

SAAB

9000

**SERVICE
MANUAL**

0 News M 1987

Units

The basic units as well as the derived units used throughout the Service Manual are in accordance with the SI system.

As a supplement to these, a number of other units are specified within brackets.

The following symbols for the various units have been used in this issue:

SI unit	Supplementary unit
mm	in
kg	lb
N	lbf
Nm	lbf ft
bar	psi
l	qt (US)
°C	°F

Conversion factors

1 in = 25,4 mm	1 mm = 0.039 in
1 lbf = 4,45 N	1 N = 0,23 lbf
1 lbf ft = 1,36 Nm	1 Nm = 0,74 lbf ft
1 psi = 0,07 bar	1 bar = 14,5 psi
1 qt = 0,95 l	1 l = 1,05 qt

Technical data

Anti-theft marking on USA-cars	1	Ignition system	3
Engine	3	Transmission	3
Fuel system	3	Wheel	3

Only major changes in specifications as compared with the 1986 models are included in this manual. See section "O" in the 1986 model for other data.

In the chassis number, 1987 models are designated by the letter "H".

Anti-theft marking on USA cars

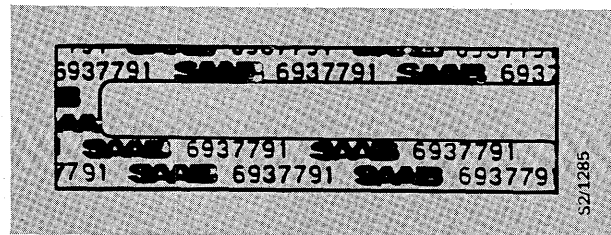
For the 1987 model year, new legal requirements on theft-proofing will be enacted on the USA market. For car models which suffer a greater-than-average number of thefts, certain parts will be marked with the company logo and chassis number.

The following parts will be marked during manufacture:

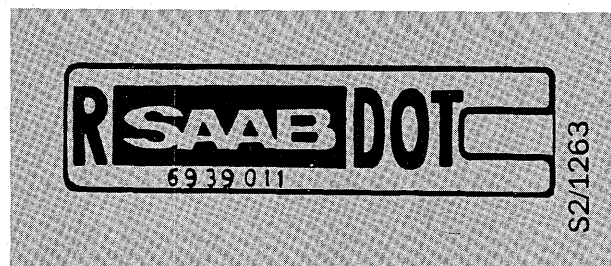
- Engine
- Gearbox
- Front wings
- Bonnet
- Front doors/Rear doors
- Front/rear bumpers
- Rear wings
- Luggage compartment lid

The corresponding spare parts will be marked with "R", the company logo and "DOT".

These labels will not be sold as spare parts. They may be fitted by the manufacturer only.

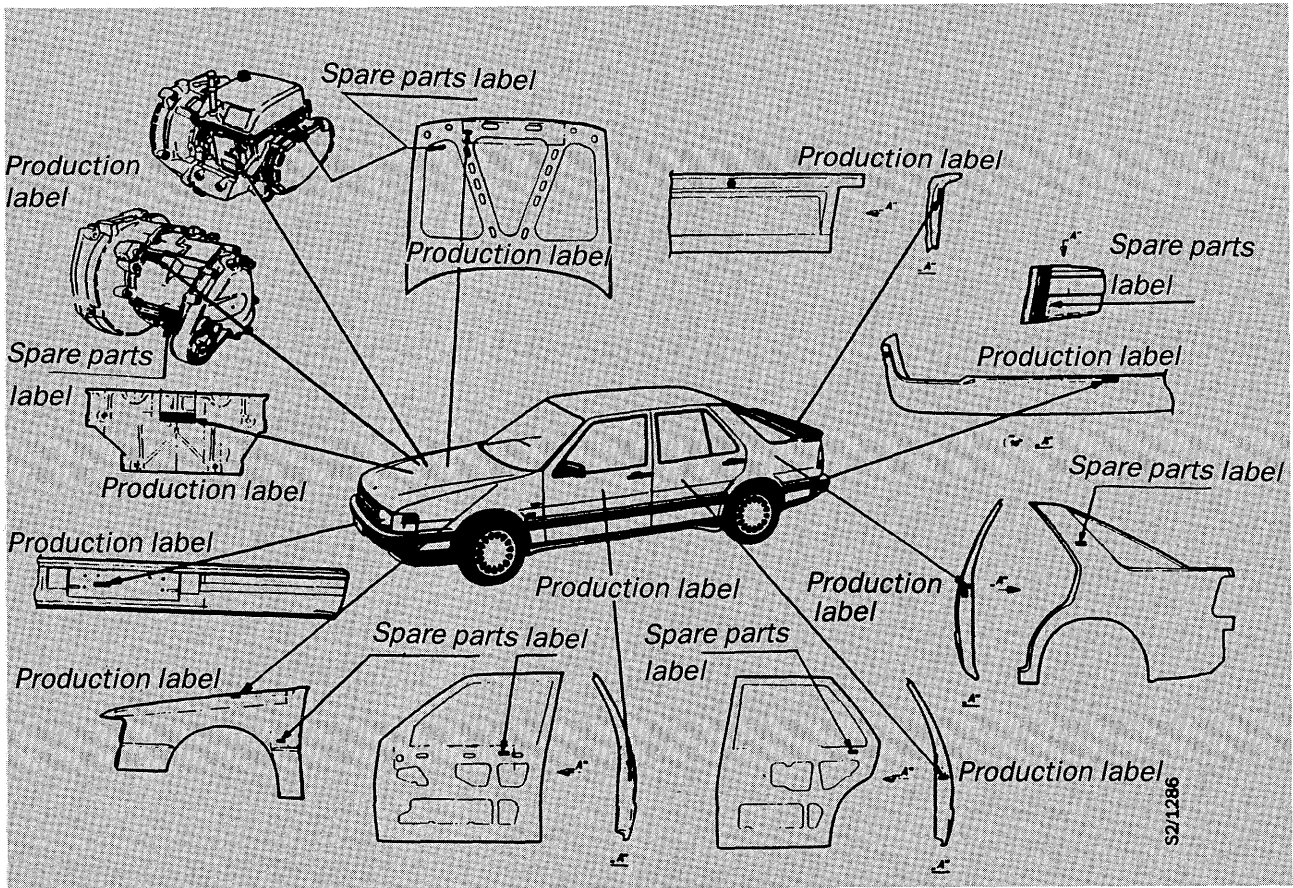


Production label



Spare parts label

Anti-theft marking on USA cars



Engine

Oil quantity incl. filter	litres (qt)	4.2 (4.5)
Oil type		Turbo: Saab Turbo engine oil, or oil to API SF/CD or SF/CC service. Others: According to API Service SF/CC
Viscosity		SAE 10W30, 10W40, 15W40 or 5W30

At constant temperatures of -20°C (-4°F) or lower, use 5W30.

Fuel system

Idling speed	r/min	850 ± 50
Pressure monitor, cut-off pressure (Turbo)	bar (psi)	1.10 ± 0.05 (15.9 ± 0.72)

Ignition system

Basic timing setting at 850 r/min (Turbo)		16° BTDC
Basic timing setting at 850 r/min (Injection)		14° BTDC

Transmission

Manual gearbox

Oil capacity	litres (qt)	Approx. 2.5 (2.65)
Oil type		SAE 10W30 or 10W40 engine oil

Automatic transmission

ATF amount	litres (qt)	7.6 (8) (8.2 (8.7) incl. torque converter and oil cooler)
ATF type		DEXRON II automatic transmission fluid (ATF)

Wheel

Rear wheel adjustment

Camber	° (grader)	-1/2 ± 1/4
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Pre-delivery and break-in service

To check the underbody	5	To check the idling speed	5
Retightening of exhaust manifold nuts and intake manifold bolts	5		

To check the underbody

Raise the car and check the underbody for any damage during transport.

Touch up the anti-corrosion treatment as required. Remove pinned front „tie” down hooks before installing spoiler and hooks in rear jack sockets, if fitted. Fit stone chip guards on the rear jack sockets.

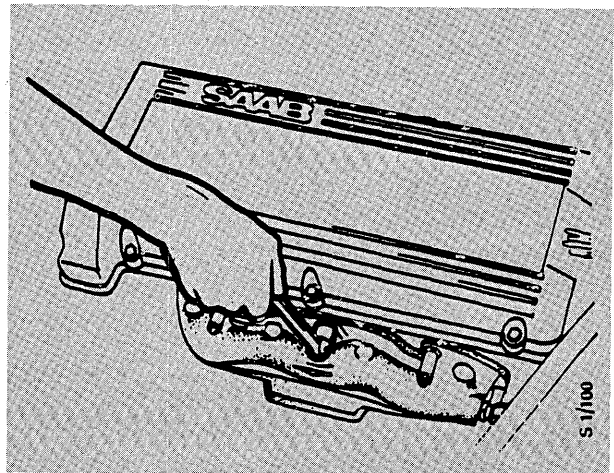
Retightening of exhaust manifold nuts and intake manifold bolts (Break-in service)

Tighten the 7 nuts on the exhaust manifold.

Tightening torque: 25 Nm (18.5 lbf ft)

Tighten the intake manifold bolts.

Tightening torque: 18 Nm (13.5 lbf ft)



To check the idling speed

Check/adjust the idling control system.

Adjust by means of the throttle adjusting screw.
See the Service Manual.

Service

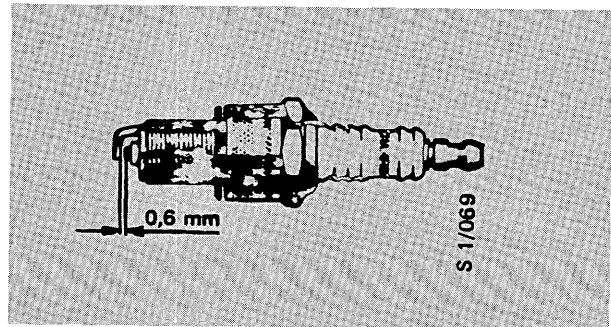
Spark plug replacement	7	To check the idling speed	7
Automatic transmission - change of ATF	7	Customer programme	7

Spark plug replacement

Turbo	Injection
NGK BCP 7EV or Champion C7GY	NGK BCP 6ES Champion C9YCI Bosch F7DC

Electrode gap: 0.6 mm (0.023 in)

Tightening torque: 25 - 29 Nm (18.5 - 21.5 lbf ft)



Automatic transmission - change of ATF

Change the ATF every 30 000 miles, i.e. at 30 000, 60 000, 90 000 miles, etc.

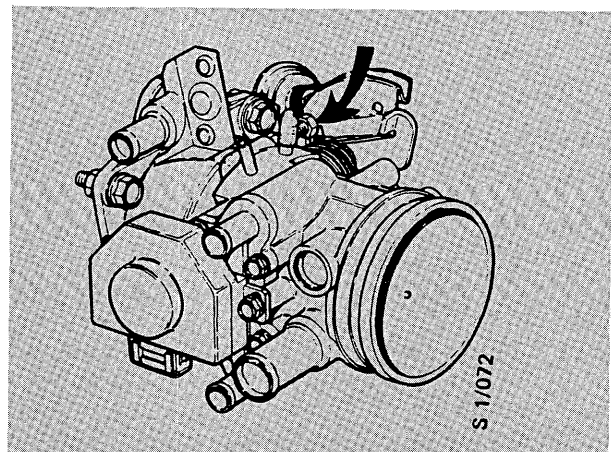
For cars driven mainly in city traffic or in warm climates, the recommended interval for changing the ATF is 15 000 miles.

To check the idling speed

On cars without idling control system

The idling speed can be checked at the same time as the CO emission. The engine should be at operating temperature and the dipped beams switched on. Adjust the idling speed by means of the adjusting screw on the throttle housing bypass.

Idling speed: 850 ± 75 r/min



Customer programme

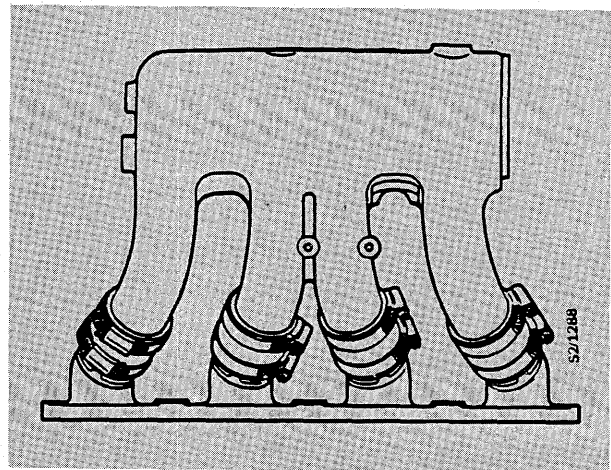
The work previously included under the heading "Supplementary service" will be known as the "Customer programme" in the future.

Engine

New intake manifold (USA)	9	Fuel filter	11
Crankcase ventilation. Vacuum connectors and nipples on the intake manifold - 1987 models	10	Exhaust manifold - 9000i	12
		Water-cooled turbocharge	12
		Turbo charger boost pressure	13

New intake manifold

The intake manifold has been divided into two parts, to increase accessibility and serviceability when working under it. The pipes are jointed with rubber connectors and hose clips.



Crankcase ventilation. Vacuum connectors and nipples on the intake manifold - 1987 models

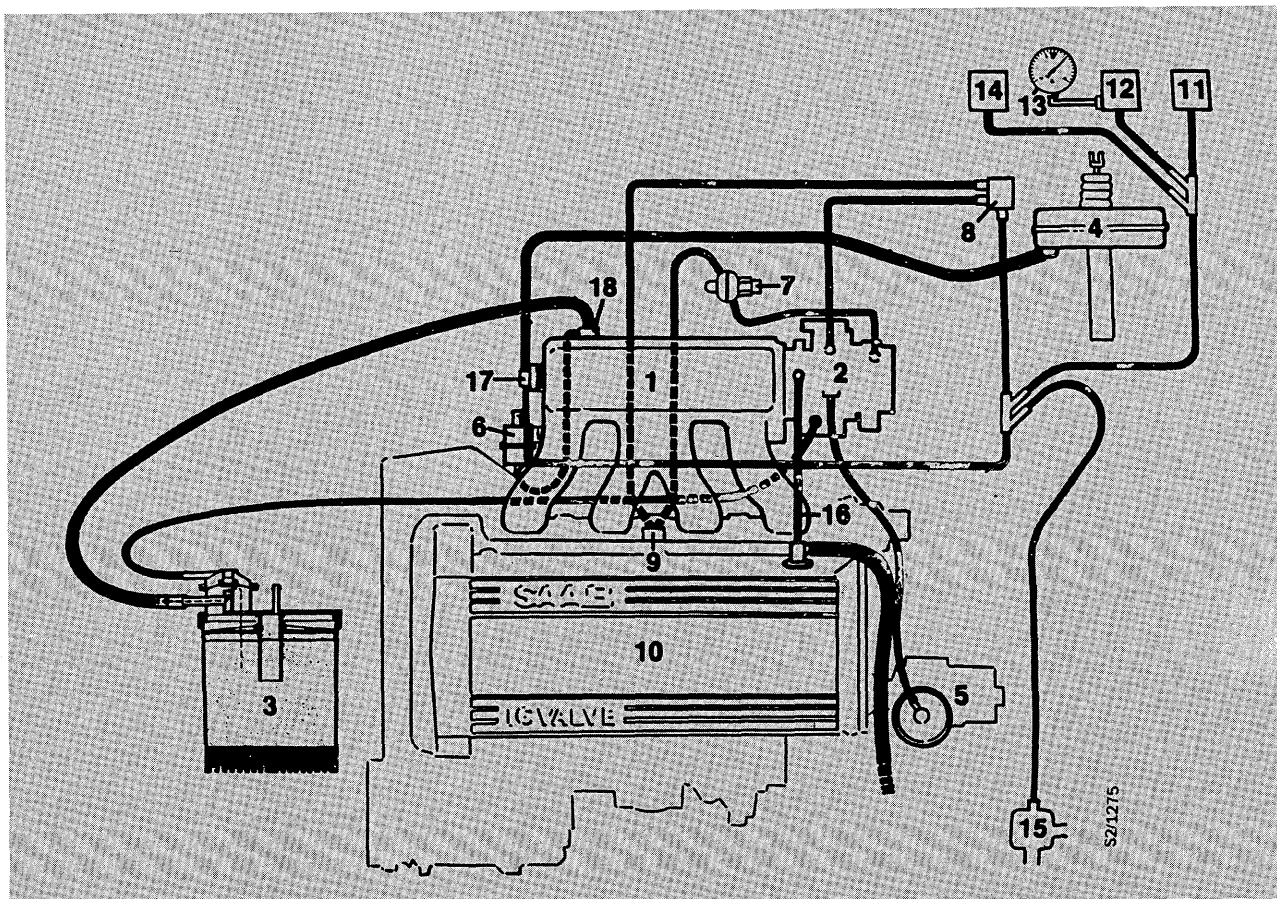
The small crankcase ventilation hose has been moved from the intake manifold to the throttle housing.

The nipple for the brake servo and the nipple for other vacuum functions (except the fuel-pressure regulator) will use the connector left vacant by the crankcase ventilation hose.

The nipple for the fuel-pressure regulator

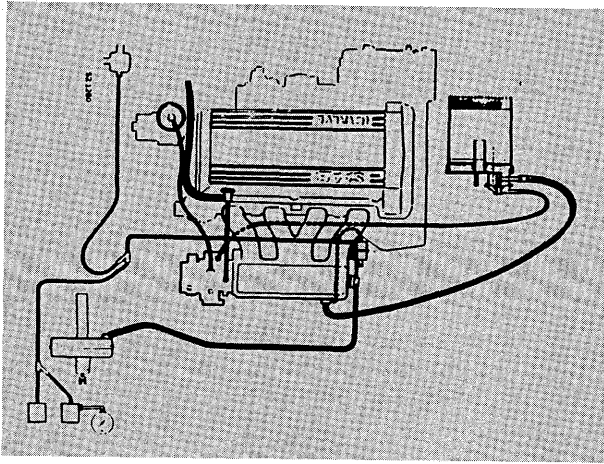
vacuum connector and for the carbon filter will be moved along the intake manifold, from the throttle housing to a new connector near the vacuum connector for the brake servo.

The nipple connectors on the intake manifold and throttle housing and the location of the vacuum hoses for the various functions are illustrated in the following general diagram of the engine variants (S, USA).

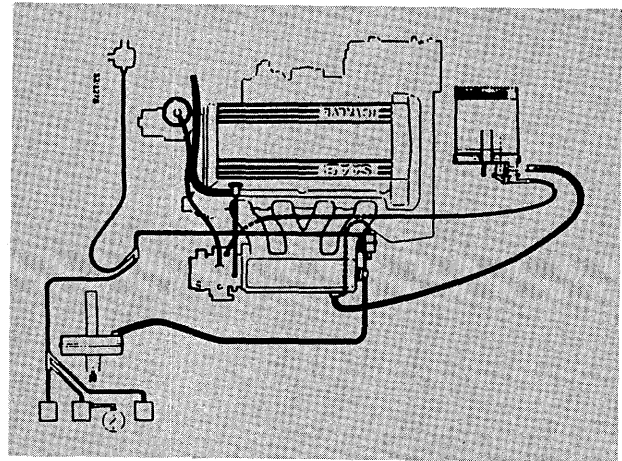


Crankcase ventilation. Vacuum connectors and nipples on the intake manifold - 1987 models.

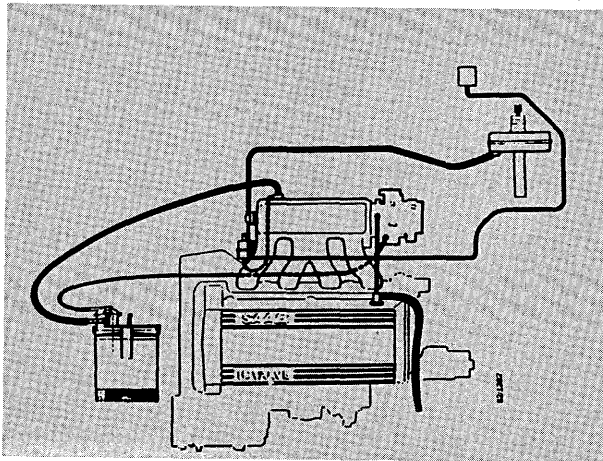
- | | |
|----------------------------|---|
| 1 Intake manifold | 11 Pressure sensor |
| 2 Throttle housing | 12 Pressure monitor |
| 3 Carbon filter | 13 Pressure instrument |
| 4 Brake servo | 14 Shift-up indicator |
| 5 Distributor | 15 Relief valve |
| 6 Fuel-pressure regulator | 16 Crankcase ventilation |
| 7 EGR valve (proportional) | 17 Vacuum conenctor for brake servo and other functions |
| 8 Signal converter | 18 Vacuum connector for fuel-pressure regulator and carbon filter |
| 9 Thermostat valve | |
| 10 Valve cowling | |



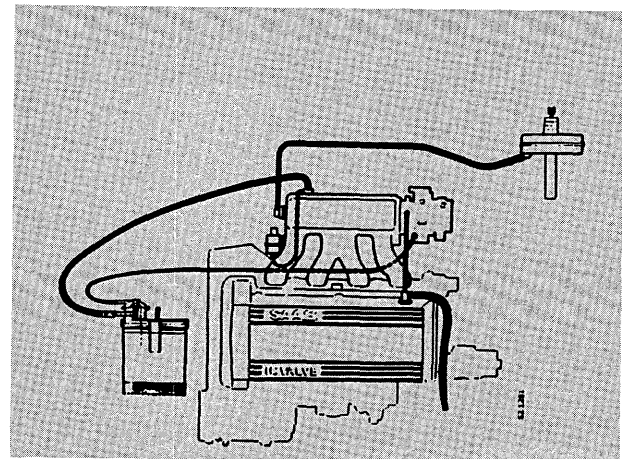
Saab 9000 Turbo (USA), manual gearbox



Saab 9000 Turbo (USA), automatic transmission



Saab 9000i (USA), manual gearbox



Saab 9000i (USA), automatic transmission

Fuel filter

The new location of the fuel filter will be 25 mm (0.98 in) higher and 32 mm (1.26 in) further from the centre, and the location of the fuel line from the filter to the fuel distribution pipe will be modified.

Exhaust manifold - 9000i

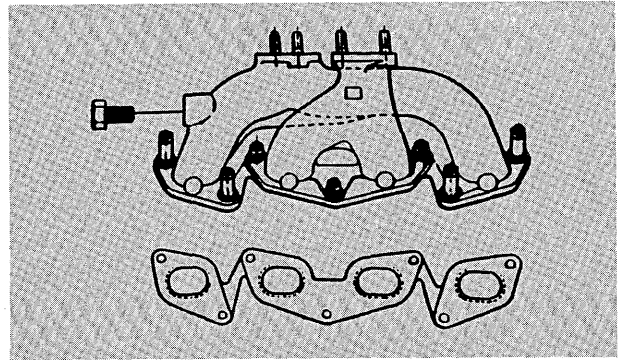
As from the 1987 model, the sheet-metal exhaust manifold will be replaced by a two-section, cast-iron exhaust manifold and a front exhaust pipe.

Outer exhaust manifold, part No. 75 62 531

Inner exhaust manifold, part No. 75 62 499

Front exhaust pipe, part No. 93 92 929

The sheet-metal exhaust manifold and front exhaust pipe for the 1986 model will no longer be available as spare parts. They will be replaced by the 1987 version.



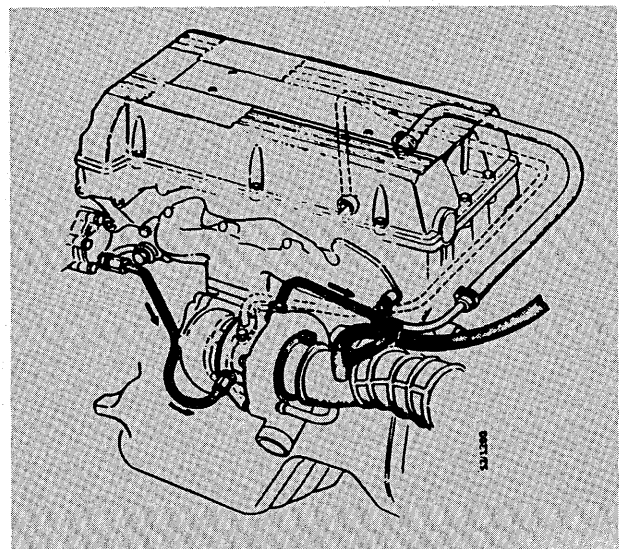
Exhaust manifold for the 1987 model

Water-cooled turbocharger

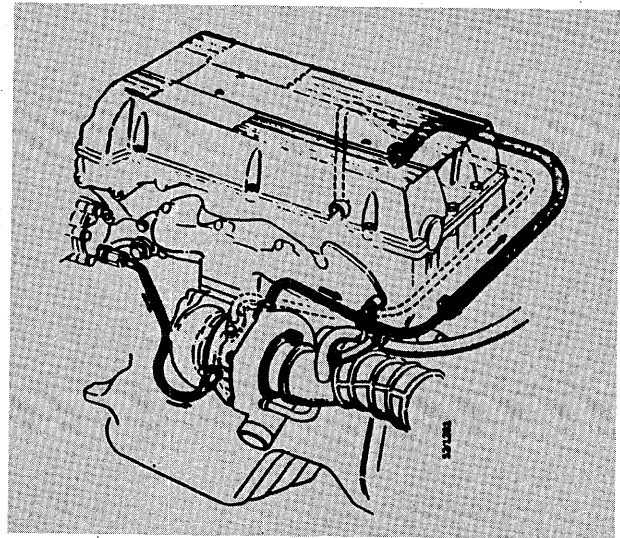
As from the 1987 model, the turbocharger for the Saab 9000 will be water-cooled. This will lower the temperature around the bearing to around 100°C (212°F). This lower temperature will reduce the risk of coking - and of the resulting damage.

Operation

Water for cooling the bearing housing is supplied through a pipe from a point between the water pump and the cylinder block. After flowing past the bearing housing, the water flows into the water-heated crankcase ventilation circuit.



When the engine is switched off and the coolant pump ceases to pump, the water in the system will circulate by natural circulation. This will cause the coolant to flow up to the cylinder head.

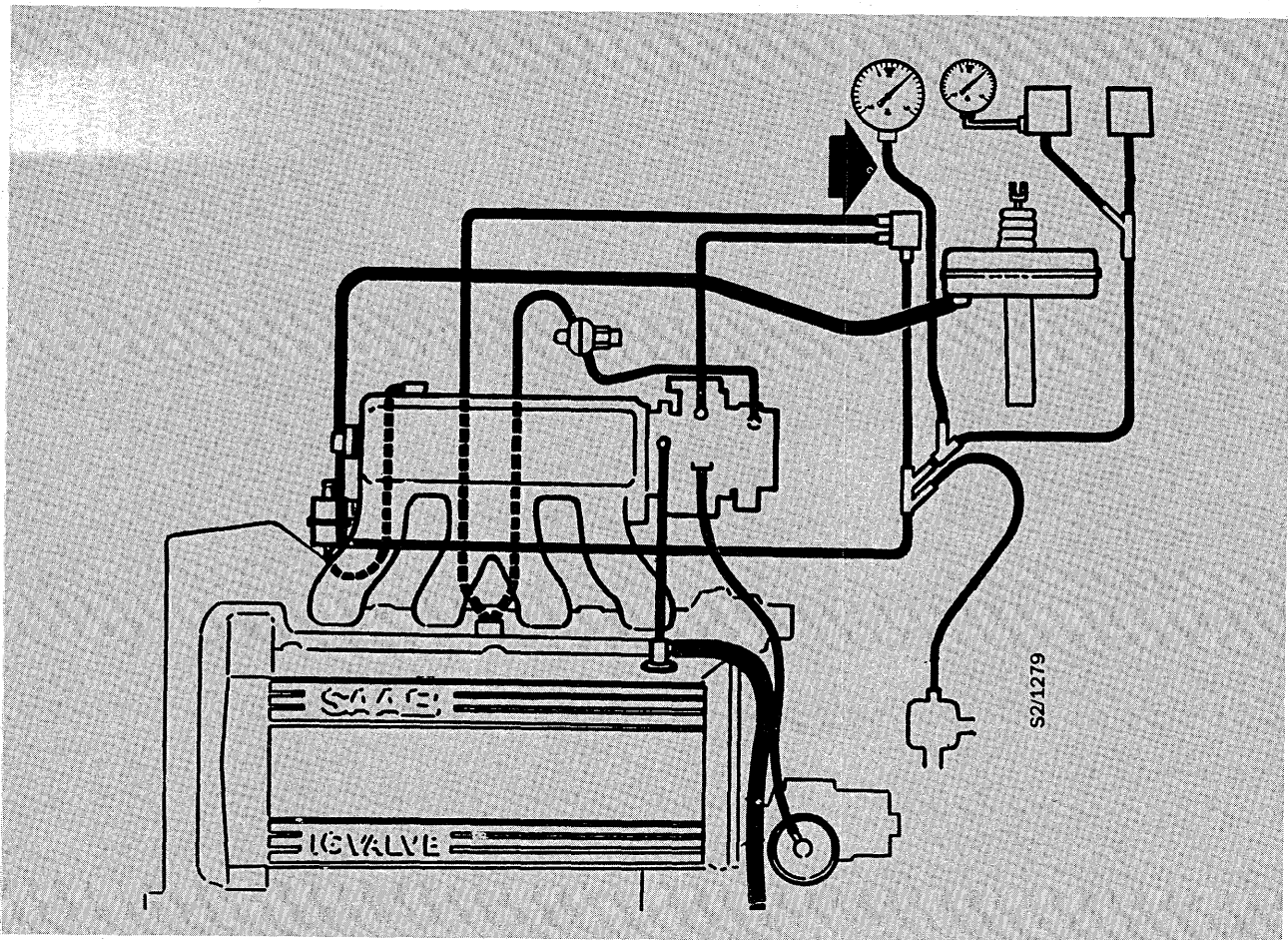


New oil-change interval

Water-cooling of the turbocharger will permit the oil-change interval to be extended 7 500 miles.

Turbocharger boost pressure

As from the 1987 model, pressure-measurement equipment 83 93 514 should be connected as shown in the illustration, due to the new location of the vacuum lines to the pressure monitor, pressure sensor, etc.



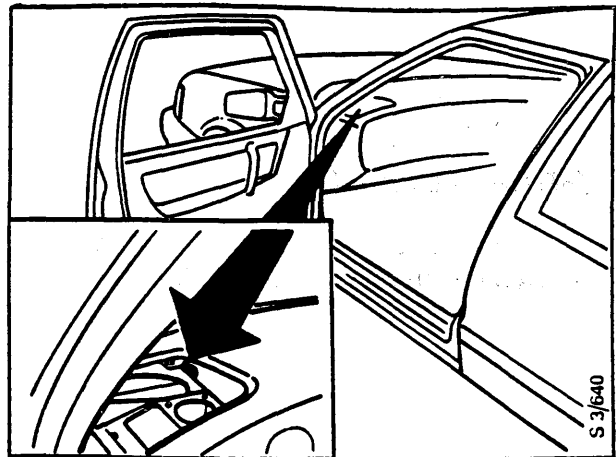
Electrical system

New earthing point	15	Shielded three-core cable, ignition system	16
Heated front seats	15	Ignition distributor	17
Engine-compartment illumination	15	LH control unit	17
Electronic speedometer	16	Component list, wiring diagram	26
7-pole connector	16	Wiring diagram	29
Ignition switch relay	16		

The following electrical system components will be modified or added as from the 1987 model year:

Grounding point

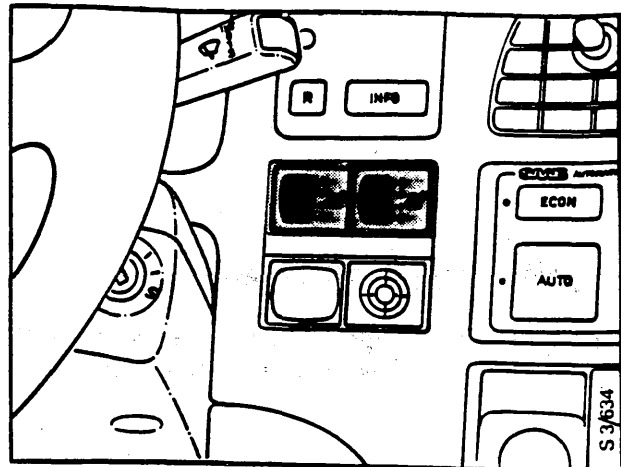
A new grounding point (3) is provided under the left-hand speaker grille in the facia. See page 24 for the wiring diagram showing the grounding point (3).



Heated front seats

Adjustable front-seat heating will be introduced on all models. Two switches will be added on the facia. For instructions on replacing the switches, see the Service Manual, section 364.

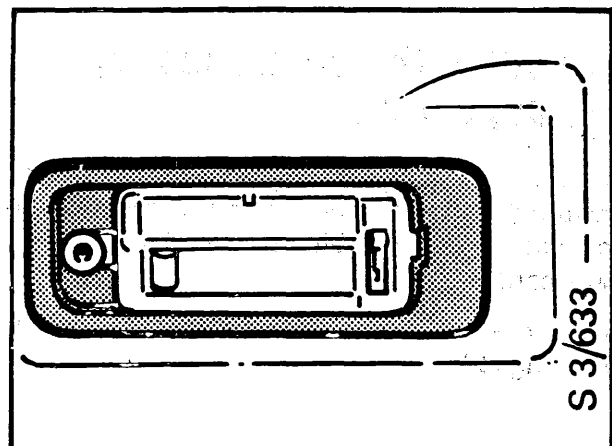
For the wiring diagram of the heated front seats, see page 18.



Engine-compartment illumination

A lamp will be added for the engine-compartment illumination.

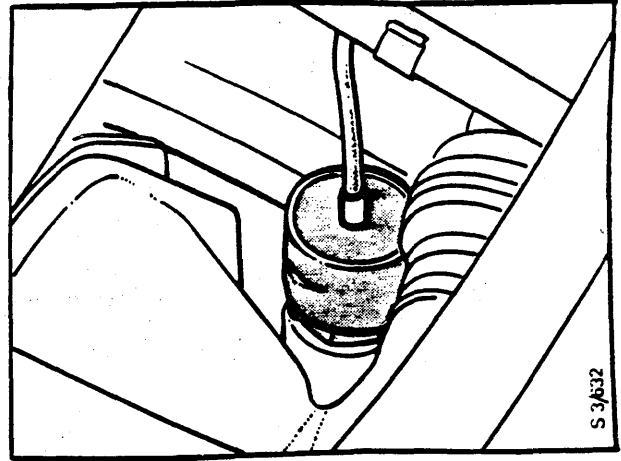
For the wiring diagram of the engine-compartment illumination, see page 20.



Electronic speedometer

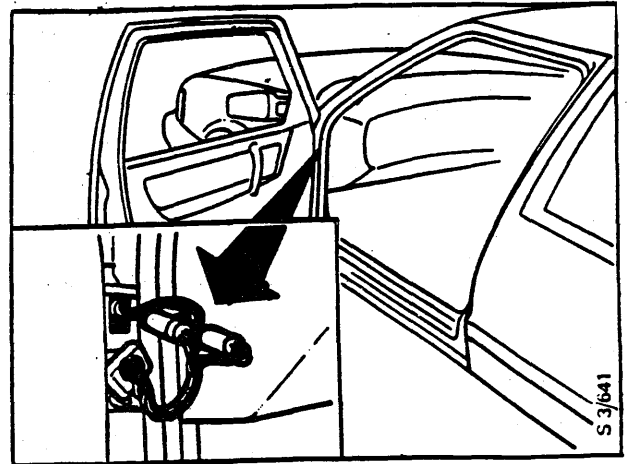
An electronic speedometer for all models will be introduced. A sensor, which sends information to the speedometer, will be mounted in the gear-box.

For the wiring diagram of the electronic speedometer, see page 22.



7-pole connector

Six new 7-pole connectors will be added: Two in each A pillar and one in each B pillar.



Ignition switch relay

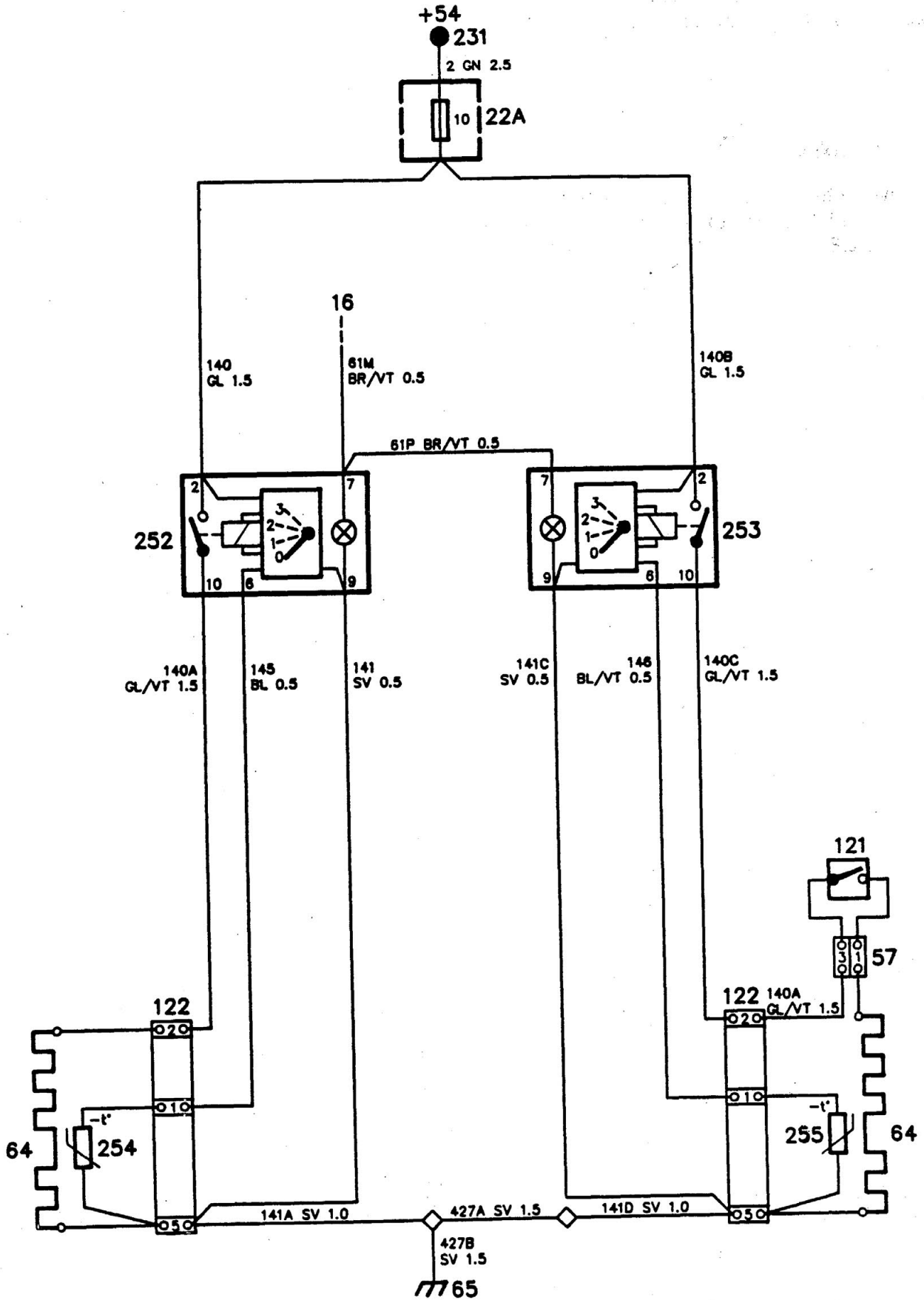
The present 50 A ignition switch relay will be replaced by a new, heavier-duty 70 A relay.

Shielded three-core cable, ignition system

A new, shielded three-core cable between the distributor and the amplifier will replace the shielded two-core cable, in which the shielding was earthed.

For the wiring diagram of the ignition system, see page 25.

Electrically heated front seats



Operation

Both front seats are electrically heated, and the heating can be controlled by means of a rheostat.

Heating pads 64 are supplied from fuse 10 and are switched on and off by temperature sensors 254 (in the driver's seat) and 255 (in the co-driver's seat). Each temperature sensor consists of a Negative Temperature Coefficient (NTC) resistor, the resistance of which varies with the temperature of the heating pad.

The temperature of the driver's seat heating pad can be adjusted by means of rheostat 252. This has four positions, marked 0, 1, 2 and 3. The heating pad is switched off in position 0, whereas the temperature is a maximum in setting 3. When the heating pad has reached the predetermined temperature for each rheostat setting, it will be switched off, but will be switched back on when the temperature has dropped to the lower limit of that particular rheostat setting.

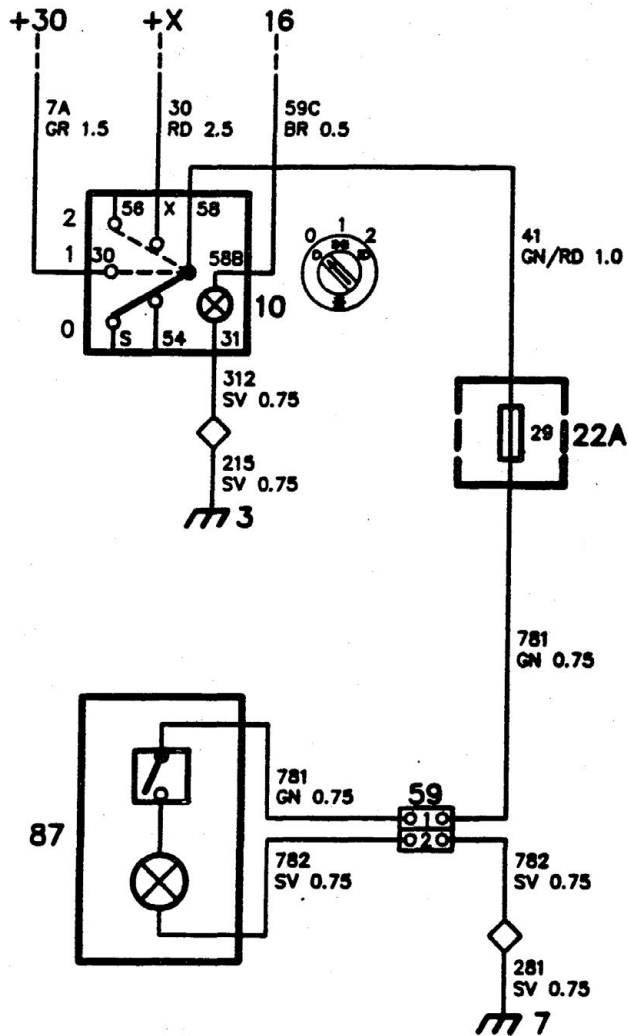
The co-driver's seat temperature can be adjusted in the same way by means of rheostat 253. The heating pads in the co-driver's seat are supplied across seat switch 121. When a load is applied to the seat, the seat switch will close and the heating pad can be controlled by temperature sensor 255. So the heating pad will be operative only when a person is seated in the co-driver's seat.

The lamps in the rheostats are connected to rheostat 16 for the instrument lighting.

Fault-tracing hints

- 1 Set the ignition switch to the drive position.
- 2 Check fuse 10 and check that the supply to rheostats 252 and 253 is live.
- 3 Check that there is no open-circuit in the temperature sensors 254 and 255. (Measure between pins 1 and 5 of connector 122.)
- 4 Check seat switch 121 in the co-driver's seat.
- 5 Check the heating elements in the heating pads for open-circuit.
- 6 Check the connectors, wiring and earth connections.

Engine compartment illumination



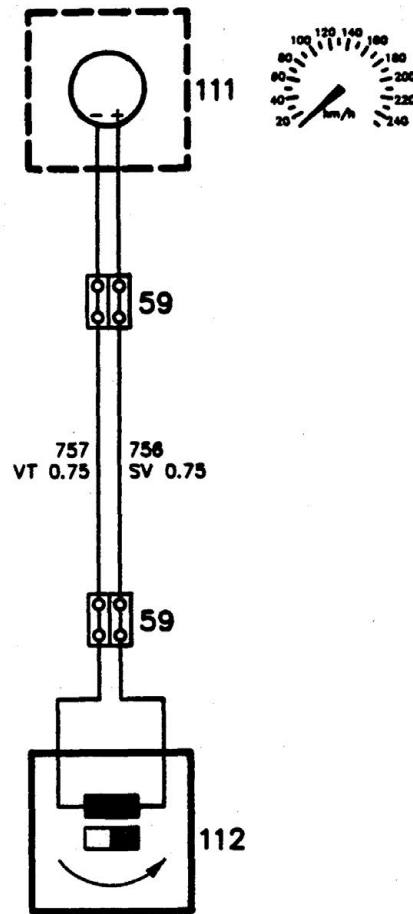
Operation

When light switch 10 is in position 1 (parking lights) or position 2 (headlamps), engine compartment lamp 87 will be supplied across fuse 29. When the bonnet is opened, the switch will close and the lamp will light up.

Fault-tracing hints

- 1 Set switch 10 to position 1.
- 2 Check fuse 29 and check that the supply to it is live.
- 3 Check that the switch for the engine compartment lamp operates satisfactorily, and check the bulb.
- 4 Check the connectors, wiring and earth connections.

Electronic speedometer



Operation

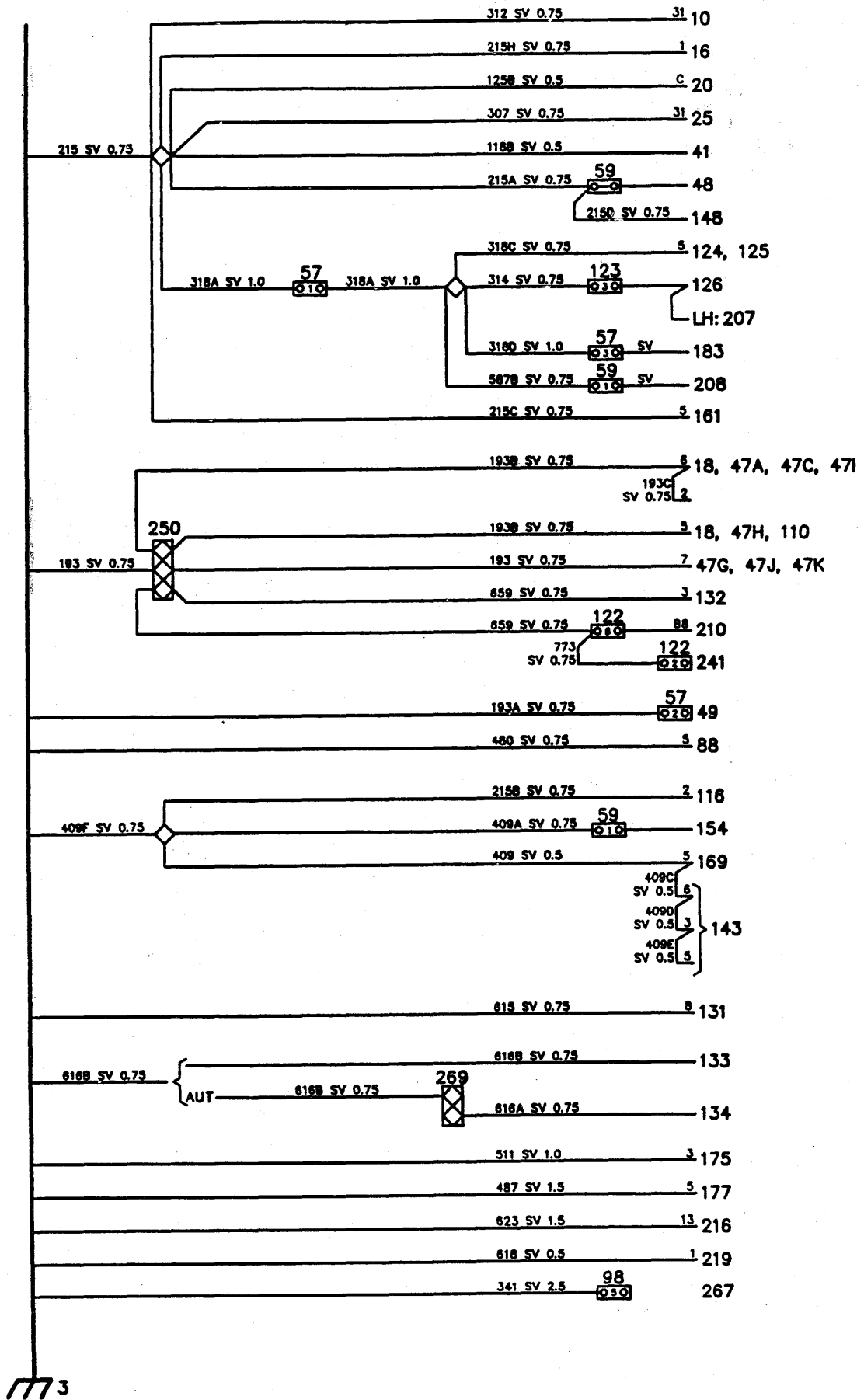
The car is equipped with an electronic speedometer, which eliminates the need for mechanical transmission (Bowden cable) between the gearbox and the speedometer.

Sensor 112 is mounted in the gearbox. The sensor output voltage, which varies with the speed of the car, is supplied to the electronic speedometer 111 in the combined instrument.

Fault-tracing hints

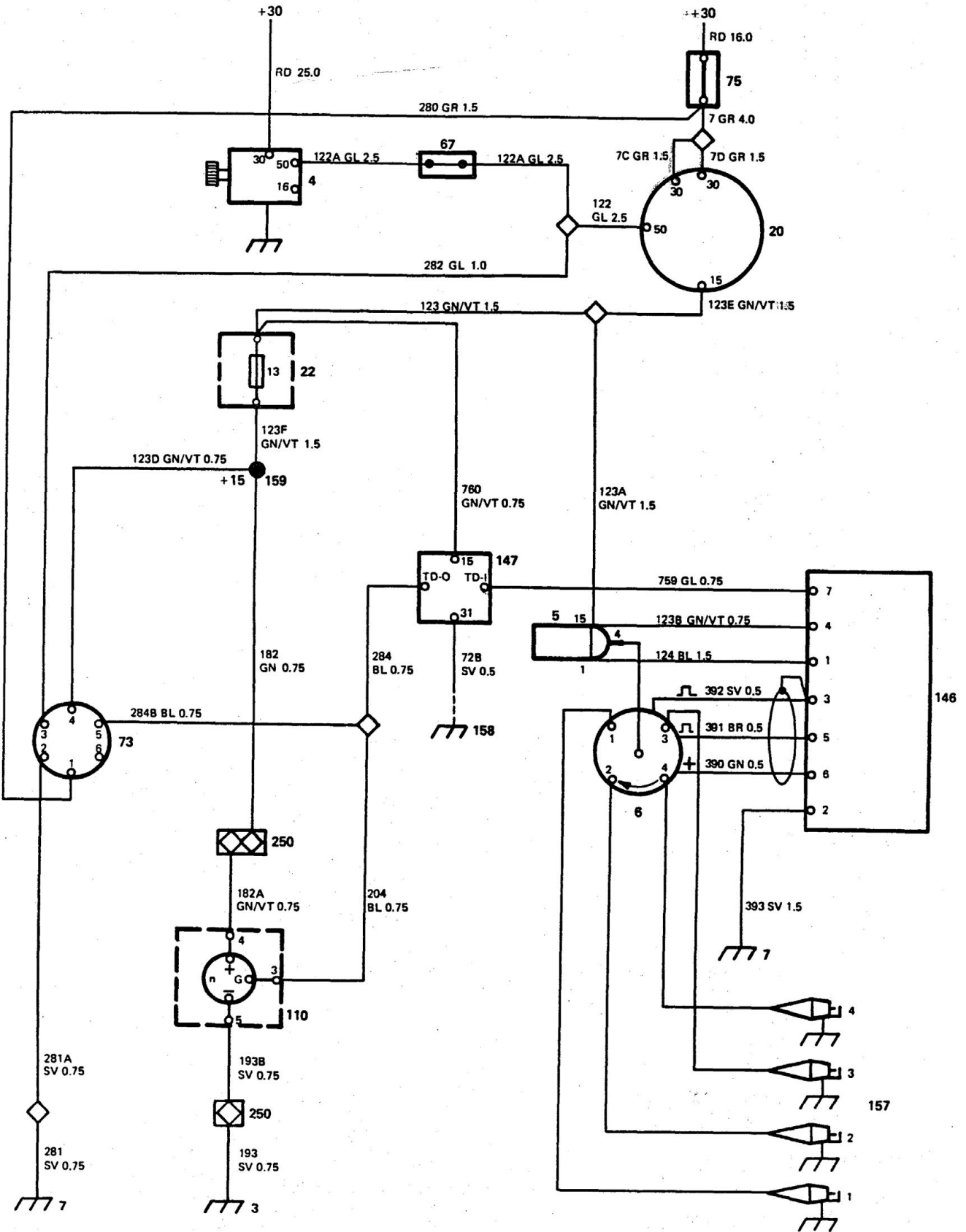
Check the connectors, and check that there is no open-circuit in sensor 112.

Grounding point 3



1773

Ignition system



Component list, wiring diagram for the 1987 Saab 9000

- | | | | |
|-----|---|-----|---|
| 1 | Battery | 47R | Washer fluid level warning lamp |
| 2 | Alternator | 48 | Cigarette lighter |
| 3 | Earthing point in the fascia | 49 | Clock |
| 4 | Starter motor | 50 | Roof lamp, centre |
| 5 | Ignition coil | 51 | Roof lamp, front |
| 6 | Ignition distributor | 52 | - |
| 7 | Earthing point on the wheel housing | 53 | Interior lighting switch |
| 8 | Lighting relay | 54 | Door switch, interior lighting |
| 9 | Earthing point in the luggage compartment | 55 | Luggage compartment lamp |
| 10 | Light switch | 56 | Luggage compartment light switch |
| 11 | Full beam | 57 | Three-pole connector |
| 12 | Dipped beam | 58 | - |
| 13 | Parking lights | 59 | Two-pole connector |
| 14 | Rear lights | 60 | Single-pole connector |
| 15 | Number plate illumination | 61 | Windscreen wiper stalk switch |
| 16 | Instrument lighting rheostat | 62 | Windscreen wiper motor |
| 17 | - | 63 | Washer motor |
| 18 | Instrument lighting | 64 | Heating pad |
| 19 | Glove compartment lamp | 65 | Earthing point at the back seat |
| 20 | Ignition switch | 66 | Headlamp wiper motor |
| 21 | Ignition switch relay | 67 | Six-pole connector |
| 22 | Electrical distribution box | 68 | Horn relay |
| 22A | Fuse holder | 69 | Co-driver's seat switch for seat-belt warning lamp |
| 22B | Relay holder | 70 | Seat-belt switch, driver's side |
| 23 | Flasher relay | 71 | Seat-belt switch, co-driver's side |
| 24 | Direction indicator stalk switch | 72 | Seat-belt warning lamp |
| 25 | Hazard warning light switch | 73 | Socket for timing service instrument (TSI socket) |
| 26 | Time delay relay for the radiator fan | 74 | Resistor for ventilation fan |
| 27 | Direction indicator lamps, left-hand | 75 | Distribution block, positive supply from battery |
| 28 | Direction indicator lamps, right-hand | 76 | Switch for raising the engine idling speed, auto |
| 29 | Brake light switch | 77 | Starting interlock contacts, auto |
| 30 | Brake lamps | 78 | Dim dipped beam relay |
| 31 | Reversing light switch | 79 | - |
| 32 | Reversing lamps | 80 | Dim dipped beam resistor |
| 33 | Rear fog lights | 81 | - |
| 34 | - | 82 | Seat belt/ignition switch warning relay |
| 35 | Selector switch for the ventilation fan | 83 | Relay for intermittent operation of the windscreen wipers |
| 36 | Motor for the ventilation fan, AC | 84 | - |
| 37 | Radiator fan motor | 85 | Extra fog lamps |
| 38 | Recirculation damper motor | 86 | - |
| 39 | Temperature switch, radiator fan | 87 | Engine compartment lamp with switch |
| 40 | Horn | 88 | Switch for extra fog lamps |
| 41 | Horn contacts | 89 | Side direction indicator, left-hand |
| 42 | Brake warning switch | 90 | Side direction indicator, right-hand |
| 43 | Handbrake switch | 91 | Gear indicating light |
| 44 | Oil pressure transmitter | 92 | - |
| 45 | Coolant temperature transmitter | 93 | (Spare) |
| 46 | Fuel level transmitter | 94 | - |
| 47 | Combined instrument | 95 | - |
| 47A | Fuel level gauge | 96 | - |
| 47B | Fuel reserve warning lamp | 97 | - |
| 47C | Coolant temperature gauge | 98 | Ten-pole connector |
| 47D | Oil pressure warning lamp | 99 | - |
| 47E | Boost pressure warning lamp | 100 | (Spare) |
| 47F | Brake warning lamp | 101 | Fuel feed pump |
| 47G | Headlamp full beam warning lamp | 102 | Fuel pump relay |
| 47H | Left-hand direction indicator warning lamp | 103 | Fuel pump |
| 47I | Right-hand direction indicator warning lamp | 104 | - |
| 47J | Rear window heater warning lamp | 105 | - |
| 47K | Shift-up warning lamp | 106 | - |
| 47L | - | 107 | Relay for extra fog lamps |
| 47M | Handbrake warning lamp | 108 | - |
| 47N | Rear fog light warning lamp | 109 | High-level brake lights |
| 47O | - | | |
| 47P | Check engine warning lamp | | |
| 47Q | ABS brake system warning lamp | | |

- 110 Tachometer
- 111 Electronic speedometer
- 112 Sensor for electronic speedometer
- 113 Relay for the electrically heated rear window
- 114 (Spare)
- 115 Electric heater for the rear window
- 116 Switch for the electrically heated rear window
- 117 (Spare)
- 118 Parking lights or driving lights
- 119 -
- 120 -
- 121 Seat switch for the heating pad
- 122 Eight-pole connector
- 123 Four-pole connector
- 124 Switch for the electrically operated rear-view mirrors
- 125 LH/RH selector for the electrically operated rear-view mirrors
- 126 Motor for the left-hand electrically operated rear-view mirror
- 127 Motor for the right-hand electrically operated rear-view mirror
- 128 -
- 129 -
- 130 -
- 131 Electronic control unit for Cruise Control
- 132 Sensor for the speed transmitter
- 133 Clutch switch for Cruise Control
- 134 Brake switch for Cruise Control
- 135 -
- 136 Lambda sensor
- 137 -
- 138 -
- 139 -
- 140 -
- 141 Selector for Cruise Control
- 142 -
- 143 Recirculation switch, AC
- 144 Boost pressure switch
- 145 Test tapping, EZK ignition system
- 146 Amplifier for electronic ignition system
- 147 Ignition pulse amplifier
- 148 Ashtray illumination, front cigarette lighter
- 149 Main switch for ventilation fan
- 150 -
- 151 Time-delay relay for the interior lighting
- 152 -
- 153 Lighting for the rear ashtray
- 154 Lighting for heater controls
- 155 Relay for the AC radiator fan
- 156 Relay for the AC and ACC radiator fan
- 157 Spark plug
- 158 Negative distribution terminal
- 159 Distribution terminal +15
- 160 Switch for glove compartment illumination
- 161 Switch for the rear fog lights
- 162 Switch for driver's door electric window regulator
- 163 Switch for co-driver's door electric window regulator
- 164 Motor for left-hand front electric window regulator
- 165 Motor for right-hand front electric window regulator
- 166 Pressure switch for the AC and ACC radiator fan
- 167 -
- 168 -
- 169 Switch, AC
- 170 Compressor for the AC and ACC
- 171 Anti-freeze thermostat (cycling clutch contact) for the AC and ACC
- 172 Radiator fan for the AC and ACC
- 173 Diode for the AC compressor
- 174 -
- 175 Electronic unit for the central locking system
- 176 Control unit, EZK ignition system
- 177 Control unit for the APC system
- 178 Knock sensor for the APC/EZK system
- 179 Solenoid valve for the APC system
- 180 Pressure transmitter for the APC system
- 181 Switch for the electrically operated sunroof
- 182 Motor for the electrically operated sun roof
- 183 Control unit for the driver's central door lock
- 184 Motor for the co-driver's door lock
- 185 Motor for the right-hand rear door lock
- 186 Motor for the left-hand rear door lock
- 187 Vacuum pump for Cruise Control
- 188 Motor for the tailgate lock
- 189 Switch for the rear-door electric window regulators
- 190 Switch for left-hand rear electric window regulator
- 190A Switch for left-hand rear electric window regulator
- 191 Switch for right-hand rear electric window regulator
- 191A Switch for right-hand rear electric window regulator
- 192 Distribution block
- 193 Window regulator motor for the left-hand rear door
- 194 Window regulator motor for the right-hand rear door
- 195 Level switch for washer fluid
- 196 -
- 197 Outdoor temperature sensor for the ACC
- 198 Recirculation damper motor for the ACC
- 199 Ventilation fan motor for the ACC
- 200 Control unit for the LH fuel injection system
- 201 Engine earthing point
- 202 Engine temperature transmitter for the LH fuel injection system
- 203 Throttle valve angle transmitter for the LH fuel injection system
- 204 Test tapping for the LH fuel injection system
- 205 Air mass meter for the LH fuel injection system
- 206 Fuel injection valves for the LH fuel injection system
- 207 Electric heater elements for the rear-view mirrors
- 208 Door indication
- 209 Courtesy lights
- 210 EDU trip computer (voltmeter and fuel consumption instrument)
- 211 (Spare)
- 212 -
- 213 Pictogram in the combined instrument
- 214 -
- 215 Dip switch
- 216 Climate control unit, ACC
- 217 Air mixture temperature transmitter, ACC
- 218 Interior temperature transmitter, ACC
- 219 Fan for interior temperature transmitter, ACC
- 220 Speed control for the ventilation fan, ACC
- 221 Air distribution damper motor, ACC
- 222 Air mixing damper motor, ACC

28 Electrical system

223	Sun transmitter, ACC	286	Outdoor temperature sensor
224	Seat-belt lock lighting	287	Relay for automatic control of window regulators
225	Reading lamp	288	Connection for burglar alarm switch
226	Co-driver's map-reading lamp	289	Connection for burglar alarm control unit
227	Fuel-cap motor in the central locking system	290	-
228	Filament monitor	291	-
229	Main relay for the LH fuel injection system	292	-
230	Distribution terminal +30	293	-
231	Distribution terminal +54	294	-
232	Stepping relay for the electrically operated sunroof	295	-
233	Vacuum switch for Cruise Control/APC	296	-
234	Side marker lights	297	-
235	Sensor for left-hand seat-belt tensioner	298A	-
236	Sensor for right-hand seat-belt tensioner	298B	-
237	Test tapping for seat-belt tensioner	298C	-
238	Electronic control unit for seat-belt tensioner	298D	-
239	Selector position switch, auto	299	-
240	Electronic unit, rheostat lighting	300	-
241	DCC trip computer	301	-
242	Coolant level switch	302	-
243	Engine oil level switch	302A	-
244	Heater socket	303A	-
245	Selector position switch, auto, EDU II	303B	-
246	Switch terminal for rear door fan	304	(Spare)
247	Fan terminal in left-hand rear door	305	(Spare)
248	Fan terminal in right-hand rear door	306	(Spare)
249	(Spare)	307	(Spare)
250	Distribution block, 6 connections		
251	Distribution block, 3 + 3 connections		
252	Rheostat for driver's seat heating pad		
253	Rheostat for co-driver's seat heating pad		
254	Temperature sensor for driver's seat heating pad		
255	Temperature sensor for co-driver's seat heating pad		
256	(Spare)		
257	(Spare)		
258	(Spare)		
259	(Spare)		
260	-		
261	Throttle contacts, zero position, shift-up indication		
262	Temperature switch, shift-up indication		
263	Vacuum switch, shift-up indication		
264	Switch, 5th gear		
265	Electrically operated aerial		
266	Speakers		
267	Radio connections		
268	-		
269	Two-pole connector		
270	Shift-up indication relay		
271	Preheating of Lambda sensor		
272	Idling speed adjustment motor, LH fuel injection system		
273	-		
274	-		
275	Siren terminal, burglar alarm		
276	Main switch terminal, burglar alarm		
277	-		
278	-		
279	-		
280	Headlamp level control motor, left-hand		
281	Headlamp level control motor, right-hand		
282	Headlamp level control switch		
283	-		
284	Five-pole connector		
285	Fuse for Lambda sensor		

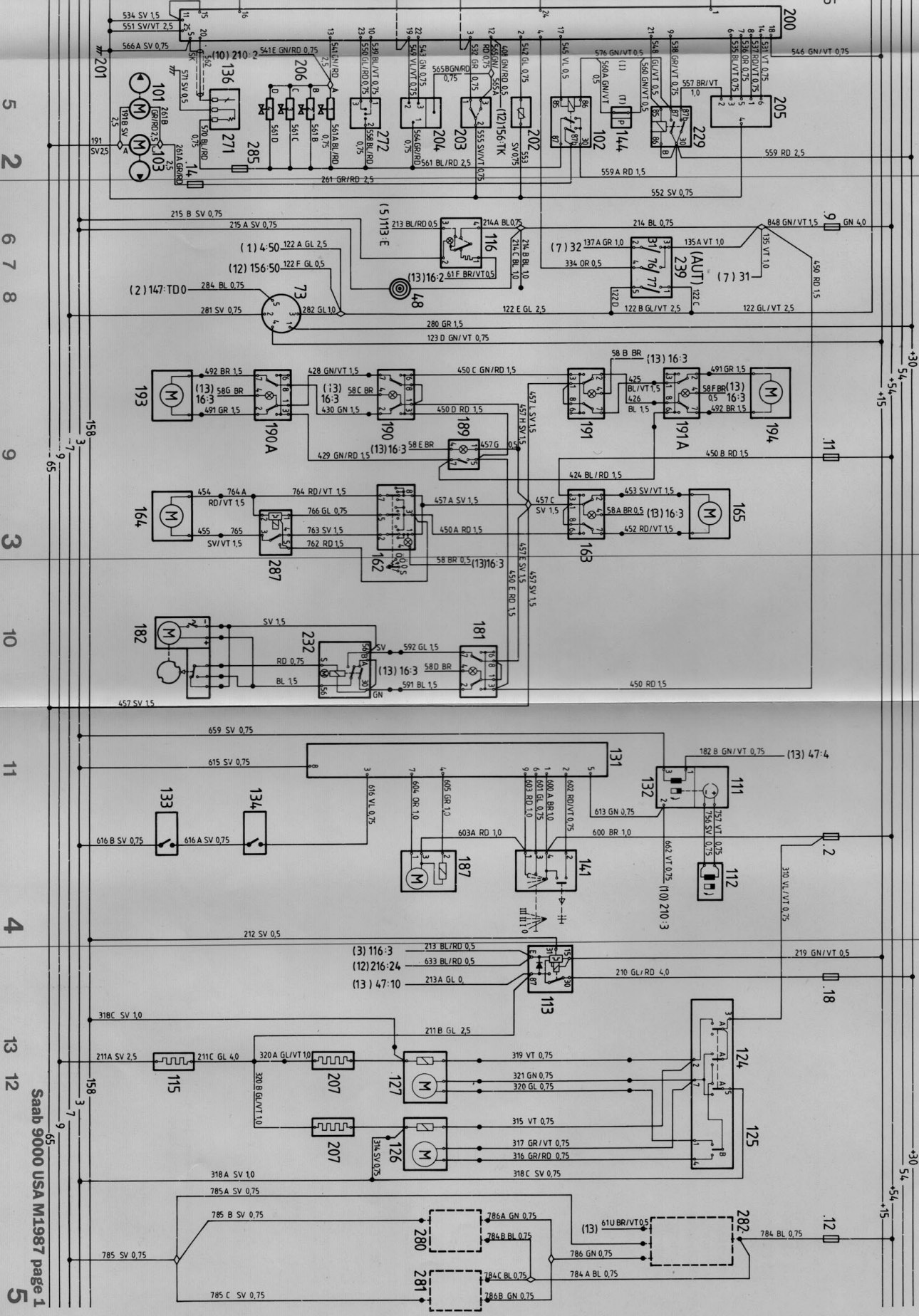
List of systems, comprehensive wiring diagrams

List of systems, comprehensive wiring diagram

- 1 Starting system
- 2 Battery-charging system
- 3 Ignition system
- 4 APC and EZK systems
- 5 Fuel injection system
- 6 Selector position switch (auto)
- 7 Cigarette lighter
- 8 Timing service instrument (TSI) socket
- 9 Electric window regulators
- 10 Electrically operated sunroof
- 11 Cruise Control system
- 12 Electrically operated and heated rear-view mirrors
- 13 Electrical heating for the rear window
- 14 Headlamp full beam
- 15 Headlamp dipped beam
- 16 Extra fog lamps
- 17 Rear lights
- 18 Engine compartment illumination
- 19 Glove compartment illumination
- 20 Parking lights
- 21 Number plate illumination
- 22 Brake lights
- 23 -
- 24 Reversing lights
- 25 Direction indicators
- 26 Side marker lights
- 27 Parking lights or driving lights
- 28 Seat belt (ignition switch) warning
- 29 Reading lamps
- 30 Central locking system
- 31 Electrically heated front seats
- 32 Courtesy lights
- 33 Luggage compartment illumination
- 34 Burglar alarm
- 35 EDU and DCC trip computers and clock
- 36 Shift-up indication
- 37 Horn
- 38 Headlamp wipers
- 39 Windscreen wipers
- 40 Seat-belt tensioners
- 41 Automatic Climate Control (ACC)
- 42 Ventilation fan
- 43 Air conditioning (AC)
- 44 Radiator fan
- 45 Lighting for switches and controls
- 46 Warning and indicating lamps
- 47 -
- 48 Radio installation

(T) = Turbocharged engine

(I) = Fuel injection engine



List of systems, comprehensive wiring diagram

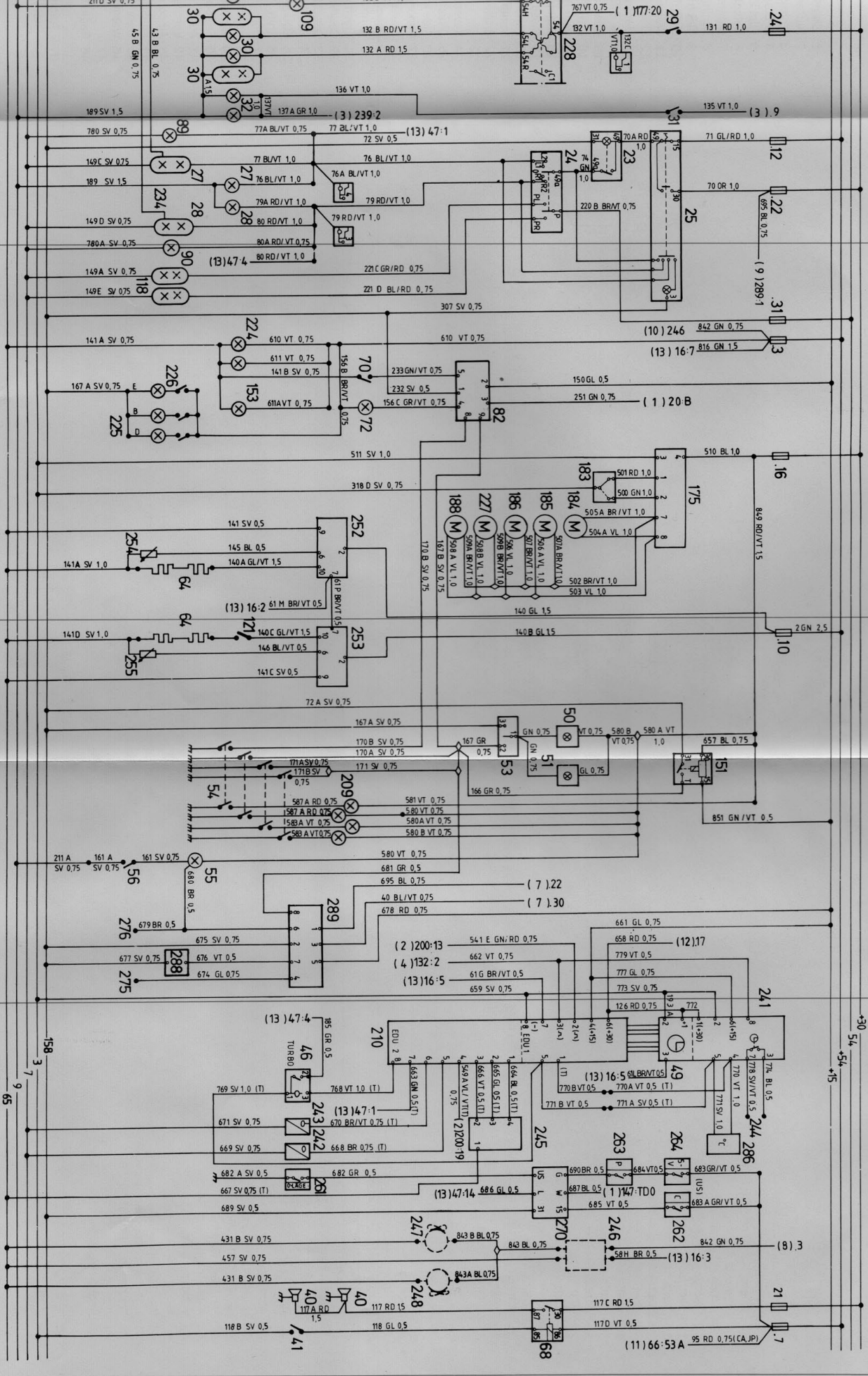
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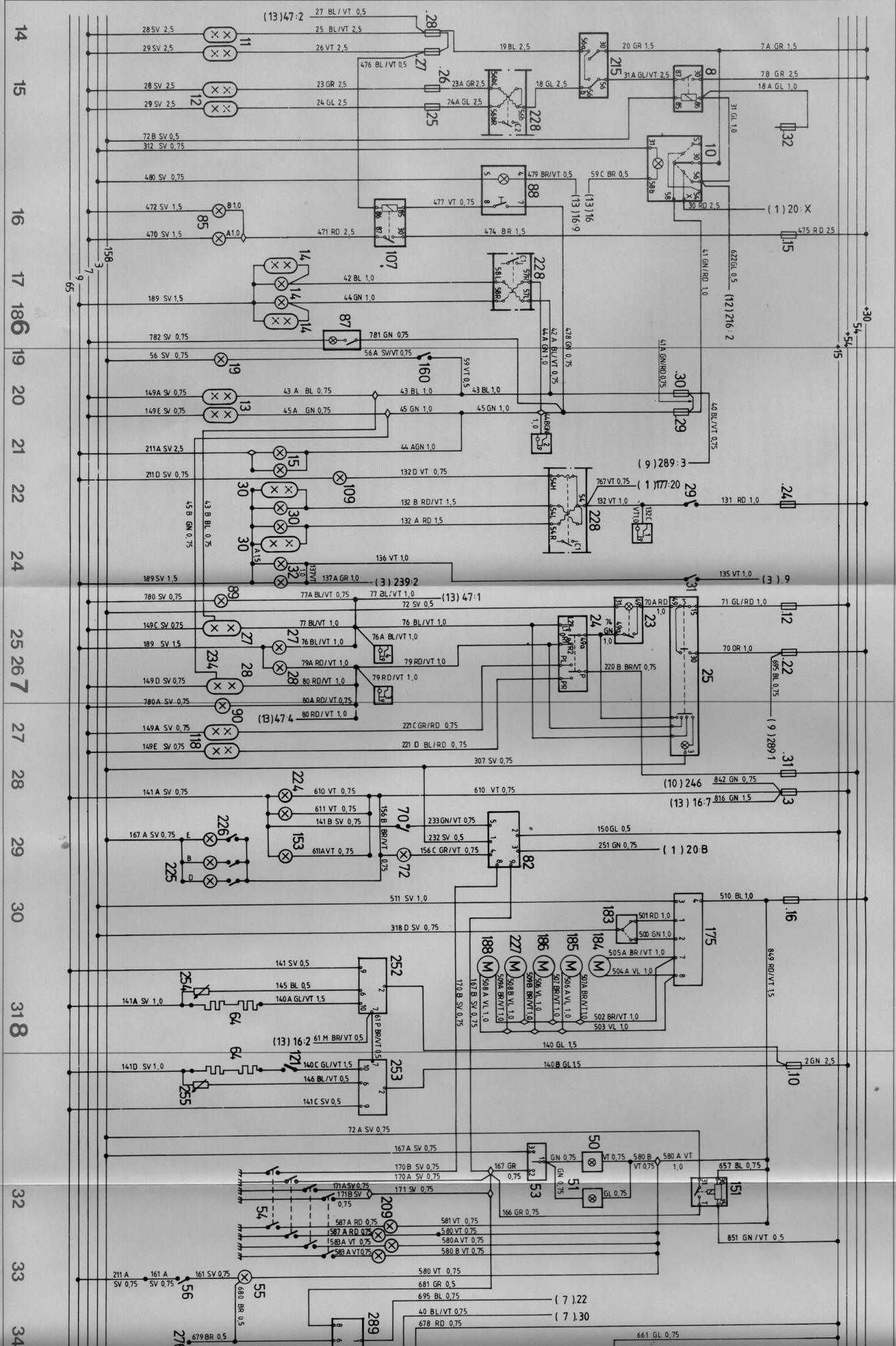
(T) = Turbocharged engine

(I) = Fuel injection engine

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(13) 147-2

(1) 20-X

(9) 289-3

(3) 239-2

(13) 47-4

(10) 246

(1) 20-B

(13) 16-2

(7) 22

(7) 30

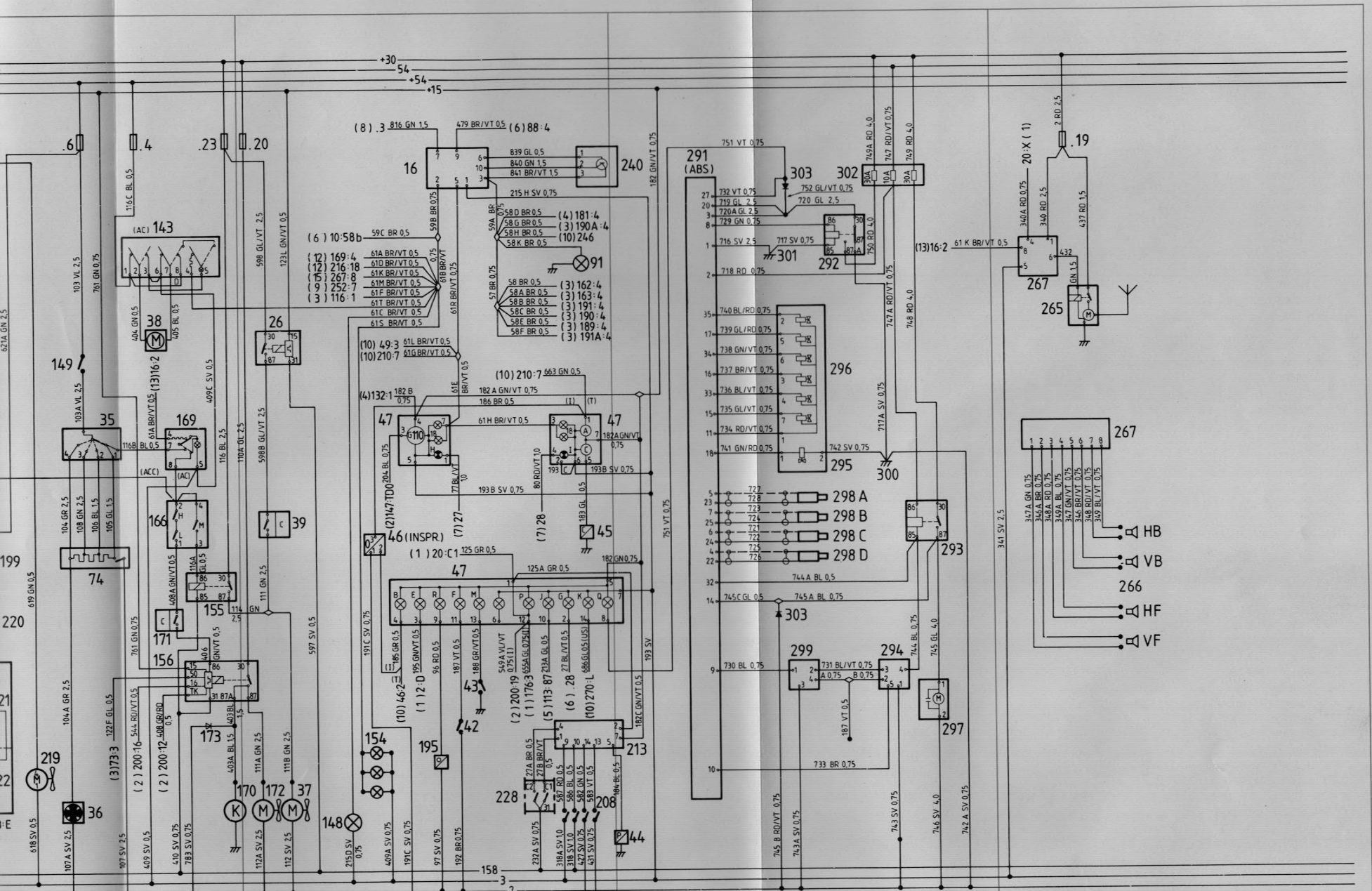
(12) 17

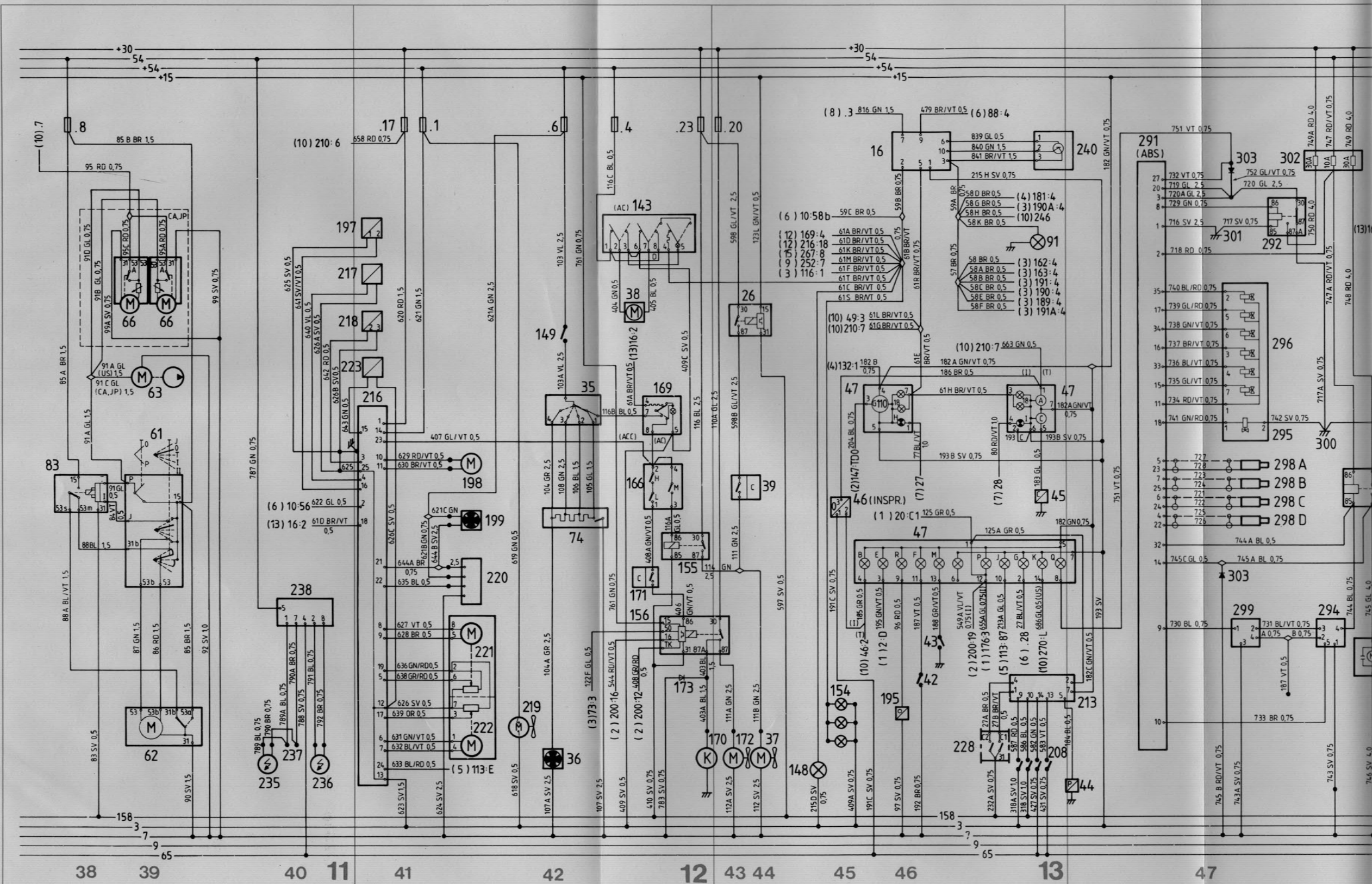
List of systems, comprehensive wiring diagram

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- 45 Lighting for switches and controls
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- 48 Radio installation

(T) = Turbocharged engine

(I) = Fuel injection engine





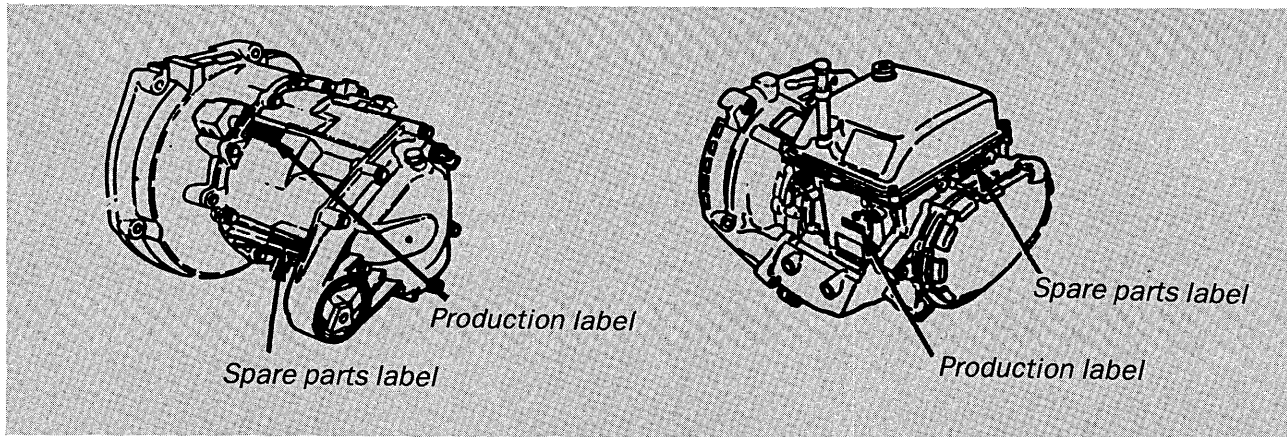
Transmission

Anti-theft marking 37
 Manual transmission 37

Automatic transmission 38

Anti-theft marking

All transmissions for the USA market will be marked to protect them from theft.



Manual gearbox

A new manual gearbox, with modified gear ratios for normally-aspirated engines (9000i), will be introduced.

Year	Model	Gearbox type	Final drive	Overall ratio						Speed per 1000 rpm						Tyre alt.
				1	2	3	4	5	R	1	2	3	4	5	R	
1987	9000i	GMT 5202	89:20 4,45	14,72	7,84	5,25	3,80	3,04	14,30	7,7	14,5	21,6	29,9	37,3	7,9	1)
										7,7	14,4	21,5	29,7	37,1	7,9	2)
1987	9000i s	GMT 5203	89:20 4,45	14,72	7,84	5,25	3,80	2,99	14,30	7,7	14,5	21,6	29,9	38,0	7,9	1)
										7,7	14,4	21,5	29,7	37,7	7,9	2)
1987	9000 Tu	GMT 5401	80:19 4,21	13,93	7,42	4,97	3,60	2,83	13,53	8,1	15,2	22,7	31,3	39,8	8,3	3)
										8,0	15,0	22,4	30,9	39,3	8,2	4)

- | | | | |
|----|-------------|------------------------|--------------------------|
| 1) | 185/65 R15H | Mich. MXV/Pirelli P6 | Dyn. rolling radius: 301 |
| 2) | 195/60 R15H | Mich. MXV/Pirelli P6 | Dyn. rolling radius: 299 |
| 3) | 195/60 VR15 | Mich. MXV/Pirelli P6 | Dyn. rolling radius: 299 |
| 4) | 205/55 VR15 | Mich. MXV/Pirelli P600 | Dyn. rolling radius: 296 |

Automatic transmission

An automatic transmission manufactured by ZF will be introduced during the 1987 model year. The transmission is of four-speed type, in which power in 4th gear is transmitted mechanically across the torque converter, to a clutch. In 3rd gear, the transmission operates on the split-torque principle, i.e. 40% of the torque is transmitted hydraulically, via the torque converter, and 60% mechanically.

Ratios

Year	Model	Gearbox type	Final drive	Overall ratio						Speed per 1000 rpm						Tyre alt.
				1	2	3	4	5	R	1	2	3	4	5	R	
1987	9000i s	GAT 4102	77:18 4,28	10,64	5,9	4,20	3,12	---	12,10	10,7	19,2	27,0	36,4	---	9,4	1)
										10,6	19,1	26,8	36,1	---	9,3	2)
1987	9000 Tu	GAT 4301	77:18 4,30	9,91	5,41	3,84	2,85	---	11,07	11,4	20,8	29,4	39,6	---	10,2	3)
										11,2	20,6	29,0	39,0	---	10,0	4)

- | | | | |
|----|-------------|------------------------|--------------------------|
| 1) | 185/65 R15H | Mich. MXV/Pirelli P6 | Dyn. rolling radius: 301 |
| 2) | 195/60 R15H | Mich. MXV/Pirelli P6 | Dyn. rolling radius: 299 |
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| 4) | 205/55 VR15 | Mich. MXV/Pirelli P600 | Dyn. rolling radius: 296 |

A supplement describing this automatic transmission will be produced.

Brakes

Front brake units	39	Rear brake pads	40
Front brake pads	39	Front brake discs	40

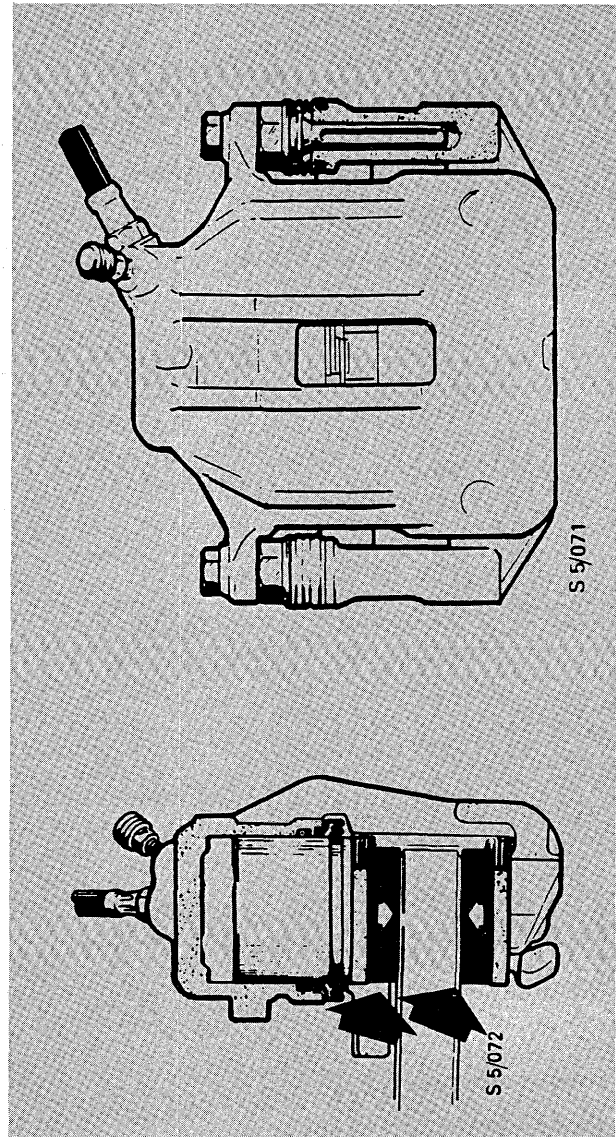
Front brake units

The dimensions of the front-brake units have been adjusted to suit the new, thicker brake discs (23.5 mm), and the thickness of the material in the brake housing has been increased.

Front brake pads

New brake pads will be introduced for the 1987 model year. The new pads, **Textar 474** (part No. 89 68 018), will improve the sound level and, together with the new rear brake pads, will provide better braking effort balance.

These brake pads can (and should) be used on all 9000 cars as from the 1985 models.



Textar 474 (part No. 98 68 018)

Note

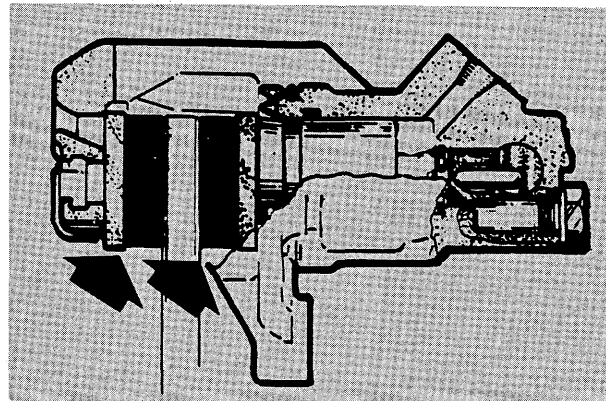
On cars used as taxis, Delco Moraine 121 brake pads (part No. 89 61 815) are recommended.

Rear brake pads

New rear brake pads will be introduced to improve the braking effort balance.

They are **Roulunds Dan Block 870** brake pads (part No. 89 68 026).

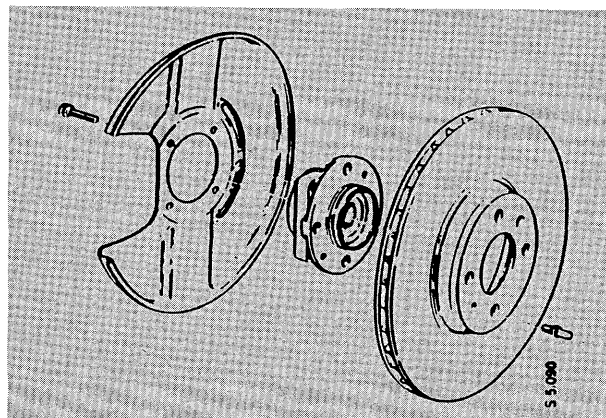
These brake pads can be used on all Saab 9000 models.



The new DB870 brake pads

Front brake discs

To improve the performance of the brakes while lowering the sound level, new front brake discs will be introduced. The new brake discs have a thickness of 23.5 mm (0.925 in) and the number of cooling passages has been increased to 60.

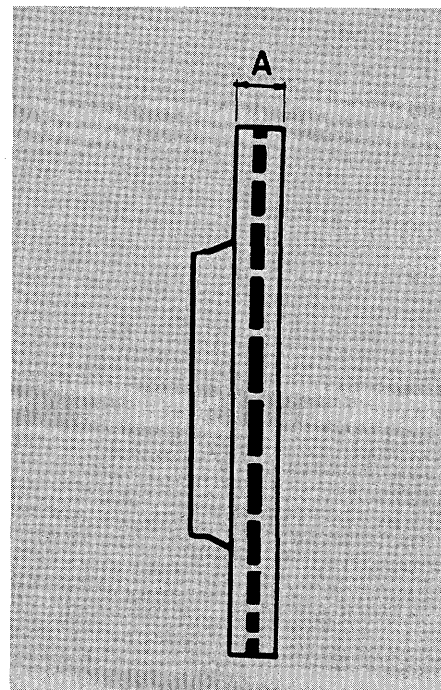


Summary - front brake discs

Cars	Dimension A mm (in)	Number of cooling passages	Part No.
M85-CG1018180	22,0 (0,866)	30	89 55 171
CG1018181 - M86	22,5 (0,886)	60	89 65 550
M87-	23,5 (0,925)	60	89 66 962

Note

These brake discs cannot be used on 1985 and 1986 models without replacing the brake units as well. But this can be done by using brake disc 89 65 550, which can be fitted to earlier cars to increase the braking effort and to reduce the sound level.

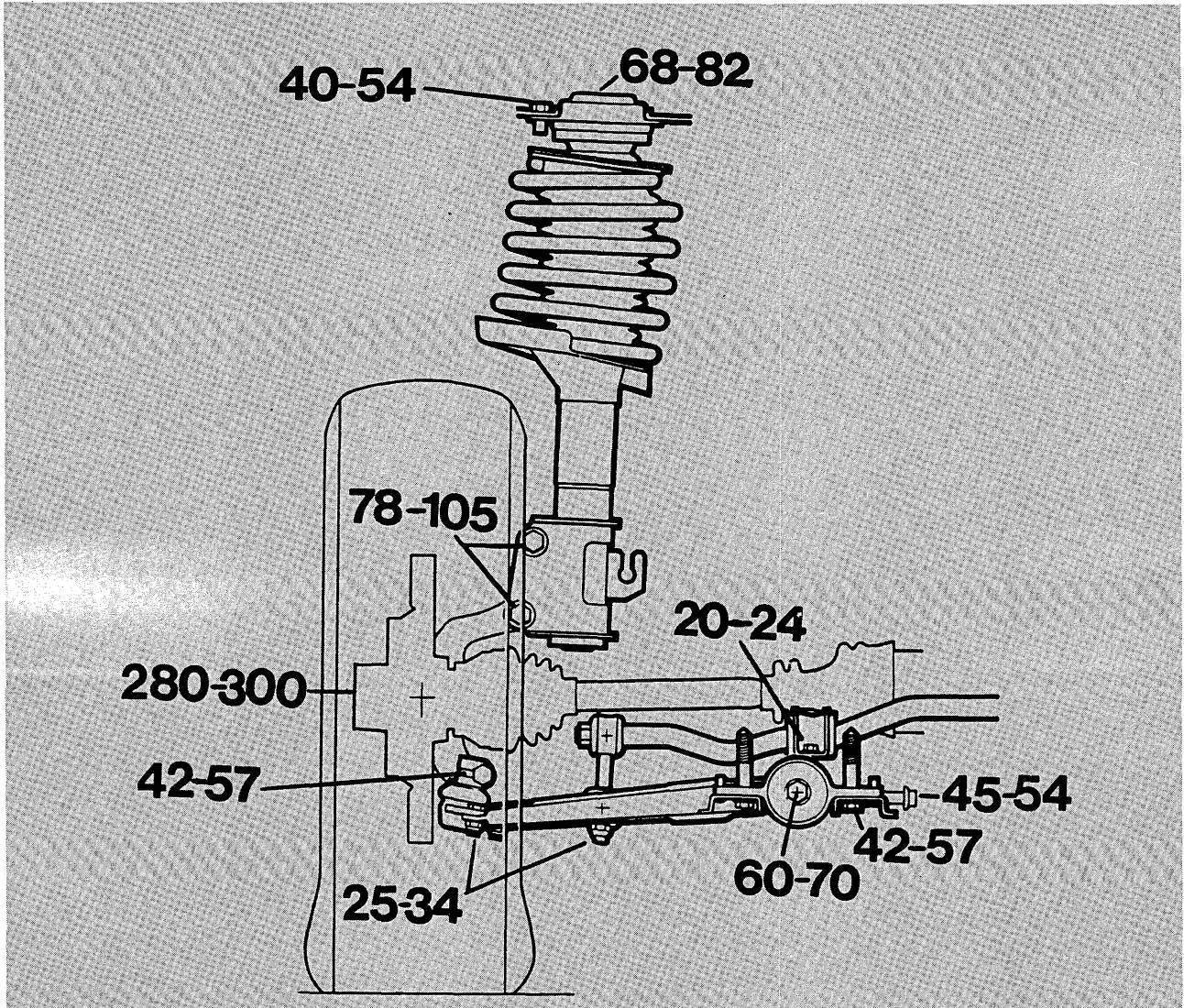


Front assembly, steering

Modified tightening torque,
front assembly 41

New method for measuring the toe-in . . . 42
To check the toe-in 43

Modified tightening torque, front assembly

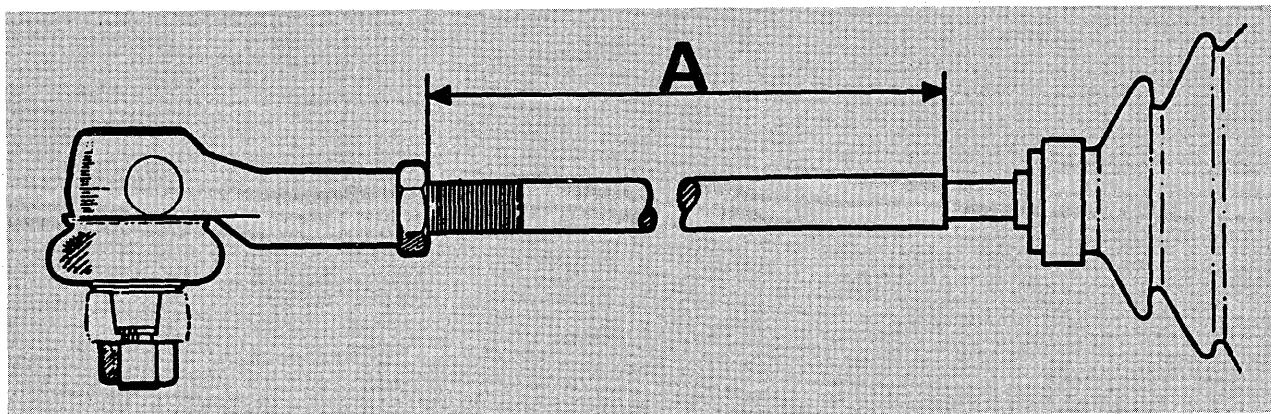


Tightening torque indicated in Nm (10 Nm = 1 kgf m)

New method for measuring the toe-in

After adjusting the toe-in, distance A, between the lock nut and the outer edge of the groove on the track rod, must not exceed 140 mm (5.51 in) under any circumstances.

The difference in distance A between the track rods must not exceed 2 mm (0.079 in).



$A = \text{max } 140 \text{ mm (5.51 in)}$

Note

Applies to all 9000 models as from 1985

The main reasons why the difference between distance A on the right-hand and left-hand sides must not exceed 2 mm (0.079 in) are:

- to avoid unfavourable self-steering effects on cornering.
- to avoid exceeding the maximum permissible angle of the steering column universal joints.

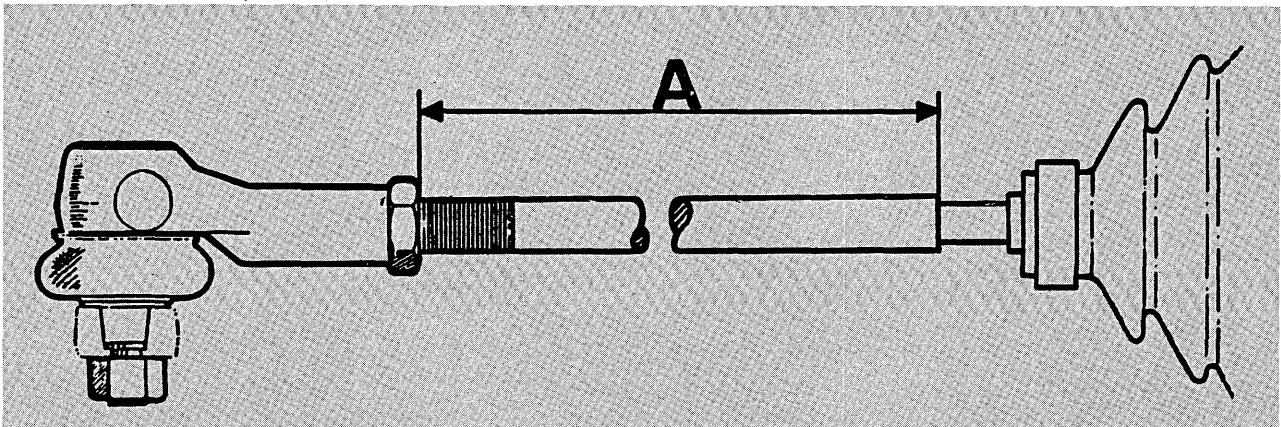
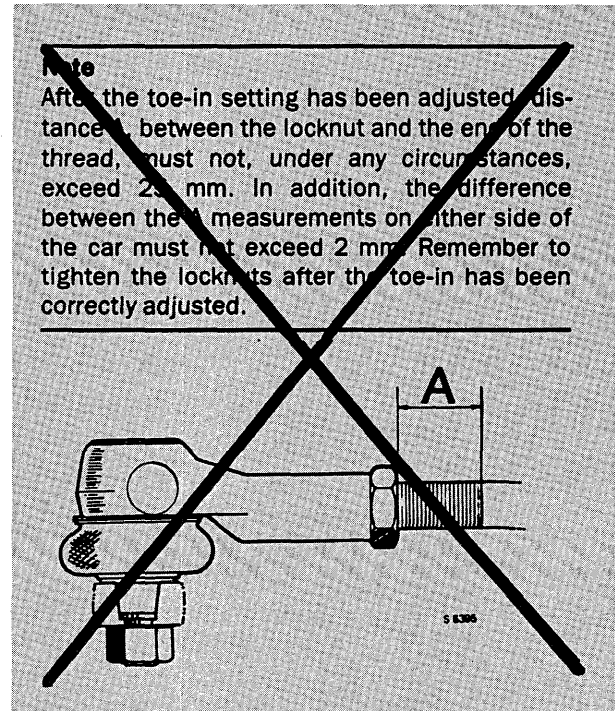
This new method of measuring the distance from the nut to the edge of the track rod groove has been introduced to determine distance A more precisely. The previous method of measuring the thread caused a certain amount of uncertainty, since the length of the thread may vary somewhat.

To check the toe-in

Previous information regarding the total length and the inside length for the track rods has been superseded.

- 1 Adjust the toe-in as described in the Service Manual.
- 2 Remove the clip holding the rubber bellows on the track rod.
- 3 Push the rubber bellows towards the steering gear housing to expose the groove in which the bellows seals.
- 4 Measure distance A.

Distance A, between the lock nut and the outer edge of the groove for the rubber bellows, must not exceed 140 mm (5.51 in) under any circumstances.



- 5 Carry out operations 2 to 4 on the other side of the car.
- 6 Compare distance A on the left-hand and right-hand sides of the car. The difference between them must not exceed 2 mm (0.079 in).
- 7 Adjust if necessary.
- 8 Slide the rubber bellows back to its place in the groove.
- 9 Fit the clip.
- 10 Carry out operations 8 and 9 on the other side of the car.

The procedure and dimensions mentioned above apply to all 9000 models.

Suspension, wheels

Automatic level control	45	Summary of recommended	
New tyre - 9000 Turbo 16		tyre pressures (cold tyres)	46
(US, CA, FI, FE, JP)	45	Summary of tyres and wheels	47

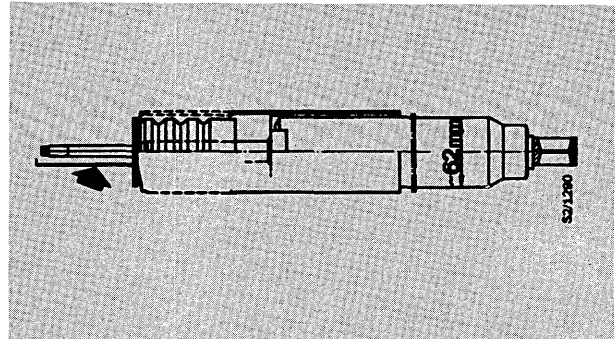
Automatic level control

An automatic system for controlling the level of the body will be available as an option as from the 1987 model year.

The rear shock absorbers are replaced by automatic level control shock absorbers (Boge Nivåmat). They build up a pressure to counteract the compression they undergo under heavy load.

The new shock absorbers also differ from the normal type in that they have stiffer lower bushes and a larger diameter.

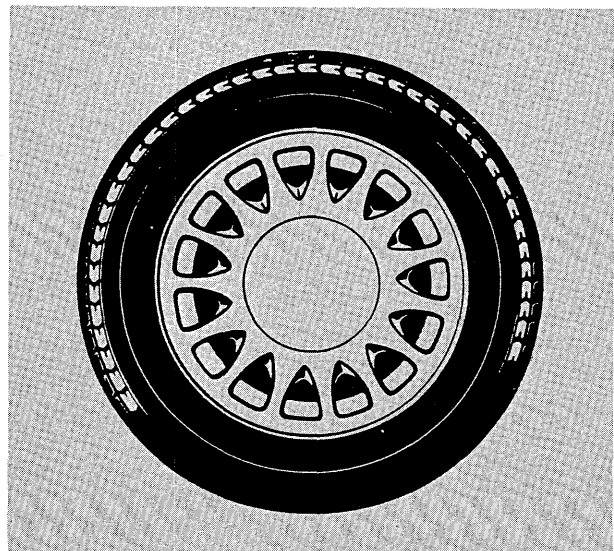
The rear springs are replaced with new ones which are softer than the original springs.



New tyre - 9000 Turbo 16 (US, CA, FI, FE, JP)

A new tyre will be introduced for the 9000 Turbo 16 on certain markets.

The new tyre is designated 205/55V. (This tyre is already included in SE spec.)



Summary of recommended tyre pressures (cold tyres)

Tyre	Load		Tyre pressure	
			Front bar (psi)	Rear bar (psi)
185/65 R15 87H	1-3 occ.	0-210 km/h	2,0 (29)	2,1 (30)
	4-5 occ.		2,4 (35)	2,5 (36)
195/60 R15 86H	1-3 occ.		2,1 (30)	2,2 (32)
	4-5 occ.		2,4 (35)	2,5 (36)
205/55 VR15	1-3 occ.	0-210 km/h	2,1 (30)	2,1 (30)
	1-3 occ.	>210 km/h	2,5 (36)	2,5 (26)
	4-5 occ.		2,5 (36)	2,5 (36)
175/70 R15 Winter tyres	1-3 occ.		2,3 (33)	2,4 (35)
	4-5 occ.		2,4 (35)	2,5 (36)
185/65 R15 Winter tyres	1-3 occ.		2,2 (32)	2,3 (33)
	4-5 occ.		2,3 (33)	2,4 (35)
T115/70 D15 eller 70 R15 Spare tyre				4,2 (61)

Summary of tyres and wheels

Use this table as follows:

Look up the number-letter combination for the respective market and model. The numbers refer to the tyre table and the letters to the wheel table.

Model designation

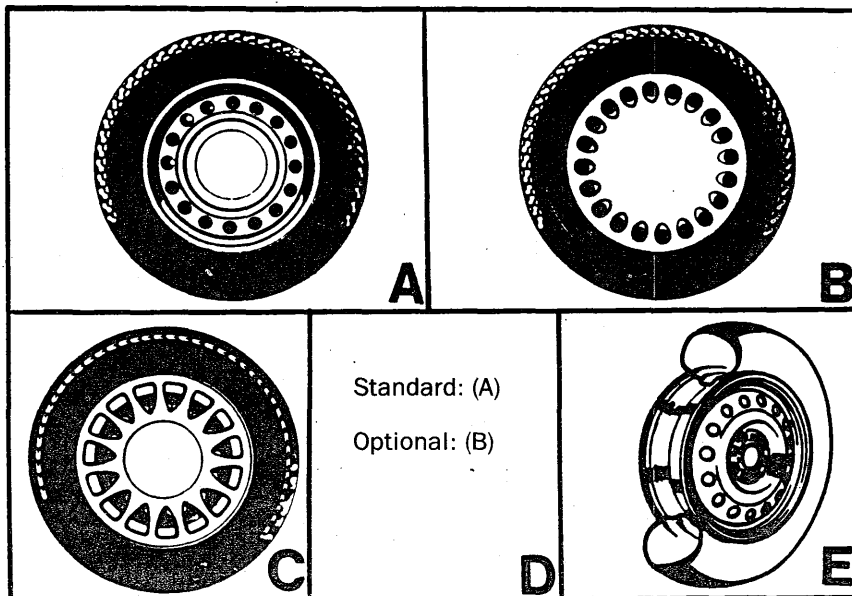
9000T	5C	5C	---	---	---	---	---	---	---	---
9000T16	---	---	5C	5C	5C	5C	4C	5C	4C	5C
9000S	3C	3C	---	---	---	---	---	---	---	---
9000i	---	---	2B	4B	2D	2D	2B	2B	2C	3B
Spare tyre/wheel	6E	6E	7E	6E	6E	6E	1A	6E	6E	6E
Markket	US	CA	GB	EU	SE	FI	ME	FE	AU	JP

Tyres

Number	Tyre designation
1	175/70 R15 86T
2	185/65 R15 87H
3	195/60 R15 86H
4	195/60 VR15
5	205/55 VR15
6	T115 70 D15 or T115 70 R15
7	T115/70 R15

Wheels

Letter	Wheel designation	Material	Comm.
A	5 1/2 J x 15H2 ET39	Steel	Silver
B	6J x 15H2 ET33	Steel	Black
C	6J x 15H2 ET33	Aluminium	Spokes
D	Standard: (B), Optional: (C)		
E	4J x 15 H1		



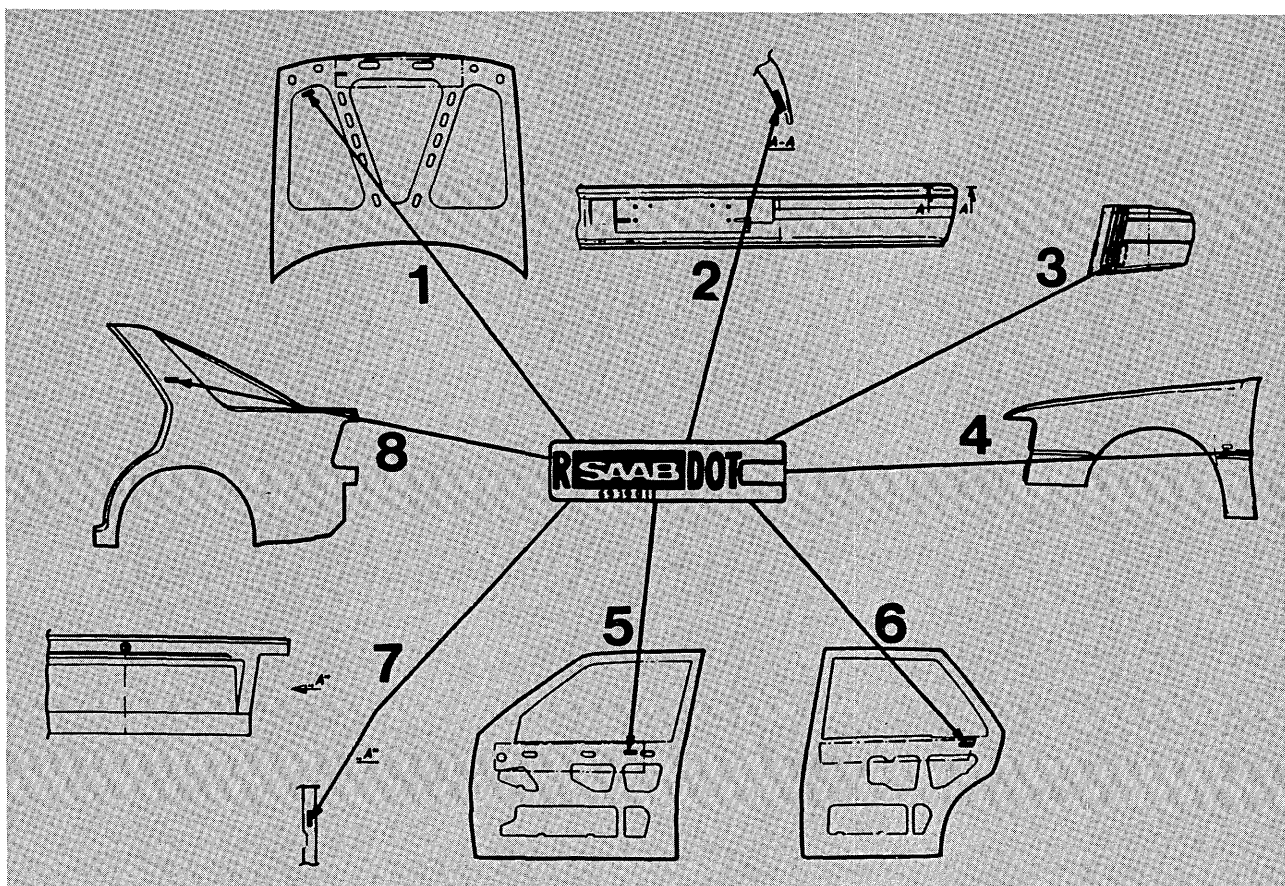
Body

Anti-theft marking of spare parts	49	Seat cushion with adjustable heating	
Painting instructions	50	- driver and co-driver seats	51
Manually operated windows -		New interior air sensor for cars with ACC	51
front and rear doors	50	Automatic lighting control - ACC unit	51
Manual operation of electric sunroof	50	New bodywork paint for the 1987 models	52

Anti-theft marking of spare parts

For the 1987 model year, new legal requirements on theft-proofing will be enacted on the USA market. For general information on the location of the production label, etc., see the section entitled "Technical specifications".

All original spare parts for the USA market will be theft-proofed by labelling after the undercoat paint has been applied. The location of the label is shown in the illustration.



Location of spare parts label

- | | |
|--|--|
| 1 Bonnet, seen from below | 6 Rear door, seen from the inside (same location on the opposite side) |
| 2 Front bumper | 7 Luggage compartment door |
| 3 Rear bumper, seen from the outside | 8 Rear wing, seen from the inside (same location on the opposite side) |
| 4 Front wing, seen from the outside (same location on the opposite side) | |
| 5 Front door, seen from the inside (same location on the opposite side) | |

Painting instructions

Note

Be careful with the solvent (thinner). It can dissolve the label and make it useless.

- Do not touch the label before painting.
- Paint the surface in the normal way.
- Remove the protective film with the text "Remove this protective mask after painting part" before the paint has dried.

Note

The legal requirements mentioned above also apply to IDS cars to USA specifications.

Manually operated windows - front and rear doors

Apart from the window crank, the removal and re-fitting procedure is the same for manual and electric windows.

To remove the window crank

Remove the cover plate in the centre.

Remove the screw and the window crank.

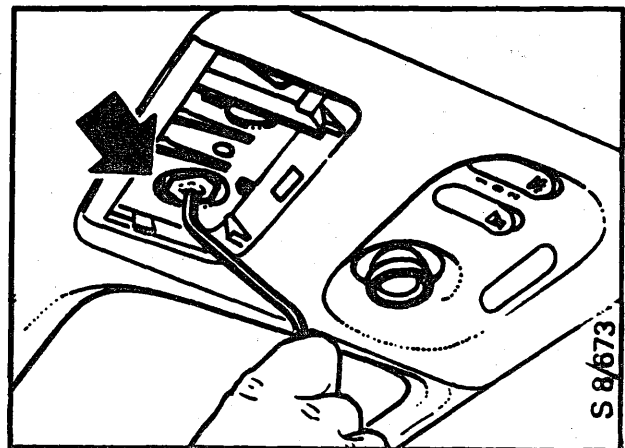
Manual operation of electric sunroof

The sunroof can be operated manually (in case of an electrical fault, etc.) by means of a crank located under the cover in the roof console. Back off the nut 2 or 3 turns with the spark-plug spanner included in the tool kit. Insert the short end of the crank into the hexagonal hole. Turn clockwise to close the sunroof. Tighten the nut.

Note

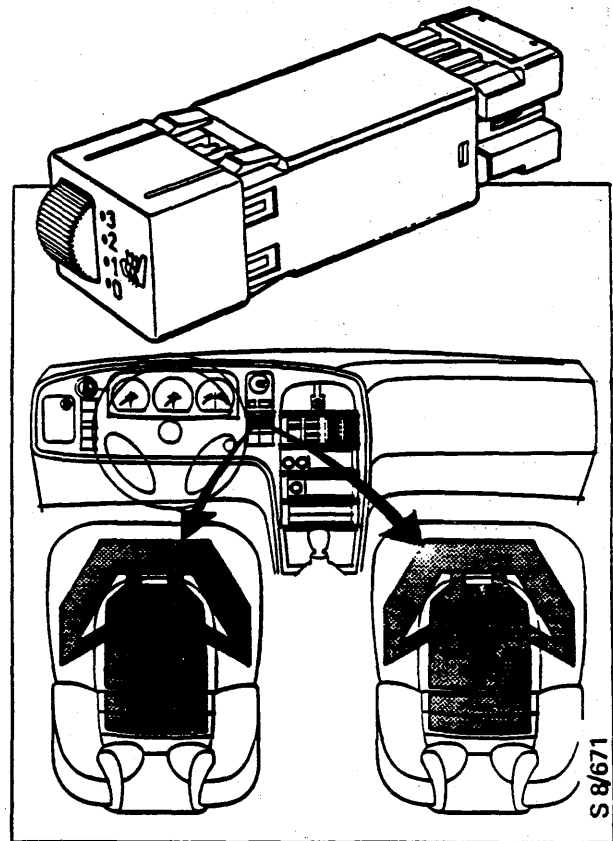
Tighten the nut carefully, to avoid damaging the shaft.

Tightening torque: 7 +0,5/-0 Nm (5,2 +0,4/-0 lbf ft)



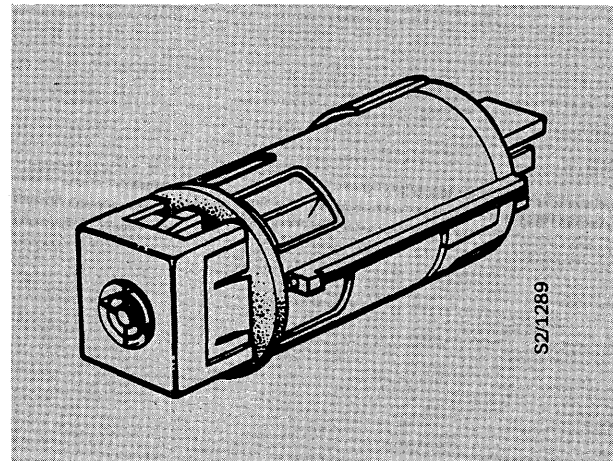
Seat cushion with adjustable heating - driver and co-driver seats

The heating of the driver and co-driver seats can now be adjusted by means of a knob on the facia. The thermostat in the cushion has been replaced by a thermistor which senses the temperature in the cushion. The thermistor transmits information on a suitable switching temperature to the electronic control and integrated relay. There are two types of heated pads: one for cars with leather upholstery and another for cars with fabric upholstery. The pad designed for use with leather upholstery is switched on for a somewhat longer time.



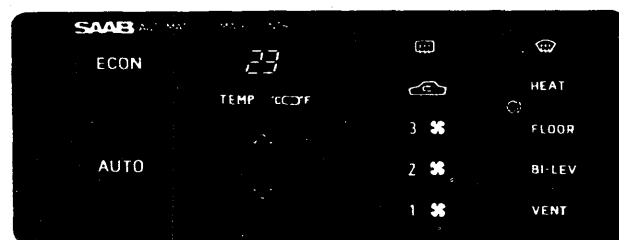
New interior-air sensor for cars with ACC

The new interior-air sensor consists of a single unit, which contains a sensor and a suction fan motor. The corrugated hose and the suction fan motor in the console for the two other servo motors have thus been eliminated.



Automatic lighting control - ACC unit

As from the 1987 models, the intensity of the ACC unit illumination (display and LED) will be controlled by a light sensor on the panel. The sensor is contained in the LED located between the HEAT and FLOOR controls. When the brightness of the interior lighting exceeds 200 lux, the illumination of the display and LED is at maximum intensity. When the brightness is less than 50 lux, the intensity is controlled via a reostat on the facia.



New bodywork paint for the 1987 models

The undercoat paint for two-coat metallic will hereafter be of medium-solid (MS) type. The designation of the paints will not be changed, but the undercoat paint will have a new colour-code number.

As a result of this modification, paint with a higher dry-solids content must be used. This will produce a slight change in colour, and will require that the correct type of paint be applied.

Note

Always quote the colour code of the car when ordering paint.

The following paints will be added or will have a new designation as from the 1987 model year:

Colour code	Colour	Type	Old designation
198	Embassy blue	Solid	
*199	Test paint	Solid or Undercoat	
200	Silver	Undercoat	172
201	Bronze	Undercoat	
202	Rose Quartz	Undercoat	129
203	Platinum blue	Undercoat	117
204	Odoardo grey	Undercoat	158
205	Light Malachite	Undercoat	159
206	Cochineal red	Undercoat	120

*Indicates that the paint for the car is not available in stock, and must be specially ordered.

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