

Service manual

Repairs and Maintenance

TP 31486/1

Section 3 (35-38)

Lighting, instru-
mentation and
other electrical
equipment

200 1975—19..

April 1990

VOLVO

Volvos are sold in versions adapted for different markets. These adaptations depend on many factors including legal, taxation and market requirements.

This manual may therefore show illustrations and text which do not apply to cars in your country.

Volvo owners planning to export their car(s) to another country should investigate the applicable safety and exhaust emission requirements. In some cases it may be impossible to comply with these requirements.

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Supersedes Manual TP 11402/3
Groups 35, 36 and 38 and TP 11413/2
Groups 35, 36 and 38.

Order No.: TP 31486/1

We reserve the right to make alterations
without prior notification.

Important!

Disconnect the battery

The battery must be disconnected when replacing all electrical components.

- Disconnect battery ground lead.

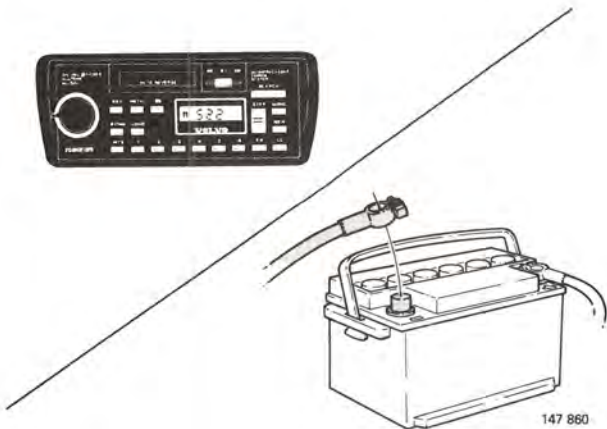
Important: Microprocessor radios

The radio must be switched off before disconnecting the battery ground lead to avoid damage to the microprocessor.

Remember that disconnecting the ground lead will also zero the clock and parking heater timer.

Warning!

Some vehicles are equipped with a Supplemental Restraint System (SRS) containing an inflatable bag assembly mounted in the steering wheel. Special precautions must therefore be taken when carrying out repairs to the cruise control system. The use of any current carrying device could cause deployment of the bag assembly. Refer to the SRS Service Manual before attempting any repairs, or personal injury may result from following improper procedures.



Specifications

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Group 35 Lighting

**	W 2.4.6d	W 2.1.9.5d	BAY 15d	SV 5.5	SV 8.5	SV 8.5	BA 7s	BA 9s	BA 15s	BA 15s	P 43t-38	P 14.5s

Group 35 Lighting

BULBS

	Rating, W	Holder	Qty.
Headlamps, 260, -1978	55 W	P 14.5 s	4
Headlamps, 260, 1979-/240	60/55 W	P 43t-38	2
Parking/day running lights, front (certain markets only)	21/5 W or 32/3 cp	Bay 15 d	2
Parking lights (other markets)	5 W or 4 cp	Ba 15 s	2
Direction indicators, front	21 W or 32 cp	Ba 15 s	2
rear	21 W or 32 cp	Ba 15 s	2
Side direction indicators	5 W	W 2.1×9.5 d	2
Rear lights*	5 W or 4 cp	Ba 15 s	2
Brake lights	21 W or 32 cp	Ba 15 s	2 (260 4)
Reversing lights	21 W or 32 cp	Ba 15 s	2
Rear foglamps (certain markets only)*	21 W	Ba 15 s	(all models from 1989 on fitted with rear foglamps)
Number plate lighting, 1975-1978	5 W	Sv 8.5	2
1979-	4 W	Ba 9 s	2
5-door, 1981-	5 W	S 8.5-8	2
Interior lighting	10 W	Sv 8.5	1
Glove compartment lighting	2 W	Ba 9 s	1
Instrument lighting, -1980	2 W	W 2.1×9.5 d	2
1981-	2 W	Ba 7 s	3
Engine compartment lighting	15 W	Sv 8.5	1
Luggage compartment lighting	15 W	Sv 8.5	1
Lighting, control panel	1.2 W	W 2×4.6 d**	3
automatic gear selector	1.2 W	W 2×4.6 d**	1
ashtray, rear	1.2 W	W 2×4.6 d**	1
seat belt locks	1.2 W	W 2×4.6 d**	1
rear window heater indicator	1.2 W	W 2×4.6 d**	1
seat belts	2 W	Ba 9 s	1
* Foglamps/rear lights, 5-door, 1981-	21/5 W	Ba 15 d	2
** Complete with holder on certain models (see illustration)			

	Rating, W	Holder		Qty.
VDO Instrument		-1980	1981-	
Warning lamp, battery charge	1.2 W	W 2×4.6 d	**	1
oil pressure	1.2 W	W 2×4.6 d	**	1
handbrake	1.2 W	W 2×4.6 d	**	1
brake fault	1.2 W	W 2×4.6 d	**	1
bulb failure	1.2 W	W 2×4.6 d	**	1
Indicating lamp, choke	1.2 W	W 2×4.6 d	**	1
direction indicators	1.2 W	W 2×4.6 d	**	2
high beams	1.2 W	W 2×4.6 d	**	1
overdrive	1.2 W	W 2×4.6 d	**	1
** Complete with holder (see illustration)				

Yazaki instrument

Warning lamp, battery charge	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
oil pressure	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
handbrake	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
brake fault	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
bulb failure	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
Indicating lamp, choke	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
direction indicators	1.2 W	W 2.1×9.5 d	W 2×4.6 d	2
high beams	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1
overdrive	1.2 W	W 2.1×9.5 d	W 2×4.6 d	1

Group 37 Fuses

1975			1976, 1977		
No.	Circuit(s) protected	Rating, A	No.	Circuit(s) protected	Rating, A
1	Cigarette lighter Headlamp wipers Rear wiper (245)	8	1	Cigarette lighter Headlamp wipers Rear wiper (245)	8
2	Windscreen wipers Heater fan Horn	16	2	Windscreen wipers Heater fan Horn	16
3	Rear window heater Overdrive	16	3	Rear window heater Overdrive	16
4	Glove compartment lighting Reversing lights Driver's seat heater Air conditioning	8	4	Glove compartment lighting Reversing lights Driver's seat heater Air conditioning	8
5	Instruments Direction indicators Warning and indicating lamps Seat belt reminder	5	5	Instruments Direction indicators Warning and indicating lamps Relay, fuel-injection engines Solenoid valve, carburettor Seat belt reminder	8
6	Hazard warning lights Rear interior lighting (245) Engine compartment lighting	8	6	Hazard warning lights Rear interior lighting (245) Engine compartment lighting	8
7	Clock Fuel pump, fuel-injection engines	8	7	Clock Fuel pump, fuel-injection engines	8
8	Brake lights Interior lighting	8	8	Brake lights Interior lighting	8
9	Spare	5	9	Day running lights (certain markets only)	8
10	Day running lights (Sweden)	8	10	Spare	16
11	LH parking lights LH number plate light (245: LH + RH)	5	11	LH parking lights LH number plate light (245: LH + RH) Side marker lights (1977: Certain markets only) Light warning buzzer	8
12	RH parking lights RH number plate light Instrument and panel lighting	5	12	RH parking lights RH number plate light Instrument and panel lighting Seat belt lock, rear ashtray lighting Gear selector lighting, automatics	8

1978			1979		
No.	Circuit(s) protected	Rating, A	No.	Circuit(s) protected	Rating, A
1	Cigarette lighter..... Headlamp wipers Rear wiper/washer (245) Windscreen wipers/washers	16	1	Cigarette lighter..... (Headlamp wipers) (Rear wiper/washer, 245) (power door mirrors) (power antenna)	8
2	Heater fan..... Horn	16	2	Windscreen wipers/washers..... Horn	16
3	Rear window heater..... Overdrive	16	3	Heater fan.....	16
4	Reversing lights..... Driver's seat heater Air conditioning	8	4	(Day running lights)..... Seat belt reminder Ignition key buzzer	8
5	Instruments..... Direction indicators Warning and indicating lamps Relay, fuel-injection engines Solenoid valve, carburettor Seat belt reminder	8	5	(Main fuel pump, tank pump, E engines)....	8
6	Brake lights..... Rear interior lighting (245) Luggage compartment lighting	8	6	Brake lights..... (Time delay relay, interior lighting)	8
7	Fuel pump, fuel-injection engines.....	16	7	(Main fuel pump, E engines).....	16
8	Clock..... Interior lighting Glove compartment lighting Hazard warning lights	8	8	Interior lighting..... Glove compartment lighting Clock Luggage compartment lighting (Engine compartment lighting)	8
9	Day running lights.....	8	9	Hazard warning lights.....	8
10	Spare.....	16	10	(Power windows)..... (Passenger seat heater) (Spotlamps)	16
11	LH parking lights..... LH number plate light (245: LH + RH) Side marker lights (certain markets only) Light warning buzzer Rear foglamps	8	11	Rear window heater..... (Overdrive)	16
12	RH parking lights..... RH number plate light Instrument and panel lighting Relay, foglamps	8	12	Reversing lights..... (Relay, power windows and passenger seat heater) (Driver's seat heater) (Air conditioning)	8
			13	Instruments..... Direction indicators (Solenoid valve) (Relay, fuel injection, E engines) Seat belt reminder	8
			14	Spare	
			15	LH parking lights..... Number plate light Side marker lights (245) Rear foglamps (certain markets only)	8
			16	RH parking lights..... Instrument and panel lighting Light warning buzzer	8

1980			
No.	Circuit(s) protected	Rating, A	
1	Cigarette lighter..... (Headlamp and rear window wipers/washers) (power door mirrors) (Radio) Cruise control	8	11 (Overdrive)..... 16 Rear window heater
2	Windscreen wipers/washers Horn	16	12 Reversing lights..... 8 (Relay, power windows and passenger seat heater) (Driver's seat heater) (Air conditioning)
3	Heater fan.....	16	13 Direction indicators..... 8 Instruments and warning lamps (Seat belt reminder) (Relay, main fuel pump) (Solenoid, carburettor) (Relay, AC fan)
4	(Day running lights)	8	14 (Rear foglamps) Accessories
5	(Tank pump, E engines)	8	15 LH parking lights..... 8 Number plate lighting (Side marker lights, 245)
6	Brake lights	8	16 Instrument and control lighting..... 8 RH parking lights (Relay, spotlamps) Light warning buzzer
	(Time delay relay, interior lighting)		
7	Main fuel pump, E engines (across relay)	16	
8	Interior lighting..... Clock Glove compartment lighting Engine compartment lighting Luggage compartment lighting (power antenna) Central locking	8	
9	Hazard warning lights.....	8	
10	(Power windows)..... (Passenger seat heater) (Spotlamps)	16	

1981–1984			
No.	Circuit(s) protected	Rating, A	
1	Cigarette lighter..... (Headlamp wiper parking) Rear window wiper/washer, 245 (power door mirrors) (Radio) (Cruise control)	8	11 Rear window heater..... 16 (Overdrive)
2	Windscreen wiper/washer..... Headlamp wipers Horn	16	12 Reversing lights..... 8 (Relay, power windows) (Seat heaters) (Air conditioning) (Heater fan, CU heater, speed 1) (Relay, rear window heater)
3	Heater fan, standard heater Heater fan, CU heater, speeds 2, 3, 4	25	13 Direction indicators..... 8 Instruments and warning lamps (Seat belt reminder) (Relay, main fuel pump) (Solenoid valve, carburettor) (Relay, AC fan) Fuel valve, diesels Control unit, diesels
4	(Day running lights).....	8	14 (Rear foglamps) Accessories
5	(Tank pump, E engines).....	8	15 LH parking lights..... 8 Number plate lighting
6	Brake lights..... (Time delay relay, interior lighting) (Cruise control)	8	16 Instrument and control lighting..... 8 RH parking lights (Relay, spotlamps) Warning buzzer – lights and ignition key
7	Main fuel pump, E engines (across relay)	16	
8	Interior lighting..... Clock Glove compartment lighting (Engine compartment lighting) Luggage compartment lighting (power antenna) Central locking (Electric boot lock, USA)	8	
9	Hazard warning lights.....	8	
10	Power windows.....	16	
1983–1984			
			Fuse on inside of LH wing at ignition coil: LH-Jetronic..... 25

1986, 1988			
No.	Circuit(s) protected	Rating, A	
1	Cigarette lighter..... Rear wiper/washer, 245 Power door mirrors Radio	8	13 Direction indicators..... 8 Constant idling system (CIS) AC fan Instruments and warning lamps Seat belt reminder Relay, main fuel pump Solenoid valve Fuel valve, diesels Control unit, diesels
2	Windscreen wipers/washers..... Headlamp wipers Horn	16	14 Rear foglamps Accessories
3	Heater fan.....	25	15 LH parking lights..... 8 Number plate lighting
4	Main fuel pump, E engines	8	16 Instrument and control lighting..... 8 RH parking lights Light warning buzzer
5	Day running lights	8	
6	Main fuel pump, E engines.....	16	Fuse on inside of LH wing at ignition coil: LH-Jetronic..... 25
7	Brake lights	8	
8	Interior lighting..... Clock Glove compartment lighting Engine compartment lighting Luggage compartment lighting Power antenna Central locking	8	D 24 Fuse on bottom of relay at washer reservoir: Glow plug..... 80
9	Hazard warning lights.....	8	*May also be supplied across fuse No. 5.
10	Power windows.....	16	
11	Rear window heater*..... Overdrive Seat heater(s)	16	
12	Reversing lights..... Relay, power windows Air conditioning Heater fan, CU heater	8	

1987, 1988, 1989			
No.	Circuit(s) protected	Rating, A	
1	Cigarette lighter..... Rear wiper/washer, 245 Power door mirrors Radio B+ Cruise control	8	11 Rear window heater..... 16 Overdrive
2	Windscreen wipers/washers..... Headlamp wipers Horn	16	12 Reversing lights..... 8 Relay, power windows Air conditioning Relay, rear window heater
3	Heater fan.....	25	13 Direction indicators..... 16 Seat heaters (Seat belt reminder) Solenoid valve Glow plug relay, diesels
4	Tank pump, E engines	8	14 Rear foglamps Accessories
5	Day running lights Dim-dip (GB)	8	15 LH parking lights..... 8 Number plate lighting
6	Main fuel pump, E engines	16	16 Instrument and control lighting..... 8 RH parking lights
7	Brake lights Cruise control	8	Fuse on inside of LH wing at ignition coil: LH-Jetronic..... 25
8	Interior lighting Clock Glove compartment lighting Engine compartment lighting Luggage compartment lighting Power antenna Central locking Radio Const+	8	D 24 Fuse on bottom of relay at washer reservoir: Glow plug..... 80
9	Hazard warning lights.....	8	
10	Power windows.....	16	

-1990			
No.	Circuit(s) protected	Rating, A	
1	Cigarette lighter..... Rear wiper/washer, 245 Power door mirrors Headlamp beam adjuster (Germany 1990)	8	10 Power windows 16
2	Windscreen wipers/washers Headlamp wipers Horn	16	11 Rear window heater 16 Overdrive
3	Heater fan.....	25	12 Reversing lights..... 8 Relay, power windows Air conditioning Relay, rear window heater Dim-dip (GB 1990)
4	Tank pump, E/F engines..... Oxygen sensor (Lambdasond)	8	13 Seat heaters 16 (Seat belt reminder) Solenoid valve
5	Direction indicators..... Reversing lights Dim-dip (GB -1989) PTC resistor 1990 Glow plug relay, diesels 1990	16	14 Rear foglamps..... 8 Accessories
6	Main fuel pump, E/F engines.....	16	15 LH parking lights..... 8 Number plate lighting
7	Brake lights Cruise control	8	16 Instrument and control lighting..... 8 RH parking lights
8	Interior lighting..... Clock Glove compartment lighting Engine compartment lighting Luggage compartment lighting Power antenna Central locking Radio Const+	8	Fuse on inside of LH wing at ignition coil: LH-Jetronic..... 25
9	Hazard warning lights.....	8	D24 Fuse on bottom of relay at washer reservoir: Glow plug..... 80

D 24

Fuse on bottom of relay at washer reservoir:	
Glow plug	80

Group 38 Instruments

Fuel level transmitter

	Volume, l	Resistance, ohm
Tank empty.....	0	296 ± 15
Tank full	60	36 ± 2

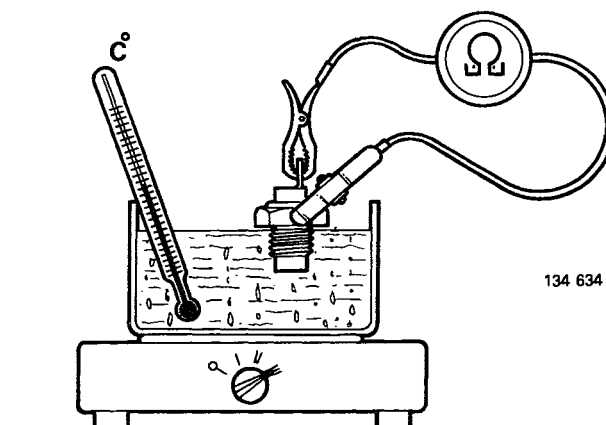
Coolant temperature sensor

Resistances at different temperatures

Temperature, °C (°F)	Sensor resistance, ohm
60 (140)	217 ± 35
90 (194)	87 ± 15
100 (212)	67 ± 11

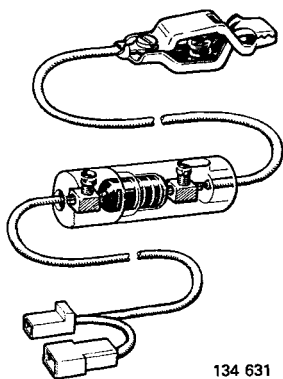
(1987–)

Temperature, °C (°F)	Sensor resistance, ohm
60 (140)	560
90 (194)	206
100 (212)	153

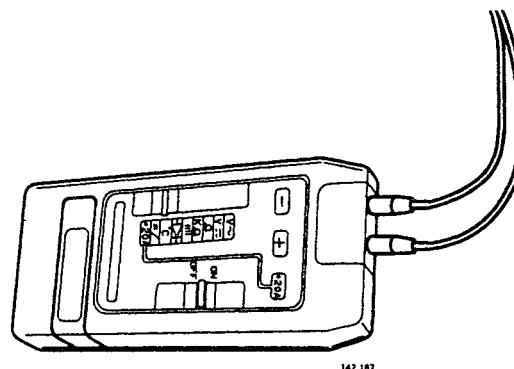


Special tools

999	Description – use
5824	Test resistor: For checking fuel level transmitter and coolant temperature sensor
6525	Multimeter: For voltage, current and resistance measurement



5824



6525

Group 35 Lighting

	Page
Bulbs.....	12
Front lighting.....	22
Rear lighting.....	26
Side lighting.....	28

Bulbs

Bulb ratings are specified either in watts (W) or candle-power (CP).

Bulbs marked with CP ratings must always be used in the USA and Canada, and W-rated bulbs in other markets. It is essential that the same type of bulb be used throughout the car since the bulb failure warning sensor is so sensitive that it can detect different types.

If the warning sensor lamp lights despite the replacement of a defective bulb, the corresponding bulb on the other

side of the car must also be replaced. The original bulb (although intact) will use less current than the new bulb, activating the sensor.

Note that the wiring of the lights may differ, and that some bulbs may not be installed due to variations in statutory requirements from country to country.

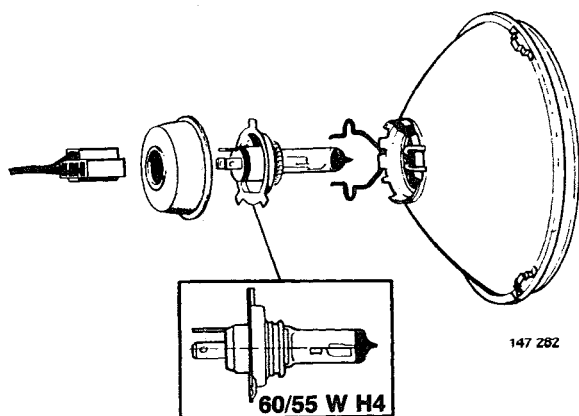
Never handle a bulb by the glass, otherwise grease and oil from the fingers, vaporized by the heat, will be deposited on the reflector, quickly damaging this component.

Bulb replacement

A1

Front headlamp 240, -1978 (USA/Canada -1980)

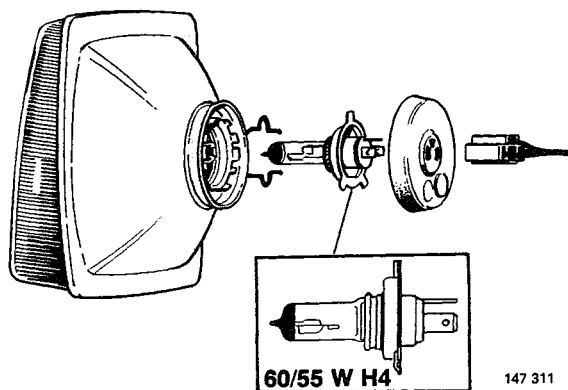
- Pull connector straight off.
- Remove rubber cap.
- Compress and bend aside bulb retaining clip.
- Reassemble in reverse order. Since the three bulb locating tabs are located asymmetrically, bulb can be inserted in one position only.



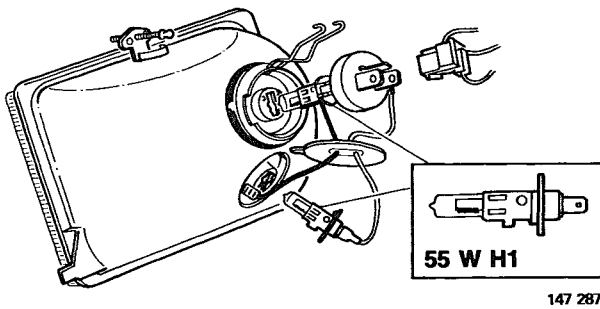
A2

240, 1979-80 (excl. USA/Canada)

- Pull connector straight off.
- Remove rubber cap.
- Compress and bend aside bulb retaining clip. Replace bulb.
- Reassemble in reverse order. Since the three bulb locating tabs are located asymmetrically, bulb can be inserted in one position only.



A3

**260, 4-door, -1977**

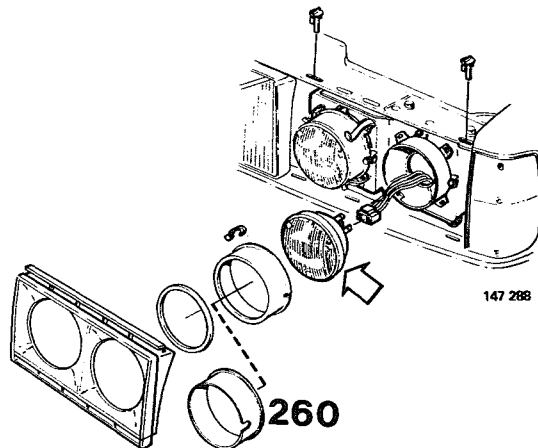
Replacement of low beam bulb:

- Undo connector.
- Release bulb retaining clips. Replace bulb, positioning as shown in illustration.

Replacement of high beam bulb:

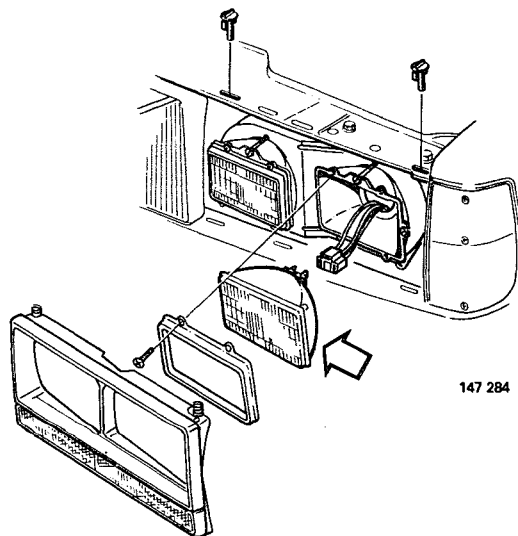
- Remove rubber seal and release bulb retaining clips.
- Replace bulb, positioning as shown in illustration.

A4

**USA/Canada****240 DL/260, 1978-80**

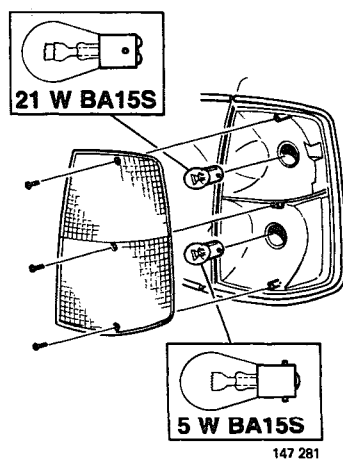
- Press in and turn plastic screws (2) through 90°.
- Remove retaining clips (4) and ring.
- Undo connector.
- Replace complete headlamp insert.
- Reassemble in reverse order.

A5

**USA/Canada****240, 1980-85**

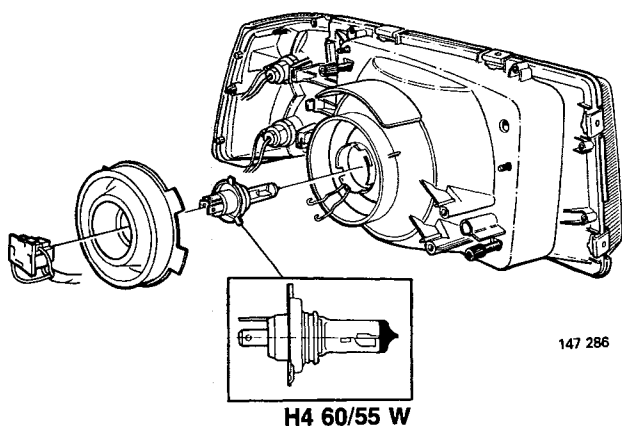
- Press in and turn plastic screws (2) through 90°.
- Remove rim by pulling forward.
- Remove screws (4).
- Undo connector.
- Replace complete headlamp insert.
- Reassemble in reverse order.

A6

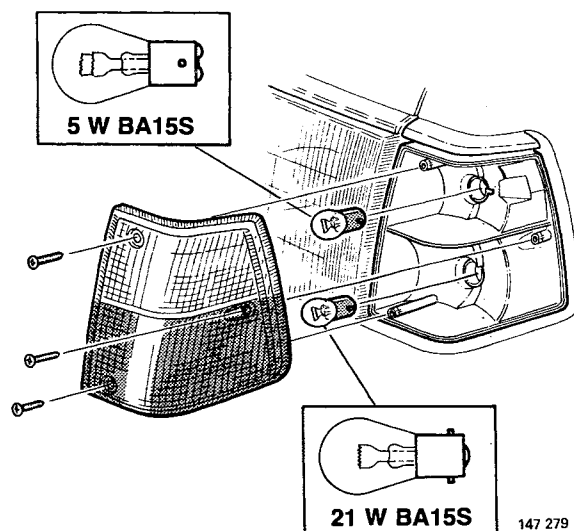
**240/260, -1980 (USA/Canada -1985)**

- Undo Phillips-head screws (3) holding lens.
- Remove bulb by pressing in slightly and turning counter-clockwise.
- Replace bulb and reassemble in reverse order.
- Ensure that seal is correctly located when refitting lens.

240, 1981– (excl. USA/Canada)



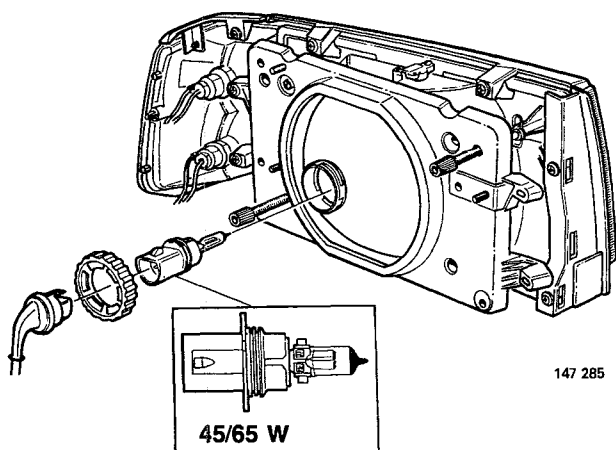
- Undo connector.
- Remove rubber cap.
- Compress and bend aside bulb retaining clip.
- Replace bulb.
- Reassemble in reverse order.



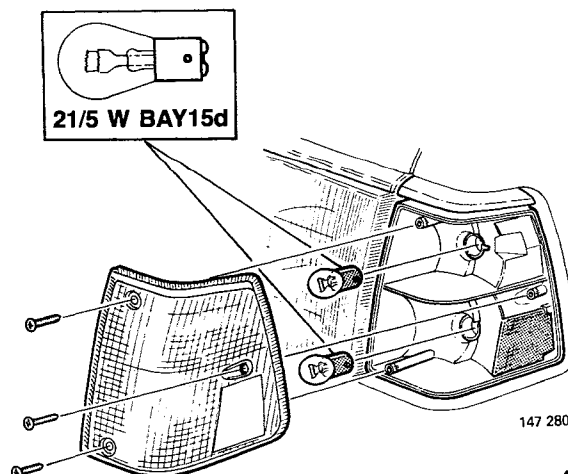
A7

- Undo Phillips-head screws (3) holding lens and lift off lens.
- Remove bulb by pressing in slightly and turning counter-clockwise.
- Install new bulb by inserting and turning gently. To find correct position for bayonet cap bulb, it may be necessary to turn bulb through 180°.
- Ensure that seal is correctly positioned when refitting lens.

240, 1986–, USA/Canada



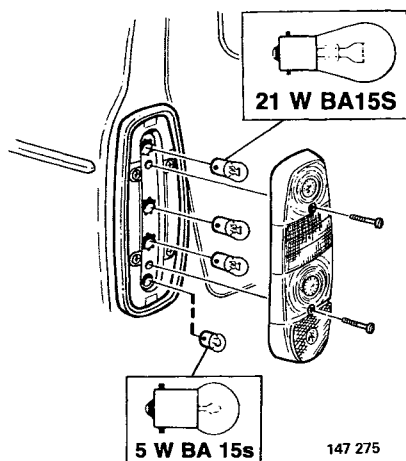
- Undo connector.
- Unscrew bulb retaining ring.
- Remove and replace bulb.
- Reassemble in reverse order.



A8

- Undo Phillips-head screws (3) holding lens.
- Remove bulb by pressing in slightly and turning counter-clockwise.
- Install new bulb by inserting and turning gently.
- Ensure that seal is correctly positioned when refitting lens.

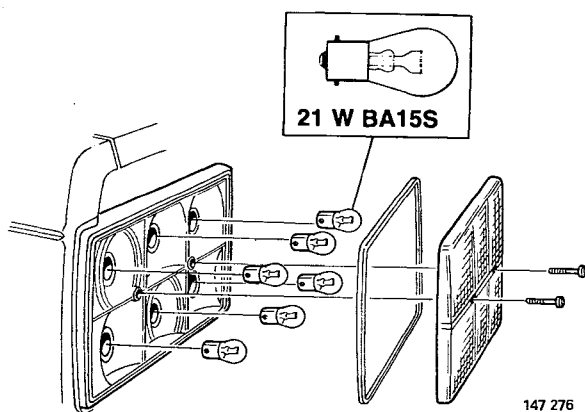
A9



Rear lights 240, 5-door, -1980

- Undo Phillips-head screws (2) and remove lens.
- Remove bulb by pressing in slightly and turning counter-clockwise.
- Install new bulb by inserting and turning gently.
- Ensure that seal is correctly positioned when refitting lens.

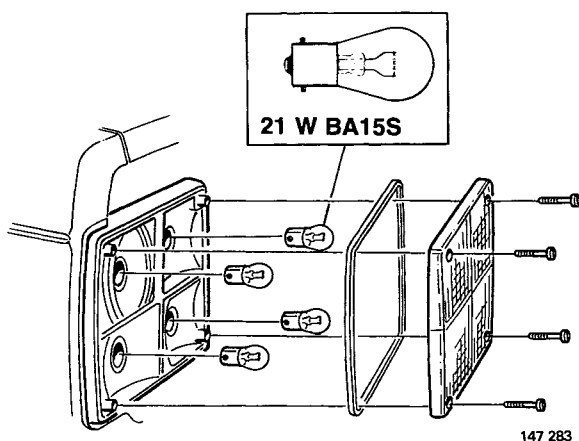
A10



240/260, 2/4-door, -1980 (excl. 240 DL)

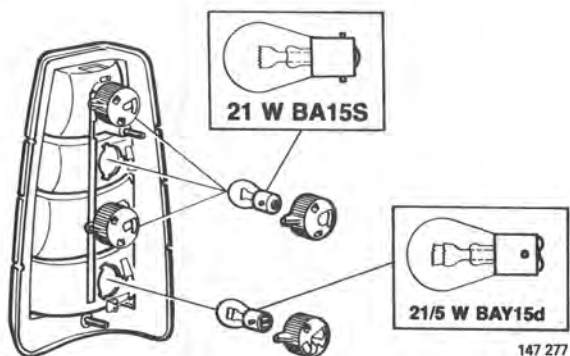
- Undo Phillips-head screws (2) and remove lens.
- Remove bulb by pressing in slightly and turning counter-clockwise.
- Install new bulb by inserting and turning gently.
- Ensure that seal is correctly positioned when refitting lens.

A11



240 DL, 2/4-door, -1980

- Undo Phillips-head screws (4) and remove lens.
- Remove bulb by pressing in slightly and turning counter-clockwise.
- Install new bulb by inserting and turning gently.
- Ensure that seal is correctly positioned when refitting lens.

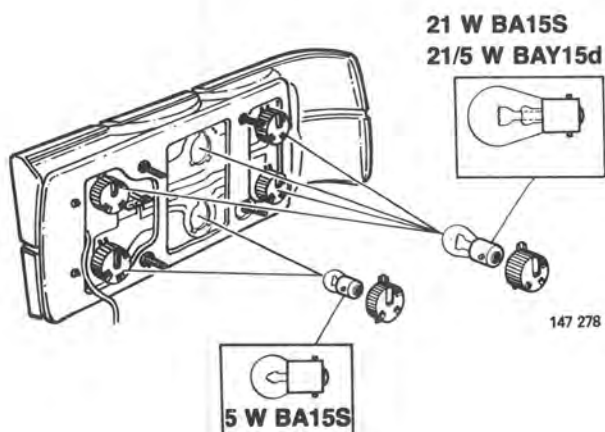


A12

240, 5-door, 1981–

All bulbs in rear clusters are replaced from inside luggage compartment.

- On left-hand side: Remove spare wheel cover and wheel.
 - On right-hand side: Remove storage compartment cover. Undo clip and prise off side panel.
 - Turn lampholder with defective bulb approx. 1 cm counterclockwise and remove. Tip: Replace bulbs one at a time to avoid interchanging.
 - Remove bulb from holder by pressing inwards and turning a few mm counterclockwise.
 - Insert new bulb in holder and replace in lamp fitting.
- Note** that one of the locating tabs on the holder is slightly wider than the other two.

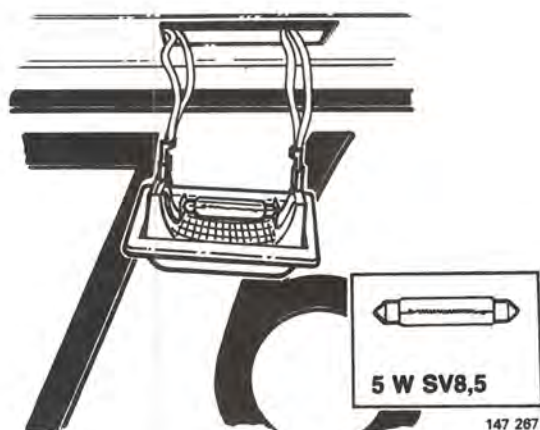


A13

240, 2/4-door, 1981–

All bulbs in rear clusters are replaced from inside luggage compartment.

- Unscrew and remove lamp cover (note hooks in top edge).
 - Turn lampholder with defective bulb approx. 1 cm counterclockwise and remove.
 - Remove bulb from holder by pressing inwards and turning a few mm counterclockwise.
 - Insert new bulb in holder and replace in lamp fitting.
- Note** that one of the locating tabs on the holder is slightly wider than the other two.



A14

Number plate lighting

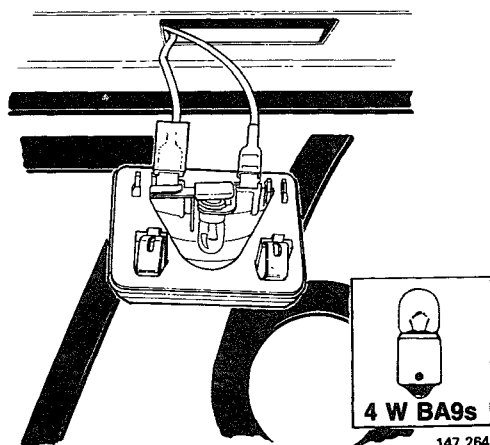
2/4 door, –1978 and 5-door

- Release lamp housing catch by inserting screwdriver in opening at one side of housing.
- Withdraw housing from mounting and replace bulb.

–1982

- Pull out end of cover not provided with locating pin.
- When reassembling, first insert locating pin in opening and then press home cover.

A15

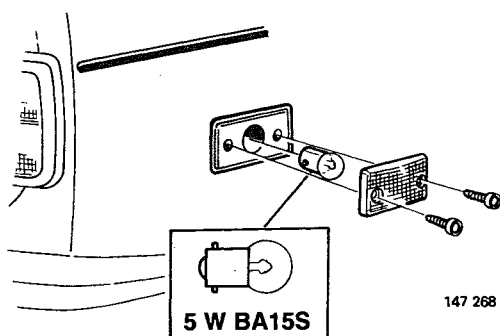


2/4-door, 1979– 1979–1981

- Insert screwdriver at rear edge of lamp housing and carefully prise out housing. Take care to avoid damage to paintwork!

1982

- Pull out lamp housing until front edge is free.
- Remove housing and replace bulb.
- Reinstall housing by locating front edge in position and pressing home rear edge by hand.



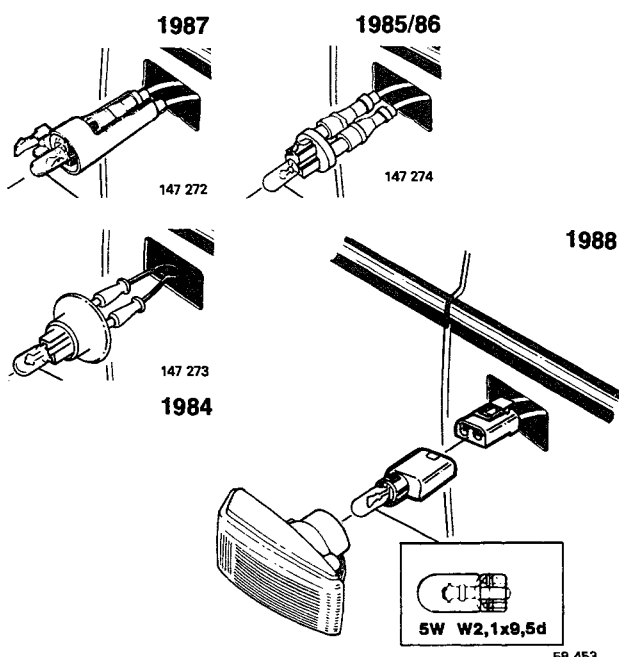
A16

Side marker lights

USA/Canada

240, 4-door, –1978; 5-door, –1980

- Undo both screws and remove lens.
- Replace bulb by pressing in slightly and turning counterclockwise.



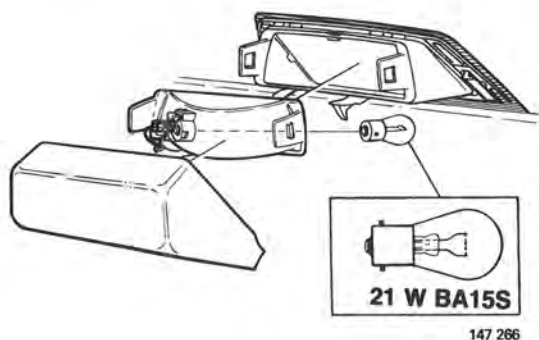
A17

Side direction indicators

240, 1987

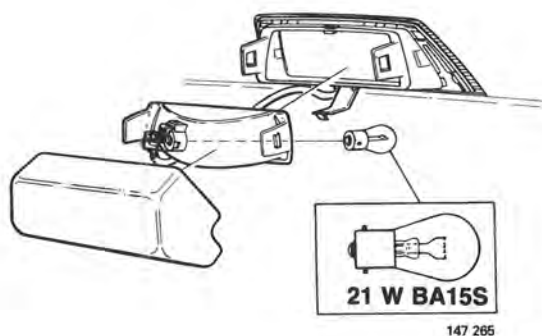
- Bulb is replaced from outside.
- Slide lamp forward to release rear edge.
- Remove complete lamp.
- Without disconnecting leads, turn lamp housing through 90°.
- Pull faulty bulb straight out.

A18



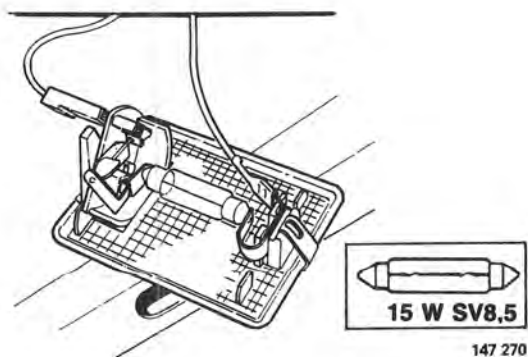
High-level brake light 4-door, 1986–

- Insert screwdriver in opening in bottom of lamp and depress spring.
- Remove cover by lifting at an angle.
- Release reflector spring clips.
- Replace bulb.



5-door, 1986–

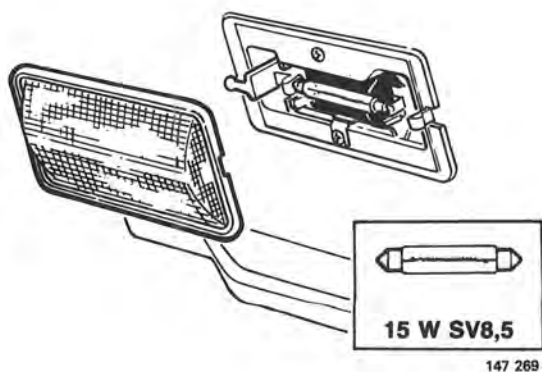
- Press in both sides of cover and pull straight off.
- Release reflector spring clips.
- Replace bulb.



A19

Luggage compartment lighting 2/4-door, 1979–

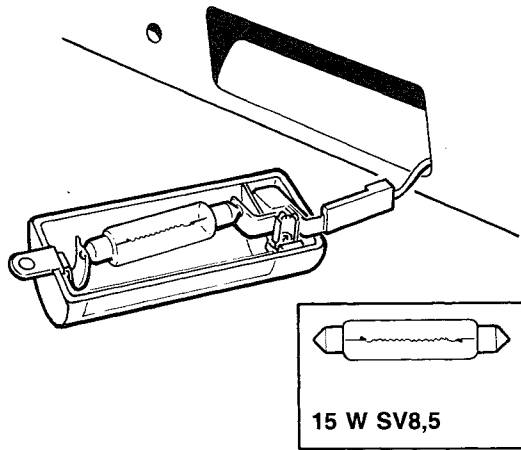
- Insert screwdriver at short side of lamp housing and prise off.
- Disconnect wiring and replace bulb.
- Reassemble in reverse order.



5-door, 1979–

- Remove lens by inserting screwdriver and twisting.
- Remove both screws and replace bulb.
- Reassemble in reverse order.

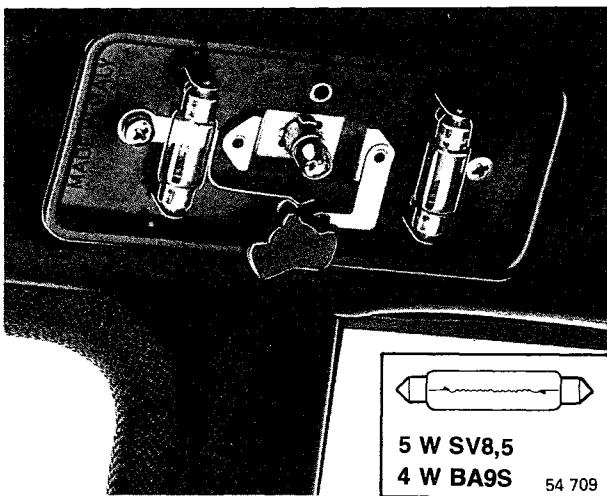
A20



147 271

Engine compartment lighting 4/5-door

- Remove screw and withdraw lamp housing.
- Replace bulb.
- Reassemble in reverse order.

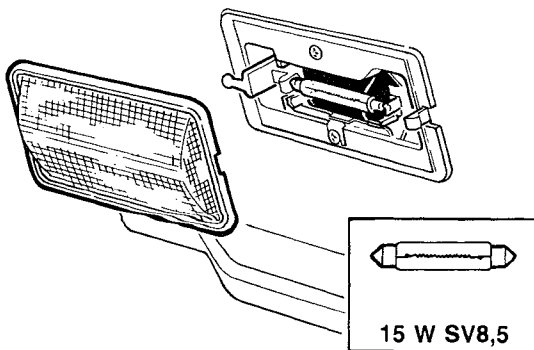


54 709

Interior lighting, 262, 1977–81

- Remove lens.
- Replace bulb.
- Reassemble in reverse order.

A21

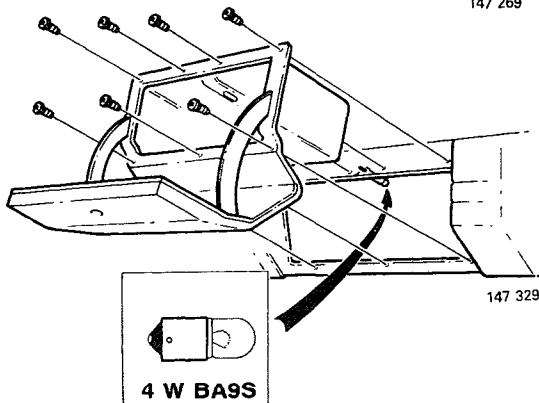


147 269

Interior lighting 240, 1980–

- Insert screwdriver in opening at short side of lamp housing and prise off. Do not twist!
- Remove lamp carefully.
- Replace bulb.

A22



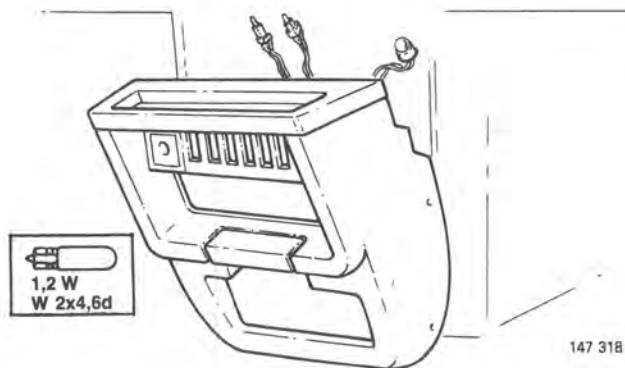
147 329

Glove compartment lighting, 1980–

- Remove screws (7).
- Lift out glove compartment.
- Replace bulb.
- Reassemble in reverse order.

A23

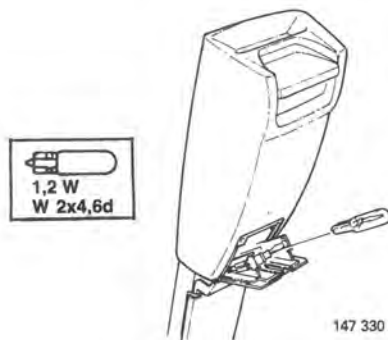
A24



Heater panel lighting

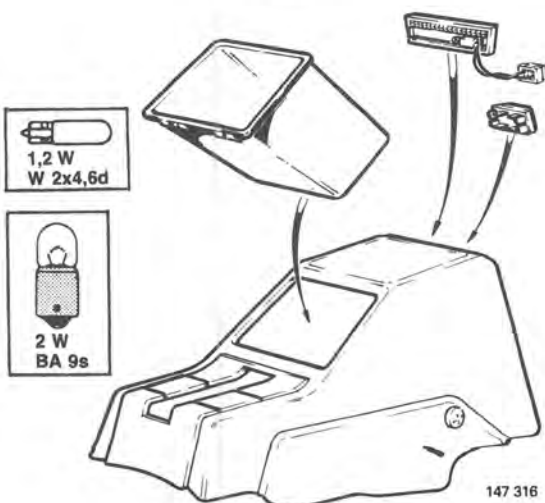
- Remove panel by undoing two screws at top edge and two clips at bottom edge.
- Pull panel forward.
- Replace bulb.
- Reassemble in reverse order.

A25



Seat belt lock lighting

- Prise out cover using small screwdriver.
- Replace bulb and press home cover.

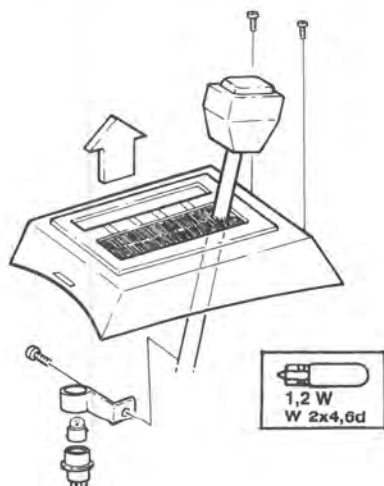


A26

Rear ashtray lighting Seat belt warning lamp

- Remove plastic cover using small screwdriver.
- Replace bulb and press home cover.

A27

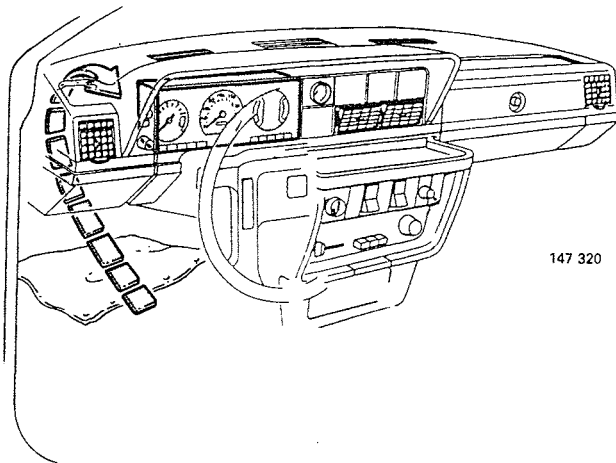


Gear selector lighting

- Remove both screws holding selector scale cover.
- Replace bulb and refit cover.

Combined instrument

A28



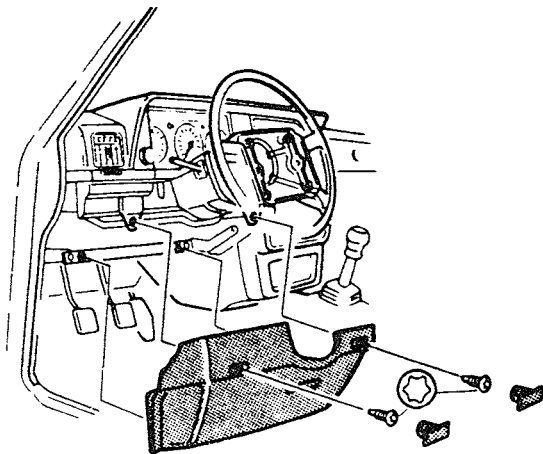
147 320

Bulb replacement Combined instrument

- Undo clips (3) holding soundproofing panel.
- Lower panel.
- Remove lamp housing with faulty bulb.
- Replace bulb.
- Reassemble in reverse order.

Warning!

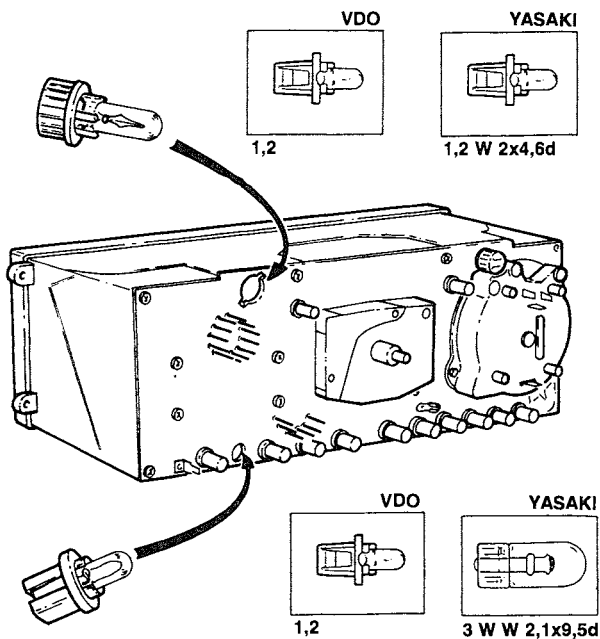
Some vehicles are equipped with a Supplemental Restraint System (SRS) containing an inflatable bag assembly mounted in the Steering wheel. Special precautions must therefore be taken when carrying out repairs to the cruise control system. The use of any current carrying device could cause deployment of the bag assembly. Refer to the SRS Service Manual before attempting any repairs, or personal injury may result from following improper procedures.



Bulb replacement USA/Canada 1990 Combined instrument

- unscrew both screws
- pull knee bolster to rear
- pull off housing from faulty bulb
- install new bulb
- reassemble in reverse order

Note: Tighten screws to 20 Nm (15 ft.lb)



- Remove lamp holder with faulty bulb.
- Replace bulb.

*Bulb is integral with holder on VDO instrument.

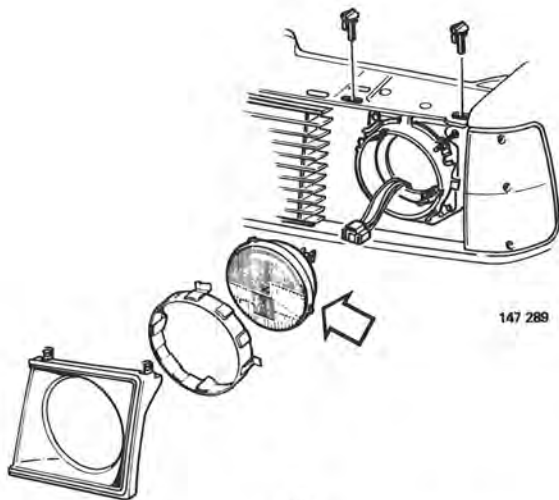
Front lighting

Complete headlamp, replacement

B1

240, –1978

- Disconnect battery ground lead.
- Lift headlamp wiper arm.
- Press in and remove plastic screws.
- Remove headlamp rim.
- Twist and remove chrome retaining ring.
- Lift out headlamp insert.
- Undo connector.
- Reassemble in reverse order.
- Readjust headlamp beam.

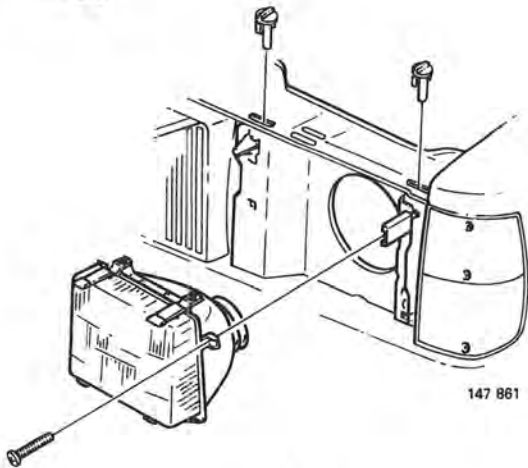


240, 1979–80 (excl. USA/Canada)

- Raise wiper arm
- Press in plastic screws (2), turn through 90° and remove
- Remove retaining screws (4) and remove rim and bracket
- Undo connector

Reassemble in reverse order

- Readjust headlamp beam

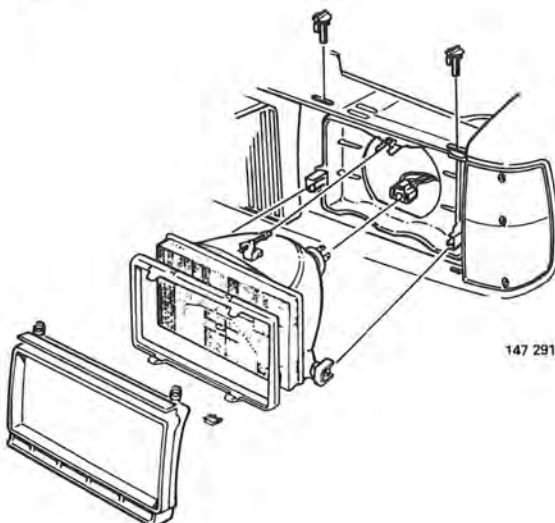


Replacement of complete headlamp insert

B2

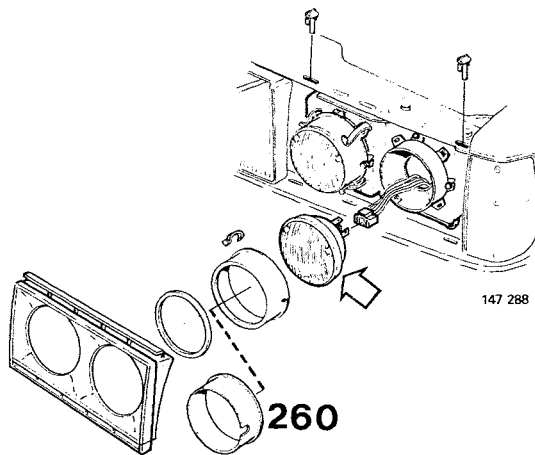
260, –1980

- Raise wiper arm.
- Press in plastic screws (2), turn through 90° and remove.
- Lift rim a few mm and remove by pulling forward.
- Withdraw top of headlamp (held in position by ball attachment).
- Release catches on either side of headlamp by prising sideways with screwdriver. Lift headlamp clear of mounting.
- Undo connector.
- Reassemble in reverse order.
- Readjust headlamp beam.



Complete headlamp, replacement (USA)

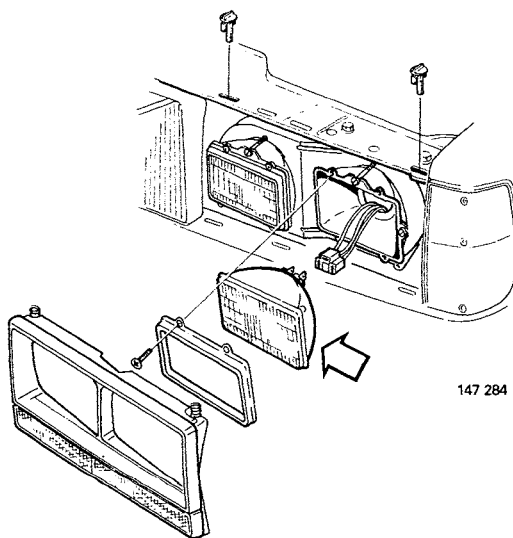
B3

**USA/Canada
240 DL/260, 1978–80**

- Disconnect battery ground lead.
- Press in and turn plastic screws (2) through 90°.
- Remove rim by pulling straight off.
- Remove clips (4) and retaining ring.
- Undo connector.
- Reassemble in reverse order.
- Readjust headlamp beam.

Complete headlamp, replacement

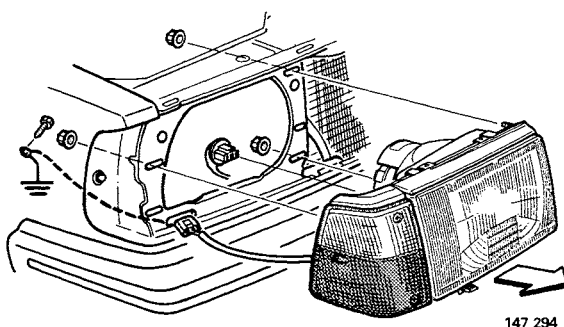
B4

**USA/Canada
240, 1980–85**

- Disconnect battery ground lead.
- Press in and turn both plastic screws through 90°.
- Remove headlamp rim by removing screws (4) and pulling straight off.
- Undo connector.
- Reassemble in reverse order.
- Readjust headlamp beam.

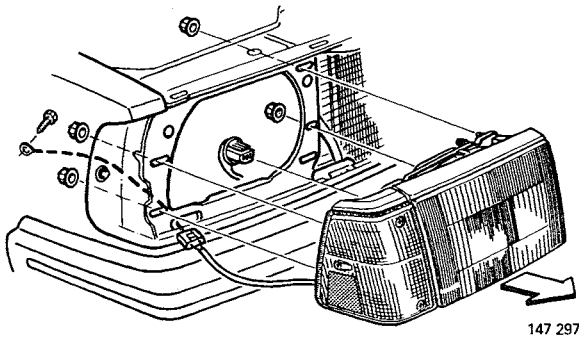
Complete front lamp cluster, replacement

B5

**240, 1981– (excl. USA/Canada)**

- Disconnect battery ground lead.
- Lift wiper blade.
- Undo headlamp retaining nuts (3).
- Undo connector
- Reassemble in reverse order.
- Readjust headlamp beam.

B6

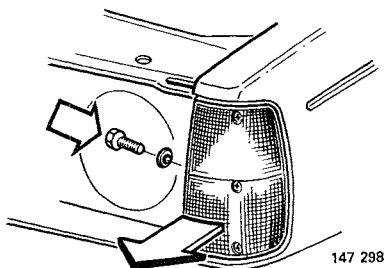


**USA/Canada
240, 1981–**

- Disconnect battery ground lead.
- Undo headlamp retaining nuts (4).
- Remove ground terminal screw and undo connector.
- Separate direction indicator lamp from headlamp by removing screws (2).
- Reassemble in reverse order.
- Readjust headlamp beam.

**Complete direction indicator/parking
lamp unit, replacement**

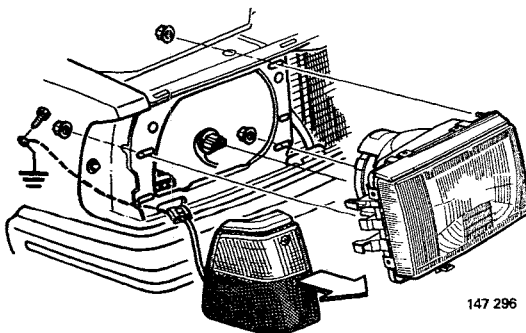
B7



240/260, –1980

- Disconnect battery ground lead.
- Undo lamp housing retaining bolt.
- Lift off lamp housing.
- Undo connector.
- Reassemble in reverse order.

B8

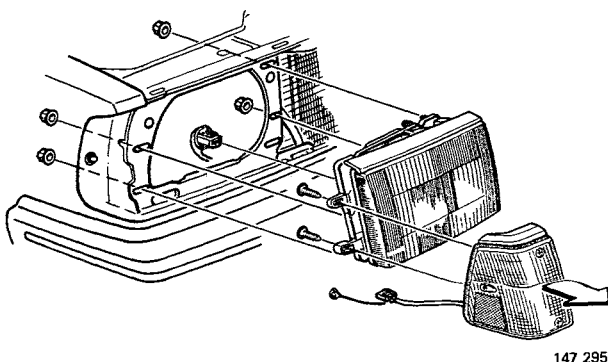


240, 1981– (excl. USA/Canada)

- Disconnect battery ground lead.
- Replace complete cluster as described in B5.
- Separate direction indicator/parking lamp assembly from headlamp.
- Undo connector.
- Reassemble in reverse order.

**Complete direction indicator/parking
lamp assembly, replacement, USA, 1981–**

B9

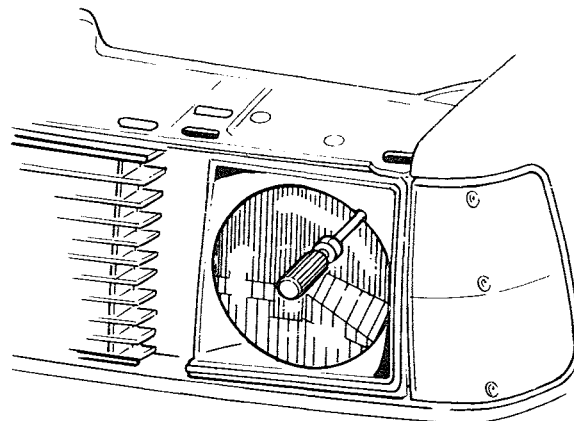


- Disconnect battery ground lead.
- Replace complete cluster as described in B6.
- Separate direction indicator/parking lamp assembly from headlamp by undoing lamp housing retaining screws (2).
- Undo connector.
- Reassemble in reverse order.

Headlamp beam adjustment

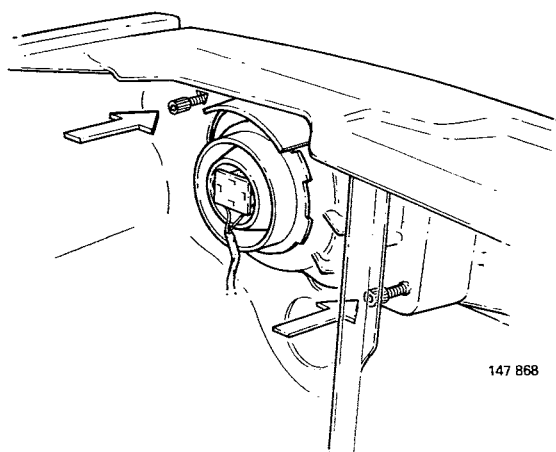
B10

Headlamp beam is adjusted by means of screws indicated.



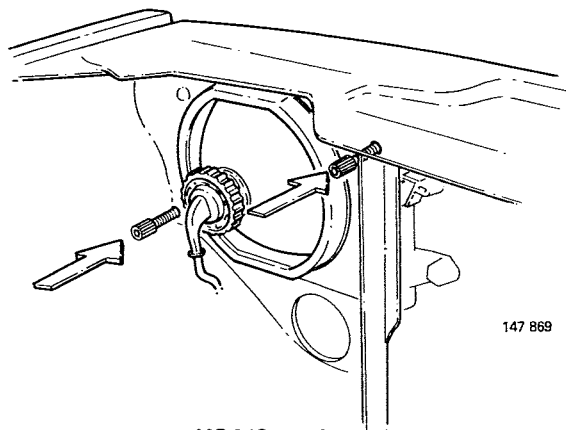
240 -1979

148 884



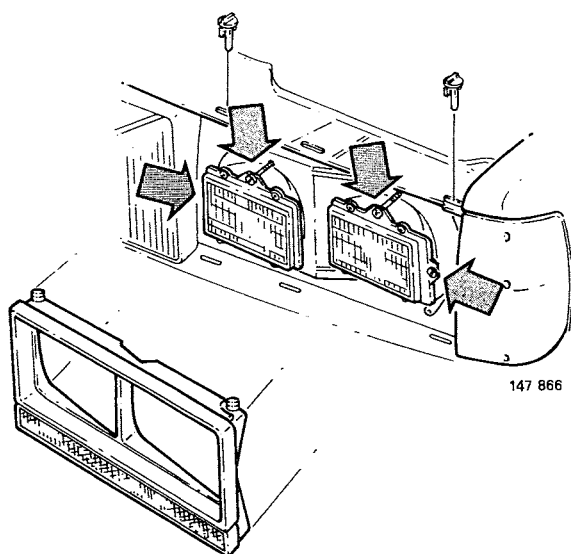
147 868

240, 1981-



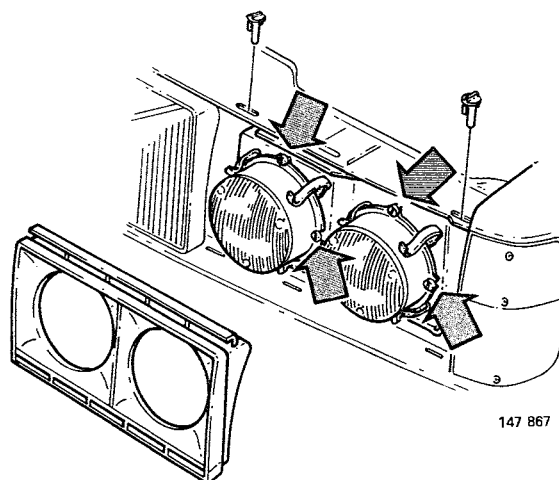
147 869

USA/Canada
240, 1984-



147 866

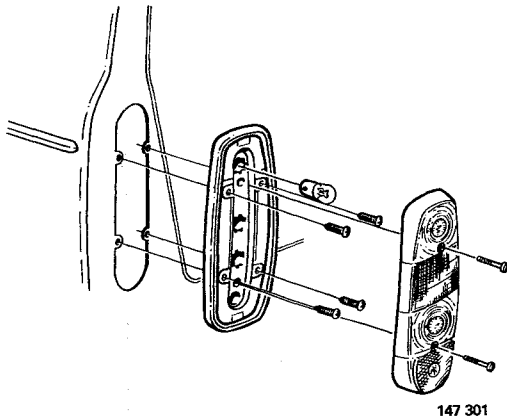
USA/Canada
240, 1980-84



147 867

USA/Canada
240, 1978-80

Rear lighting

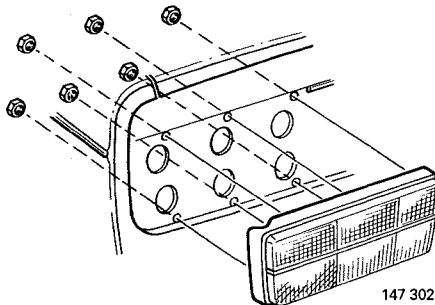


Complete rear lamp cluster, replacement

C1

240, 5-door, –1979

- Disconnect battery ground lead.
- Remove lens retaining screws (2).
- Remove lamp housing retaining screws (4).
- Withdraw lamp and disconnect leads.
- Reassemble in reverse order.

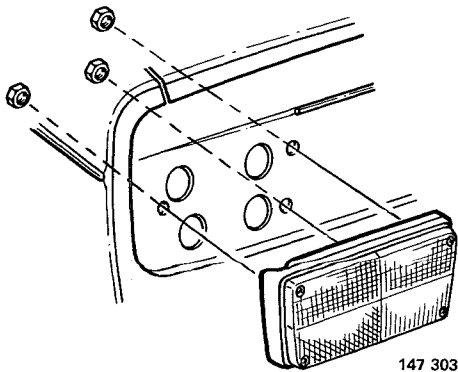


Complete rear lamp cluster, replacement

C2

260, 4-door, –1979

- Remove panel.
- Undo lamp retaining nuts (6).
- Withdraw lamp and undo connector.
- Reassemble in reverse order.

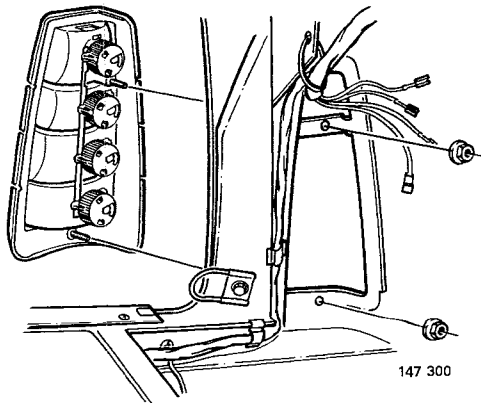


Complete rear lamp cluster, replacement

C3

240, 4-door, –1979

- Remove panel.
- Undo lamp retaining nuts (3).
- Withdraw lamp and disconnect leads.
- Reassemble in reverse order.



Complete rear lamp cluster, replacement

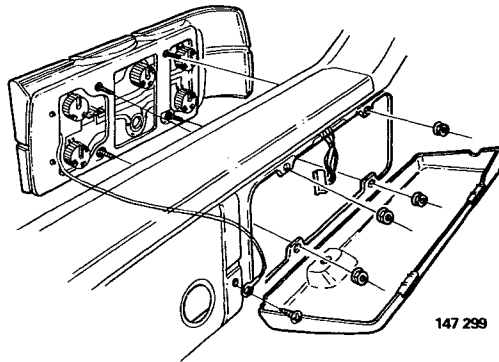
C4

5-door, –1980

- Disconnect battery ground lead.
- Remove cover.
- Remove lamp retaining nuts (2).
- Withdraw lamp, and disconnect and mark leads.
- Reassemble in reverse order.
- Reconnect leads as per markings.
- Ensure that none of leads is pinched between lamp and body.

Complete rear lamp cluster, replacement

C5

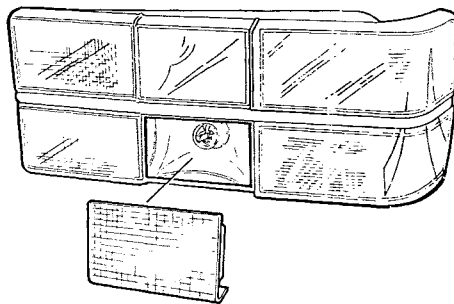


240, 4-door, 1980–

- Disconnect battery ground lead.
- Unscrew plastic cover over bulb holders.
- Undo lamp connector.
- Disconnect ground lead.
- Remove lamp retaining nuts (4).
- Withdraw lamp cluster.
- Reassemble in reverse order.

Note: Bulb holders for combined rear and brake light are different on left and right-hand sides. Left-hand holder is black and right-hand holder white. If interchanged, brake light will operate instead of rear light, and vice versa.

C6

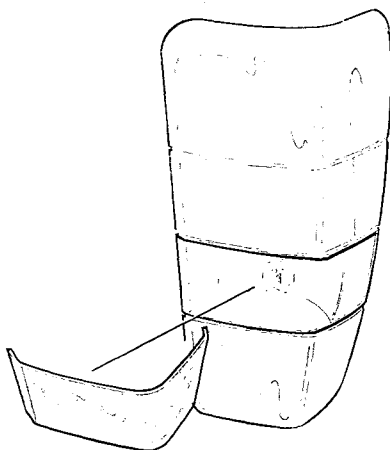


Replacement of separate reversing light lens, 4 and 5-door, –1980

- Remove lamp cluster from car.
- Remove lens and clean off remains of adhesive.
- Clean surfaces to be bonded.
- Place bead of adhesive around edge.

Note: Ensure adhesive does not touch reflector.

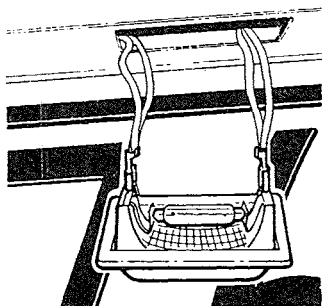
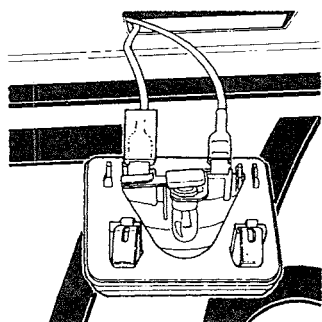
- Press new lens into position.
- Secure lens with tape and allow adhesive to dry for 24 hours.
- Reinstall lamp cluster and reconnect leads.



Caution!

- Unhardened compound is an eye and skin irritant.
- Compound releases acetic acid during hardening. Ensure that area is well ventilated.
- If jointing compound/adhesive comes in contact with eyes, wash eyes immediately with water for at least 15 minutes. Consult a doctor.
- Dangerous if swallowed.
- Use protective goggles!

C7



Number plate lighting 2 and 4-door, 1979-81

- Insert screwdriver at rear edge of lamp housing and carefully prise out housing, taking care not to damage paintwork.
- Disconnect leads.

1982-

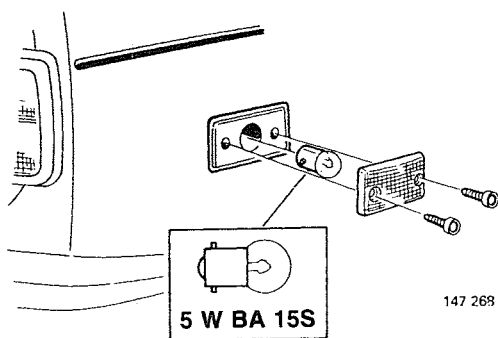
- Withdraw lamp housing until front edge is free.
- Remove housing completely and disconnect leads.
- Replace lamp housing by placing front edge in position and pressing home rear edge by hand.

5-door, -1981

- Release lamp housing catch by inserting screwdriver in opening at one side.
- Withdraw lamp housing from mounting and disconnect leads.

1982-

- Pull out end of cover not provided with locating pin.
- Withdraw lamp housing from mounting and disconnect leads.
- When reinstalling cover, first insert guide pin in opening and then press home cover by hand.



C8

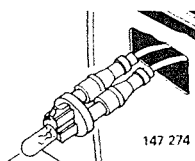
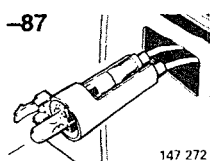
Complete side marker light, replacement USA/Canada 240, 4-door, -1978; 5-door, -1980

- Disconnect battery ground lead.
- Undo both screws.
- Pull lamp housing straight out.
- Disconnect leads/connector
- Reassemble in reverse order.

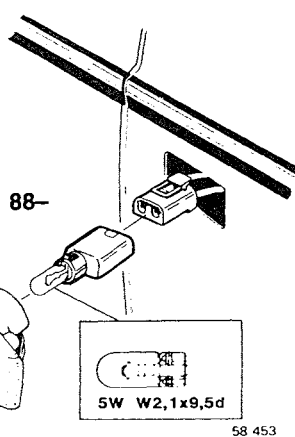
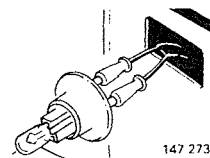
C9

Complete side direction indicator, replacement

- Disconnect battery ground lead.
- Slide lamp forward and pull out rear end.
- Disconnect leads/connector.
- Reassemble following reverse order of disassembly.



85/86



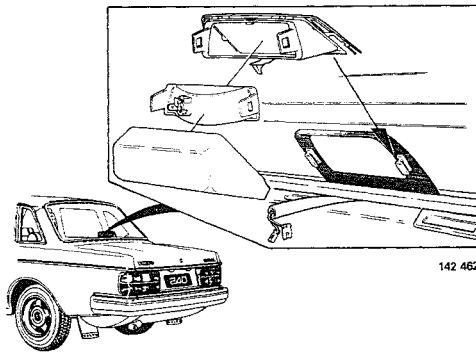
-84

88-

C10

High-level brake light, replacement, 4-door, 1986–

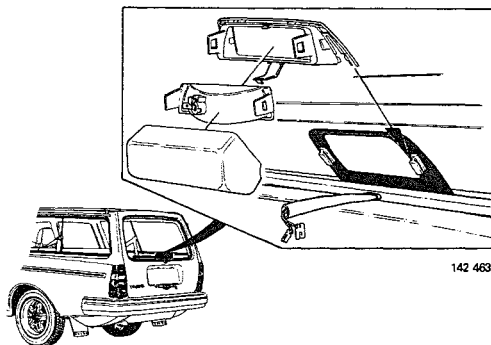
- Disconnect battery ground lead.
- Insert screwdriver in opening at bottom of lamp and release spring.
- Lift cover.
- Disconnect leads.
- Lift lamp to remove.
- Reassemble in reverse order.



C11

5-door

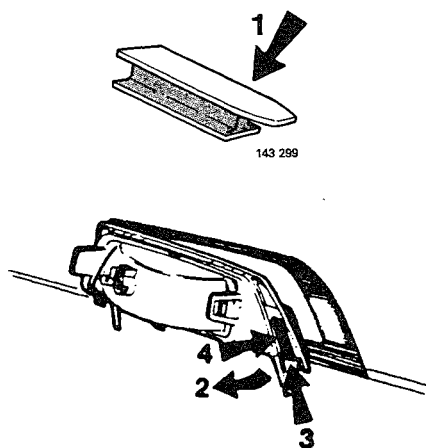
- Disconnect battery ground lead.
- Pull plastic cover straight off.
- Disconnect leads.
- Remove lamp baseplate.
- Remove screws holding bulb holder to baseplate.
- Remove bulb holder retaining clips.
- Reassemble in reverse order.



C12

Bonding of high-level brake light holder, 1986–

- Grind holder mounting surface completely flat (1).
- Thoroughly clean mounting surface on glass and spray on primer.
- Apply extremely thin coat of adhesive to mounting.
- Mount lamp housing on other mounting still attached to window.
- Prise housing outwards (2) and press prepared mounting as far as possible into lamp housing groove (3).
- Line up and press mounting into position on window (4), applying pressure for about one minute.



Caution!

- Unhardened compound is an eye and skin irritant.
- Compound releases acetic acid during hardening. Ensure that area is well ventilated.
- If jointing compound/adhesive comes in contact with eyes, wash eyes immediately with water for at least 15 minutes. Consult a doctor.
- Dangerous if swallowed.
- Use protective goggles!

Group 36 Other electrical equipment

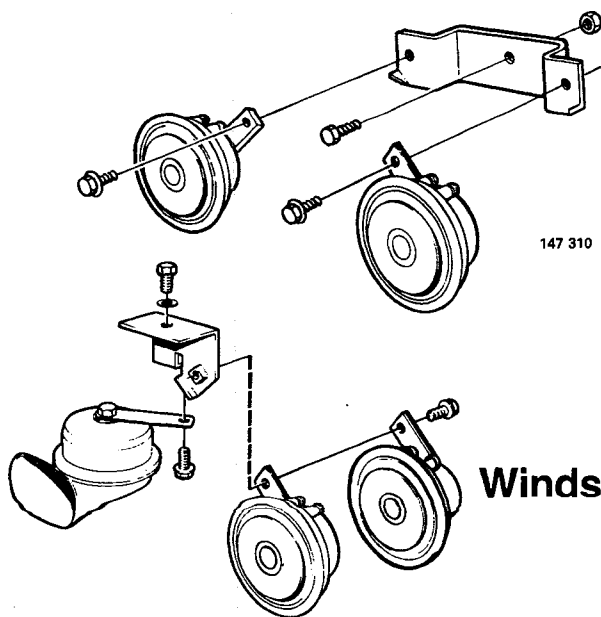
	Page
Horn	30
Windscreen wipers	30
Windscreen washers	31
Headlamp wipers	33
Electrical auxiliaries	36
Relays	39
Power door mirrors	42
Seat heaters	44

Horn

Horn, replacement

D1

- Undo nut at rear of horn to be replaced.
- Undo both connectors.
- Reassemble in reverse order.

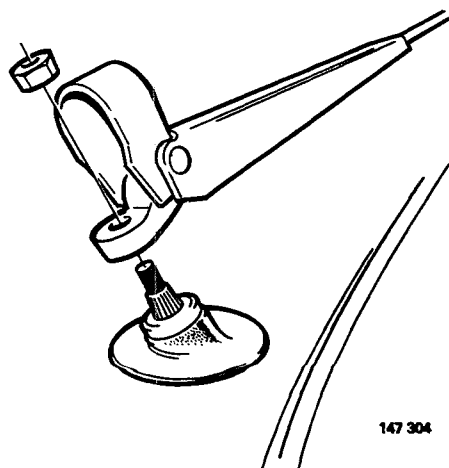


Windscreen wipers

Wiper arm, replacement

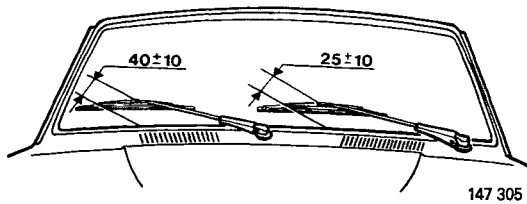
E1

- Lift wiper arm.
- Raise mounting cover as arm is lifted.
- Undo nut.
- Remove arm.
- Reassemble in reverse order.
- Tightening torque 16 Nm (12 ft.lb).



Wiper arm adjustment

- Adjust wiper arm as illustrated.
- Rear wiper arm should be parallel with weatherstrip on tailgate.

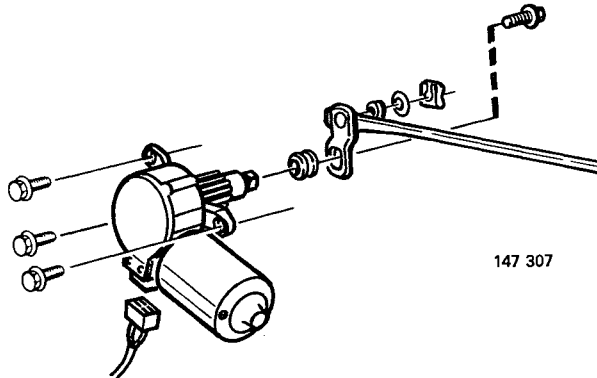


147 305

E2

Windscreen wiper motor, replacement

- Undo motor mounting bolts (3).
- Undo connector.
- Remove glove compartment as described in A23.
- Lower soundproofing panel and remove lever mounting screw.
- If wiper arm has not stopped in parking position, lever clips must also be removed.
- Reassemble in reverse order.
- Check that wiper is in parking position before remounting lever.
- Check rubber seal.



147 307

E3

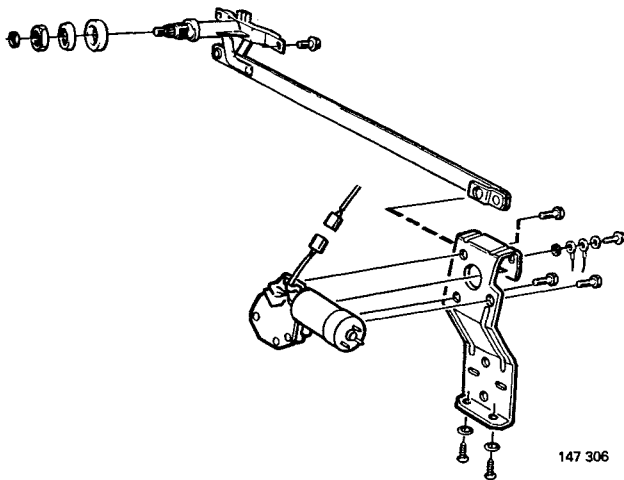
Rear wiper

Rear wiper motor, replacement

Remove wiper arm, nut, washer and sealing ring.
Open tailgate and remove:

- handle trim
- cover under handle
- panel upholstery

Remove motor mounting screws and disconnect leads.
Remove motor.



147 306

Install new motor

Mount motor on bracket.
Install motor and bracket in car.

Note: Use short screws at bracket upper mounting point.
Connect rear window heater and wiper motor to ground.

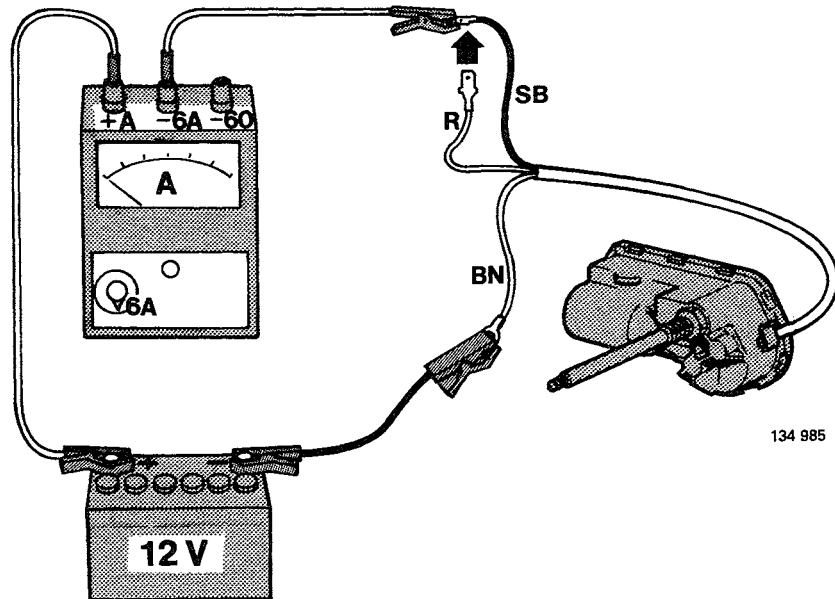
Headlamp wiper motor – fault tracing

E4

- If headlamp wiper motor is suspected to be faulty, it may be tested simply using Volvo voltmeter/ammeter, P/N 999 6450, or comparable instrument.
- Test procedure is as follows:

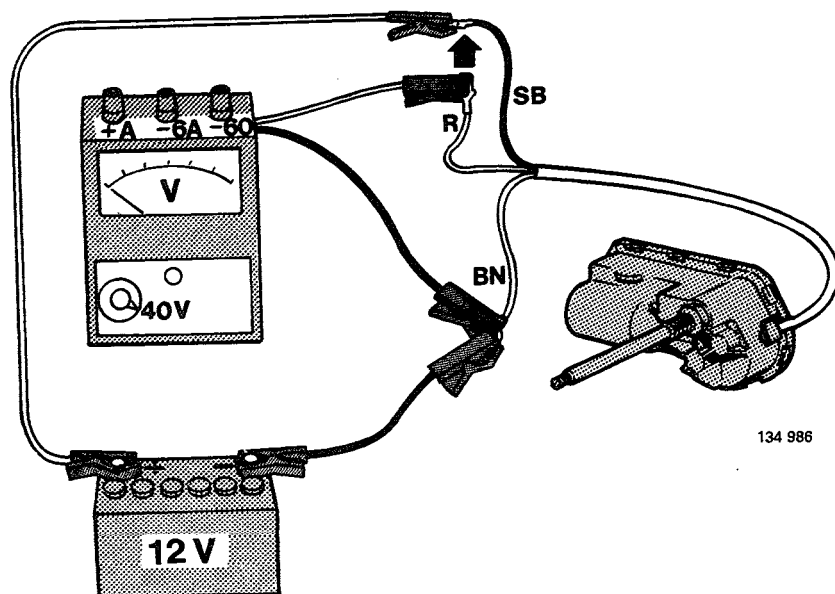
Current measurement

- Start motor by connecting red lead to supply.
- Max. current consumption: 0.5 A.

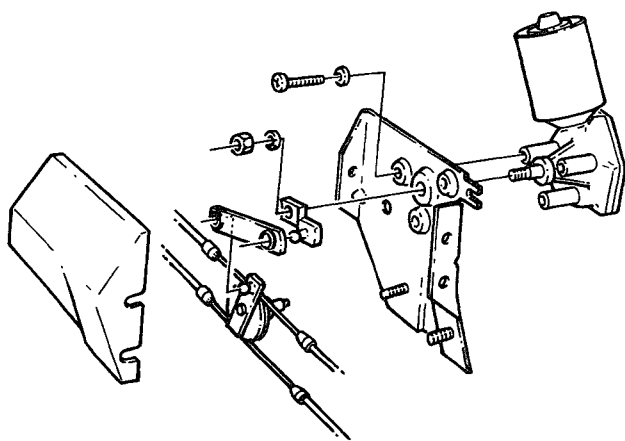


Checking diode blocking function

- Start motor and open connection between red and black leads. (Voltmeter should indicate 12 V when red and black leads are connected.)



Headlamp wipers

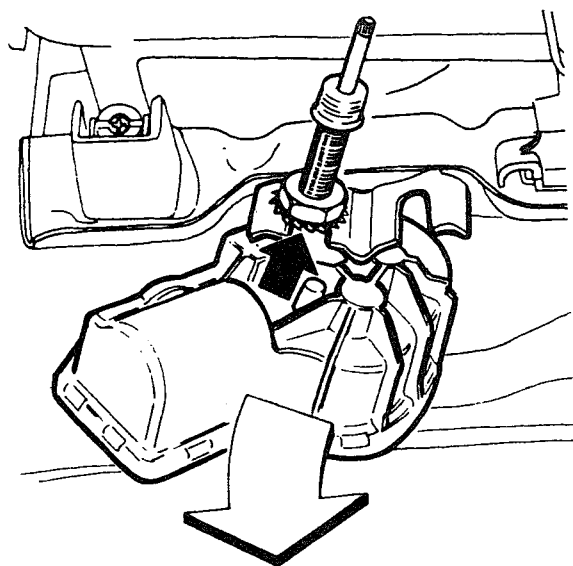


Headlamp wiper motor, replacement

E5

240, 1975–1978

- Remove grille.
- Remove plastic cover.
- Remove screws (3).
- Undo lever ball joint.
- Undo connector.
- **Replace motor.**
- Reassemble in reverse order of disassembly.

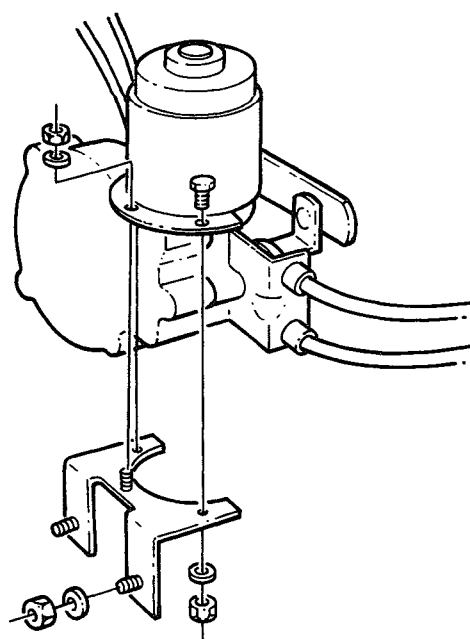


Headlamp wiper motor, replacement

E6

240, 1978–

- Remove wiper arm.
- Undo nut and withdraw wiper motor from slotted groove.
- Undo connector.
- Replace motor.
- Reassemble in reverse order.



Headlamp wiper motor, replacement

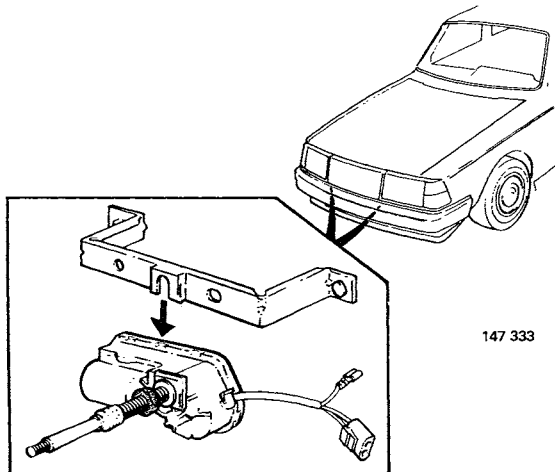
E7

240, 1975–78

- Remove grille.
- Remove motor mounting screws (2).
- Disconnect wire cables on each side.
- Undo connector.
- **Replace motor.**
- Reassemble in reverse order.

Headlamp wiper motor, replacement

E8

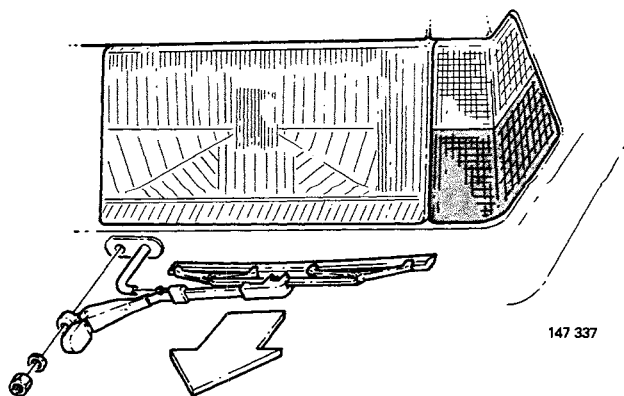


240, 1980

- Disconnect battery ground lead.
- Remove wiper arm.
- Open connector. (Connectors for left and right-hand motors are both located at left wing.)
- Disconnect ground lead. (Both left and right-hand motors are grounded to left wing.)
- Undo nut holding motor to bracket.
- Slide off plastic tube.
- Remove motor.
- Reassemble in reverse order.
- Ensure that motor is parked before replacing wiper arm.

Headlamp wiper arm, replacement

E9



240, 1979-

- Lift wiper arm.
- Raise mounting cover as arm is lifted.
- Undo mounting nut.
- Remove arm.
- Disconnect washer tube.
- Reassemble in reverse order.
- Position wiper blade under stop when tightening nut.
- Reposition blade above stop. Blade should now be tight against stop.

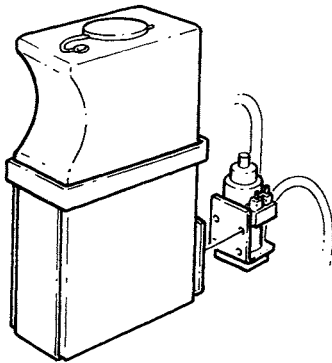
Windscreen washer motor, replacement

F1

240 1978–81

Replacement of motor on turbo models with reservoir on left-hand side

- Unhook motor from bracket.
- Remove tube and undo connector.
- Install new motor and reconnect connector.



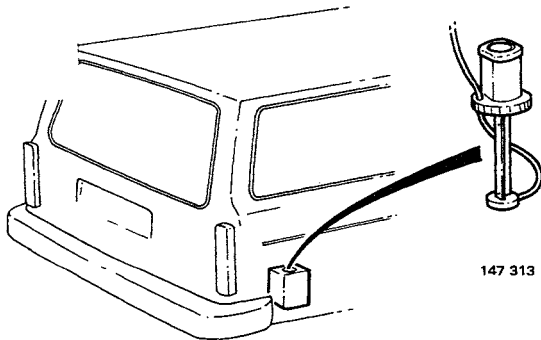
F2

240 –1978

Rear washer motor, replacement

To replace washer motor on 5-door model with reservoir in spare wheel well:

- Unscrew cover and lift out motor.
- Disconnect tube and undo connector, reconnect tube to new motor and install motor.
- Reconnect connector.



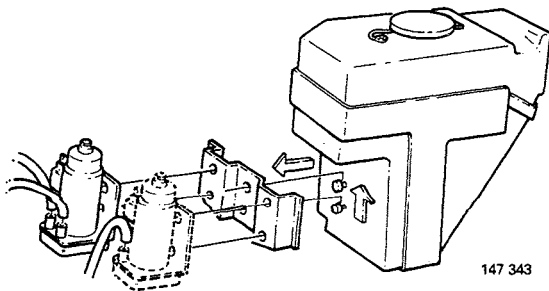
147 313

F3

240 1979–

Washer pump, replacement, 4 and 5-door models

- Remove pump from bayonet mounting on bracket.
- Disconnect tubes and undo connector.
- Install new pump. Reconnect connector and tubes.
- Expansion vessel must be removed to replace reservoir.

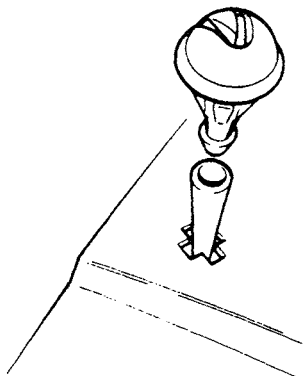


147 343

F4

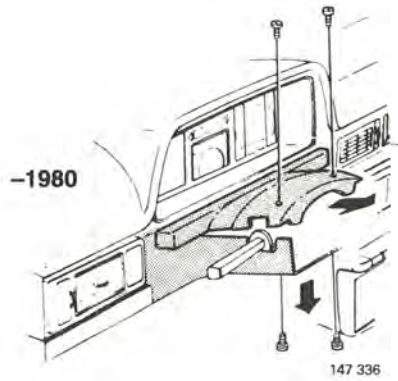
Washer nozzle, replacement

- Press out nozzle and tube from underneath.
- Disconnect nozzle from tube.
- Install new nozzle and reassemble.



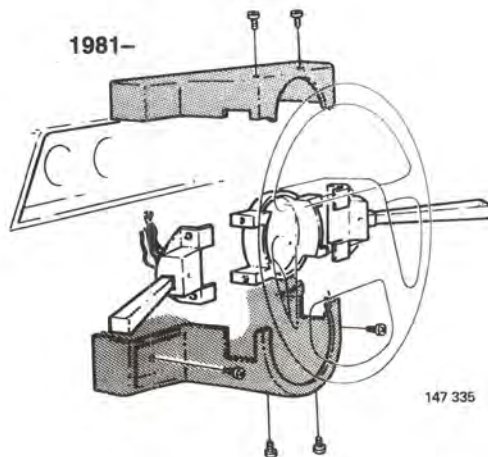
Electrical auxiliaries

G1



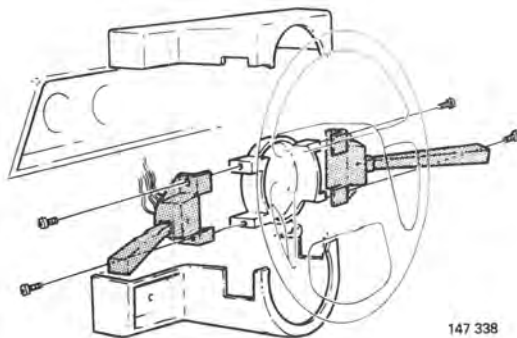
Column-mounted stalks, replacement

- Undo screws holding upper (2) and lower (4) covers.
- Remove covers.
- Remove mounting screws on stalk to be replaced.
- Undo windscreen wiper connector; disconnect and mark direction indicator leads.

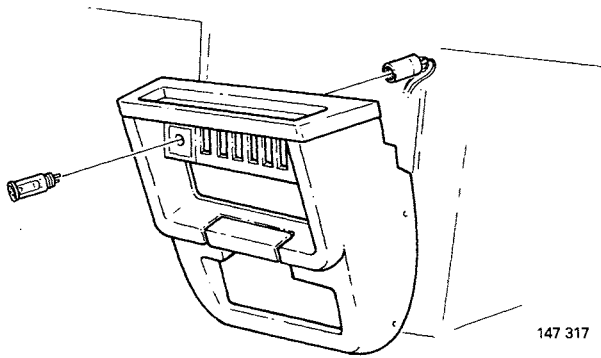


Installation

- Reassemble in reverse order.
- Check that direction indicator cancels when steering wheel is turned in both directions.

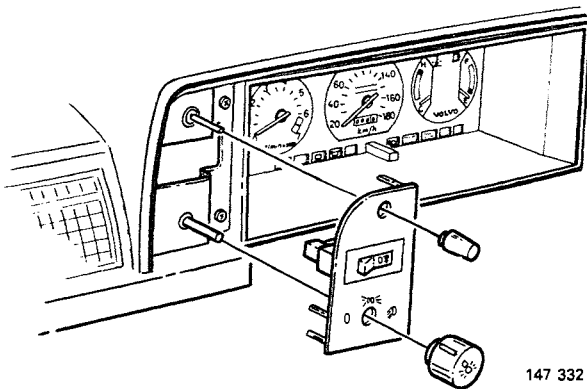


G2

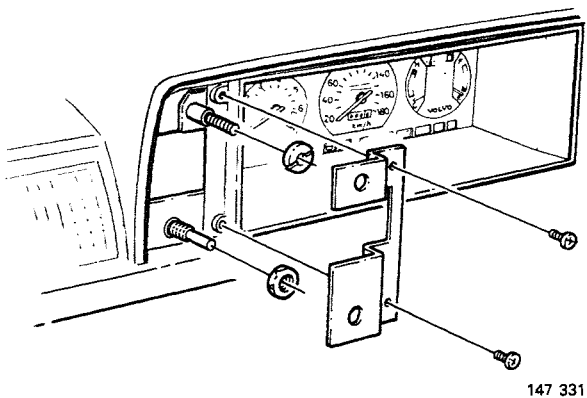
**Cigarette lighter, replacement**

- Remove heater panel screws (2) and clips.
- Tilt panel forward.
- Disconnect leads.
- Unscrew lighter holder.
- Replace lighter.
- Reassemble in reverse order.

G3

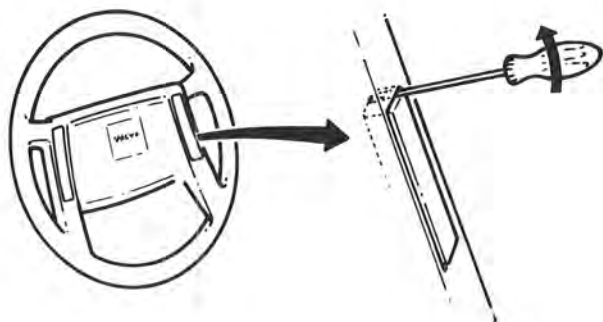
**Rheostat and light switch**

- Pull off control knobs.
- Remove panel using small screwdriver.
- Undo control retaining nuts.



- Remove cover plate screws (2).
- Undo connector and replace control.
- Reassemble in reverse order.

G4



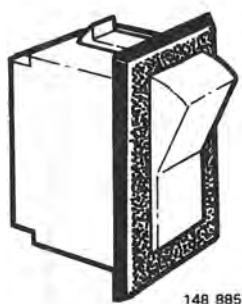
Horn button, replacement

Removal

- Prise up button by inserting screwdriver at outer edge.
- Disconnect leads and remove button.

Installation

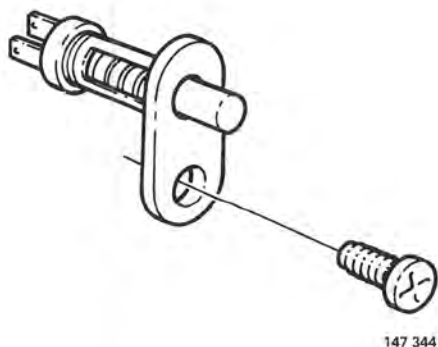
- Reconnect leads to new button and press into position in wheel recess.



Rocker switch, replacement

G5

- Remove switch panel.
- Undo connector.
- Release catches and press out switch.
- Reassemble in reverse order.



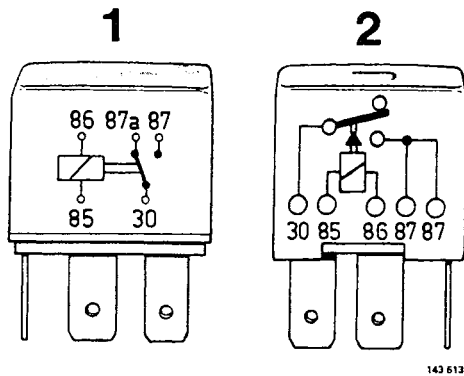
Door switch, replacement

G6

- Remove screw.
- Withdraw switch.
- Disconnect leads.
- Reassemble in reverse order.

Relays

Relay replacement



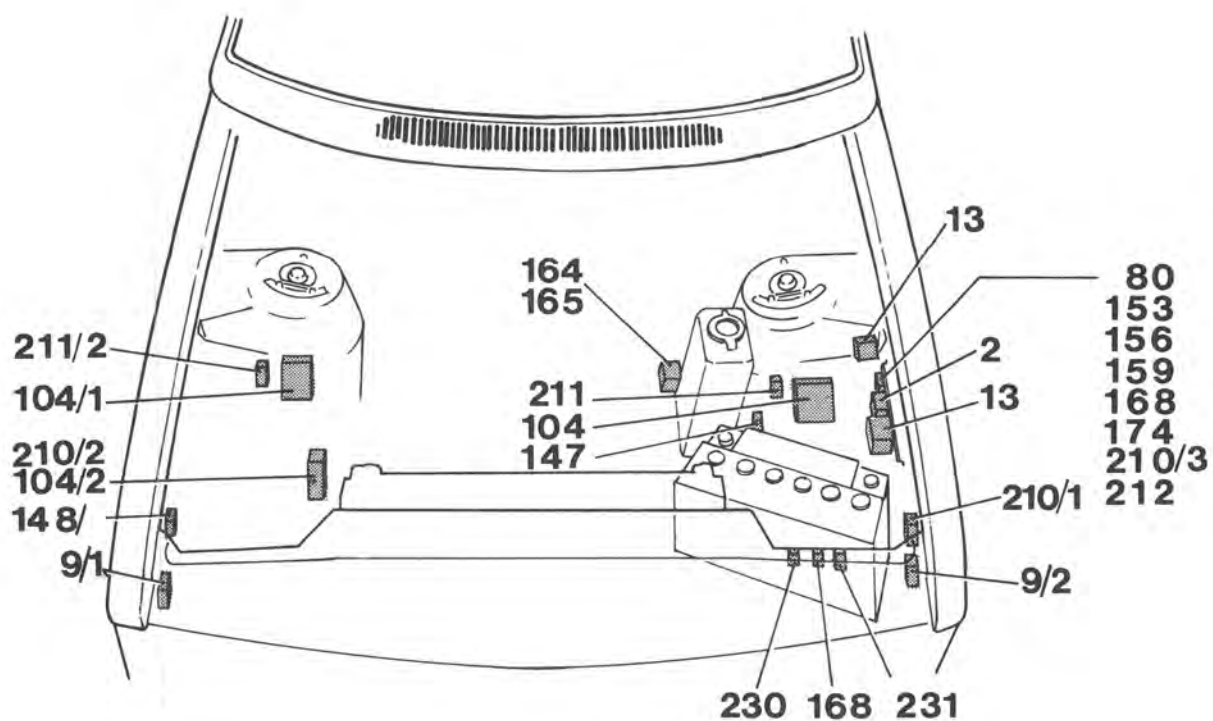
H1

When replacing a relay, ensure that the closing type is not interchanged with the alternating type.

Each relay housing is provided with a circuit diagram illustrating the particular type.

In the alternating type (1), the connection between 87 and 87a is not fixed, whereas in a closing relay (2), terminals 87 are permanently connected.

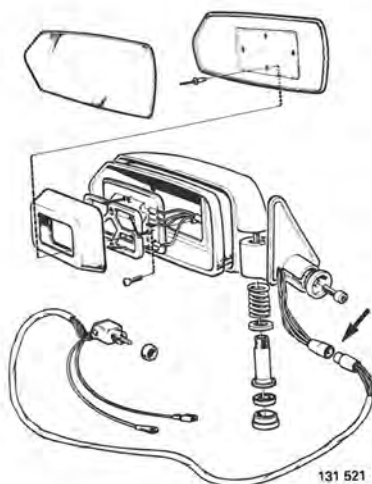
Check parts catalogue.



Location of relays

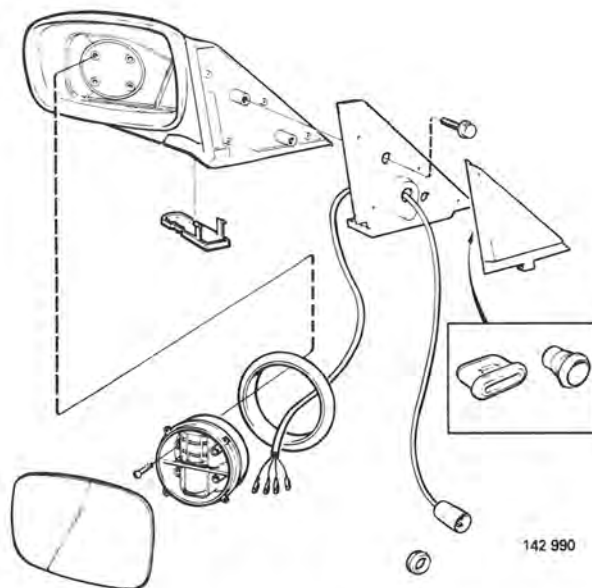
2	Terminal board	159	Oxygen sensor (Lambdasond) relay, -85
9/1	Voltage regulator	161	Emission control system control unit, -85
12/1	Bulb failure warning sensor	163/1	Rear wiper intermittent relay
12/2	Headlamp wipers, 75-79	163/2	Rear wiper intermittent relay, 80-
13	Stepping relay for low beams, high beams and flasher	164	Glow plug relay, D 24, with integral 80 A fuse
28	Direction indicator relay	165	Glow plug relay, D 24, 84-
67	Light warning buzzer, -80	167	Time delay relay, interior lighting
80	Headlamp wiper relay, 80-	168	Electric radiator fan, -85
94/1	Seat belt reminder (USA)	171	Direction indicator control unit, -86
94/2	Seat belt reminder, 80-	175	Rear window heater relay, USA, -89
99/1	Fuel pump relay, -79	188	Central locking relay, opening
99/2	Fuel pump relay, -76/77	189	Central locking relay, closing
99/3	Fuel pump relay, -75	196	Rex ignition system control unit
104/1	Ignition system control unit, TSZ-2 (260)	210/1	TZ-28H ignition system control unit
104/2	Ignition system control unit, TSZ-4/TSZ-2 (260), 85-	210/2	Chrysler ignition system control unit
108	Overdrive relay	210/3	Control unit relay, diesels, 80-
124	Main lighting relay, -85	211/1	EZ-116K ignition system control unit, -89
125	Rear foglamp relay, -86	211/2	Starting valve impulse relay, -85
126/1	Power window relay, -80	212	In-line fuse for emission control system
126/2	Power window relay, -84	214	Control unit, LH emission control system
129	Air conditioning relay	216	Fuel pump relay, 84-
131	CIS control unit, -85	217	Main relay for LH emission control system
133	Dim-dip regulator (GB)	230	Speed relay, -85
148	Windscreen wiper intermittent relay	231	AC switch-out relay
153	Spotlamp relay, 80-		
156	Auxiliary light and foglamp relay		

Power door mirrors (1975–86)



131 521

1975–86 models



142 990

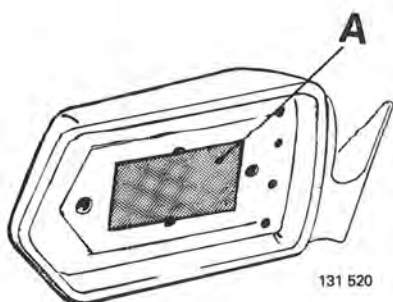
1986– models

J1

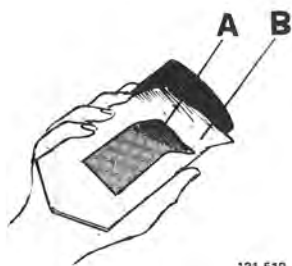
Remember, when replacing a mirror:

On models up to 1979 inclusive, the connector is located in the door (see illustration).

On models from 1980 on, the connector is in the fusebox on the side panel.



131 520



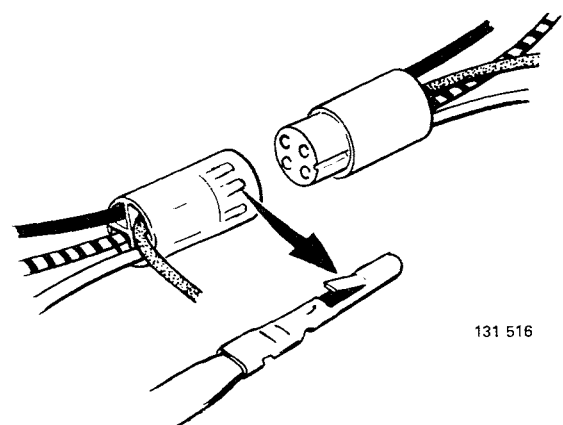
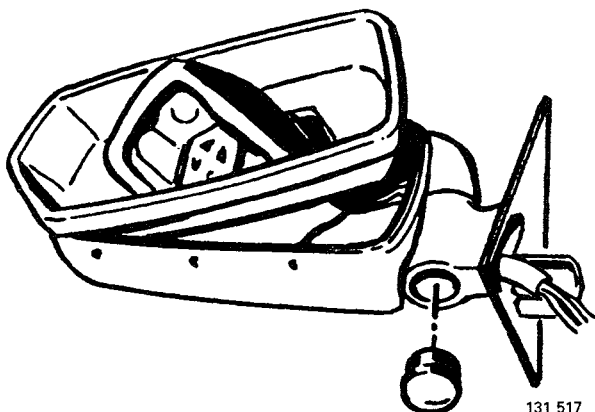
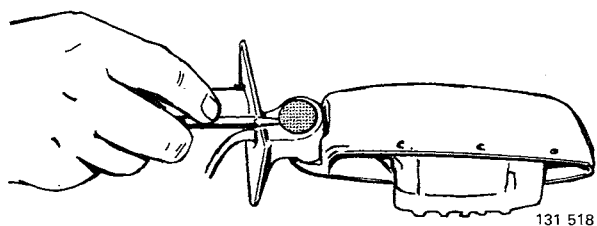
131 519

Glass replacement (1975–85)

J2

Remove glass (use screwdriver).
Clean mounting plate with methylated spirits.
Transfer tape (A) to recess in mounting tape.
Puncture bubbles (if any).

Remove protective strips A and B.
Adjust glass and press into position.



Power door mirror, motor replacement (1975–85)

J3

Motor is replaced with mirror unit removed.

Removal

Remove:

- glass
- mirror mounting plate (prise lose from motor compartment)

Open connector (mark leads). Remove plastic washer and pull out wiring. Remove protective rubber from motor and unscrew motor.

Installation

Mount protective rubber on motor. Thread wiring through mounting and install motor.

Place PVC sleeve on wiring and insert in mounting. Install plastic washer.

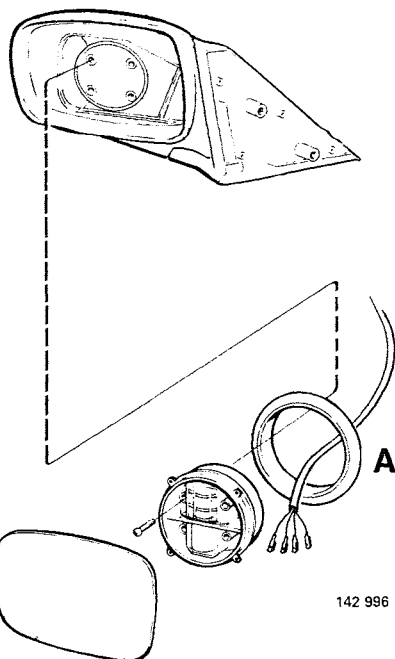
Bond mirror mounting plate in position. Install glass.

Install new terminal pins in connector.

P/N (engine side): 944 222-9

(body side): 942 607-3

Remount unit and rejoin connector.



Power door mirror, motor replacement (1986–)

J4

Motor is replaced without removing mirror unit from car.

Removal

Remove glass.

Undo motor screws (4).

Disconnect leads and transfer dust shield (A) to new motor.

Installation

Reconnect leads and install new motor.

Install glass.

Seat heaters

Heating elements, replacement

J5

Disconnect heater wiring. Remove seat from car and remove cushion. (Remove bolts between seat and tilt fitting).

Backrest element, replacement

Removal

Remove upholstery clips. On early models: Remove plastic hooks in hem.

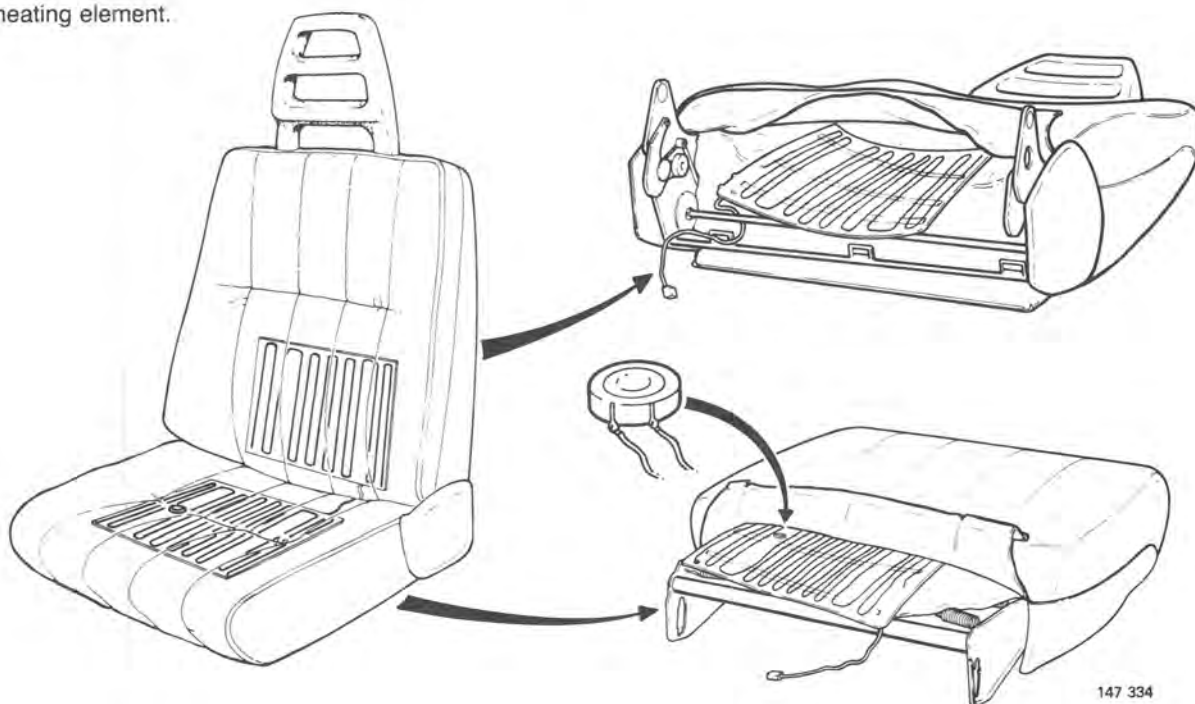
Remove heating element.

Installation

Turn points towards padding. Heater leads should emerge at inner edge of seat.

Clip upholstery in position using pliers, P/N 1 158 962-9.

On early models: Secure hem with plastic hooks.



Seat cushion element, replacement

J6

Removal

Remove upholstery rail.

Remove clips (early models). Remove heating element.

Installation

Turn points towards padding. Heater leads should emerge at inner edge of seat. Refit upholstery rail. On early models: Clip upholstery in position.

Remount seat cushion in seat. Install seat in car and re-connect wiring.

Seat heater thermostat, fault tracing

J7

(-1987)

If fault is suspected, remember:

- Heating effect will be lower with leather upholstery.
- Thermostat will operate only when temperature falls below +14°C (switching off at +26°C).

Fault symptoms:

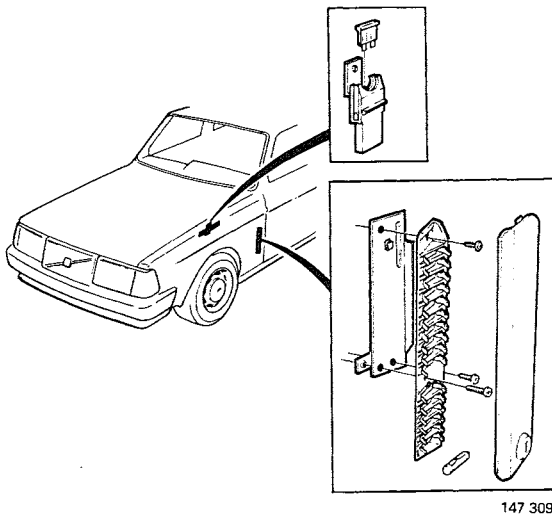
Heater does not operate although power supply and ground connection are intact.

- Open connector.
- Connect ammeter to connector.
- Switch on ignition and read ammeter. Instrument should indicate approx. 4 A.
 - If ammeter gives reading, thermostat is probably faulty.
 - If ammeter does not give reading, element is open-circuited. Test with buzzer or ohmmeter.

Group 37 Wiring and fuses

	Page
Fusebox	45
Wiring harnesses	46
Wiring and connectors.....	48

Fusebox



Replacement of fusebox, 240, 1975

K1

- Disconnect battery ground lead.
- Remove fusebox cover.
- Remove kick strip and panel.
- Remove fusebox retaining screws.
- Mark all leads before disconnection.
- Mount new fusebox.
- Reconnect leads as per markings.
- Retighten screws.
- Test functions.
- Reinstall kick strip and panel.
- Refit cover.

Fusebox, connection

K2

- Obtain access to fusebox according to K1.
- Connect lead(s) to appropriate fuse
 - connect to input (1)
 - check amperage of fuse.
- Reassemble in reverse order.

Checking fuses

K3

If in doubt whether a fuse is intact:

- Switch on ignition.
- Check for voltage at both fuse terminals.
 - Use test lamp.

Fuse ratings

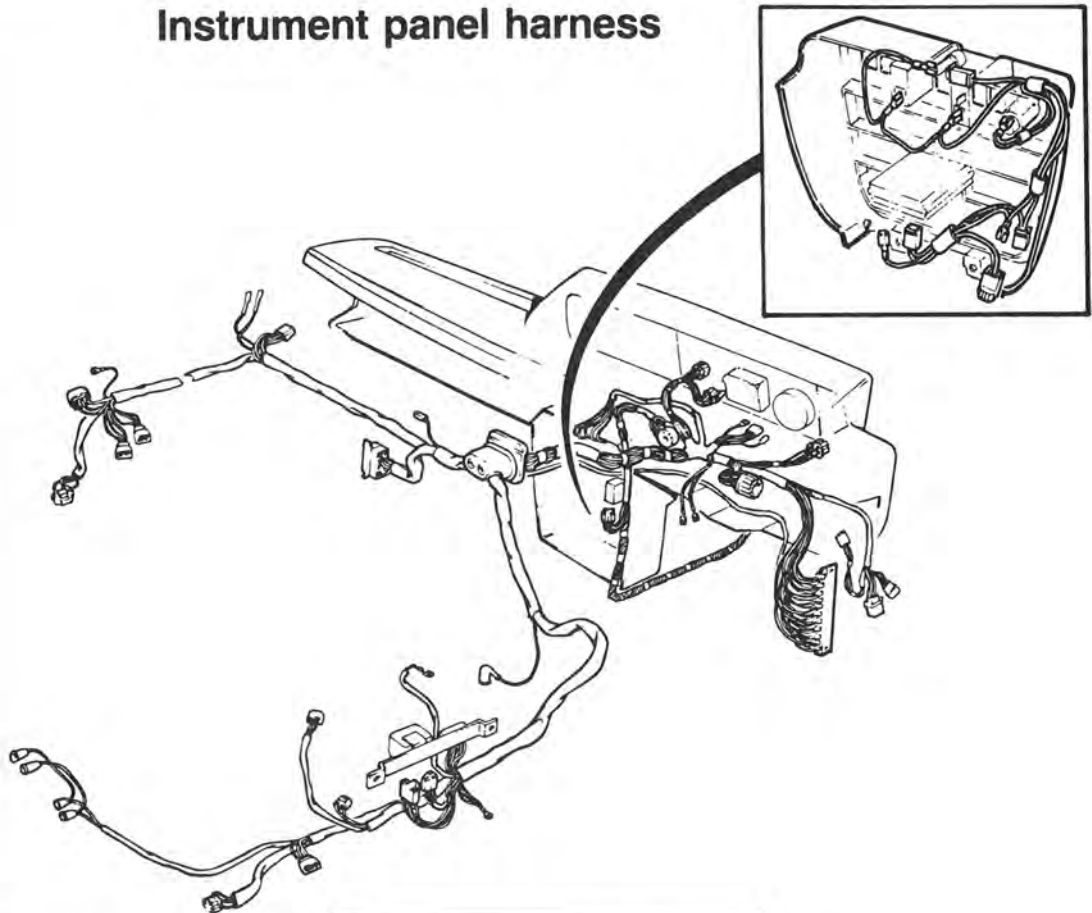
See "Specifications" (pages 4–10).

Wiring harnesses

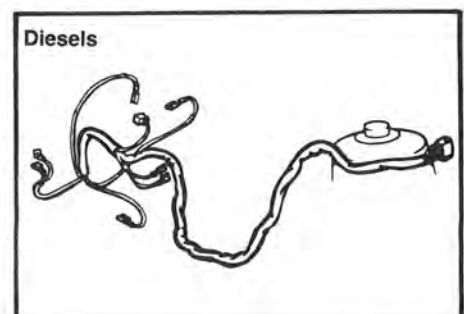
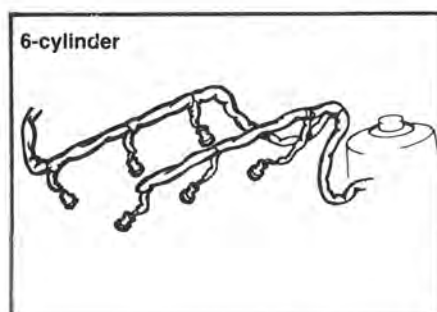
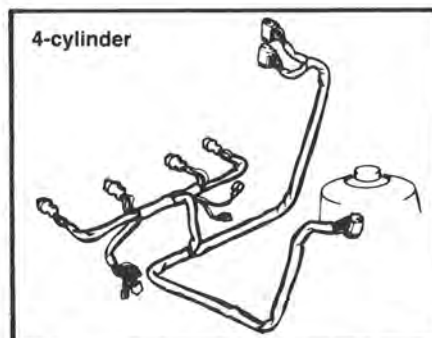
Due to the large number of wiring harness variants which exist, the illustrations below are intended to show only the basic arrangement of the harnesses.

A new harness should be secured at the same points and in the same manner as the original.

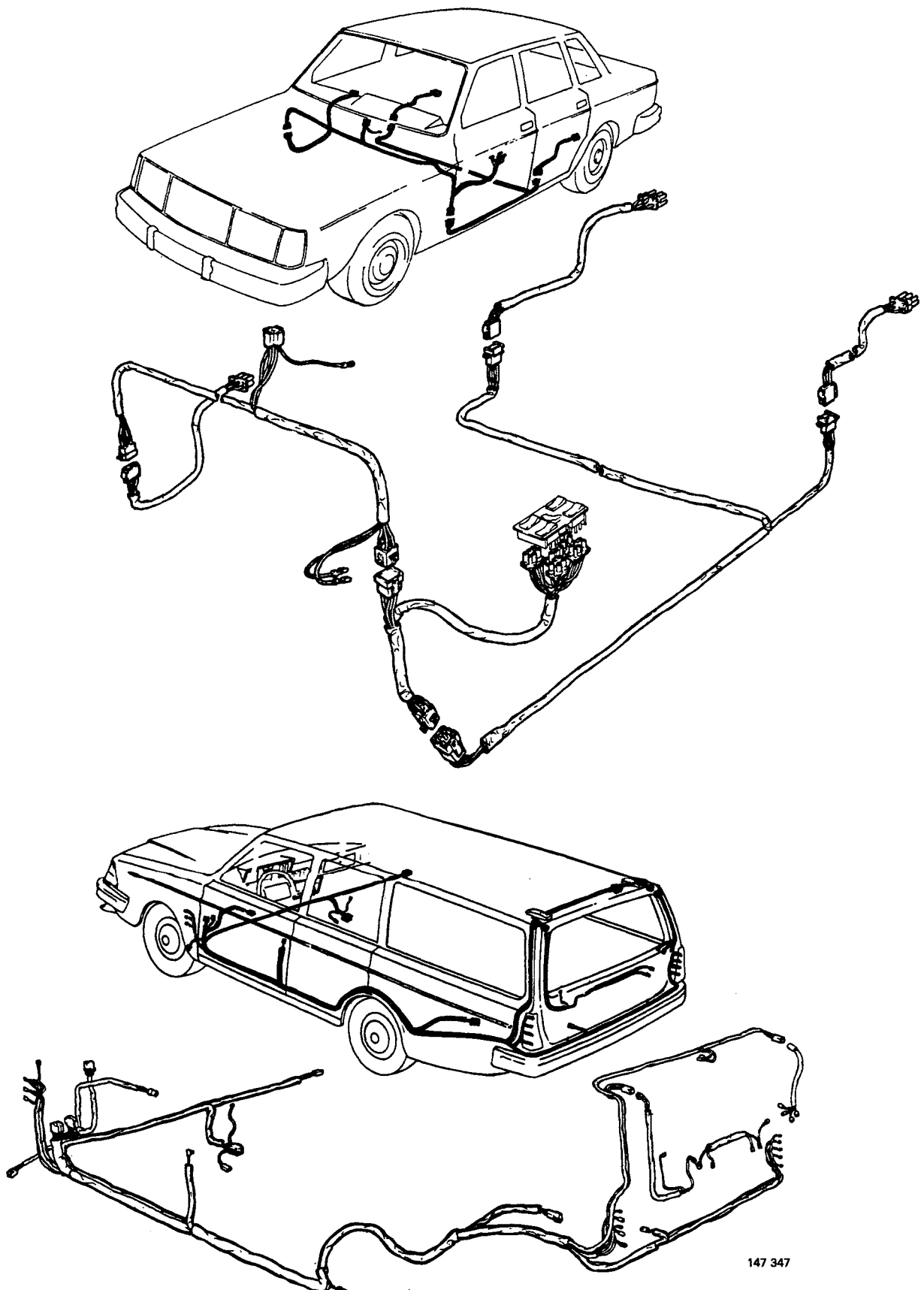
Instrument panel harness



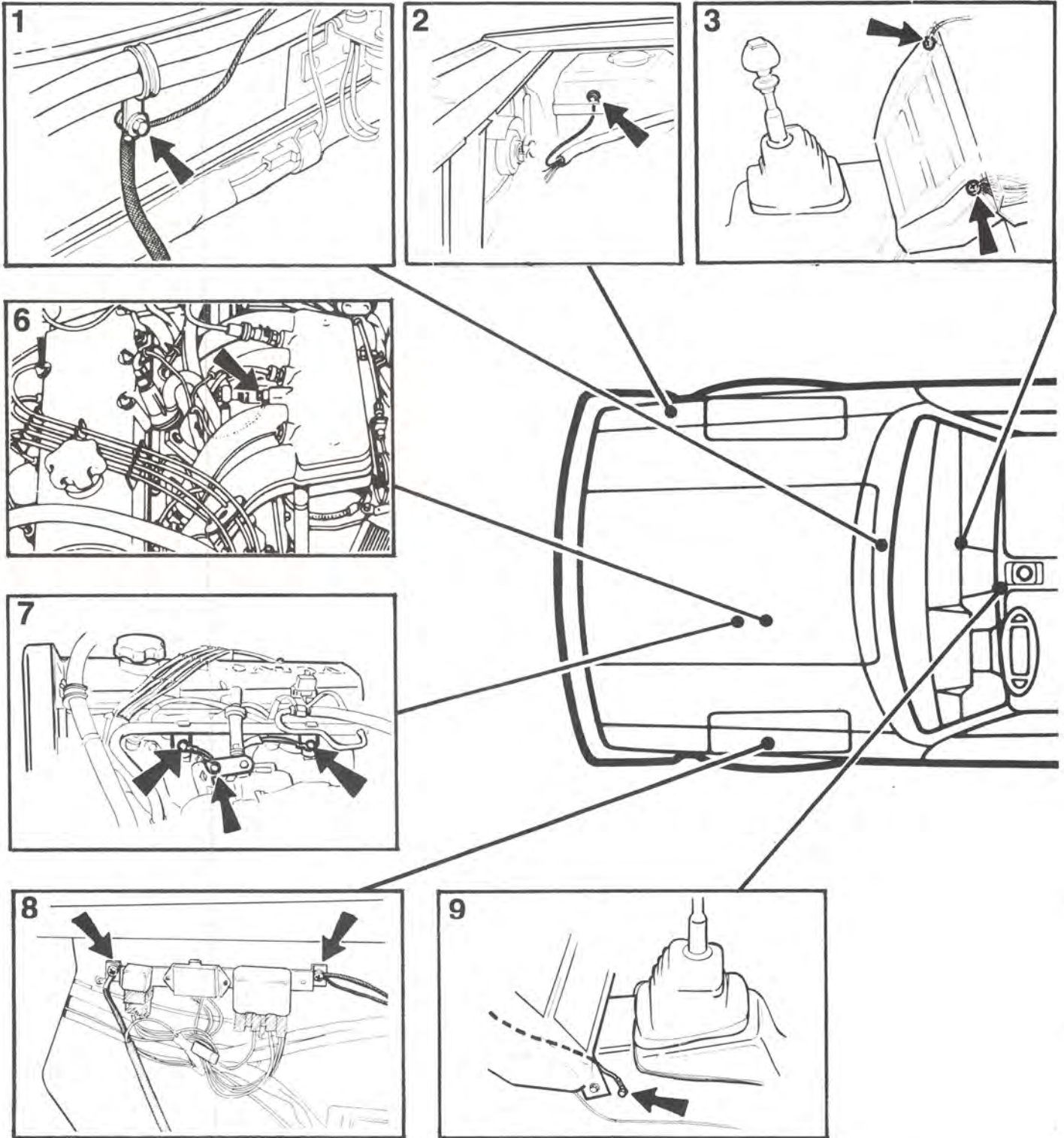
Engine compartment harness



Car interior harnesses



147 347



Ground connections

1 Bulkhead, engine side

- Ground terminal, radio interference suppression

2 Right front wheel housing

- RH high and low beams
- RH direction indicators
- RH parking lights
- RH day running lights
- Headlamp wipers

3 RH suspension strut

- Power window relay
- Power window switch
- Overdrive relay
- Central locking relay
- Fan, CU heater

4 Under rear seat

- Fuel pump
- Spotlamp, 4-door models

5 Rear lights, 5-door models

6 4-cylinder E engine, CI system

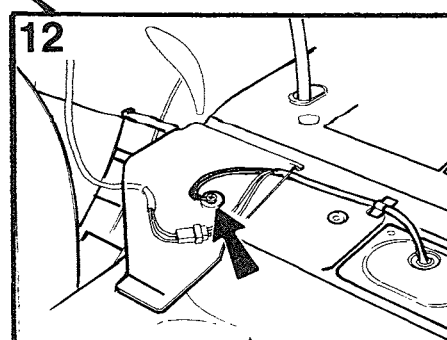
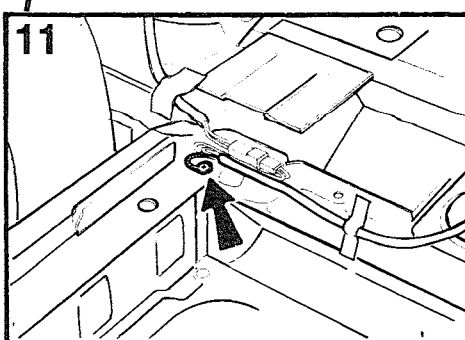
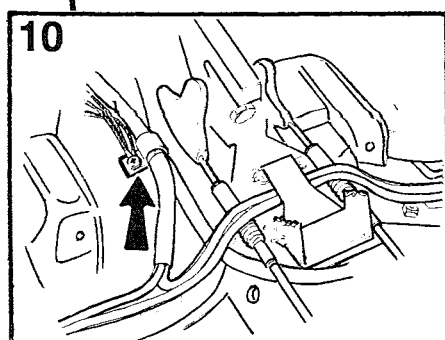
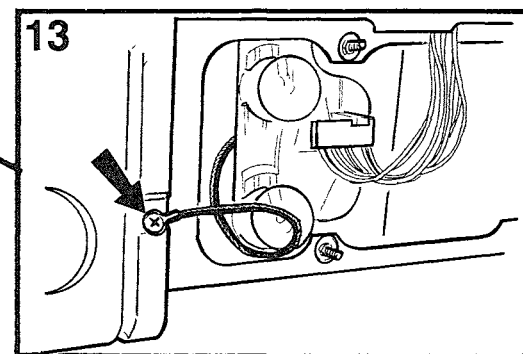
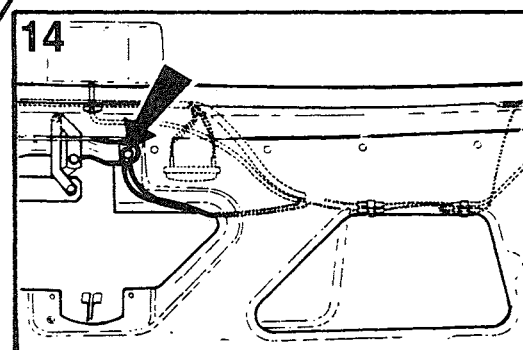
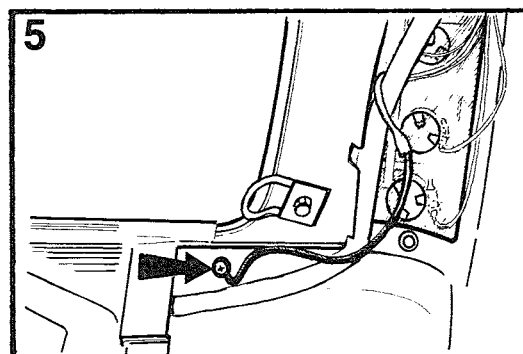
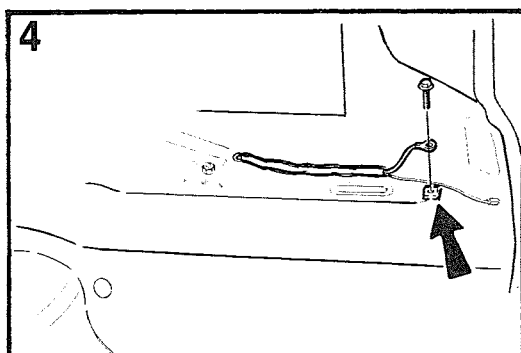
- Auxiliary idling valve
- Control pressure regulator

7 B 230 F, LH-Jetronic 2.4

- 1 Signal ground:
 - (214) Control unit terminal 5
 - (214) Control unit terminal 19 (jumper)
 - (214) Control unit terminal 29 (jumper)
 - (211) EZ-116 K control unit terminal 20
 - (215) Air mass meter
 - (131) Diagnostic terminal

• Power stage ground:

- (214) Control unit terminal 17
- (218) Idling and full-load switches
- (162) Oxygen sensor heating
- (211) EZ-116 K control unit terminal 14
- (216) EZ-116 K power stage

**8 Relay panel, LH side**

- LH high and low beams
- LH direction indicators
- LH parking lights
- LH day running lights

- Wiper motors, diesels

- Glow plug relay, diesels

- TZ-28H ignition system control unit

9 Propeller shaft, at gear lever

- Main lighting relay
- Seat belt lock lighting
- Bulb failure warning sensor
- Instruments
- Windscreen wiper intermittent relay
- Fuel pump relay
- Direction indicator relay

- Rear wiper switch

- Rear window heater relay (USA)

- Seat belt reminder control unit, USA

- Steering column

- Control panel lighting

- Speedometer

- Speedometer pick-up

- Cigarette lighter

- Horn

10 Under LH front seat

- Power door mirrors
- Seat heaters

11 5-door models

- Rear window heater
- Rear wiper motor

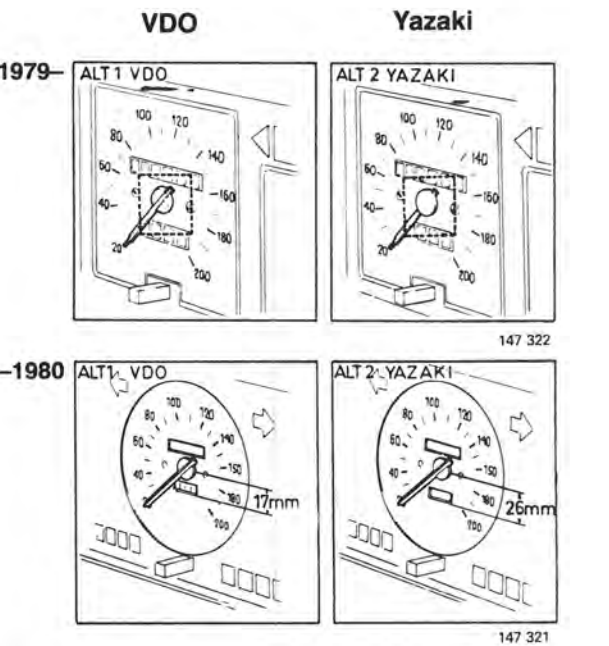
12 Tank pump, ES and FS engines**13 Rear lights, 4-door models****14 5-door models**

- High-level brake light
- Rear lights

Group 38 Instrumentation

Combined instrument instrument.....	50
Instruments	51
Sensors	59

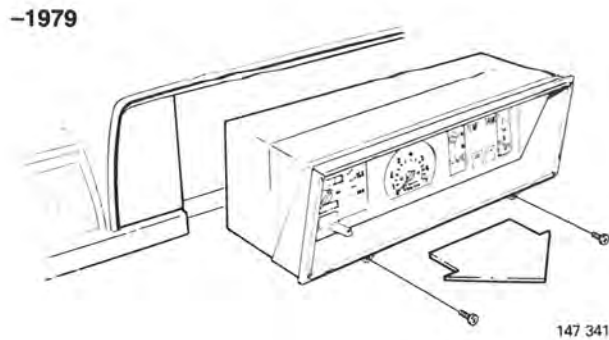
Combined instrument



Combined instrument – alternative makes

M1

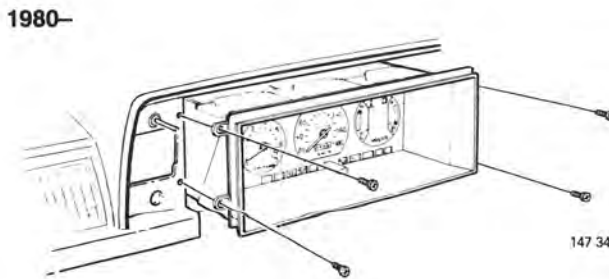
Two makes of combined instrument – VDO and Yazaki – are used. The difference is most apparent from the trip recorder configuration (see illustrations).



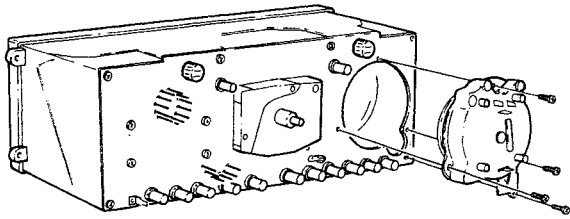
Combined instrument, replacement

M2

- Remove rheostat and lighting switch (see G3).
- Remove covers at each side of instrument.
- Remove instrument retaining screws.
- Disconnect speedometer cable (speedometer is electronic on models from 1986 on).
- Undo connector and disconnect leads.



Instruments



147 327

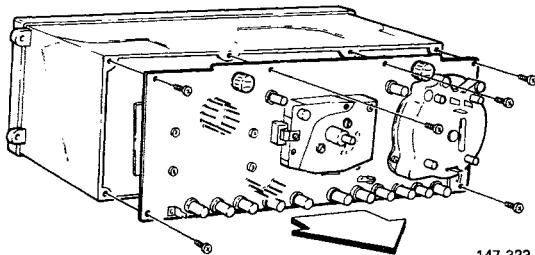
Instrument replacement

M3

Rev counter/clock

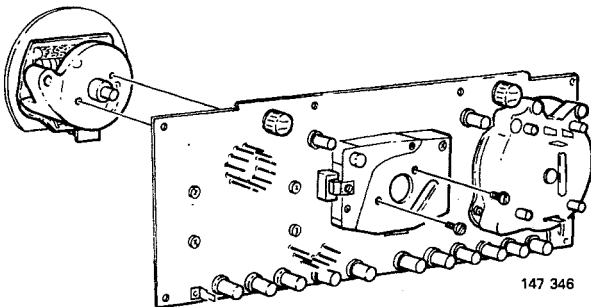
The following are some typical instrument replacement procedures. The method is basically the same in all cases.

- Remove combined instrument as described in M2.
- Remove mounting plate retaining screws (4).
- Reassemble in reverse order.



147 323

- Remove rear plate retaining screws (7).
- Remove rear of instrument housing.
- Reassemble in reverse order.

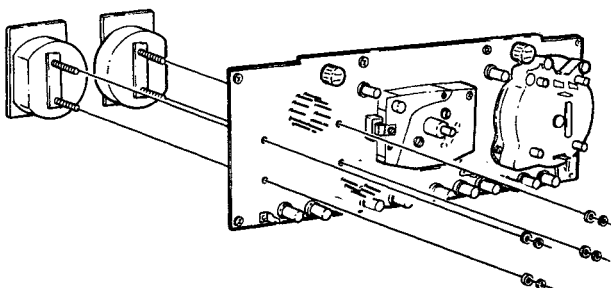


147 346

M4

Instrument replacement, speedometer

- Remove instrument retaining screws.
- Reassemble in reverse order.



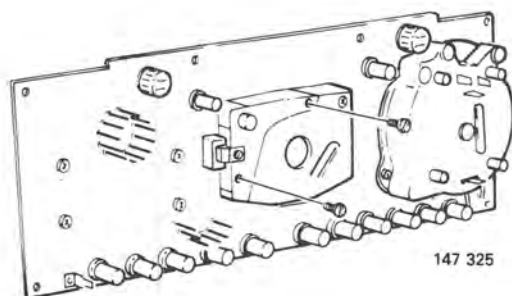
147 319

M5

Instrument replacement, temperature gauge/ fuel gauge

- Remove instrument retaining screws.
- Reassemble in reverse order.

M6

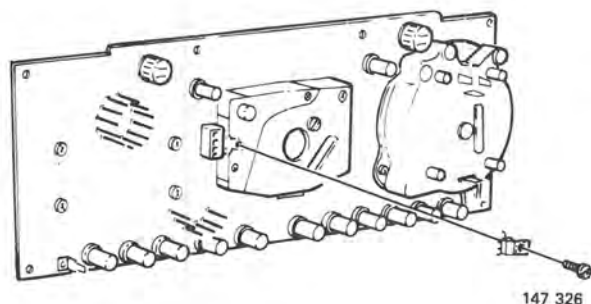


Combined instrument circuit board, replacement

- Remove combined instrument.
- Remove all bulb holders.
- Remove all screws and nuts holding circuit board.
- Remove circuit board.
- Reassemble in reverse order.

Before replacing board, check that fault is not due to presence of oxide between screws and board, and that all screws are properly tightened.

- Remove one screw at a time on the instrument which is not working and scrape the circuit board gently.
- Reinsert screw and tighten securely.
- Rejoin all connectors and check if instrument is working.



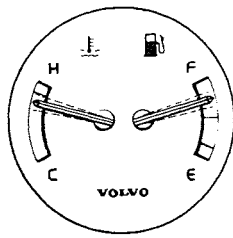
M7

Voltage stabilizer, replacement

- Remove stabilizer retaining screw.
- Remove and replace stabilizer.

Temperature gauge, fault tracing

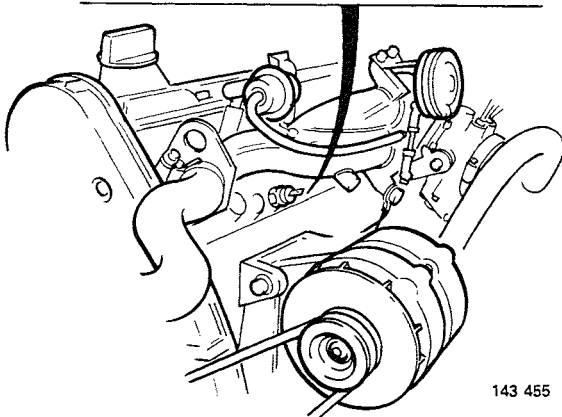
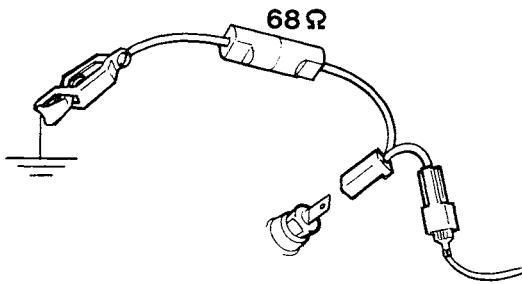
M8



134 632

- Check if fuel gauge is also indicating incorrectly.
 - If both gauges are incorrect, voltage stabilizer is probably faulty.
 - If fuel gauge is correct, check temperature gauge using test resistor.

M9

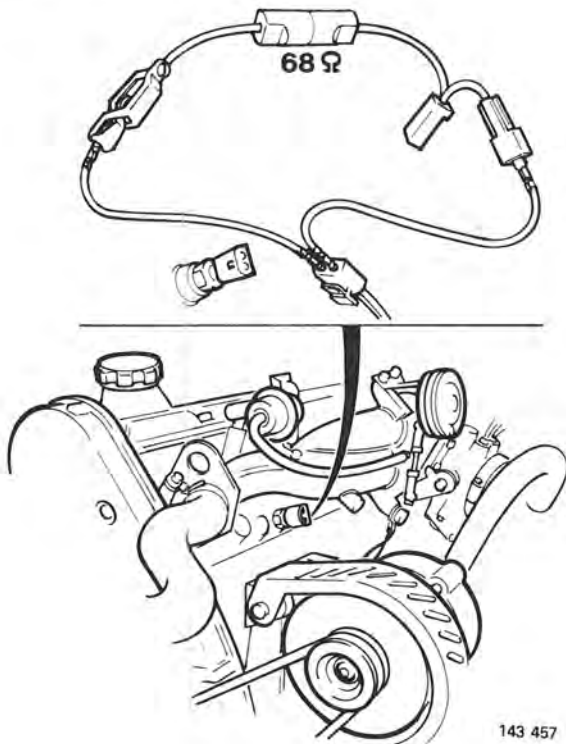


143 455

Check temperature gauge using 68 ohm resistor (P/N 999 5824-1).

- Disconnect battery ground lead.
- Disconnect sensor lead.
- Connect test resistor across connector terminals.
- Reconnect battery ground lead and switch on ignition.
 - If instrument is intact, needle should indicate 3/4 full, as illustrated. (Tolerance: \pm width of needle.)
 - If reading is correct, sensor is faulty.
 - If reading is incorrect, instrument is faulty. Replace instrument.
 - If instrument shows no reading, check wiring.
- Use ohmmeter to check for wiring open-circuit.
 - If wiring is intact, replace instrument as described in M5.

M10

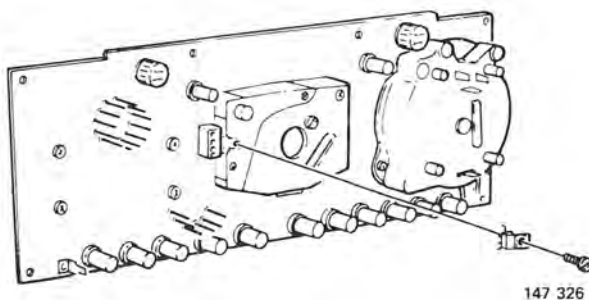


Check temperature gauge using 68 ohm test resistor (P/N 999 5824-1).

- Disconnect battery ground lead.
- Remove sensor connector.
- Connect test resistor between connector terminals.
- Reconnect battery ground lead and switch on ignition.
 - If instrument is intact, needle should indicate in middle of red zone. (Tolerance: \pm width of needle).
 - If reading is correct, sensor is faulty.
 - If reading is incorrect, instrument is faulty. Replace instrument.
 - If instrument shows no reading, check wiring.
- Use ohmmeter to check for wiring open-circuit.
 - If wiring is intact, replace instrument as described in M5.

Voltage stabilizer, checking

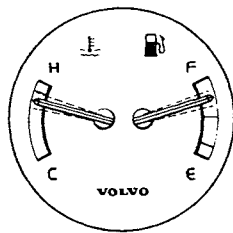
M11



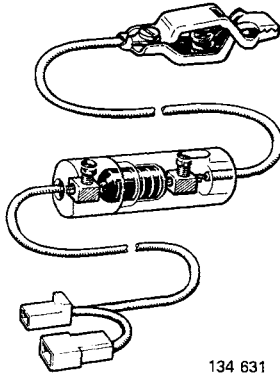
- Remove combined instrument as described in M2, M3 and M7.
- Connect 12–20 V source to voltage stabilizer, as illustrated.
 - 12 V car battery is suitable for this purpose.
- Use voltmeter to check that stabilizer voltage is 10 ± 0.2 V.
 - If voltmeter shows no reading, replace stabilizer.

Fuel gauge, fault tracing

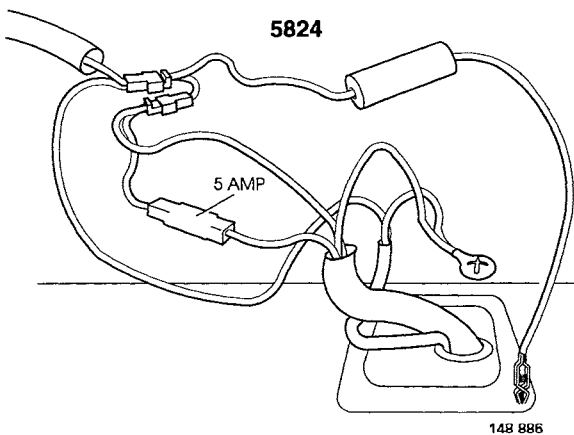
M12



134 632



134 631



148 886

- Check if temperature gauge is also indicating incorrectly.
 - If both gauges are incorrect, voltage stabilizer is probably faulty.
 - If temperature gauge is correct, check fuel gauge using test resistor.

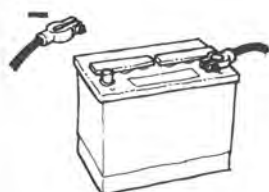
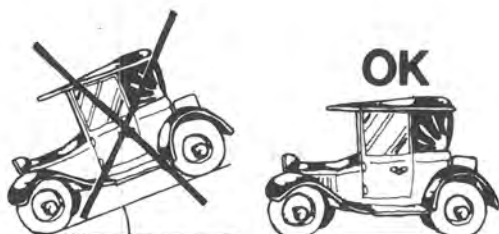
Check fuel gauge using 68 ohm resistor (P/N 999 5824-1).

- Disconnect battery ground lead.
- Disconnect lead at connector.
- Connect test resistor between ground and disconnected lead.
- Reconnect battery ground lead and switch on ignition.
 - If instrument is intact, needle should indicate three-quarters of full-scale deflection, as illustrated. (Tolerance: \pm width of needle.)
 - If reading is correct, transmitter is faulty.
 - If reading is incorrect, instrument is faulty. Replace instrument.
 - If instrument shows no reading, check wiring.
- Use ohmmeter to check for wiring open-circuit.
 - If wiring is intact, replace instrument as described in M5.

Correction of fuel level indication

On cars with the float-arm type of fuel level transmitter, a low fuel gauge reading may be corrected by connecting a potentiometer in parallel with the sensor to reduce the circuit resistance.

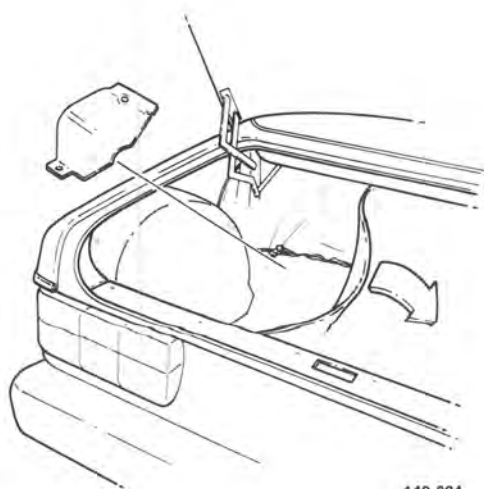
Material	P/N
Potentiometer	3515717-1



146 055

Park car on level surface
Disconnect battery ground lead

M13



146 064

4-door models

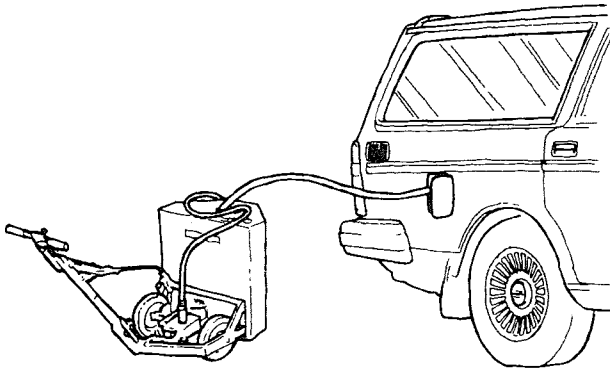
- Fold back boot carpet.
- Remove filler pipe protective cover.

5-door models

Lift floor cover.

M14

M15

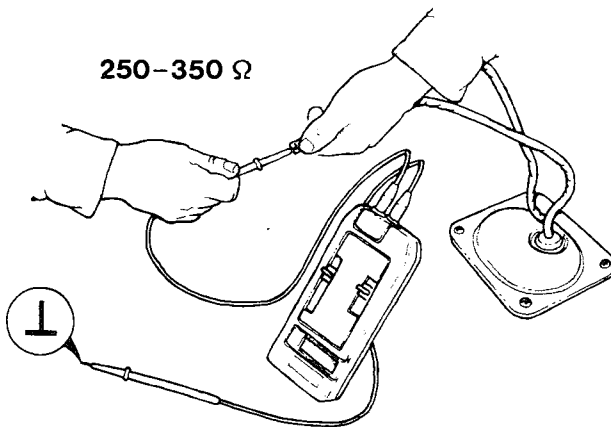


146 067

Drain fuel

- Use tank drainage unit.
- Extract fuel through filler opening.

M16

250–350 Ω **Measure resistance**

- Open tank unit connector.
- Measure resistance between level transmitter lead and ground.
- Resistance should be 250–350 ohm.

If reading is incorrect, all fuel has not been drained from tank or level transmitter must be replaced.

M17

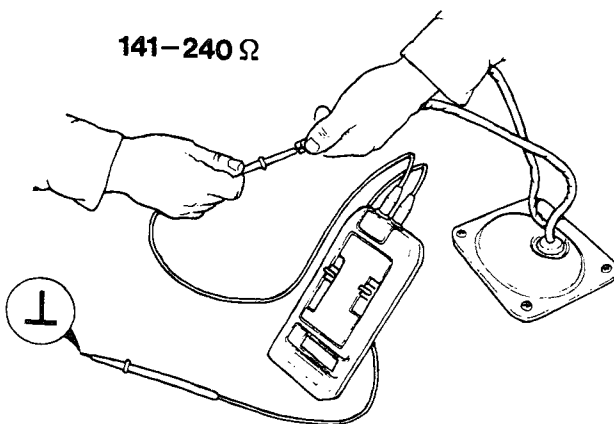


144 060

Add fuel

Add 11.0 \pm 0.5 litres of fuel to tank.

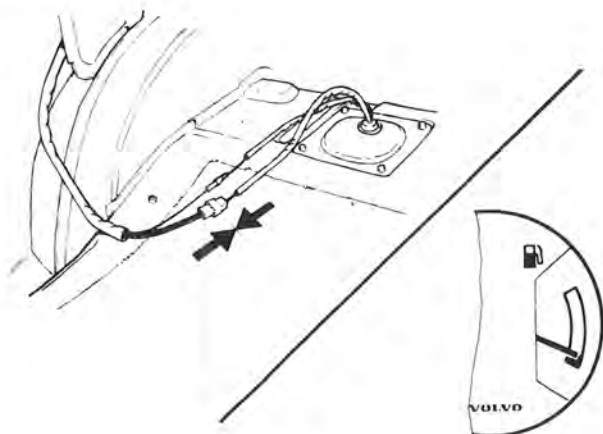
M18

141–240 Ω **Measure resistance**

- Measure transmitter resistance as described in M16.
- Value should now be 141–240 ohm.

If reading is still incorrect, level transmitter must be replaced.

M19



146 065

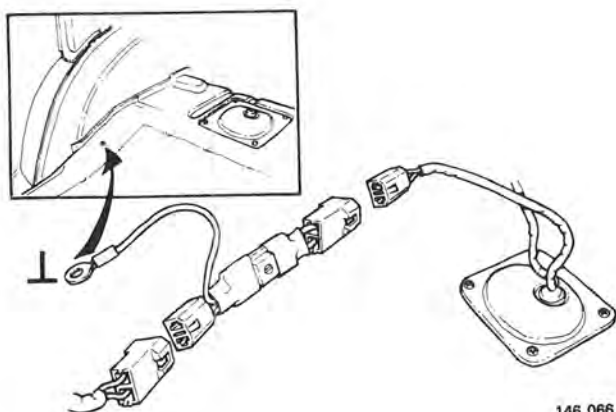
Read fuel gauge

- Reconnect tank unit connector.
- Reconnect battery ground lead.
- Switch on ignition and allow approx. 3 minutes for gauge to overcome instrument damping.
- Needle should now indicate at beginning of red zone.

If indication is within red zone (= less fuel in tank), potentiometer may be installed to correct reading.

If gauge indicates above red zone (= more fuel in tank), potentiometer cannot be used as intended.

M20



146 066

Install potentiometer

- Switch on ignition.
- Connect potentiometer between connector halves.
- Connect ground lead to same terminal as tank unit.
- Set potentiometer to middle position.
- Switch on ignition, wait 3 minutes and recheck fuel gauge reading.

Further adjustments may now be made without switching off ignition. However, 3 minutes must be allowed to elapse following each adjustment before reading gauge.

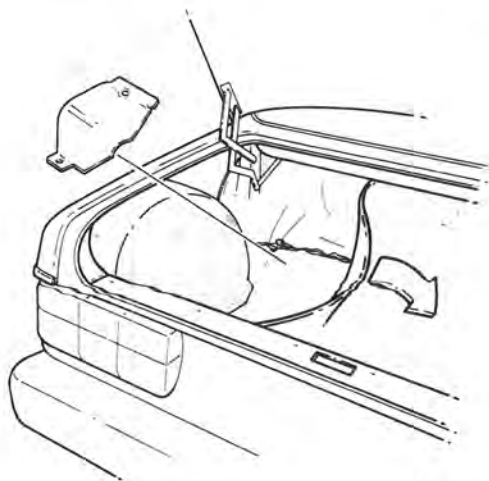
M21

4-door models

- Install filler pipe protective cover.
- Refit boot carpet.

5-door models

Replace floor cover in position.

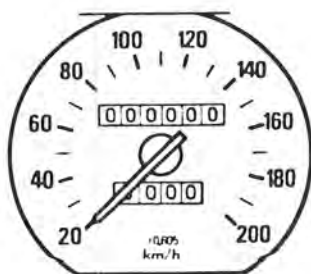


146 064

Speedometer, fault tracing

M22

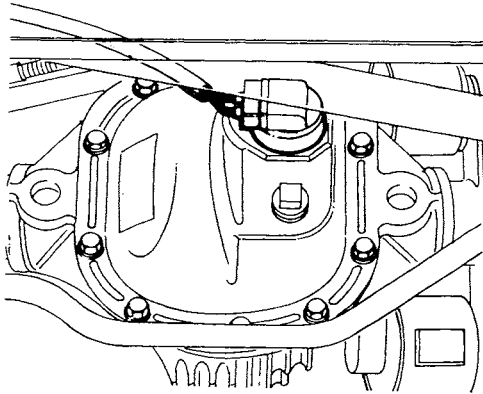
- VDO instruments: Check that speedometer seal is not broken and causing poor contact.
- Check that both speedometer and trip recorder are out of service.
 - If only one is unserviceable, speedometer is faulty. Replace as described in M2–M4.
 - If both are unserviceable, wiring may be open or short-circuited.
- Use ohmmeter to check wiring.
 - If wiring is intact, speedometer is faulty. Replace as described in M2–M4.



Sensors

Speedometer pick-up, replacement

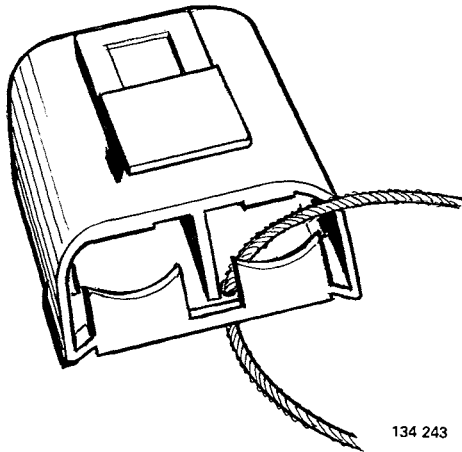
N1



143 460

- Cut and remove seal.
- Undo connector.
- Unscrew pick-up.

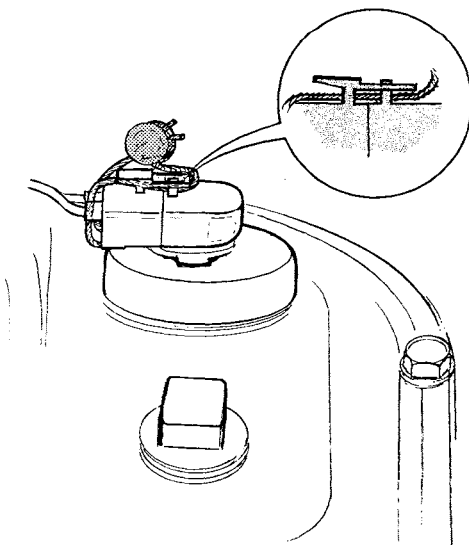
N2



134 243

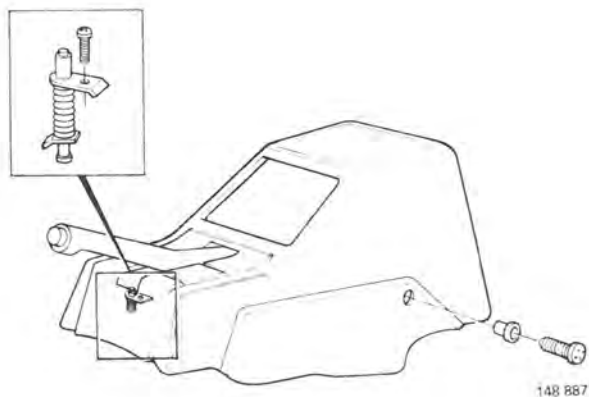
- Install new pick-up.
- Insert seal wire in connector cover.

N3



134 246

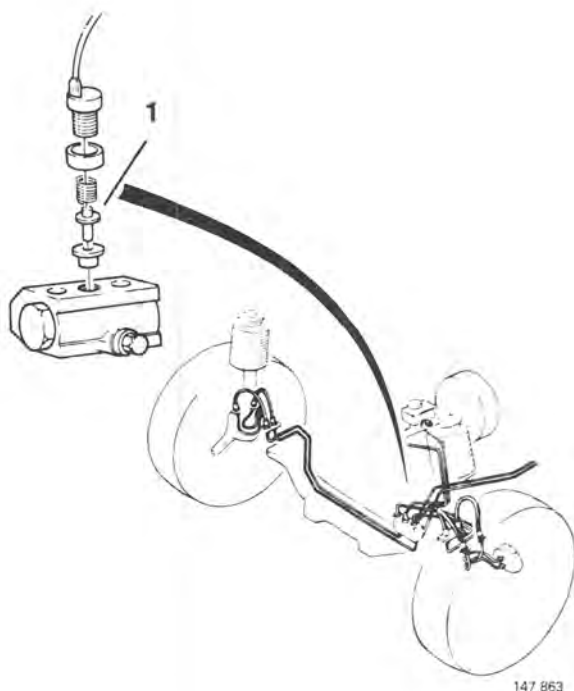
- Reconnect connector to pick-up.
- Thread seal wire through locking tab on connector and attachment on pick-up.
- Place lead seal on wire and crimp in position with pliers.



Handbrake switch, replacement

N4

- Disconnect battery ground lead.
- Apply handbrake.
- Remove ashtray and holder.
- Remove clip at front of panel.
- Remove both panel screws.
- Raise panel.
- Disconnect handbrake switch lead.
- Undo screw and remove switch.
- Reassemble in reverse order.
Check that warning lamp on combined instrument goes out when handbrake is released.



Brake circuit failure switch, replacement

N5

- Disconnect battery ground lead.
- Disconnect switch lead.
- Unscrew switch.
- Remove ferrule.
- Lift up plastic contact (1) and install switch.
- Correct leakage.
- Press brake pedal once or twice to equalise pressure.
- Check that warning lamp goes out.
- Reassemble in reverse order.
– Check that warning lamp on combined instrument lights when ignition key is turned to starting position, and that lamp goes out when engine starts.



Seat belt switch, replacement

N6

- Disconnect battery ground lead.
- Unhook switch under seat.
- Open two-pole connector.
- Reassemble in reverse order.
– Check that warning lamp on combined instrument flashes when passenger seat is occupied (without fastening seat belt) and that the lamp goes out when seat is unoccupied.

Temperature sensor, replacement

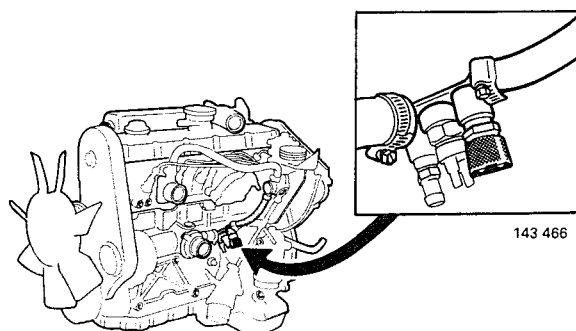
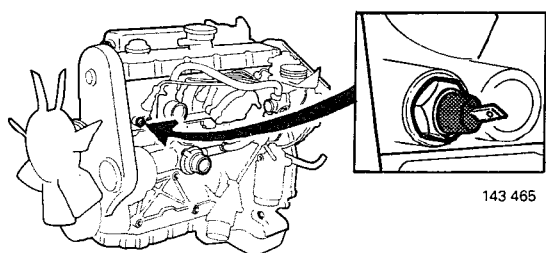
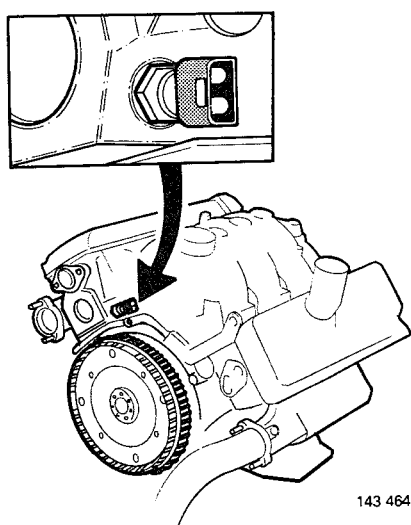
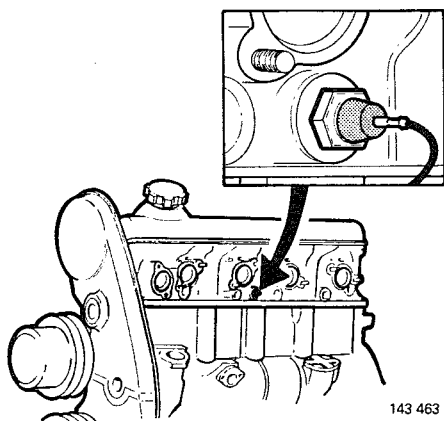
N7

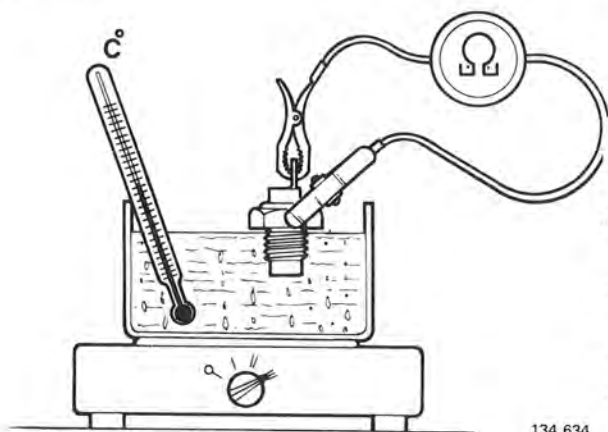
Models up to and including 1986 are equipped with single-pole sensor, and models from 1987 on with two-pole sensor.

- Disconnect battery ground lead.
- Disconnect sensor lead or connector.
- Unscrew sensor.

Note: Have new sensor or plug ready to install to avoid spilling large quantities of coolant.

- Reassemble in reverse order.





134 634

Temperature sensor, checking

N8

- Check sensor by connecting ohmmeter between terminal pins and body.
- Immerse sensor in water up to the top of thread.

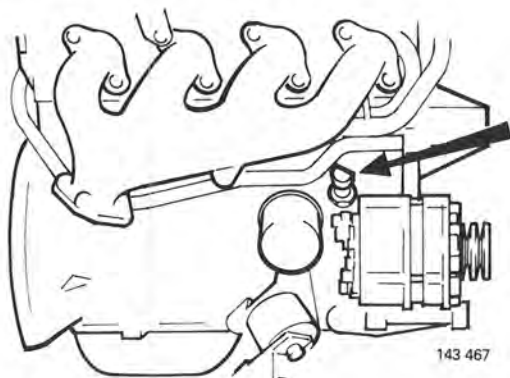
Note! Neither thermometer nor sensor should touch bottom of vessel.

Temperature, °C (°F)

Resistance
in sensor

60°C (140°F)	217 ± 35 Ω
90°C (194°F)	87 ± 15 Ω
100°C (212°F)	67 ± 11 Ω

4-cylinder



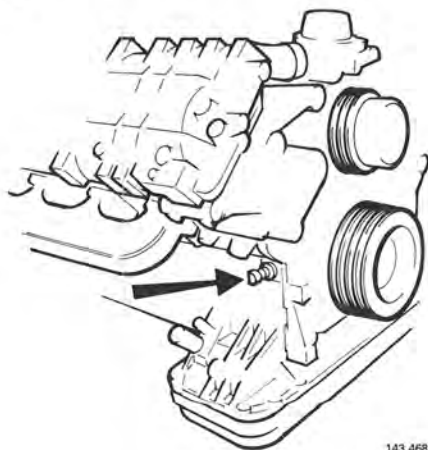
143 467

Oil pressure switch, replacement

N9

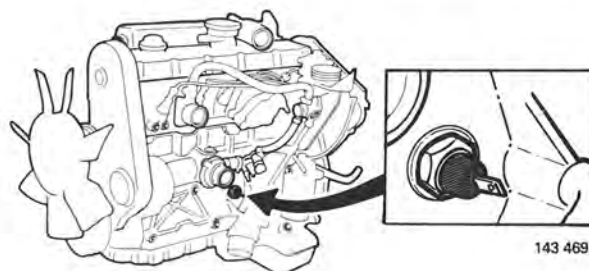
- Disconnect battery ground lead.
- Disconnect switch lead.
- Unscrew switch.
- Reassemble in reverse order.
 - Check that warning lamp on combined instrument lights when ignition key is in starting position, and that lamp goes out when engine starts.

6-cylinder



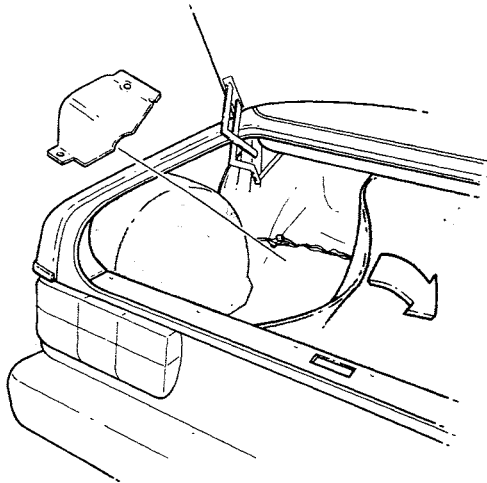
143 468

Diesels



143 469

Tank unit, replacement



146 064

01

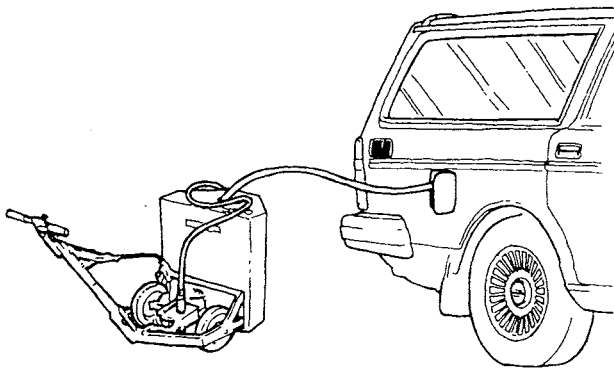
Disconnect battery ground lead

4-door models

- Fold back boot carpet.
- Remove filler pipe protective cover.

5-door models

Lift floor cover.

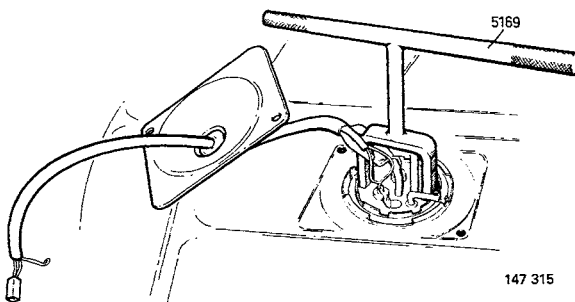


146 067

02

Drain fuel

- Use tank drainage unit
- Extract fuel through filler opening.



147 315

03

- Undo tank unit connector.
- Remove tank unit cover. Clean area around unit and hose connections.
- Disconnect hoses from unit.
- Remove unit and O-ring seal. Use tool **5169**.

04

Install new tank unit

Use new O-ring. Lubricate ring with glycerine or similar medium.

Install locking ring using tool **5169**.

O5



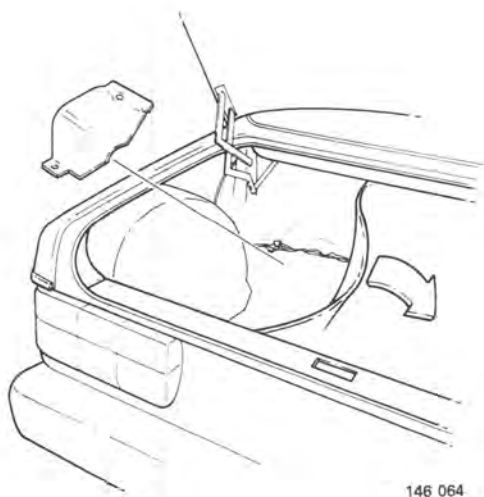
Refit tank unit cover

- Reconnect unit connector.

Remember to fit rubber grommet in cover.

**Fill fuel tank and replace filler cap.
Reconnect battery ground lead and start engine**

O6



4-door models

- Install filler pipe protective cover.
- Refit boot carpet.

5-door models

Replace floor cover in position.

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This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is a vertical fold or crease visible down the center of the page, suggesting it might be a notebook page or a sheet designed to be folded. The paper appears slightly aged or off-white.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is a vertical margin line on the left side, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled document.



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