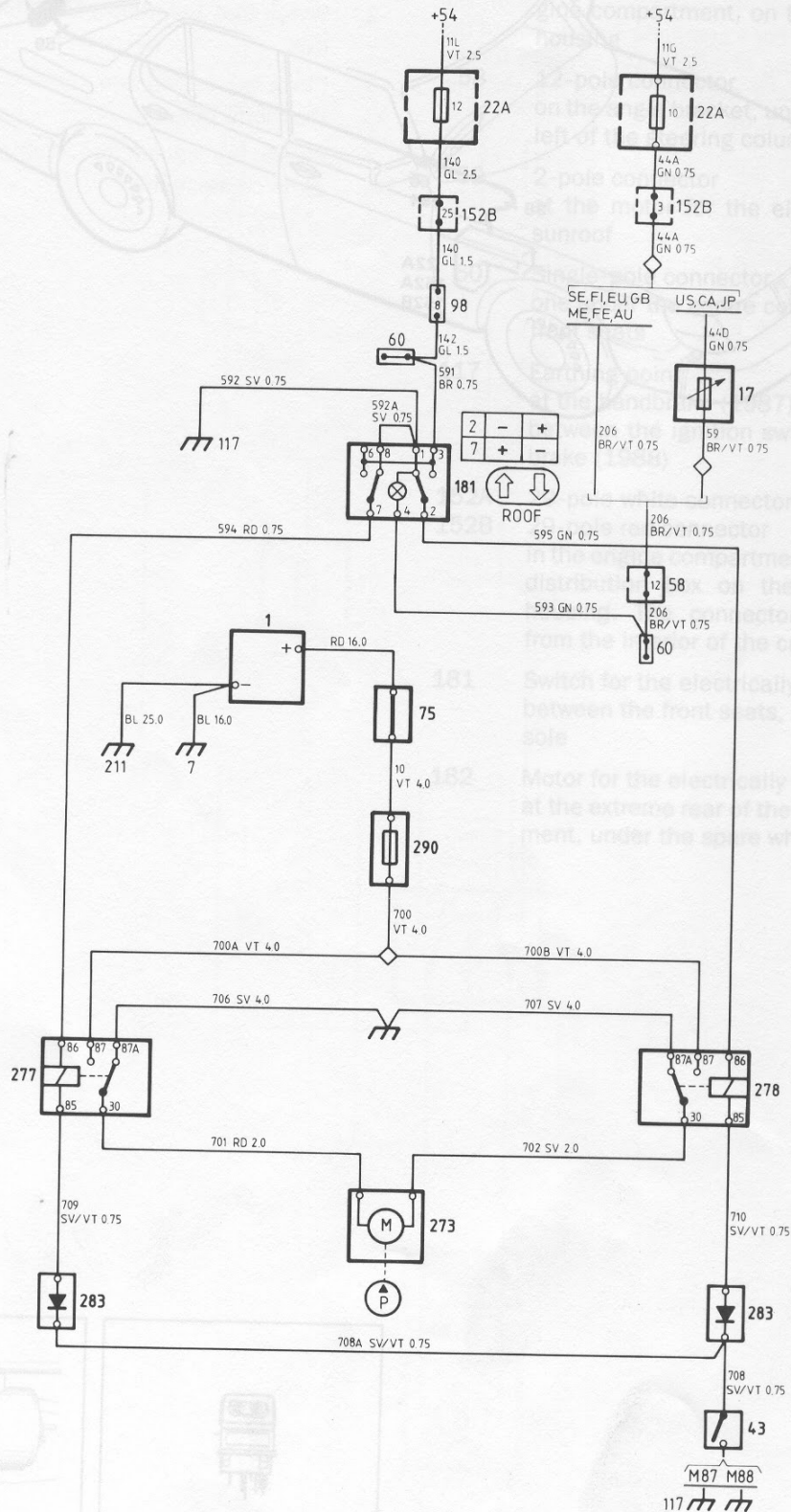


181



182

Electrically operated Convertible top



Operation

Two hydraulic cylinders actuated by oil from an electric-motor driven hydraulic pump are used for raising and lowering the top.

Switch 181 for operating the top is supplied from fuse 12 via 29-pole white connector 152A and 10-pole connector 98.

When the top is being lowered, current flows from pin 2 on the switch to relay 278, which is energised. The relay coil is earthed across switch 43 for the handbrake warning lamp, and the handbrake must therefore be applied before the top can be operated.

Motor 273 of the hydraulic pump (P) is now supplied across the relay contacts from battery 1 and fuse 290 (25 A). The motor is earthed through the second relay (277) which is de-energised.

To raise the top, the direction of rotation of the motor is reversed, since relay 277 is energised instead, and relay 278 is de-energised.

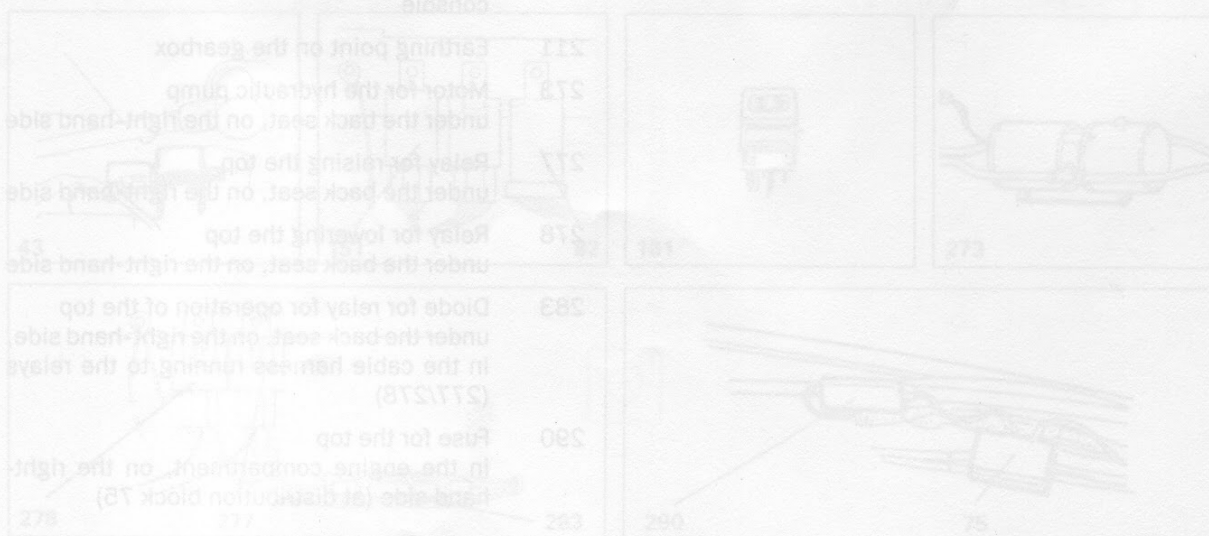
Diodes 283 prevent reverse current and operation of the relays in the wrong circumstances.

For a complete description of the wiring for the lighting of switch 181 on cars for the US, CA and JP markets, see also the section entitled "Lighting for controls, US, CA, JP".

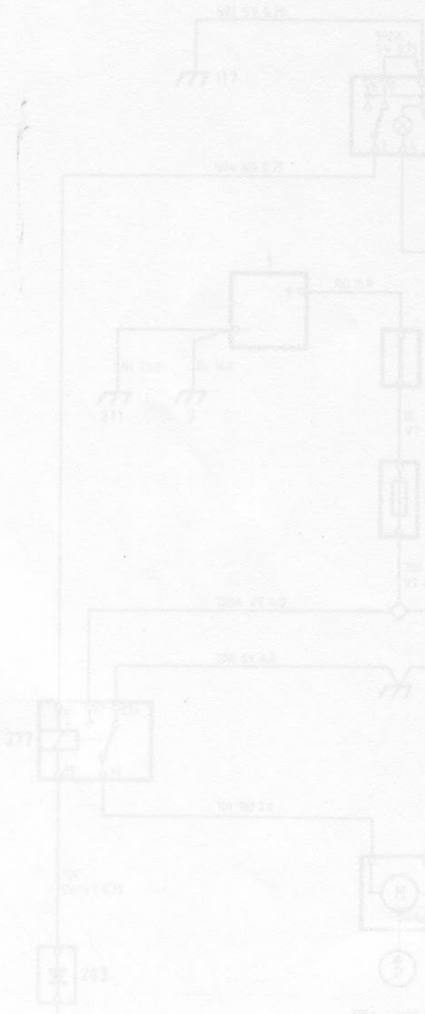
Fault-tracing hints

The top can be operated when the ignition switch is in the drive position and the handbrake is applied.

1. Check fuse 12 and check that the supply to it is live.
2. Check that the relays for raising and lowering the top perform correctly and that the diodes are in good condition.
3. Check that the relays are energised at terminal 87 and that the hydraulic pump motor is energised when the switch is actuated.
4. Check the connectors, cable harnesses and earth connections.



Locations of components

- 
- 1 Battery
on the right-hand side of the engine compartment
 - 7 Earthing point, radiator cross-member
 - 17 Extra rheostat for the lighting of switches and controls
 - 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
 - 43 Handbrake switch
under the plastic cover at the handbrake lever
 - 58 12-pole connector
on the angle bracket, under the facia, to the left of the steering column
 - 60 Single-pole connector
two under the centre console, between the front seats
 - 75 Distribution block
in the engine compartment, on the side of the right-hand wheel housing
 - 98 10-pole connector
under the facia, to the left of the steering column
 - 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
 - 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car.
 - 181 Switch for the electrically operated sunroof/top
between the front seats, on the the centre console
 - 211 Earthing point on the gearbox
 - 273 Motor for the hydraulic pump
under the back seat, on the right-hand side
 - 277 Relay for raising the top
under the back seat, on the right-hand side
 - 278 Relay for lowering the top
under the back seat, on the right-hand side
 - 283 Diode for relay for operation of the top
under the back seat, on the right-hand side, in the cable harness running to the relays (277/278)
 - 290 Fuse for the top
in the engine compartment, on the right-hand side (at distribution block 75)

Components

The central locking system of the car is controlled by the key switch 183. When the key is turned in the lock of the driver's door...

Terminal 4 of control unit 175 for the central locking system is continuously supplied from terminal 24, via 29-pole white connector 152A. The control unit is controlled by key switch 183, which is connected to the driver's door.

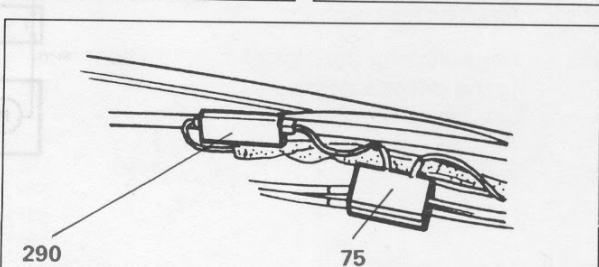
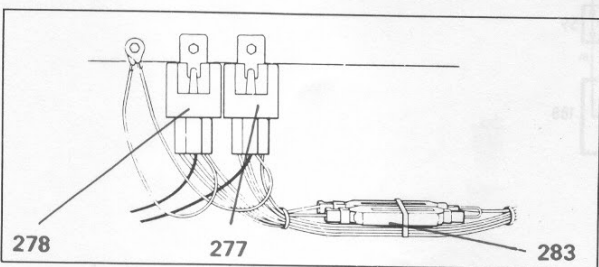
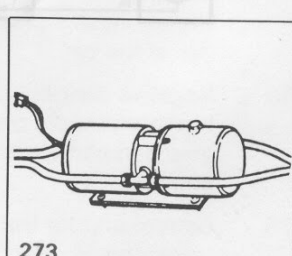
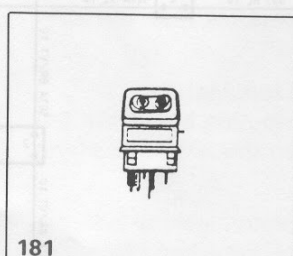
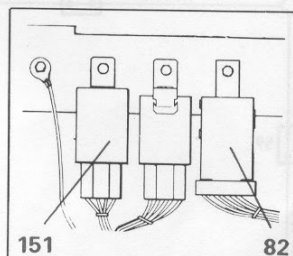
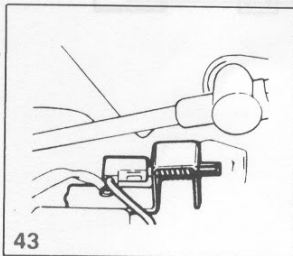
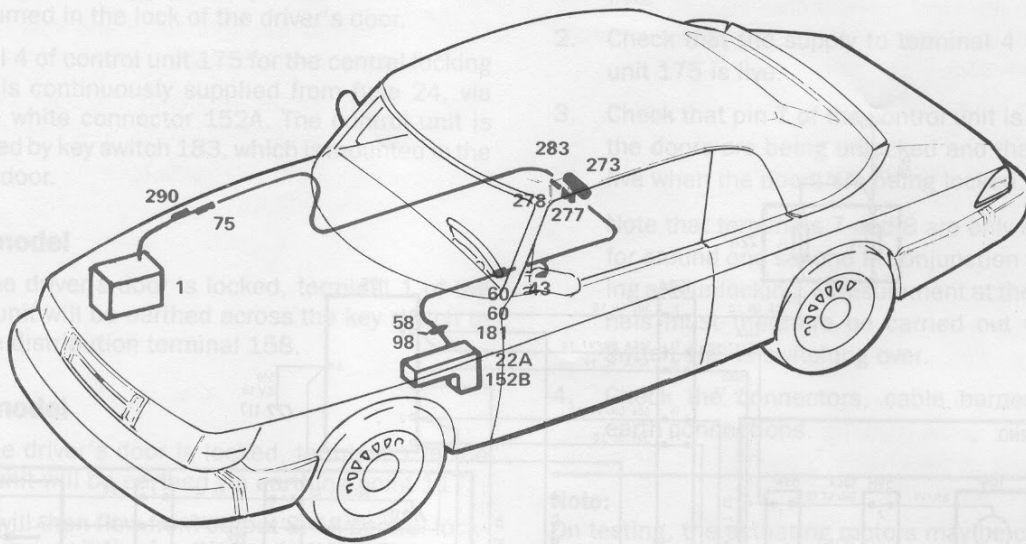
1987 model

When the driver's door is locked, terminal 2 of the control unit will be earthed across the key switch. Current will then flow from terminal 4 to the locking motors which are connected to terminals 1 and 2 of the control unit, and on from terminal 3 to earthing point 117.

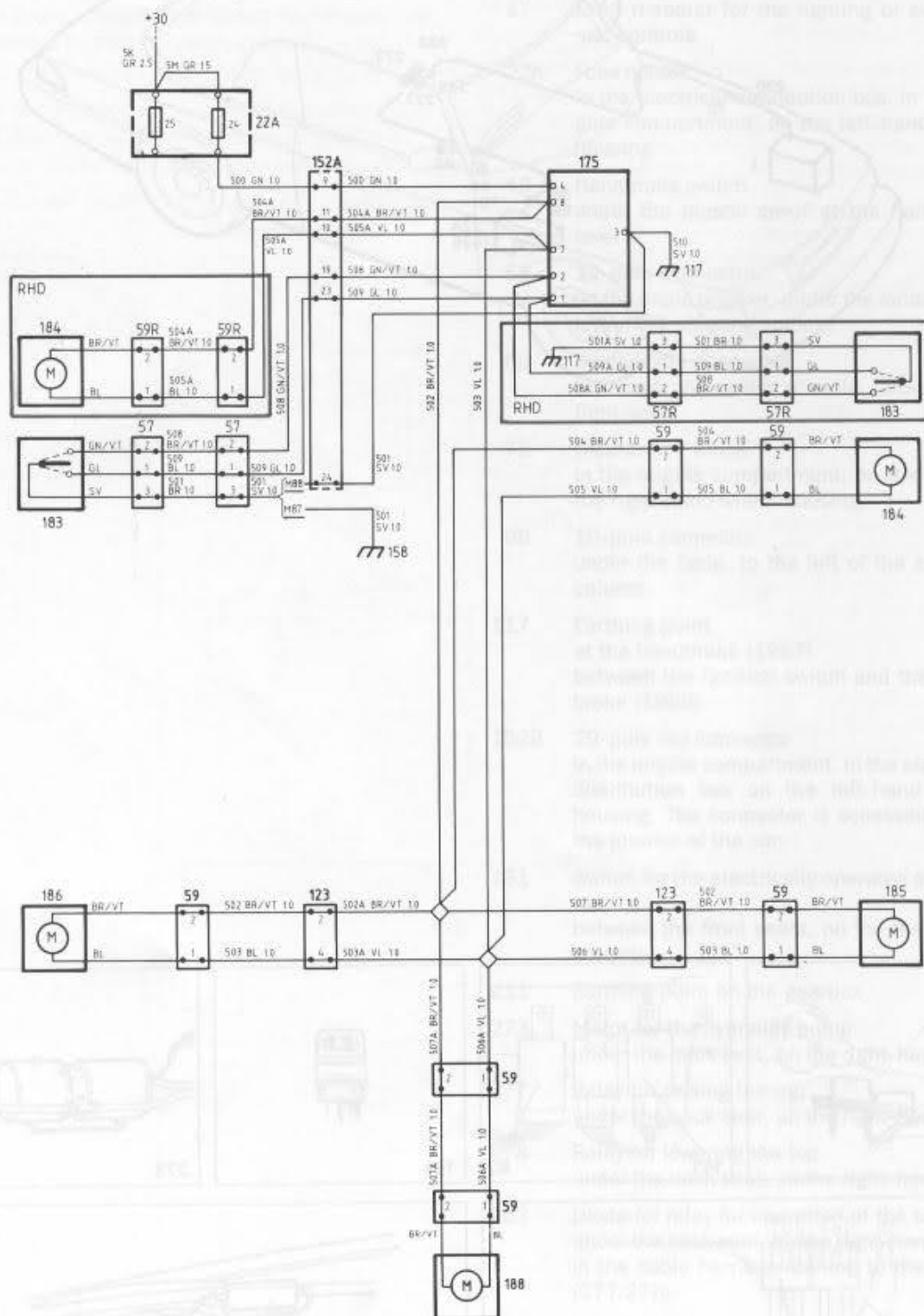
1988 model

When the driver's door is unlocked, terminal 2 of the control unit will be earthed across the key switch. The motors will now be energised from pin 7 instead, and will be earthed across pin 5 of the control unit (for approx. 1 second), causing the locks to open.

On right-hand drive cars, the key switch is connected to connector 57R, and motor 184 for the co-driver's door lock is connected to connector 58R.



Central locking



Operation

The central locking system of the car locks or unlocks all doors and the luggage compartment lid when the key is turned in the lock of the driver's door.

Terminal 4 of control unit 175 for the central locking system is continuously supplied from fuse 24, via 29-pole white connector 152A. The control unit is controlled by key switch 183, which is mounted in the driver's door.

1987 model

When the driver's door is locked, terminal 1 of the control unit will be earthed across the key switch to negative distribution terminal 158.

1988 model

When the driver's door is locked, terminal 1 of the control unit will be earthed via earthing point 117.

Current will then flow from output 8. All central locking motors (which are connected in parallel) will now be energised for approx. 1 second and the doors will be locked. The motors are earthed through pin 7 of the control unit, and on from terminal 3 to earthing point 117.

When the driver's door is unlocked, terminal 2 of the control unit will instead be earthed across the key switch. The motors will now be energised from pin 7 instead, and will be earthed across pin 8 of the control unit (for approx. 1 second), causing the locks to open.

On right-hand drive cars, the key switch is connected to connector 57R, and motor 184 for the co-driver's door lock is connected to connector 59R.

Fault-tracing hints

1. Check fuse 24 and check that the supply to it is live.
2. Check that the supply to terminal 4 of control unit 175 is live.
3. Check that pin 7 of the control unit is live when the doors are being unlocked and that pin 8 is live when the doors are being locked.

Note that terminals 7 and 8 are only energised for around one second in conjunction with locking and unlocking. Measurement at these terminals must therefore be carried out when key switch 183 is switching over.
4. Check the connectors, cable harnesses and earth connections.

Note:

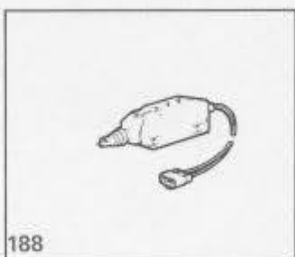
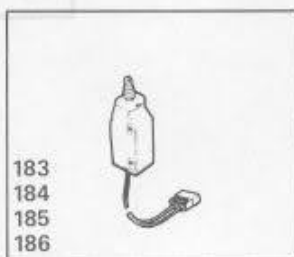
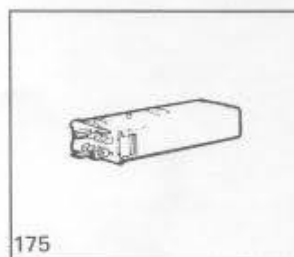
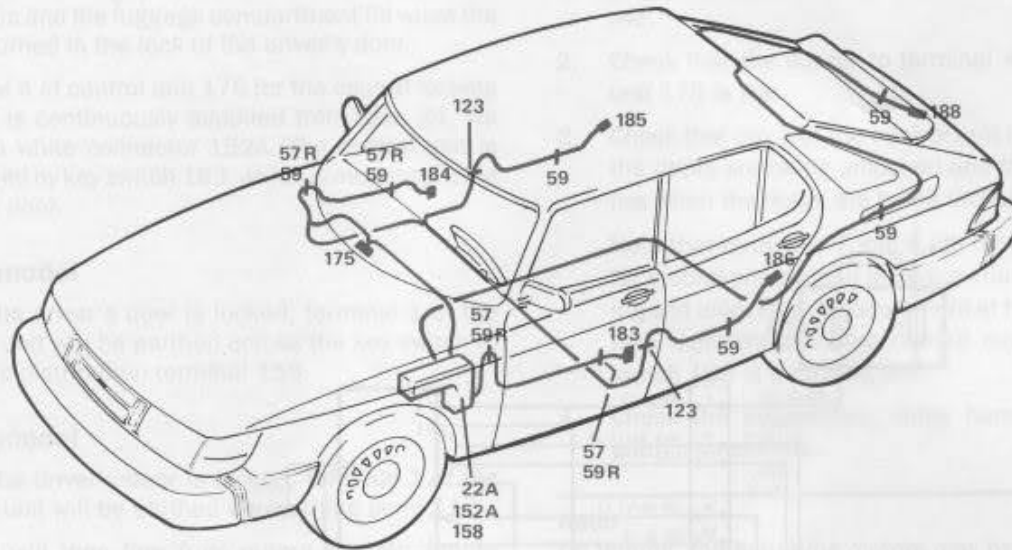
On testing, the actuating motors may be connected to terminals 7 and 8 of the control unit only. Do not connect them to any other power supply sources. Doing so may overload the motors and damage them.



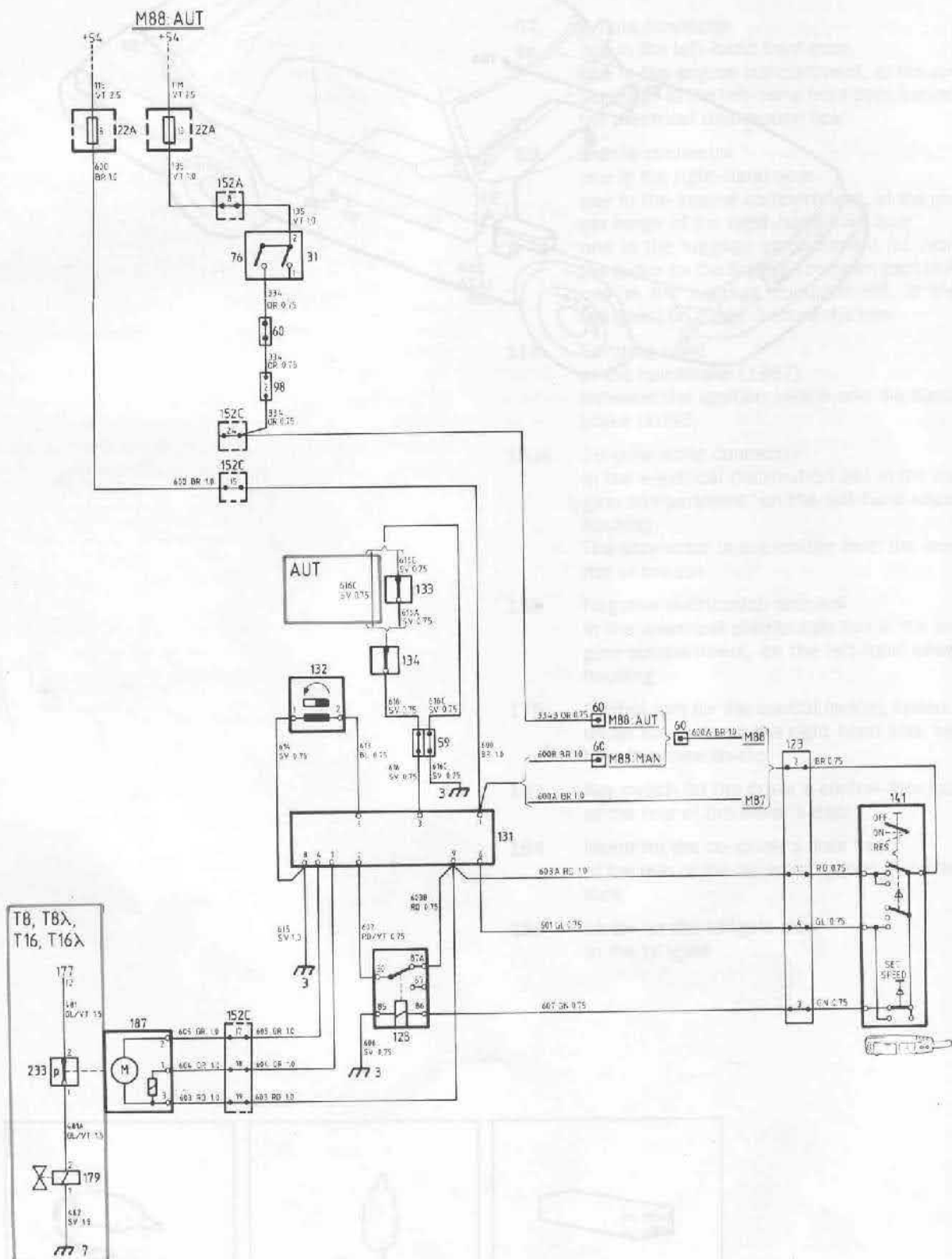
Locations of components

- | | | | |
|------|---|-----|---|
| 22A | Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 184 | Motor for the co-driver's door lock
in the co-driver's door, at the rear, under the lock |
| 57 | 3-pole connector
one in the left-hand front door
one in the engine compartment, at the upper hinge of the left-hand front door, behind the electrical distribution box | 185 | Motor for the right-hand rear door lock
under the lock in the right-hand rear door |
| 57R | 3-pole connector
one in the right-hand front door
one in the engine compartment, at the upper hinge of the right-hand front door | 186 | Motor for the left-hand rear door lock
under the lock in the left-hand rear door |
| 59 | 2-pole connector
one in the right-hand front door
one in the engine compartment, at the upper hinge of the right-hand front door
one in the left-hand rear door
one in the right-hand rear door
one in the luggage compartment lid, near the motor for the luggage compartment lock
one in the luggage compartment, above the left-hand wheel housing | 188 | Motor for the tailgate lock
in the tailgate |
| 59R | 2-pole connector
one in the left-hand front door
one in the engine compartment, at the upper hinge of the left-hand front door, behind the electrical distribution box | | |
| 117 | Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988) | | |
| 123 | 4-pole connector
one in the left-hand B pillar
one in the right-hand B pillar | | |
| 152A | 29-pole white connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing.
The connector is accessible from the interior of the car | | |
| 158 | Negative distribution terminal
in the electrical distribution box in the engine compartment, on the left-hand wheel housing | | |
| 175 | Control unit for the central locking system
under the facia on the right-hand side, behind the knee shield | | |
| 183 | Key switch for the driver's central door lock
in the driver's door | | |

Components



Speed Control system



Operation

Control unit 131 and selector 141 of the Speed Control system are supplied from fuse 8, via 29-pole black connector 152C.

The system is switched in by means of selector 141. When the latter is set to the ON position, the supply will be taken to the control unit (terminal 9), and from there to the vacuum pump and vacuum valve 187. The pump and valve are activated when terminals 4 and 7 are earthed. These terminals are earthed inside the control unit, which is connected to earthing point 3 via pedal switches 133 and 134.

When the SET SPEED button is depressed, the coil of relay 128 will be de-energised and the relay will close the circuit between pins 30 and 87A. Power will be supplied to pin 6 of control unit 131 when the SET SPEED button is depressed. Terminal 2 of the control unit will be supplied from terminal 9, via the relay contacts. The speed of the car will then be sensed by speed transmitter 132. The value is supplied to terminal 5 and is stored in the memory of the control unit.

Vacuum pump 187 generates a vacuum in the vacuum controller. This vacuum corresponds to the selected speed. The vacuum controller is connected by chain to the accelerator linkage.

The speed of the car is continuously sensed and compared with the value stored in the memory. In the event of a deviation, the vacuum pump/vacuum valve will increase or decrease the vacuum in the controller, thus resetting the accelerator linkage.

When terminals 4 and 7 are both earthed, the vacuum pump will run and the valve will be closed. The vacuum in the controller will increase, thereby increasing the accelerator setting.

When terminal 4 is not earthed and terminal 7 is earthed, the vacuum pump will be stationary and the valve will be closed. The vacuum in the controller, and thus the accelerator setting, will remain constant.

When terminals 4 and 7 are both open (not earthed), the vacuum pump will be stationary and the valve will be open. The vacuum in the controller will decrease, thereby reducing the accelerator setting.

If the clutch or brake pedal is depressed, the circuit to earth will be opened by the corresponding pedal switch (133 or 134). At the same time, a valve in the pedal switches will open, so that the vacuum will be lost. The pedal switches thus take the electrical and vacuum systems out of operation. The system will also be disconnected if the speed of the car drops below 34 km/h, if the selector is set to OFF or if the ignition is switched off.

The value in the memory of the control unit will not be erased, so the selected speed can be resumed after the pedal is released, by setting the selector to the RESUME position. Terminal 6 of the control unit will then be supplied.

The information in the memory of the control unit is erased when the ignition is switched off.

1988 model

On cars with automatic transmission, selector 141 is supplied from fuse 13, via 29-pole white connector 152A.

Turbo engine

Cars with the Turbo engine are also equipped with vacuum switch 233. The switch is connected between control unit 177 for the APC system and to solenoid valve 179.

When the Speed Control system is in operation, the vacuum switch is controlled from vacuum pump 187 (via a vacuum hose), and opens the solenoid valve circuit. This limits the boost pressure to the basic boost pressure, thus providing smoother control of the speed of the car.

Fault-tracing hints

1. The Speed Control system will be operative when the ignition switch is in the drive position.
2. Check fuse 8 and check that the supply to it is live.
3. Check that the supply to terminal 1 of control unit 131 and to selector 141 is live.
4. Check the following with selector 141 set as indicated:

ON position

Check that the supply is live to:

- terminal 9 of the control unit
- terminal 87A of relay 128
- vacuum pump/valve 187, at the connection of red cable 603

SET position

Check that the supply is live to:

- terminal 2 of the control unit
- terminals 86 and 30 of relay 128

RESUME position

Check that the supply to terminal 6 of the control unit is live.

5. Check the connectors, cable harnesses and earth connections.

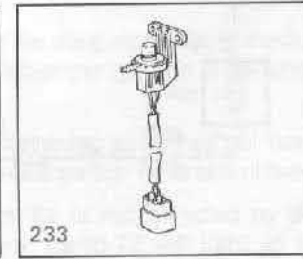
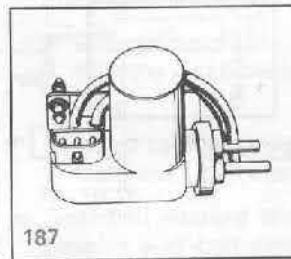
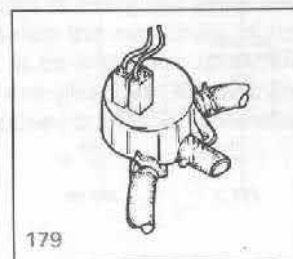
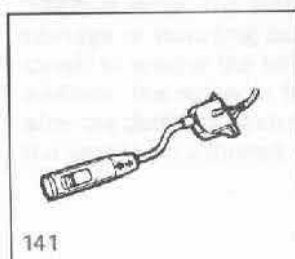
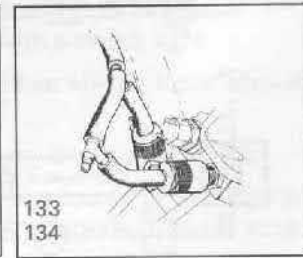
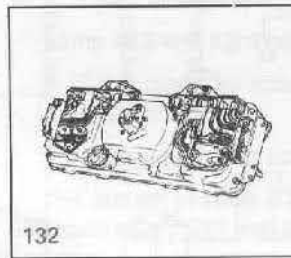
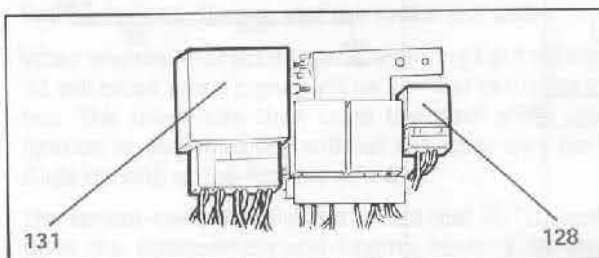
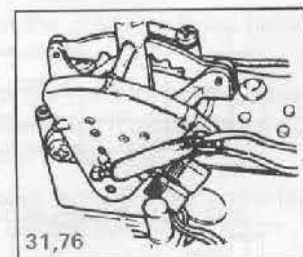
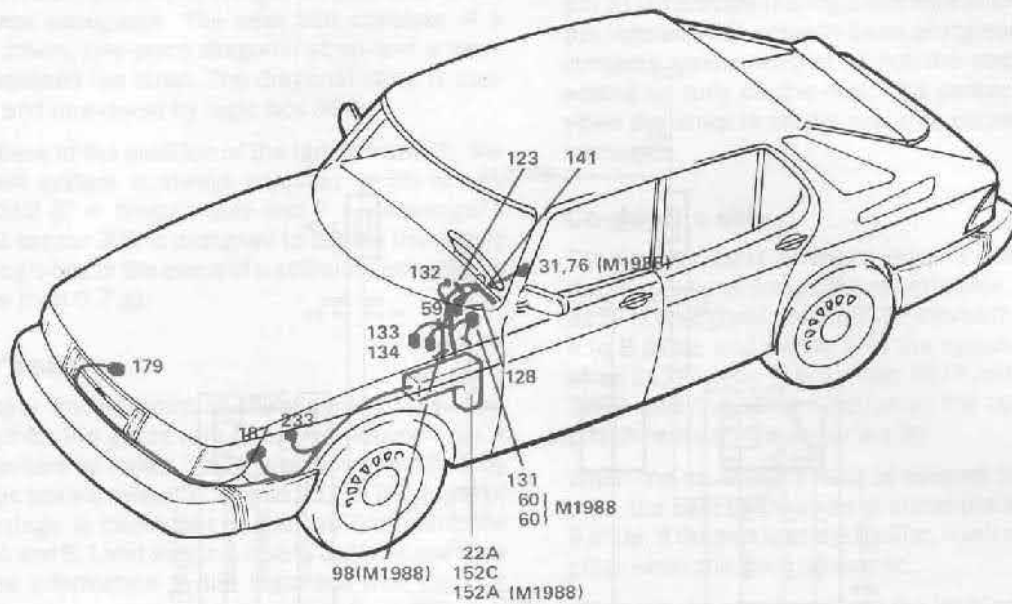
1988 model

On cars with automatic transmission, check fuse 13 and switch 76 for raising the idling speed, and check that the supply to selector 141 is live.

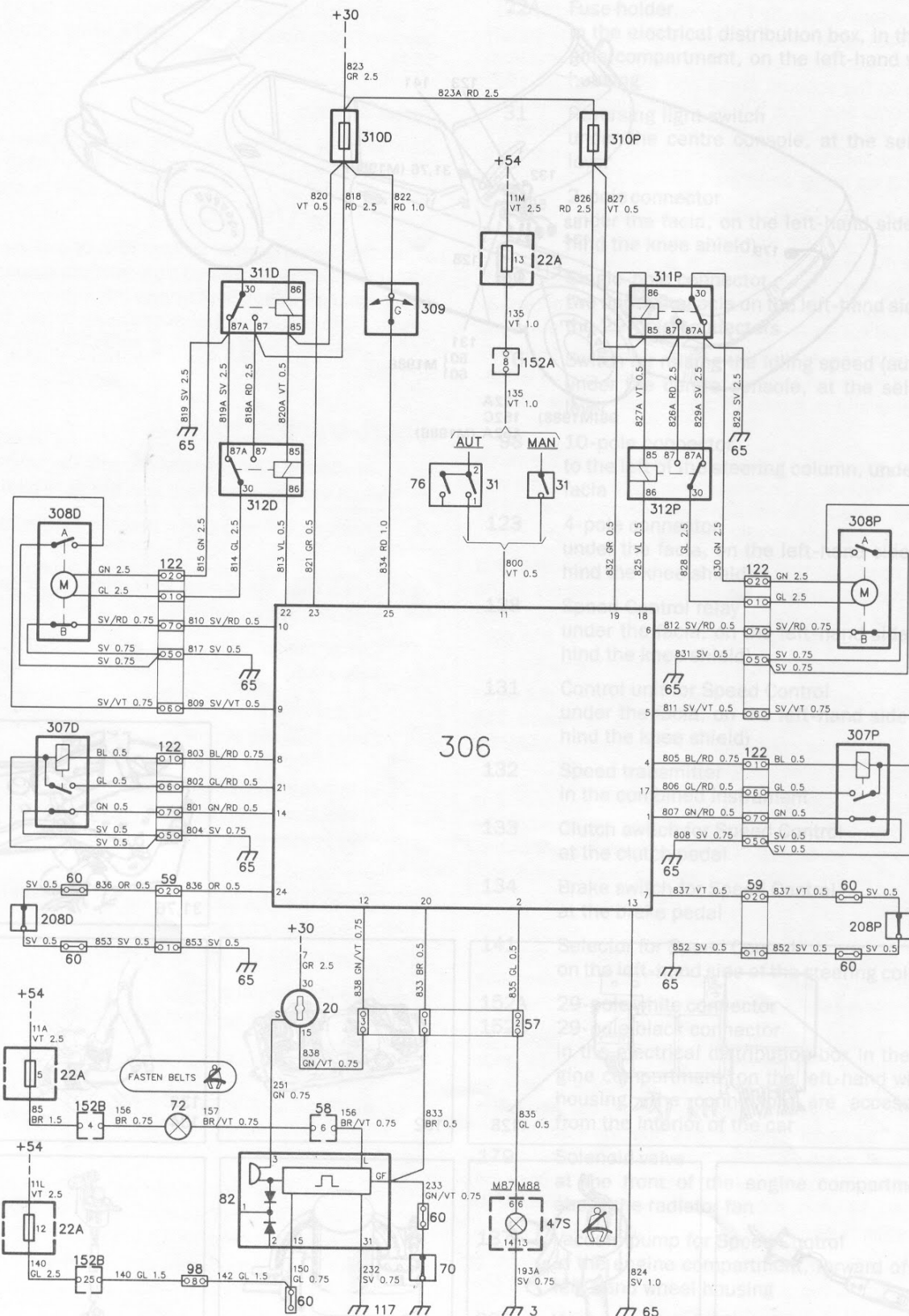
Locations of components

- 3 Earthing point in the facia
- 7 Earthing point, radiator cross-member
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 31 Reversing light switch
under the centre console, at the selector lever
- 59 2-pole connector
under the facia, on the left-hand side (behind the knee shield)
- 60 Single-pole connector
two under the facia on the left-hand side, at the 29-pole connectors
- 76 Switch for raising the idling speed (auto.)
under the centre console, at the selector lever
- 98 10-pole connector
to the left of the steering column, under the facia
- 123 4-pole connector
under the facia, on the left-hand side (behind the knee shield)
- 128 Speed Control relay
under the facia, on the left-hand side (behind the knee shield)
- 131 Control unit for Speed Control
under the facia, on the left-hand side (behind the knee shield)
- 132 Speed transmitter
in the combined instrument
- 133 Clutch switch for Speed Control
at the clutch pedal
- 134 Brake switch for Speed Control
at the brake pedal
- 141 Selector for Speed Control
on the left-hand side of the steering column
- 152A 29-pole white connector
- 152C 29-pole black connector
in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connectors are accessible from the interior of the car
- 179 Solenoid valve
at the front of the engine compartment, above the radiator fan
- 187 Vacuum pump for Speed Control
in the engine compartment, forward of the left-hand wheel housing
- 233 Vacuum switch for Speed Control
in the engine compartment, forward of the left-hand wheel housing

Components



Passive seat belts



Operation

In certain cars, passive seat belts are provided for the front-seat occupants. The seat belt consists of a motor-driven, two-point diagonal strap and a manually fastened lap strap. The diagonal strap is controlled and monitored by logic box 306.

Regardless of the position of the ignition switch, the seat-belt system is always supplied (+30) across fuses 310 (D = driver's side and P = passenger's side). G sensor 309 is designed to isolate the supply to the logic box in the event of a collision (retardation of more than 0.7 g).

Driver's side

The upper anchor point of the diagonal strap (the carriage on the guide rail) is moved between the A and B pillars by motor 308D, which is controlled by the logic box via relays 311D and 312D. The travel of the carriage is monitored by the two limit switches 308D:A and B. Limit switch A opens a circuit and thus provides information to the logic box that the carriage has reached the A pillar, and limit switch B opens the circuit when the carriage is locked at the B pillar.

When the door is opened from the outside, the carriage is in the forward position at the A pillar. After the door has been closed, i.e. door switch 208D is open and ignition switch 20 is in the drive or start position, the coil of relay 311D will be earthed via pin 23 in logic box 306. The relay is energised and one pole of the motor is supplied via the relay contacts, while the other pole is earthed via relay 312D. When the carriage has reached the rear limit of its travel at the B pillar, limit switch B will open. The logic box will then open the earth circuit to the coil of relay 311D and the motor will stop.

When the ignition is switched off or the door is opened, the logic box will energise (via pin 22) relay 312D. The direction of rotation of the motor will then be reversed and the carriage will move towards the A pillar. When the carriage has reached the A pillar, limit switch A will open and the motor will stop.

When reverse gear is engaged, reversing light switch 31 will close and a signal will be applied to the logic box. The driver can then open the door while the ignition is switched on, without the seat-belt carriage moving to the forward position.

The sensor-override solenoid in belt reel 307D overrides the acceleration and tipping sensors for the diagonal strap. The solenoid is energised while the carriage is travelling between the two limits of its travel, to enable the belt to be withdrawn freely. In addition, the solenoid is energised for 30 seconds after the door has been opened or closed, to enable the seat to be adjusted.

When the solenoid is energised, the circuit will be closed at the upper contacts in the diagram (earth at pin 21) to provide the logic box with information that the solenoid has actually been energised. The lower contacts sense whether or not the strap has been wound up fully on the reel. The contacts are open when the strap is on the reel (not connected to the carriage).

Co-driver's side

The diagonal strap on the co-driver's side is driven in the same way as that on the driver's side. (When relay 311P is energised, motor 308P moves the strap from A to B pillar, and moves it in the opposite direction when 312P is energised.) Reel 307P and door switch 208P have the same function as the corresponding components on the driver's side.

When the co-driver's door is opened from the outside, the seat belt may be at either the A pillar or the B pillar. If the belt is at the B pillar, it will move to the A pillar when the door is opened.

When the door is closed and the ignition is switched on or if it is already switched on, the belt will move to the B pillar, regardless of whether or not the seat is occupied.

When the co-driver's door is opened, the carriage will move to the A pillar, and will remain there when the door is closed, unless the ignition is switched on.

Warning system

Warning lamp 47S for the passive seat belts is controlled by the logic box. The lamp will flash:

- when the carriage on the driver's side is moving from A to B pillar
- when the carriage on the co-driver's side moves from the A to the B pillar and if it takes more than 8 seconds to reach the B pillar
- if the carriage is locked at the B pillar and a fault has occurred on the sensor-override function
- if the carriage is not securely locked at the B pillar

Lamp 47S will light up with a steady light:

- if the diagonal strap has worked loose from the carriage.

A flashing light has priority over a steady light.

The buzzer in relay 82 is actuated by the logic box (earth at pin 20) and by the driver's side lap strap.

The buzzer will sound:

- while the carriage for the diagonal strap is moving from the A or B pillar when the ignition is switched on
- for up to 8 seconds if the lap strap has not been fastened, i.e. if seat-belt switch 70 is still closed.

Seat-belt warning lamp 72 is not affected by the passive seat-belt system. Lamp 72 will light up for 4–8 s after the ignition has been switched on.

Fault-tracing hints

Check that the supply to the seat-belt system is live. Fuse 310D protects the logic box and the seat belt on the driver's side, whereas fuse 310P protects the seat belt on the co-driver's side. (The seat belt on the driver's side will still operate, even if fuse 310P has blown.) Also check fuses 5, 12 and 13.

As a general rule, always disconnect the connector from the logic box before carrying out fault-tracing on the system. Never take any measurements with the logic box connected or on the pins of the logic box.

The logic box is regarded as an exchange unit, and fault-tracing should start by determining whether the fault is in the logic box or in other components, connectors, etc. Most of the signals to and from the logic box can be checked using the system diagram and the table below. The diagram shows the belt system with the carriages at the A pillar, the car doors open and the lap strap not fastened.

1. Ensure that the ignition is switched off and disconnect the connector from the logic box. Carry out all measurements from the rear of the connector.
2. Turn the ignition key to the drive position and use a voltmeter to check that the following pins in the connector are at battery voltage.

Pin	Remarks
11	reverse gear engaged
12	ignition switch in the drive position
18	via the relay coil in 312P
19	via the relay coil in 311P
22	via the relay coil in 312D
23	via the relay coil in 311D
25	via g sensor 309

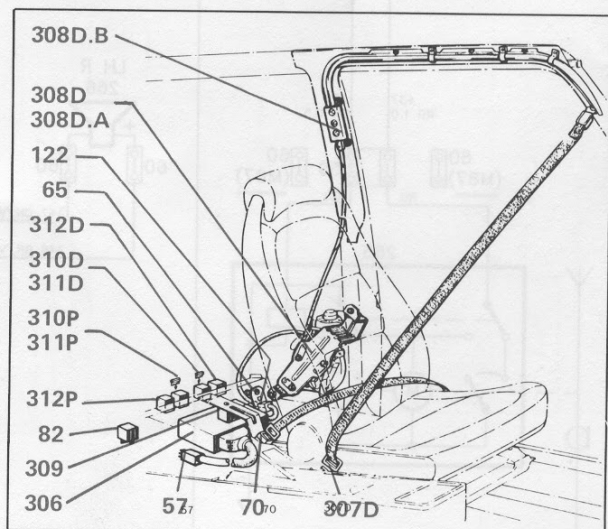
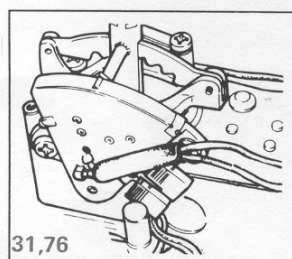
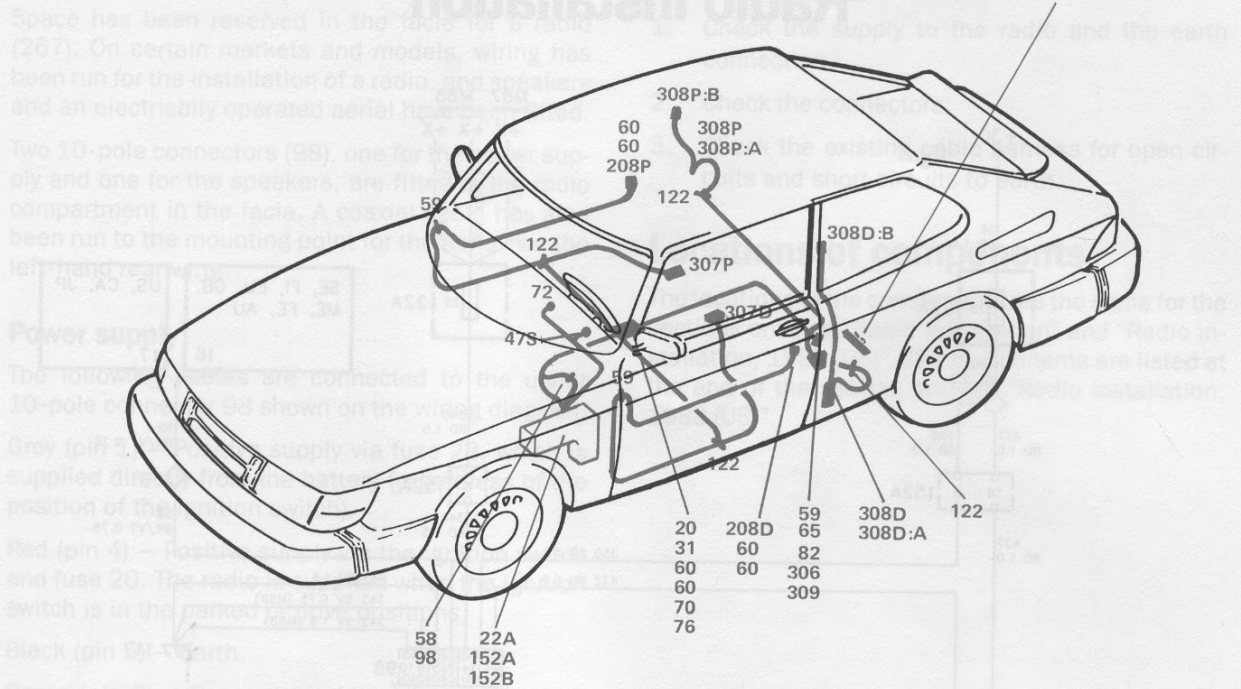
3. Use an ohmmeter to measure between the following pins and earth.

Pin	Resistance	Remarks
1	0 ohm	belt in the carriage
2	approx. 13 ohm	bulb resistance
4	approx. 22 ohm	coil resistance
5	open circuit	carriage at A pillar
6	0 ohm	
7	0 ohm	co-driver's door open
8	approx. 22 ohm	coil resistance
9	open circuit	carriage at A pillar
10	0 ohm	
13	0 ohm	
14	0 ohm	belt in the carriage
17	open circuit	
20	0 ohm	lap strap not fastened
21	open circuit	
24	0 ohm	driver's door open

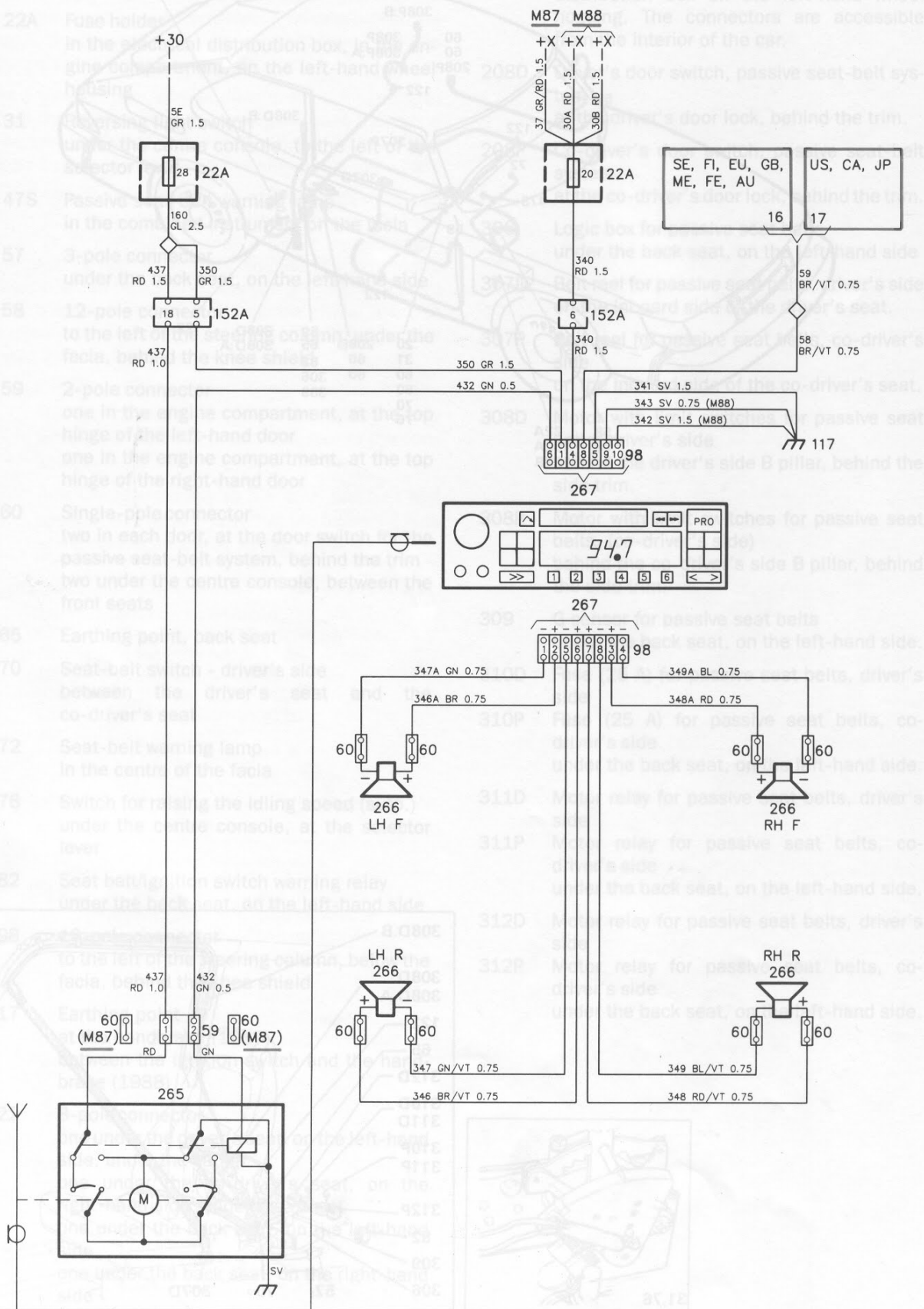
Locations of components

- | | | | |
|-----|---|------|--|
| 3 | Earthing point in the facia | 152A | 29-pole white connector |
| 20 | Ignition switch | 152B | 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car. |
| 22A | Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 208D | Driver's door switch, passive seat-belt system
at the driver's door lock, behind the trim. |
| 31 | Reversing light switch
under the centre console, to the left of the selector lever | 208P | Co-driver's door switch, passive seat-belt system
at the co-driver's door lock, behind the trim. |
| 47S | Passive seat-belt warning lamp
in the combined instrument on the facia | 306 | Logic box for passive seat belts
under the back seat, on the left-hand side |
| 57 | 3-pole connector
under the back seat, on the left-hand side | 307D | Belt reel for passive seat belts, driver's side
on the inboard side of the driver's seat. |
| 58 | 12-pole connector
to the left of the steering column, under the facia, behind the knee shield | 307P | Belt reel for passive seat belts, co-driver's side
on the inboard side of the co-driver's seat. |
| 59 | 2-pole connector
one in the engine compartment, at the top hinge of the left-hand door
one in the engine compartment, at the top hinge of the right-hand door | 308D | Motor with limit switches for passive seat belts, driver's side
behind the driver's side B pillar, behind the side trim. |
| 60 | Single-pole connector
two in each door, at the door switch for the passive seat-belt system, behind the trim
two under the centre console, between the front seats | 308P | Motor with limit switches for passive seat belts, (co-driver's side)
behind the co-driver's side B pillar, behind the side trim. |
| 65 | Earthing point, back seat | 309 | G sensor for passive seat belts
under the back seat, on the left-hand side. |
| 70 | Seat-belt switch - driver's side
between the driver's seat and the co-driver's seat | 310D | Fuse (25 A) for passive seat belts, driver's side |
| 72 | Seat-belt warning lamp
in the centre of the facia | 310P | Fuse (25 A) for passive seat belts, co-driver's side
under the back seat, on the left-hand side. |
| 76 | Switch for raising the idling speed (auto.)
under the centre console, at the selector lever | 311D | Motor relay for passive seat belts, driver's side |
| 82 | Seat belt/ignition switch warning relay
under the back seat, on the left-hand side | 311P | Motor relay for passive seat belts, co-driver's side
under the back seat, on the left-hand side. |
| 98 | 10-pole connector
to the left of the steering column, below the facia, behind the knee shield | 312D | Motor relay for passive seat belts, driver's side |
| 117 | Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988) | 312P | Motor relay for passive seat belts, co-driver's side
under the back seat, on the left-hand side. |
| 122 | 8-pole connector
one under the driver's seat, on the left-hand side, under the carpet
one under the co-driver's seat, on the right-hand side, under the carpet
one under the back seat, on the left-hand side
one under the back seat, on the right-hand side | | |

Components



Radio installation



Operation

Space has been reserved in the fascia for a radio (267). On certain markets and models, wiring has been run for the installation of a radio, and speakers and an electrically operated aerial have been fitted.

Two 10-pole connectors (98), one for the power supply and one for the speakers, are fitted in the radio compartment in the fascia. A coaxial cable has also been run to the mounting point for the aerial, on the left-hand rear wing.

Power supply

The following cables are connected to the upper 10-pole connector 98 shown on the wiring diagram:

Grey (pin 1) – Positive supply via fuse 28, which is supplied directly from the battery (regardless of the position of the ignition switch).

Red (pin 4) – Positive supply via the ignition switch and fuse 20. The radio is supplied when the ignition switch is in the parked or drive positions.

Black (pin 5) – Earth.

Green (pin 6) – For control of the electrically operated aerial (265). The motor of the electrically operated aerial is supplied via fuse 28.

Brown/white (pin 8) – Dial lighting. The supply is taken from the instrument lighting rheostat 16/17.

Speakers

The speaker connections are made via the lower 10-pole connector shown in the diagram.

Left-hand front:

Green (pin 1) –

Brown (pin 2) +

Right-hand front:

Red (pin 3) +

Blue (pin 4) –

Left-hand rear:

Green/white (pin 5) –

Brown/white (pin 6) +

Right-hand rear:

Red/white (pin 7) +

Blue/white (pin 8) –

Each speaker is connected via single-pole connector 60.

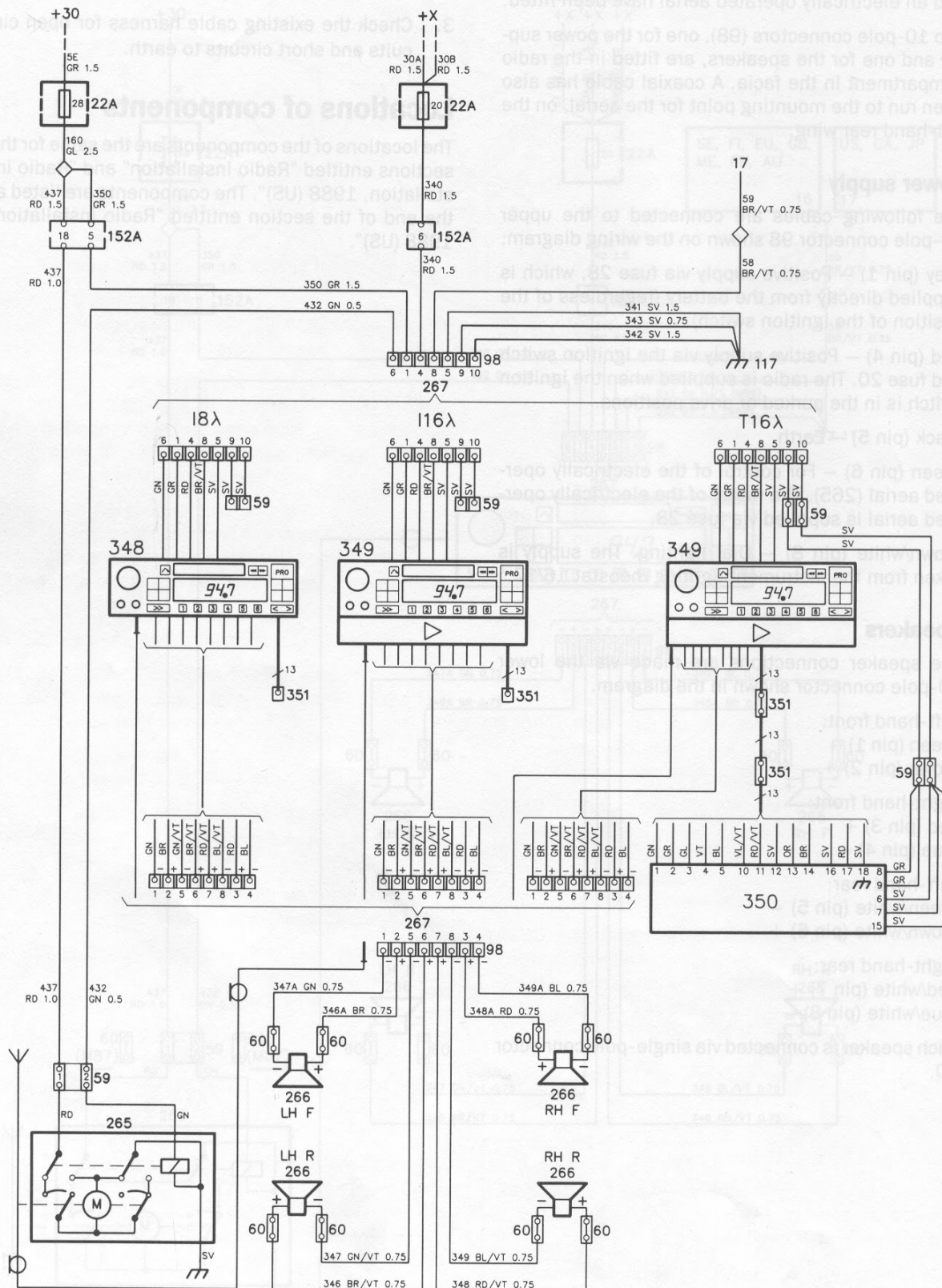
Fault-tracing hints

1. Check the supply to the radio and the earth connection.
2. Check the connectors.
3. Check the existing cable harness for open circuits and short circuits to earth.

Locations of components

The locations of the components are the same for the sections entitled "Radio installation" and "Radio installation, 1988 (US)". The components are listed at the end of the section entitled "Radio installation, 1988 (US)".

Radio installation, 1988 (US)



Operation

The fascia is fitted with a radio contact box.

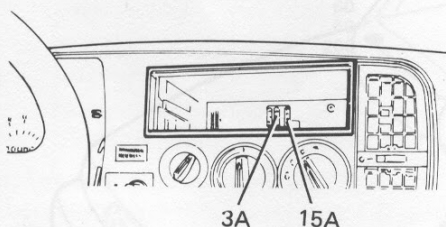
Three variants exist:

- 900 I8: A radio contact box without amplifier (348)
- 900 I16: A radio contact box with amplifier (349)
- 900 T16: A radio contact box with amplifier (348). This contact box is equipped with a shielded cable with an 18-pole connector, for the connection of a CD player or equalizer. The shielded cable is fitted with two 13-pole connectors 351 (DIN connectors). The CD player or equalizer can be connected by inserting it into a contact box located in the top compartment of the centre console.

In addition, the car is pre-wired, and speakers and an electrically operated aerial are fitted, to facilitate the installation of a radio.

The radio contact box must be connected to the aerial cable and to two 10-pole connectors 98 (267), one for the power supply and the other for the speakers.

The contact box with amplifier (349) is fitted with a 3A fuse and a 16A fuse.



Blade fuses for amplifier

Power supply

The following cables are connected to the upper 10-pole connector 98 shown on the wiring diagram:

Grey (pin 1) – Positive supply via fuse 28, which is supplied directly from the battery (regardless of the position of the ignition switch).

Red (pin 4) – Positive supply via the ignition switch and fuse 20. The radio is supplied when the ignition switch is in the parked or drive positions.

Black (pins 5, 9 and 10) – Earth.

Green (pin 6) – For control of the electrically operated aerial (265). The motor of the electrically operated aerial is supplied via fuse 28.

Brown/white (pin 8) – Dial lighting. The supply is taken from the instrument lighting rheostat 17.

Speakers

The speaker connections are made via the lower 10-pole connector shown in the diagram.

Left-hand front:

Green (pin 1) –
Brown (pin 2) +

Right-hand front:

Red (pin 3) +
Blue (pin 4) –

Left-hand rear:

Green/white (pin 5) –
Brown/white (pin 6) +

Right-hand rear:

Red/white (pin 7) +
Blue/white (pin 8) –

Each speaker is connected via single-pole connector 60.

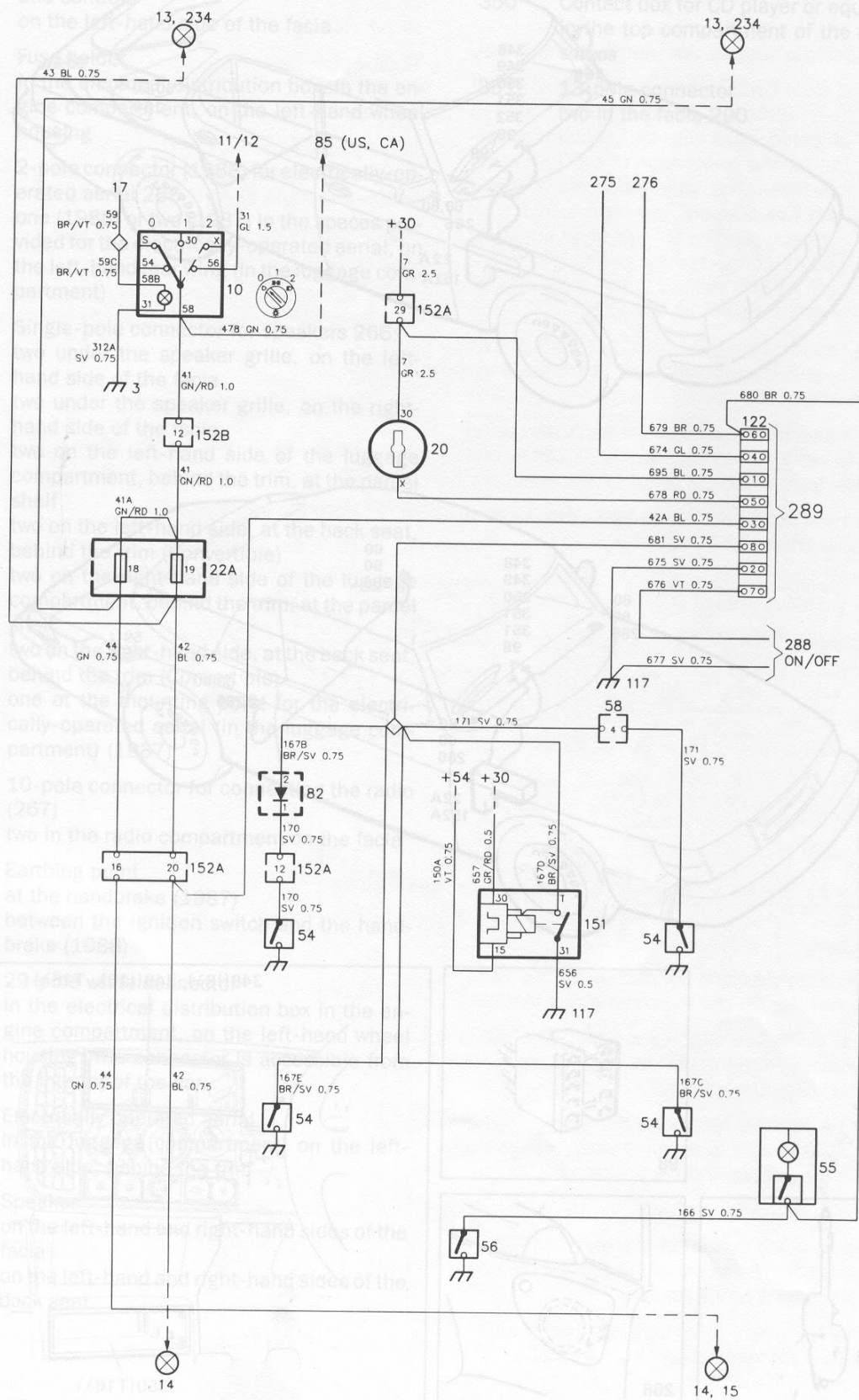
Fault-tracing hints

1. Check the supply to the radio and the earth connection.
2. Check the connectors.
3. Check the existing cable harness for open circuits and short circuits to earth.

Locations of components

- 16 Instrument lighting rheostat in the combined instrument
- 17 Extra rheostat for the lighting of switches and controls on the left-hand side of the facia
- 22A Fuse holder in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 59 2-pole connector (1988) for electrically-operated aerial 265 one (1988) or two (1987) in the spaces provided for the electrically-operated aerial, on the left-hand rear wing (in the luggage compartment)
- 60 Single-pole connector for speakers 266:
two under the speaker grille, on the left-hand side of the facia
two under the speaker grille, on the right-hand side of the facia
two on the left-hand side of the luggage compartment, behind the trim, at the parcel shelf
two on the left-hand side, at the back seat, behind the trim (Convertible)
two on the right-hand side of the luggage compartment, behind the trim, at the parcel shelf
two on the right-hand side, at the back seat, behind the trim (Convertible)
one at the mounting point for the electrically-operated aerial (in the luggage compartment) (1987)
- 98 10-pole connector for connecting the radio (267)
two in the radio compartment on the facia
- 117 Earthing point at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 152A 29-pole white connector in the electrical distribution box in the engine compartment, on the left-hand wheel housing. The connector is accessible from the interior of the car.
- 265 Electrically operated aerial in the luggage compartment, on the left-hand side, behind the trim
- 266 Speaker on the left-hand and right-hand sides of the facia
on the left-hand and right-hand sides of the back seat
- 348 Radio contact box in the radio compartment on the facia
- 349 Radio contact box with amplifier In the radio compartment on the facia
- 350 Contact box for CD player or equalizer in the top compartment of the centre console
- 351 13-pole connector two in the facia 290

Burglar alarm – US, CA, JP



Operation

Cars delivered to certain markets, including the U.S.A. market, have provision for the installation of a burglar alarm. A special cable harness and an 8-pole connector (289) for connecting the burglar alarm control unit are included.

The control unit is supplied from pin 1 of connector 289 (+30), regardless of the position of the ignition switch, and from pin 5 (+X) when the ignition switch is in the parked, drive or start position.

To prevent the burglar alarm from being set off, the ignition key must be turned within a certain time after a car door has been opened.

The movement detector can be switched on and off by means of an ON/OFF switch connected to pin 7 of the control unit (earth/no earth).

If the burglar alarm is activated, the alarm will be set off if one of the following contacts should close:

- Door switches 54 connected to pin 8.
- Luggage compartment light switch 56, luggage compartment lighting 55 or the HOOD switch, which are connected to pin 6.

When the alarm is set off, the horn will be supplied via pin 4, and the parking lights via pin 3.

The parking lights are supplied via pin 20 of 29-pole white connector 152A, and include:

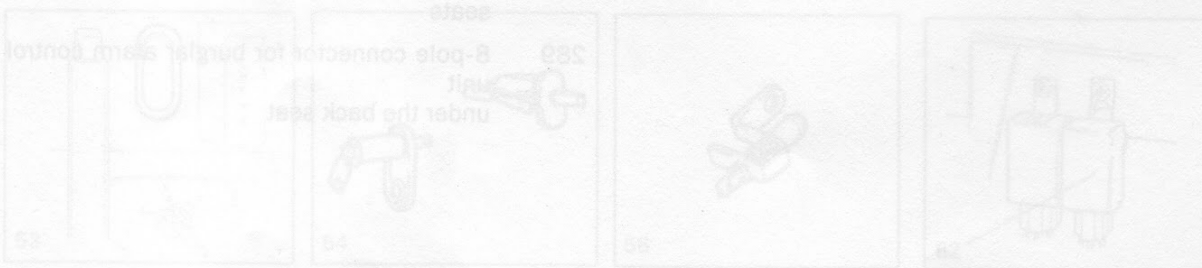
- 13 Parking lights (front)
- 14 Rear lights
- 15 Number plate illumination
- 234 Side marker lights (certain markets)

Note: The wiring varies from one market to another, and between the 3-D/5-D and 2-D/4-D models (see the section entitled "Parking lights").

Fault-tracing hints

1. Check that the supply to connector 289 (terminals 1 and 5) is live.
2. Check the burglar alarm ON/OFF switch.
3. Check the door switches, luggage compartment light switch and hood switch, and the corresponding connections to connector 289.
4. Check the connectors, cable harnesses and earth connections.

For fault-tracing hints on the parking lights, see the section entitled "Parking lights".

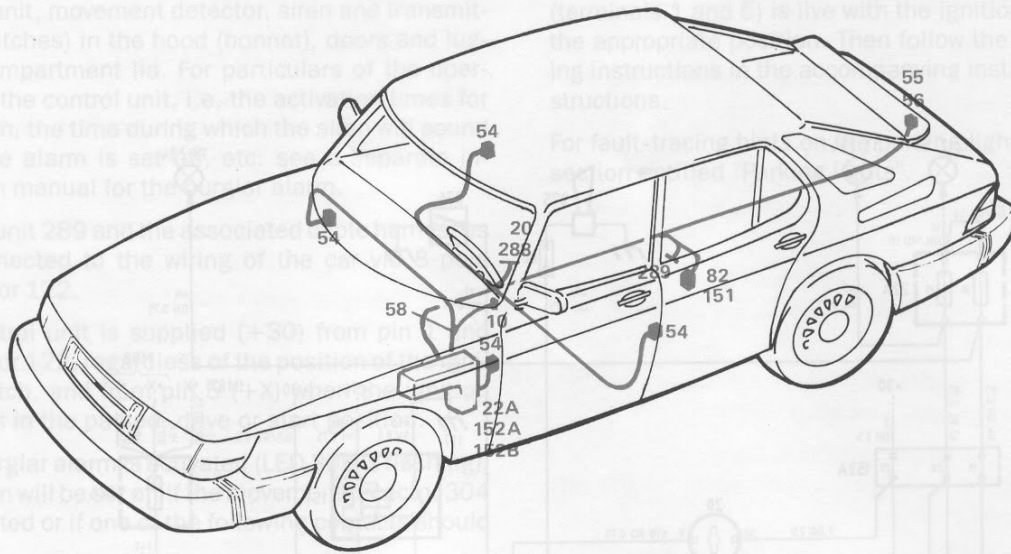


Locations of components

For the locations of parking light components, see the section entitled "Parking lights".

- 9 Earthing point in the luggage compartment
- 10 Light switch
on the left-hand side of the facia
- 20 Ignition switch
on the centre console between the front seats
- 22A Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing
- 54 Door switches, interior lighting
at the front of each door frame
- 55 Luggage compartment lamp
in the luggage compartment, on the left-hand side
- 56 Luggage compartment light switch
3-D/5-D: at the luggage compartment lock
2-D/4-D: in the luggage compartment, at the left hinge of the luggage compartment lid.
- 58 12-pole connector
on the angle bracket, under the facia, to the left of the steering column (behind the knee shield)
- 60 Single-pole connector
one for the horn, in the engine compartment, behind the right-hand wheel housing
- 82 Seat belt/ignition switch warning relay
under the back seat, on the left-hand side
- 117 Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988)
- 151 Time-delay relay for the interior lighting
under the back seat, on the left-hand side
- 152A 29-pole white connector
- 152B 29-pole red connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connectors are accessible from the interior of the car.
- 288 Connector for burglar alarm switch
on the centre console between the front seats
- 289 8-pole connector for burglar alarm control unit
under the back seat

Components



- Door switches are connected to pin 8. (Time-delay relay 151 for the interior lighting affects only the alarm activation time, approx. 3 seconds.)
- Luggage compartment switch 58, horn (bonnet) switch 270, which are connected to pin 8.

When the alarm is set, the horn will sound from pin 4 and will sound in the horn. It is connected to black connector 152A and the parking lights of the car will also flash.

The parking lights are supplied via pin 20 of 20-pole white connector 152A and the horn.

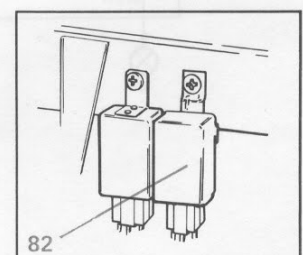
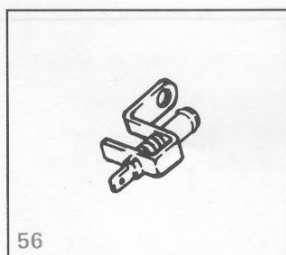
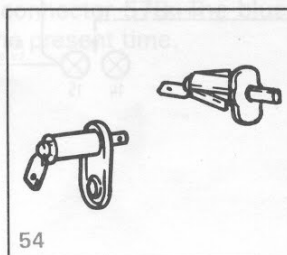
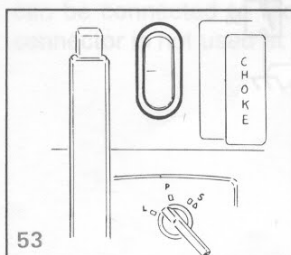
- 13 Parking lights (front)
- 14 Rear lights
- 15 Number plate illumination
- 234 Side marker lights

If the headlamps (13/14) or extra fog lamps (23) are switched on, they will also flash.

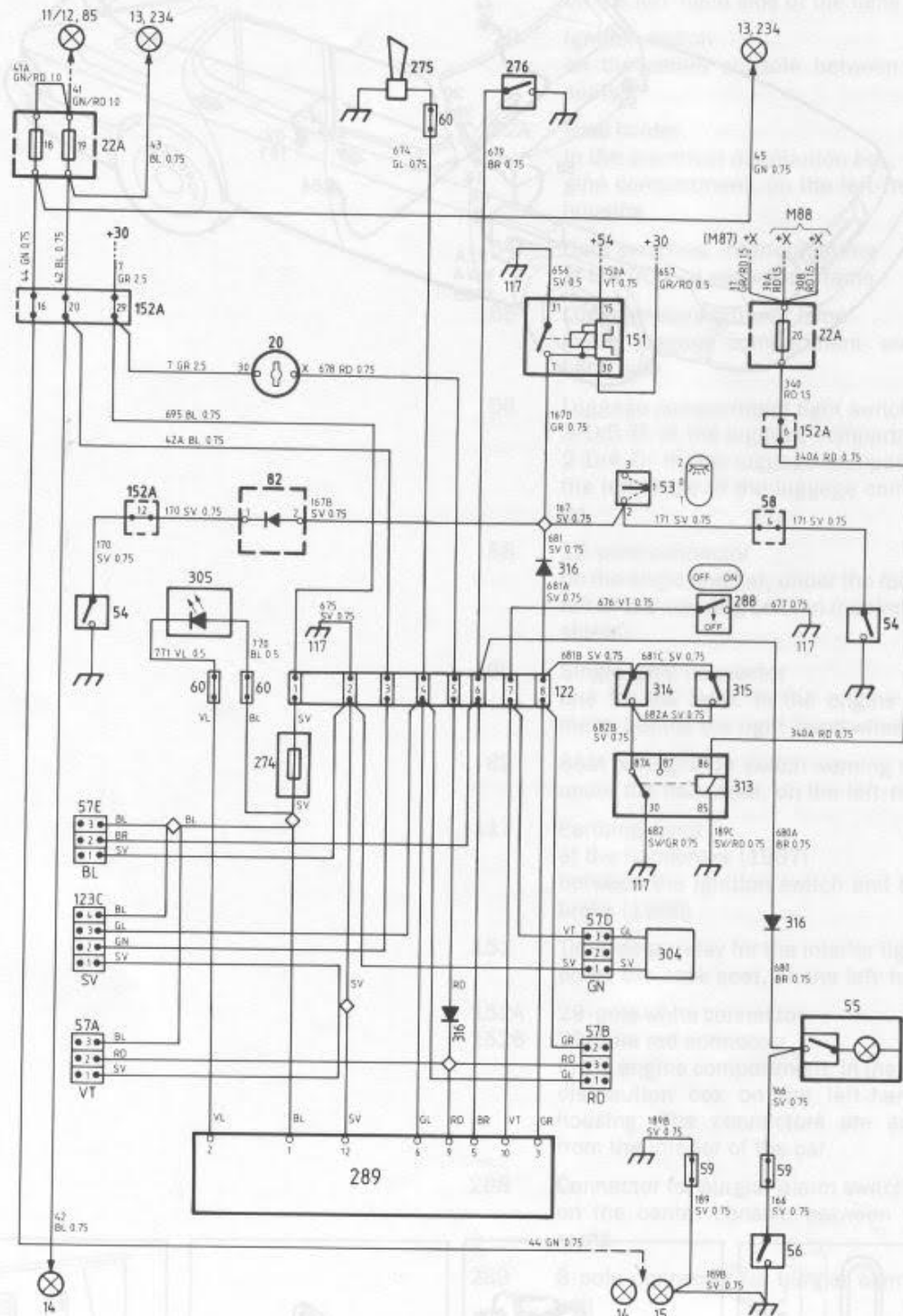
The movement detector can be switched off by means of ON/OFF switch 288 connected to pin 7. The contacts are closed.

None of the seat switches 314 or 315 will be activated at the same time as the ignition switch is in the drive or start position. LED 305 will be switched on.

A receiver for remote control activation can be connected to white connector 57A. A transmitter designed to initiate an alarm in a portable receiver.



Burglar alarm, Convertible



Operation

The car is equipped with a burglar alarm comprising a control unit, movement detector, siren and transmitters (switches) in the hood (bonnet), doors and luggage compartment lid. For particulars of the operation of the control unit, i.e. the activation times for the alarm, the time during which the siren will sound when the alarm is set off, etc. see a separate instruction manual for the burglar alarm.

Control unit 289 and the associated cable harnesses are connected to the wiring of the car via 8-pole connector 122.

The control unit is supplied (+30) from pin 1 and connector 122, regardless of the position of the ignition switch, and from pin 5 (+X) when the ignition switch is in the parked, drive or start position.

If the burglar alarm is activated (LED 305 is flashing), the alarm will be set off if the movement detector 304 is activated or if one of the following contacts should close:

- Door switches 54 connected to pin 8. (Time-delay relay 151 for the interior lighting affects only the alarm activation time, approx. 15 seconds.)
- Luggage compartment light switch 56 or hood (bonnet) switch 276, which are connected to pin 6.

When the alarm is set off, siren 275 will be energised from pin 4 and will sound. If the flasher relay is connected to black connector 123C, the parking lights of the car will also flash.

The parking lights are supplied via pin 20 of 29-pole white connector 152A, and include:

- | | |
|-----|---------------------------|
| 13 | Parking lights (front) |
| 14 | Rear lights |
| 15 | Number plate illumination |
| 234 | Side marker lights |

If the headlamps (11/12) or extra fog lamps (85) are switched on, they will also flash.

The movement detector can be switched off by means of ON/OFF switch 288 connected to pin 7 (contacts closed).

If one of the seat switches 314 or 315 is closed at the same time as the ignition switch is in the parked, drive or start position, LED 305 will be switched off.

A receiver for remotely controlled de-activation can be connected to white connector 57A. A transmitter designed to initiate an alarm in a portable receiver can be connected to red connector 57B. The blue connector is not used at the present time.

Fault-tracing hints

Start by checking that the supply to connector 122 (terminals 1 and 5) is live with the ignition switch in the appropriate position. Then follow the fault-tracing instructions in the accompanying installation instructions.

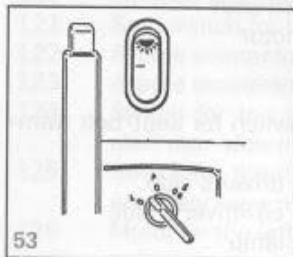
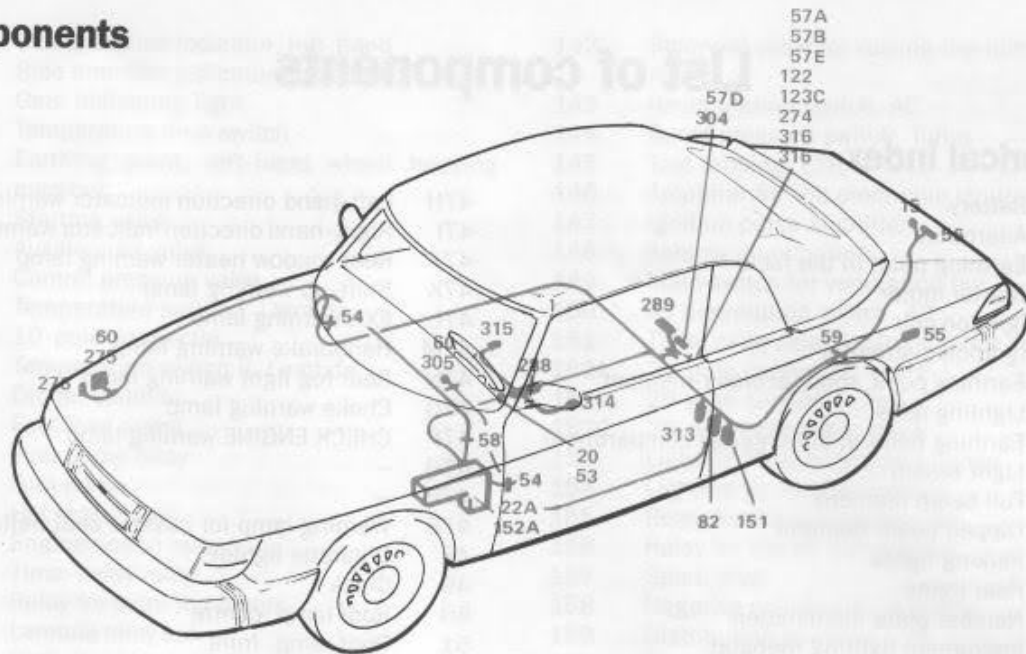
For fault-tracing hints on the parking lights, see the section entitled "Parking lights".

Locations of components

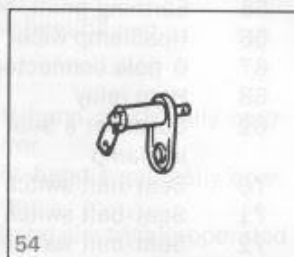
For the locations of parking light components, see the section entitled "Parking lights".

- | | | | |
|------|---|------|--|
| 20 | Ignition switch
on the centre console between the front seats | 152A | 29-pole white connector
in the engine compartment, in the electrical distribution box on the left-hand wheel housing. The connector is accessible from the interior of the car. |
| 22A | Fuse holder
in the electrical distribution box, in the engine compartment, on the left-hand wheel housing | 275 | Burglar alarm siren
in the engine compartment, behind the right-hand headlamp |
| 53 | Interior lighting switch
on the centre console, between the front seats | 276 | Burglar alarm hood switch
under the hood, at the extreme front of the wheel housing |
| 54 | Door switches, interior lighting
at the front of each door pillar | 288 | Burglar alarm switch
on the centre console between the front seats |
| 55 | Luggage compartment lamp
in the luggage compartment, on the left-hand side | 289 | Burglar alarm control unit
under the back seat |
| 56 | Luggage compartment light switch
at the luggage compartment lock | 304 | Movement detector
under the back seat, at the control unit |
| 57A | 3-pole white connector | 305 | LED for burglar alarm
on the fascia, at the left-hand speaker grille |
| 57B | 3-pole red connector | 313 | Burglar alarm relay
under the back seat |
| 57D | 3-pole green connector | 314 | Driver's seat switch for the burglar alarm
under the driver's seat |
| 57E | 3-pole blue connector
under the back seat, at the burglar alarm control unit | 315 | Co-driver's seat switch for the burglar alarm
under the co-driver's seat |
| 58 | 12-pole connector
on the angle bracket, under the fascia to the left of the steering column (behind the knee shield) | 316 | Diode for the burglar alarm
under the back seat, in the cable harness |
| 59 | 2-pole connector
in the luggage compartment at the left-hand lid hinge, behind the trim | | |
| 60 | Single-pole connector
one for the siren in the engine compartment, behind the right-hand headlamp
two for the LEDs on the fascia, at the left-hand speaker grille | | |
| 82 | Seat belt/ignition switch warning relay
under the back seat, on the left-hand side | | |
| 117 | Earthing point
at the handbrake (1987)
between the ignition switch and the handbrake (1988) | | |
| 122 | 8-pole connector for connecting the burglar alarm control unit
under the back seat | | |
| 123C | 4-pole black connector
under the back seat, at the burglar alarm control unit | | |
| 151 | Time-delay relay for the interior lighting
under the back seat, on the left-hand side | | |

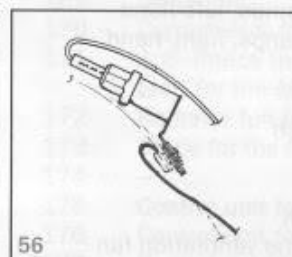
Components



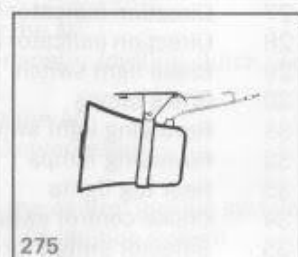
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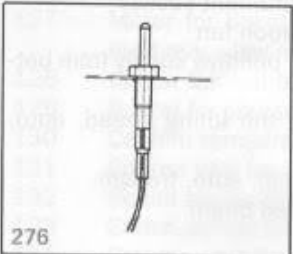
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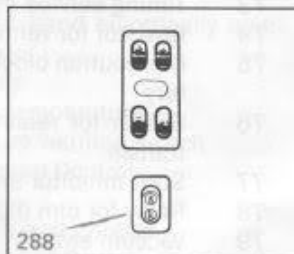
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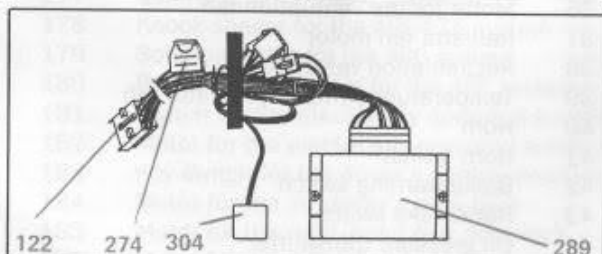
275



276



288

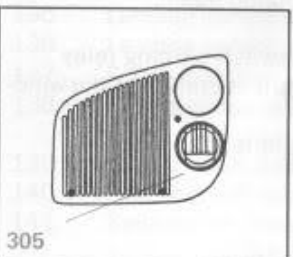


122

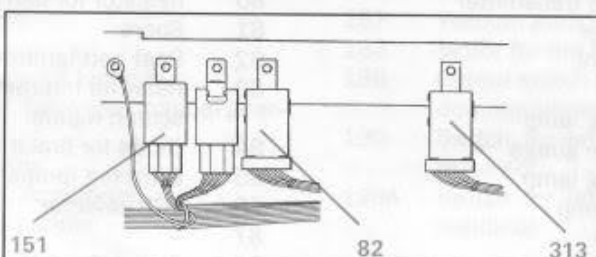
274

304

289



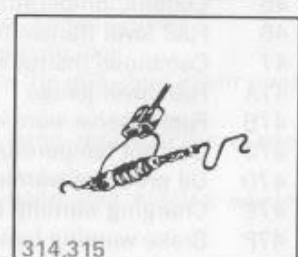
305



151

82

313



314,315

List of components

Numerical index

- | | | | |
|-----|--|-----|---|
| 1 | Battery | 47H | Left-hand direction indicator warning lamp |
| 2 | Alternator | 47I | Right-hand direction indicator warning lamp |
| 3 | Earthing point in the fascia | 47J | Rear window heater warning lamp |
| 4 | Starter motor | 47K | Shift-up warning lamp |
| 5 | Ignition coil | 47L | EXH warning lamp |
| 6 | Ignition distributor | 47M | Handbrake warning lamp |
| 7 | Earthing point, radiator cross-member | 47N | Rear fog light warning lamp |
| 8 | Lighting relay | 47O | Choke warning lamp |
| 9 | Earthing point in the luggage compartment | 47P | CHECK ENGINE warning lamp |
| 10 | Light switch | 47Q | — |
| 11 | Full beam filament | 47R | — |
| 12 | Dipped beam filament | 47S | Warning lamp for passive seat belts |
| 13 | Parking lights | 48 | Cigarette lighter |
| 14 | Rear lights | 49 | Clock |
| 15 | Number plate illumination | 50 | Roof lamp, centre |
| 16 | Instrument lighting rheostat | 51 | Roof lamp, front |
| 17 | Extra rheostat for the lighting of switches and controls | 52 | Ignition switch lighting |
| 18 | Combined instrument lighting | 53 | Interior lighting switch |
| 19 | Glove compartment lamp | 54 | Door switches, interior lighting |
| 20 | Ignition switch | 55 | Luggage compartment lamp |
| 21 | Ignition switch relay | 56 | Luggage compartment light switch |
| 22 | Electrical distribution box | 57 | 3-pole connector |
| 22A | Fuse holder | 58 | 12-pole connector |
| 22B | Relay holder | 59 | 2-pole connector |
| 23 | Flasher relay | 60 | Single-pole connector |
| 24 | Direction indicator stalk switch | 61 | Windscreen wiper stalk switch |
| 25 | Hazard warning light switch | 62 | Windscreen wiper motor |
| 26 | Time delay relay for the radiator fan | 63 | Washer motor |
| 27 | Direction indicator lamps, left-hand | 64 | Heating pad |
| 28 | Direction indicator lamps, right-hand | 65 | Earthing point, back seat |
| 29 | Brake light switch | 66 | Headlamp wiper motor |
| 30 | Brake lamps | 67 | 6-pole connector |
| 31 | Reversing light switch | 68 | Horn relay |
| 32 | Reversing lamps | 69 | Co-driver's seat switch for seat-belt warning lamp |
| 33 | Rear fog lights | 70 | Seat-belt switch - driver's side |
| 34 | Choke control switch | 71 | Seat-belt switch - co-driver's side |
| 35 | Selector switch for the ventilation fan | 72 | Seat-belt warning lamp |
| 36 | Motor for the ventilation fan | 73 | Timing service instrument socket |
| 37 | Radiator fan motor | 74 | Resistor for ventilation fan |
| 38 | Recirculation valve, AC | 75 | Distribution block, positive supply from battery |
| 39 | Temperature switch for radiator fan | 76 | Switch for raising the idling speed, auto. transm. |
| 40 | Horn | 77 | Start inhibitor switch, auto. transm. |
| 41 | Horn switch | 78 | Relay for dim dipped beam |
| 42 | Brake warning switch | 79 | Vaccum switch |
| 43 | Handbrake switch | 80 | Resistor for dim dipped beam |
| 44 | Oil pressure transmitter | 81 | Spare |
| 45 | Coolant temperature transmitter | 82 | Seat belt/ignition switch warning relay |
| 46 | Fuel level transmitter | 83 | Relay for intermittent operation of the windscreen wipers |
| 47 | Combined instrument | 84 | Diode for brake light testing |
| 47A | Fuel level gauge | 85 | Extra fog lamps |
| 47B | Fuel reserve warning lamp | 86 | EGR selector |
| 47C | Coolant temperature gauge | 87 | — |
| 47D | Oil pressure warning lamp | 88 | Switch for extra fog lamps |
| 47E | Charging warning lamp | | |
| 47F | Brake warning lamp | | |
| 47G | Full beam warning lamp | | |

- | | | | |
|-----|--|------|--|
| 89 | Side direction indicator, left-hand | 142 | Solenoid valve for raising the idling speed, AC |
| 90 | Side direction indicator, right-hand | 143 | Recirculation switch, AC |
| 91 | Gear indicating light | 144 | Boost pressure switch, Turbo |
| 92 | Temperature time switch | 145 | Test tapping, EZK |
| 93 | Earthing point, left-hand wheel housing member | 146 | Amplifier for the electronic ignition system |
| 94 | Starting valve | 147 | Ignition pulse amplifier |
| 95 | Auxiliary air valve | 148 | Ashtray illumination |
| 96 | Control pressure valve | 149 | Main switch for ventilation fan |
| 97 | Temperature switch I, Lambda | 150 | Air distribution switch, AC |
| 98 | 10-pole connector | 151 | Time-delay relay for the interior lighting |
| 99 | Temperature switch II, Lambda | 152A | 29-pole connector, white |
| 100 | Diode, Lambda | 152B | 29-pole connector, red |
| 101 | Fuel feed pump | 152C | 29-pole connector, black |
| 102 | Fuel pump relay | 153 | Lighting for the cigarette lighter |
| 103 | Fuel pump | 154 | Lighting for heater controls |
| 104 | Hot start relay | 155 | Relay for the AC radiator fan |
| 105 | Engine speed relay | 156 | Relay for the AC compressor |
| 106 | Time-delay relay | 157 | Spark plug |
| 107 | Relay for extra fog lamps | 158 | Negative distribution terminal |
| 108 | Lambda relay box | 159 | Distribution terminal +15 |
| 109 | High-level brake lights | 160 | Switch for glove compartment illumination |
| 110 | Tachometer | 161 | Switch for the rear fog lights |
| 111 | — | 162 | Switch for driver's door electric window regulator |
| 112 | — | 163 | Switch for co-driver's door electric window regulator |
| 113 | Relay/time-delay relay for the electrically heated rear window | 164 | Motor for left-hand front electric window regulator |
| 114 | Float chamber valve, carburetor | 165 | Motor for right-hand front electric window regulator |
| 115 | Electric heater for the rear window | 166 | Pressure switch for the AC radiator fan |
| 116 | Switch for the electrically heated rear window | 167 | Throttle contacts, AC |
| 117 | Earthing point at the handbrake | 168 | Coolant temperature switch, AC |
| 118 | Corner lights | 169 | Switch, AC |
| 119 | Side reversing lights | 170 | Compressor for the AC |
| 120 | Lambda test socket | 171 | Anti-freeze thermostat (cycling clutch contact) for the AC |
| 121 | Seat switch for the heating pad | 172 | Radiator fan for the AC |
| 122 | 8-pole connector | 173 | Diode for the AC compressor |
| 123 | 4-pole connector | 174 | — |
| 124 | Switch for the left-hand electrically operated rear-view mirror | 175 | Control unit for the central locking system |
| 125 | Switch for the right-hand electrically operated rear-view mirror | 176 | Control unit for EZK ignition system |
| 126 | Motor for the left-hand electrically operated rear-view mirror | 177 | Control unit for the APC system |
| 127 | Motor for the right-hand electrically operated rear-view mirror | 178 | Knock sensor for the APC/EZK system |
| 128 | Speed Control relay | 179 | Solenoid valve for the APC system |
| 129 | Buzzer for coolant temperature | 180 | Pressure transmitter for the APC system |
| 130 | Coolant temperature warning switch | 181 | Switch for the electrically operated sunroof |
| 131 | Control unit for Speed Control | 182 | Motor for the electrically operated sunroof |
| 132 | Speed transmitter | 183 | Key switch for the driver's central door lock |
| 133 | Clutch switch for Speed Control | 184 | Motor for the co-driver's door lock |
| 134 | Brake switch for Speed Control | 185 | Motor for the right-hand rear door lock |
| 135 | Lambda control unit | 186 | Motor for the left-hand rear door lock |
| 136 | Lambda sensor | 187 | Vacuum pump for Speed Control |
| 137 | Full throttle contacts for Lambda | 188 | Motor for the tailgate lock |
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| 139 | Timing valve, Lambda | 190 | Switch for left-hand rear electric window regulator |
| 140 | Fuel shut-off valve, carburetor | 190A | Switch for left-hand rear electric window regulator |
| 141 | Selector for Speed Control | | |

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191A	Switch for right-hand rear electric window regulator	236	—
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198	—	243	—
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210	—	256	Spare
211	Earthing point on the gearbox	257	Earth, alternator mounting
212	Solenoid valve for raising the idling speed (auto.)	258	Spare
213	—	259	Reverse current protection relay
213A	—	260	Fuel shut-off solenoid valve, Lambda
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213C	—	262	Temperature switch, shift-up indicator
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213G	—	266	Speaker
213H	—	267	Radio connection
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