

SAAB

90

**SERVICE
MANUAL**

8 **Body**

M 1985—

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M 1985-

Blank lined paper.

Specifications

Two colour code plates are fitted in the engine compartment, adjacent to the chassis number plate. One of these specifies the body colour code and the other specifies the colour scheme for the interior.



S 8/025

Example of body colour code plate.



S 8/026

Example of colour code plate for the interior trim.

Body colours

Colour code	Colour	Solid	Metallic
112	Slate Blue		Basic colour
116	Azure Blue	x	
117	Platinum Blue		Basic colour
120	Cochineal		Basic colour
127	Cherry Red	x	
129	Rose Quartz		Basic colour
131	Navy Blue	x	
140	Pine Green		Basic colour
153	Cirrus White	x	
155	Ivory	x	
168	Chestnut Brown	x	
170	Black	x	
172	Silver		Basic colour

No.	Lubrication point	Lubricant
1	Hood lock, hood hinge	Engine oil
2	Door hinge	Engine oil
3	Seat runners	Chassis grease
4	Reclining seat mechanism	Permanently lubricated; lubricate as necessary with thin penetrating oil
5	Door lock mechanism	Thin penetrating oil
6	Hinges, luggage compart- ment door	Thin penetrating oil
7	Luggage compartment door lock and mechanism	Thin penetrating oil

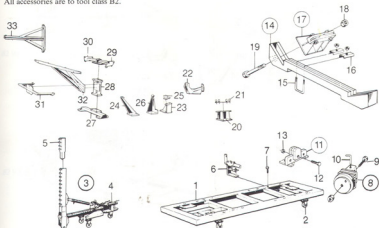
Tightening torque

Seat belt anchor bolts
 $45 \pm 10 \text{ Nm}$ ($4.5 \pm 1 \text{ kgf m}$)

Special tools

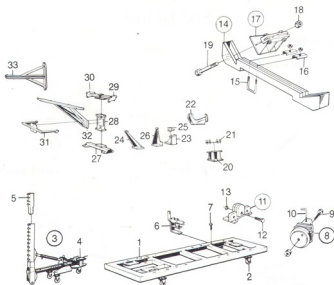
Aligning bench

Special tool for advanced bodywork
All accessories are to tool class B2.



S 8/083

Item	Part No.	Quantity	Description	Remarks
1	82 92 908	1	Aligning bench	
2	82 91 874	4	Casters	
3	82 91 973	1	Draw aligner assembly	
4	82 91 890	1	U bracket for draw aligner	Part of 82 91 973
5	82 92 153	1	Extension for draw aligner	
6	82 92 088	1	Mounting for pulling downwards	Part of 82 91 908
7	70 61 559	20	Bolts	
8	82 92 161	1	Draw aligner mounting, upper spring ratchet, LH and RH	
9	82 92 179	1	Bolt	
10	82 92 187	1	Locking pin	
11	82 92 237	1	Draw aligner mounting, upper control arm mounting, LH and RH	
12	82 92 260	1	Bolt	
13	82 92 278	1	Nut	
14	82 92 369	1	Anchor beam	Alternative to 82 90 298/306
15	82 92 377	1	U bolt	
16	82 92 385	2	Pads	
17	82 92 393	1	Body clamp	
18	80 74 148	1	Nut	
19	80 21 073	1	Bolt	



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Item	Part No.	Quantity	Description	Remarks
20	82 90 124	1	Front support, LH	Alternative to 82 92 369
20	82 90 132	1	Front support, RH	
21	82 90 439	1	Check support, LH front	
21	82 90 447	1	Check support, RH front	
22	82 90 298	1	Sill support, LH	
22	82 90 306	1	Sill support, RH	Alternative to 82 92 369
23	82 90 223	1	Support, centre floor, LH	Can also be used separately
23	82 90 231	1	Support, centre floor, RH	
24	82 90 421	1	Support, rear floor	
25	82 90 165	2	Check support, rear	
26	82 90 470	1	Support, rear wheel housing, LH	
26	82 90 488	1	Support, rear wheel housing, RH	
27	82 90 652	1	Intermediate piece	
28	82 90 660	1	Pillar	
29	82 90 678	1	Support, front bearing bracket LH	
30	82 90 686	1	Support, front bearing bracket, RH	
31	82 91 718	1	Fixture, steering gear mounting	
32	82 91 742	1	Fixture, front floor	
33	82 90 728	1	Fixture, engine mounting	



82 90 637 Fixture, front fender (B1)



78 84 166 Holder, door (B3)
82 90 561 Holder, door (B3)
78 84 182 Stay, holder, door (B3)



82 91 023 Installing tool decor strip, window glass (A2)



S 4741

82 91 767 Pad, front window (A2)
82 91 775 Pad, side window (A2)
82 91 551 Pad, rear window (A2)



82 91 577 Tool, luggage compartment lid spring (A2)

General

The car has a body of unit construction consisting of pressed sheet steel components. The various components are joined together mainly by spot welding, although continuous welding is also employed wherever it is more suitable. The stiffness of the body is achieved by a system of longitudinal and transverse members in the floor panel, to which the mountings for the power unit and suspension are connected. Sturdy steel sections in the windscreen pillars, reinforcing frames on the inside of the roof sides and around the doors, windows and other openings, and folded edges of the body components at which welding is carried out contribute to a large degree to the strength of the body.

It is impossible to describe clearly how the body will be deformed in the event of a collision, since this is dependent on the collision force and angle. In the most common situation, i.e. a collision from the front or rear, the bumpers will absorb a lighter impact. On heavier impact, the front or rear section of the body will be deformed. To improve the protection in the event of a collision from the side, the doors are reinforced by steel members at bumper height, and these distribute the forces to the edges of the door opening. The hinges for the bonnet, doors and luggage compartment lid are bolted to the body and include provision for adjustment in position.

Body insulation

The underbody is partially coated with a polyester compound and a viscous (non-penetrating) anti-corrosion agent. This treatment provides good protection against corrosion and also has a certain sound attenuating effect.

The interior and luggage compartment are insulated with bituminised felt mats, the sizes, weights and locations of which have been tested to ensure that they provide the best possible attenuation of sound and vibrations. The insulating mats on the floor and doors are fitted into place in the paint shop and are then fused to the surface by the heat in the drying furnace. Other mats are glued in position.

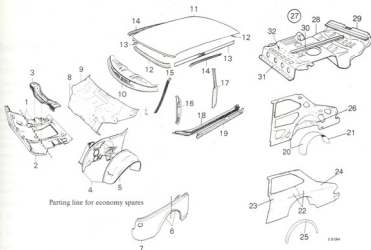
The underside of the bonnet is insulated with a plastic foam mat.

Body assembly

General

If any part of the body is damaged beyond repair in a collision, it can be replaced. This applies to all parts with the exception of the centre floor section, around which the entire body is built up.

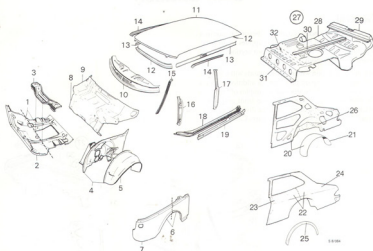
The pressed section with reinforcements will normally be available as a spare part, but, in addition, certain "economy spares" are stocked. Examples of these are the front sections of the wings, the front end of the engine compartment floor, and the divided rear side panel. For details, see the Spare Parts Catalogue.



Parting line for economy spares

Some typical body parts available as economy spares

- | | |
|---|---|
| 1. Front floor (engine compartment floor) | 11. Roof panel |
| 2. Front floor, front section (economy spare) | 12. Roof members |
| 3. Floor member | 13. Side members |
| 4. Front wheel housing cpl. | 14. Guttering |
| 5. Front wheel housing, outer section | 15. Front pillar |
| 6. Front wing | 16. Plate, front pillar |
| 7. Front wing, front section (economy spare) | 17. Rear pillar |
| 8. Bulkhead, lower section | 18. Scuff plate, inner section |
| 9. Bulkhead, upper section | 19. Scuff plate, outer section |
| 10. Windshield member | 20. Inner side panel with wheel housing |



- 21. Rear wheel housing, outer section
- 22. Rear side panel
- 23. Rear side panel, front section (economy spare)
- 24. Rear side panel, rear section (economy spare)
- 25. Edge of side panel in the wheel housing opening (economy spare)
- 26. Wheel housing bracket

- 27. Rear floor assembly
- 28. Rear floor panel
- 29. Sill
- 30. Reinforcing member
- 31. Cross-member
- 32. Transverse reinforcing member

Welds with safety requirements

The welds at several points in the body must be sufficiently strong to withstand the twisting loads and forces which can be generated in a collision.

Remember that:

- Welding primer should be applied between the panels to prevent corrosion weakening the panel around the weld.
- The new panel should be attached with as many spotwelds as the original had.
- Continuous welds should be at least as long as the original welds and sited in the same position.
- All welds should be properly fused with the metal.

Joining panels

If it is more economical to replace a section of a panel, rather than the complete panel, do so.

Cut away the damaged section and cut out a similar section from the new panel.

Note!

Some sections of the underside of the car are treated with polyester type underseal, see section 890 Surface Treatment.

Welding polyester-treated surfaces produces toxic gases which should not be inhaled.

Heat the polyester from the back of the plate in the area of the weld and remove with a steel scraper.

Always extract the air from the vicinity of the weld or wear a protective face mask (filter).

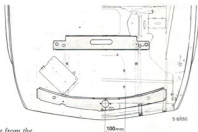
Remember that the joint should be positioned:

- Where the length to be welded is the shortest possible.
- Where the joint is the least visible.

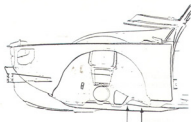
Two panels should always be joined with a continuous weld unless otherwise stipulated.

On the following parts, cuts may only be performed in the places indicated.

Engine member



No joints within this zone from the engine mounting



Joints may only be made within this zone

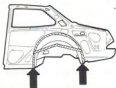


Front pillar



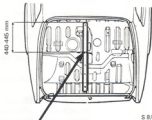
Rear pillar

Wheel housing bracket



To obviate the need to divide the inner and outer wheel housing sections, the bracket ends can be cut and welded at the wheel housing joints

Impact-absorbing member



S 8/023

A joint may be made adjacent to the floor panel

Surface treatment in conjunction with body repairs

It is important that surface treatment is also performed on those places which are not painted.

Examples include cavities, joints and metal surfaces covered with filler.

Materials: (welding primer, sealing compound, filler, etc.).

Always use well-known brands and carefully follow the manufacturer's instructions.

The paint shop should be consulted so that the correct materials are used for the subsequent surface treatment. This can reduce disputes in the event of claims being made, e.g. over bubbles forming in the paintwork due to the filler not being compatible with the paints.

Thinners

It is important that an effective cleaner is used to remove grease and excess welding primer from the metal so that it provides a good key for filler, sealing compound and paint.

Caution

Use no other liquids for the final cleaning. Always use a clean cloth for drying.

Welding primer

Welding primer must be applied to the edges of the metal before they are welded together.

Remove the paint from the edge of the new section so that good electrical contact is obtained.

File the corresponding surface so that the old spot welds are levelled with the surface. Remove any paint, oxidation or rust from the metal.

Clean the surfaces of the metal and immediately apply the welding primer.

Wash off excess welding primer after the edges have been welded together.

Note!

Welding primer on the metal provides a poor key for filler, sealing compound and paint.

Cleaning welds and tempered surfaces

Welds of satisfactory appearance or of no cosmetic importance can be brushed clean instead of being filed. Use a circular wire brush. Remove all slag and mill scale.

Paintable sealing compound

Metal seams and joints sealed from the factory should be re-sealed after repair so that water cannot enter the joint, or the car through the joint.

Clean the metal surface round the joint or seam.

Apply the paintable sealing compound.

Important

It is difficult to apply paint to the edges of the metal, and rust therefore forms rapidly.

This is one of the reasons why folded metal edges should be covered, e.g. on doors and the luggage compartment lid.

Filler

Small irregularities in the surface of a panel should be made good with filler, so that a smooth surface is achieved. The best results are obtained using a polyester filler e.g.

Herberts Stando Soft Plastic with hardener.

Roughen the surface and clean the metal to be treated with the filler.

Mix the filler and hardener together carefully. A correct mix is indicated when the red hardener is evenly distributed.

Apply the filler and work in from all angles. Hold the spreader at right angles to the metal surface to ensure good application.

Repeat the procedure for any subsequent layers. Clean the surface, prepare the filler, apply it and work it in carefully.

Important

Clean the surface with thinner before applying each layer of filler. Even small quantities of oil from the skin can cause blisters in the drying oven and reduce adhesion.

Do not use excessive hardener. Excess hardener is not utilized in the hardening process and simply reacts with the finishing coat causing discolouration. Follow the manufacturer's instructions carefully.

Aligning bench

Description of aligning bench and draw aligner

A description is available of the aligning bench with accessories and the draw aligner. This can be ordered from Saab-Scania in Nyköping and the part No. is 101733.

The draw aligner is secured directly to the aligning bench, which makes it easier to work with. The aligning bench is equipped with four casters, on which it is designed to stand even during aligning work.



Draw aligner

Draw aligner

The Caroline draw aligner, in a version designed specially for this alignment jig, is equipped with a hydraulic cylinder which can apply a load of ten tonnes. The draw aligner is mounted on castors and can be secured at any point round the frame of the jig. It is secured to the jig by means of a forked bracket and a locking pin. It is of the utmost importance that this always be locked securely during operation of the draw aligner.

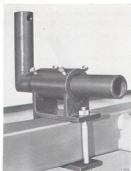


Draw aligner



Extension piece mounted to draw-aligner arm for the application of loads at roof height

Accessories



Side support



Loads may be applied in an upward direction by means of an additional hydraulic cylinder and an extension piece



Side mounting used for application of downward load

Mounting the car in the jig

The simplest method of mounting the car in the jig is to use a side car hoist with one or two pillars.



Mounting the car in the jig

The car can also be mounted in the jig by hoisting it onto high trestles by means of a high-lift jack, and then rolling the jig in under the car. A side lifting ramp should then be used to lift the car onto the jig mountings.

Checking body dimensions

If any part of the body has had to be renewed or straightened, it is important to check the measurements of the door openings and the attachment points of the suspension and power unit. Diagonal measurements should also be made to check that there is no residual skew or asymmetry after repairs.

Measuring system

The direction of measurement is specified in the table of dimensions in the column headed "Measure" in accordance with the coordinate system.

Direction of measurements in accordance with the coordinates in the table

- X = Longitudinal axis of the body
 Y = Transverse axis of the body (left to right)
 Z = Height axis of the body
 Every coordinate starts from a zero point.
 XO (zero) cannot be used in practice and is therefore not specified.
 YO (zero) is specified. The line divides the body into the left-hand and right-hand halves.
 Width dimensions are always specified between two points. If this facilitates the work, one side can be measured by halving the dimension and tolerance and starting from YO.
 ZO (zero) is specified. The starting position is the underside of the sill members (see Fig. 4). All dimensions in the table are measured upwards.
 This is why no + (plus) or - (minus) sign is specified.

Other indications

"Hc" in the text specifies that the hole centre + is taken as the starting position for the measurements.

1. in the "Measure" column indicates a design dimension
2. in the "Measure" column is the actual dimension, generally direct diagonal dimension
3. in the "Measure" column specifies the tolerance for the best fit.

Item	Figure	Dimension, mm, and tol.	Measurement points	Measure
1	1. 2	4284 \pm 10	Total length, items 2-5	X.1
2	2	625 \pm 3	YO-Hc, front control arm hole	X.1
3	2	269.6 \pm 1	Hc, front-rear control arm holes	X.1
4	2. 7	1883 \pm 2	Hc, rear control arm hole-Hc, front control arm hole	X.1
5	2	1506.1 \pm 4	Hc, spring arm hole - YO	X.1
6	2	1100 \pm 3	Front floor	Y.1
7	1. 3	1260 \pm 3	Distance between bonnet mountings	Y.1
8	2	779 \pm 3	Hc, outer control arm hole	Y.1
9	1	312.5 \pm 3	ZO-YO, top edge member in the centre	Z.1
10	1	143 \pm 3	ZO-Top of front engine mounting	Z.1
11	1	167 \pm 3	ZO-Top of rear engine mounting	Z.1
12	2	2096 \pm 3	Hc, rear outer control arm hole - Hc, front spring arm hole	X.2
13	2. 4	1180 \pm 4	Sill beam, inside top edge	Y.2
14	4	1336 \pm 4	Sill flange	Y.2
15	2. 7	1060 \pm 3	Hc, spring arm hole	Y.1
16	2. 7	986.9 \pm 3	Hc, mounting of transverse member - Hc, front spring arm hole, RH side	Y.2
17	2. 7	448 \pm 2	Hc, mounting of transverse member - Hc, front spring arm hole, LH side	X.2

Item	Figure	Dimension, mm, and tol.	Measurement points	Measure
18	2. 7	416.5 ± 3'	Centre in the mounting of transverse member - Hc, front spring arm hole LH side	X.1
19	2. 7	144 ± 2	Hc in the centre of the mounting of the transverse member - sheet edge in floor opening (ref. point 20)	Y.1
20	2. 7	33 ± 1.5	Opening in the rear floor	
21	1. 7	136 ± 2	ZO-Hc, mounting of transverse member	Z.1
22	1	1200 ± 3	Rear floor	Y.1
23	1. 4	80 ± 3	ZO-upper surface of sill	Z.1
24	5. 8	1301.7 ± 4	Hc, front spring arm hole - Hc, centre hole YO	X.2
25	5	276.8 ± 4	ZO-Top of cross-member at YO	Z.1
26	5	318.8 ± 4	ZO-Top of connection panel at YO	Z.1
27	5	489 ± 4	ZO-Rear corner in the lid opening, measurement point as point 34	Z.1
28	5	504.8 ± 4	ZO-"Waist line", rear corner	Z.1
29	1	171 ±2 -1	Bottom edge of lamp opening - rear corner of lid opening	Z.2
30	5. 8	1584.4 ± 4	Hc, front spring arm hole - Hc, hinge pin hole	Y.2
31	5. 8	1044 ± 4	Hc, hinge pin hole - Hc, centre hole YO	Y.2
32	5. 8	687.4 ± 3	Hc, centre hole - bottom edge of lid gutter in line YO	X.2
33	5. 8	808.7 ± 3	Rear corner of lid opening - Hc, centre hole YO	X.2
34	5. 8	1535 ± 5	Corner of lid opening - Hinge pin hole	Y.2
35	8	1375.6 ± 4	Distance at holes, hinge pins	Y.1
36	8	1321.6 ± 4	Distance at holes, seat belt guides	Y.1
37	8	1321 ±4 -2	Rear edge of lid opening	Y.1
38	5. 8	657 ±3 -1	Height along glass surface at YO	X.1
39	1	545.5 ± 3	Height along glass surface at YO	X.1
40	1	236.9 ± 3	Bulkhead - Windscreen member at YO	Z.2
41	1	1457 ± 6	Longest dimension in radii	2.3
42	1	1197 ± 6	Longest dimension in radii	2.3
43	3	677.5 ± 3	Upper control arm mounting, upper front hole	Y.1
44	6	30 ± 2	Hc, YO - Hc, front engine mounting	Y.1
45	6	516 ± 3	Hc, rear engine mounting	Y.1
46	6	687 ± 3	Hc, front engine mounting - Hc, line through the rear engine mountings	X.1
47	4	1595 ± 3	Inside of the sill flange - roof side member flange, inside	Z.2
48	4	1152 ±2 -6	Insides of roof side members	Y.2
49	2	13 ±2	VO-Hc, line through the holes in the reinforcing member	Y.1

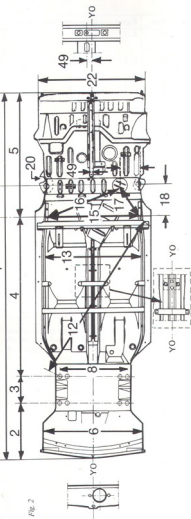
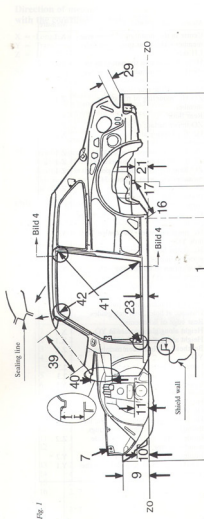


Fig. 5

Fig. 4

Fig. 3

Fig. 3

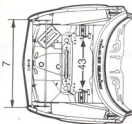


Fig. 4

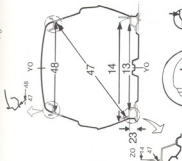


Fig. 5

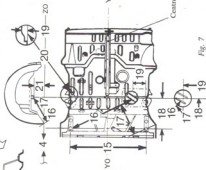
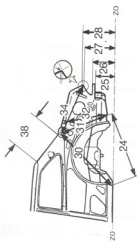


Fig. 6

Fig. 7

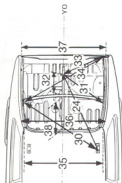


Fig. 8

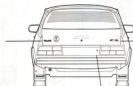
Emblems and mouldings

Emblems

The emblem in the centre of the bonnet is secured by means of clips. Others are secured to the paint by means of tape. These are fitted in the positions shown in the picture.



The bonnet emblem is secured by means of clips.



Mouldings

Car equipped with front spoiler

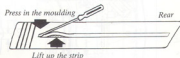
The spoiler is extended and is secured at the wheel opening. The rear moulding has been replaced by the bumper extension. It is mechanically secured by means of a screw.

Remove the moulding by pressing in carefully with a broad screwdriver so that the strip is bent out.

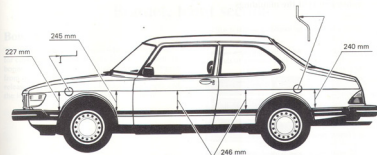
Other mouldings are secured to the paintwork by means of tape.

Car without front spoiler

All mouldings are secured to the paintwork by means of tape.



Note
Nom
strip
deco



Note

Nominal dimensions. Tolerance ± 2 mm. The bright strips must be in line with one another and with the decorative strips in the bumpers.

To remove and refit the mouldings

To remove

1. Use an air to heat the moulding so that it will be easier to remove.
2. Detach the moulding by introducing a scraper under the lower edge. Take care not to damage the paintwork.

Before refitting

Use benzine to remove all dirt, grease and adhesive from the bodywork.

Mark the position of the moulding with a pencil. **Do not use a felt-tip pen.**

For nominal dimensions, see diagram.

If the old moulding is to be refitted, remove the old adhesive tape, thoroughly clean the contact surfaces and fit a new length of tape.

To refit

1. Use an air heater to heat the moulding until it is sufficiently pliable (160–175°F/70–80 °C). Note that the best results are obtained if the metal is at room temperature (68 °F/20 °C approx.).
2. Remove the protective foil from the adhesive tape and then press the moulding into position. Use a strong roller to apply a pressure of at least 22 lb (100 N; 10 kg). Ensure that the ends of the moulding are securely stuck down.

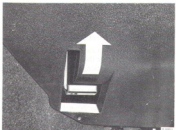
Bonnet, front section

Bonnet

The bonnet locking mechanism is located on the radiator cross-member and locks the bonnet pin when the bonnet is closed. A safety catch prevents the bonnet from opening when the locking mechanism has been released. The bonnet pin is adjustable in length and the locking mechanism is adjustable sideways.

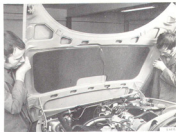
The lock can be operated by means of a cable connected to a disengaging lever located on the left-hand side, below the fascia.

If the release mechanism should fail so that the main catch cannot be operated from the inside of the car, a suitable tool can be inserted through the grille to press the catch to the right.



To remove

1. Disconnect the windscreen washer hose at the branch.
2. Hold the bonnet steady and remove the bolts at the hinges.
3. Lift off the bonnet and preferably suspend it. Refit in the reverse order. The bonnet fit can be adjusted by changing its position at the mounting bolt holes.

**To adjust the bonnet locking mechanism**

The locking mechanism can be centred in relation to the bonnet pin. Remove the grille and release the two retaining bolts of the locking mechanism. The locking mechanism can then be moved.

The height of the bonnet can be adjusted by first backing off the bonnet pin lock nut and then screwing the pin out or in until the bonnet is held securely in position when it is in the locked position.

Grille

The grille is made of thermoplastic material and consists of three parts, i.e. the centre section and two outer sections which also serve as the headlamp frames. The outer and centre sections are held together by means of pins and can be dismantled.



To remove

1. Run the headlamp wipers and switch off the ignition so that the blades will be parked in the centre of the lenses.
2. Open the bonnet and remove the two screws holding the centre section to the radiator cross-member.
3. Remove the screws retaining the headlamp frames on each side and make sure not to lose the spacer tube on the inside of the frame.
4. Disconnect the frames from the centre section and disconnect the washer hoses.
5. Remove the centre section upwards. Take care not to lose the bushes (three) in the front cross-member.

Radiator cross-member**To remove and refit**

1. Remove the bonnet.
2. Remove the grille.
3. Undo the self-tapping screws that secure the headlights to the radiator cross-member and the screws at the top outer corners of the cross-member.
4. Undo the bolts that secure the cross-member to the front cross-member on either side of the radiator.
5. Undo the radiator retaining bolts.
6. Disconnect the bonnet release cable and disconnect the headlight washer hoses from their attachment points on the radiator cross-member. Lift the radiator cross-member away slightly to reach the ball joint of the wiper mechanism and take it apart. The radiator cross-member can now be removed.

Refit in the reverse order.

Doors and lids

Front door

To remove and refit

To remove the door, undo the six bolts fastening the hinges to the body. The door can then be taken out complete with hinges. Hang the door in the reverse order.



Adjusting of doors

To maintain the fit of the door on final assembly, the hinge is dowelled to the body and this dowel must be removed before any adjustment.

To adjust the flush fit of a door, slacken the hinge bolts in the pillar. The door can then be moved outward or inward on the slotted holes in the hinges. To adjust the position of the door upward, downward, forward or backward, slacken the hinge bolts in the door. These bolts can be reached if the inside door trim is removed.

Use the sleeve with Higrip no. 8. (An Allen key can also be used but it grips less well.)



S 8 067



Lubrication of hinges

The tops of the hinge pins are provided with lubrication grooves. Lubricate the pins with engine oil.



Lubricating the bottom front hinge through a hole in the door pillar.

Adjusting door striker plates

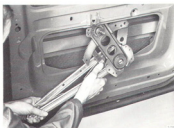
The striker plate is adjustable and can be moved if the retaining screws are slackened. Adjust the plate so that it does not force the door either upward or downward. Check at the same time that the door opens and closes easily.



Removing and fitting window regulators

Remove the door trim and the window. Undo the four screws fastening the window regulator to the door and lift out the regulator.

Refit in the reverse order.



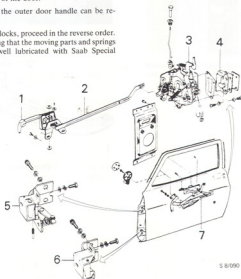
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Changing door locks

1. Crank the window all the way up.
2. Remove the lock button and the inside door trim.
3. Turn the lock mechanism to the closed position and unscrew the three retaining screws from the lock.
4. Door lock with tie-bar operation: Unhook the rear part of the operating link on the door lock. Unfasten the link to the lock cylinder.
5. Remove the lock. Back off the outer handle retaining screws slightly so that the handle can be wiggled when the mechanism is removed. One of the screws is inside the door and the other is on the rear edge of the door.
6. If necessary, the outer door handle can be removed.

To fit handles and locks, proceed in the reverse order. Check before fitting that the moving parts and springs of the lock are well lubricated with Saab Special chassis grease.



Front door components

1. Inside door handle
2. Operating link
3. Door lock
4. Striker plate
5. Top hinge with door stop
6. Bottom hinge
7. Window regulator

Door handle

To remove and refit

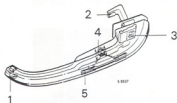
1. Remove the door trim.
2. Remove the front screw of the door handle inside the door. Back off the rear screw of the door handle (in door edge) about four turns.
3. Separate the handle from the door using tool 89 95 607 to draw the door lock lever to the side. Turn the handle and withdraw it diagonally upwards and towards the rear.

Refit in the reverse order.



Dismantling and assembly

The operating lever is kept in position by means of a plastic retainer, which is fixed to the handle by peening.



Door handle

1. Bearing
2. Slide pad
3. Guide
4. Spring
5. Spring guide

Door lock cylinder

Removing

1. Crank the window all the way up.
2. Remove the inside door trim.
3. Unhook the link rod from the plastic arm of the lock cylinder.
4. Remove the lock clip using polygrip pliers and remove the entire lock cylinder.



Dismantling and assembly

1. Prise off the driver and remove its lock ring.
2. Remove the plastic arm and the spring.
3. Withdraw the lock cylinder from the lock sleeve. Leave the key in the lock cylinder as long as it is withdrawn from the lock sleeve or the lock cylinder may fall apart.
4. Remove the O-ring.

Note

The key in the new lock cylinder must not be withdrawn before the lock cylinder is fitted in the lock sleeve.

Note

The lock ring should be changed after having been removed.

Re-assemble in reverse order.

Keys

Two keys are supplied with the car. Both fit the ignition switch and all locks.

Spare parts

If the lock cylinder in the ignition switch, the luggage compartment lock or any door is damaged, a replacement cylinder can be ordered by quoting the serial number of the key and the spare parts number (see Spare Parts Catalogue). The system of master keys fitting all locks can thus be maintained without the need to fit a new set of locks to the car.



Door lock

1. Lock ring
2. Driver
3. Plastic arm
4. Spring
5. Lock clip
6. Gasket
7. Locking sleeve
8. O-ring
9. Lock cylinder
10. Key

Luggage compartment door

To remove and refit

1. Detach the cable from the connector by the left hinge plate by loosening the door switch screw so that the lever can be extracted. Detach the cable clip from the hinge mounting.
2. Remove the four nuts holding the door on the hinge mountings.

Refit in the reverse order.



To adjust

Lateral adjustment is performed by loosening the nuts which hold the door on the hinge mountings and subsequently moving it laterally in the bolt holes. Longitudinal and height adjustment is afforded by the hinge holes once the nuts have been loosened. See also "Striker plate: to adjust".



Hinges, to remove and refit

To remove

Remove the door from the hinges. Remove the rear seat belt mounting plates. Remove the trim pad from the C pillars. Remove the four parcel shelf retaining screws and remove the shelf. Remove the wheel housing trim retaining clip and expose the hinge attachment point. Remove the spring using tool 82 91 577 and a screwdriver.



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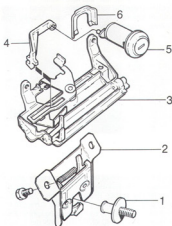
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Luggage compartment door lock

To remove

1. Release the lock cylinder by removing the clip. Use a screwdriver to remove the link from the driver ball. Extract the cylinder.
2. Remove the screws holding the lock mechanism and handle. Remove the lock mechanism. Remove the handle by passing it between the inner and outer panels.

Refit in the reverse order.



S 8 010

Lock, Trunk Lid

1. Striker plate
2. Lock assembly
3. Operating link
4. Tie rod
5. Lock cylinder
6. Circlip

Striker plate: to adjust

The striker plate, which is in the form of a socket-head screw, can be adjusted in its free fit mounting hole once it has been slackened using a hexagonal key.

The pressure of the luggage compartment door against its contact surface, its seal and position can also be adjusted using the two adjustable stops. These are screwed in or out until the correct position is obtained.



Note

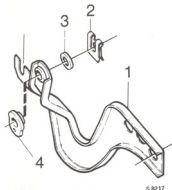
If the link for tool 82 91 577 is equipped with S hook, the same size as the link, and then rotated, a direction of pull will be in line with the spring, which will greatly facilitate removal and refitting. Remove the clip from the hinge pivot and remove the hinge.



To refit

Check the condition of the plastic bush and replace if necessary. Refit the bush on the hinge pivot. Refit the hinge and the washer. Replace the clips.

Apply a small amount of grease to the surface of the hinge which comes into contact with the spring. Refit the spring using tool 82 91 577. Normally the spring is hooked in the middle hole. The opening force of the hinge can be increased or decreased by fitting the spring to the outer or inner hole. Refit the parcel shelf, pillar trim and seat belt mounting plate.

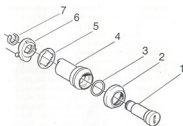


Hinge

1. Hinge
2. Circlip
3. Washer
4. Plastic bush

Lock cylinder, to replace

The key should be inserted before dismantling the lock to prevent the cylinder components from separating. Use two screwdrivers to spring the driver off the cylinder. The cylinder is now free and can be removed from the sleeve. A new plastic lock ring must be fitted on the barrel when assembling the lock because the old ring is damaged when dismantling. Once the lock ring has been fitted the cylinder is inserted into the sleeve and the driver pressed on.



Lock cylinder assembly, luggage compartment door

1. Lock cylinder assembly
2. Bezel
3. Seal
4. Sleeve
5. Spacer
6. Driver
7. Circlip

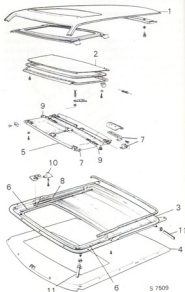
Sunroof

The sunroof is opened and closed by sliding the handle backwards or forwards. Once the handle is released, it will spring back to its central position (locking position) whereupon two locking devices, equipped with toothed segments, will extend outwards to engage in the toothed guide rails, mounted one on each side of the opening. The sunroof consists of a panel equipped with a locking mechanism and guides, concealed beneath the sunroof top. The underside of the panel is clad in the same material as that of the headlining. The sunroof cassette is screwed to the car-roof which is equipped with a special mounting frame. Mounted in the cassette are runners and toothed racks. Rubber drainage hoses run from the frame corners. The two front hoses run down through the corner pillars.

The two rear hoses run down through the rear corner pillars and discharge behind the rear wheel housings. Access to the drainage hoses can be gained after the sunroof lining has been removed. The front edge of the roof opening is raised slightly and serves as a windbreak.

To obviate noise or rattles from the sunroof, the following points should be observed:

1. The catch pull rods should be clear of the panel.
2. The lateral play of the sunroof should not be excessive.
3. The sliding pins should be secure and undamaged.
4. The toothed guide rail should be installed so that the rear mounting is under spring tension. (Guide rails that have previously been used should be bent so that spring tension is obtained.)
5. The U stirrup at the handle should be installed with outwards-acting spring loading (i.e. the arms should be bent outwards before attachment to the handle.



Sunroof

1. Roof panel with frame
2. Sunroof top
3. Mounting cassette
4. Headlining
5. Panel
6. Runners
7. Guide clips with studs
8. Toothed rack
9. Catch
10. Rear guide shoe
11. Drainage hoses



Removal

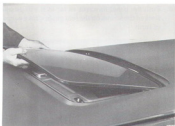
1. Slide the sunroof and remove the four screws in the front edge.



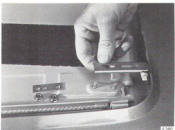
2. Slide the roof forward until the opening is about 3/4 in (2 mm) wide.

3. Slightly raise the front of the sunroof top and slide the roof all the way forward. Remove the sunroof top by pulling it forward and upwards, thereby releasing the back.

Take care not to scratch the paintwork.



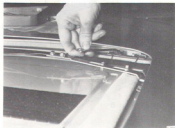
4. Remove the front guide clips.



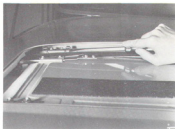
5. Bend back the locking plate and remove the nuts from the catch. Bend the pull rods up slightly and disengage the catches from the teeth. Retain the springs, leaf springs, mountings, plastic bushings and sleeves.



6. Push the panel forwards as far as it will go and slacken the screws on the rear guide clips a couple of turns.



7. Push out the guide clips.



8. Raise the front edge of the panel, pull forwards and remove the entire panel.

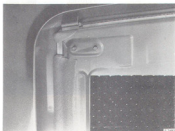


Installation

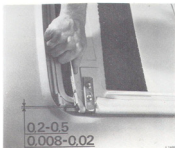
Lubrication

Lubricate all bearing points with VASELINE

1. Place the panel in position with the rear guide clips loosely fitted (extended) and the retaining springs for the sunroof top installed.
2. Position the panel against the front stop pins. Centralize the panel laterally in relation to the stop pins and the sunroof aperture.



3. Insert the front guide clips and tighten the nuts until a clearance of between 0.2 and 0.5 mm is obtained.



4. a. Insert the rear guide clip (while the front edge of the panel is still against the stop pins) and fit the screws loosely.



4. b. Press gently from below against the rear edge of the panel so causing it to bend enough to allow the guide clips to be pushed back enough to provide a little play.



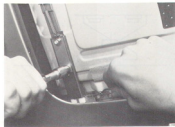
4. c. Tighten the rear guide clips.



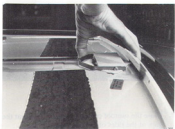
5. Fit the catches.



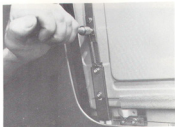
6. a. Adjust the catches laterally so that the distance between the edge of the mounting and the top of the teeth on the toothed racks is $\frac{3}{4}$ – $\frac{1}{2}$ in (1–1.5 mm). Use a piece of wire $\frac{3}{64}$ 1/16 in dia. (1.1.5 mm) as a gauge.



6. b. Hold that catch handle as far forward as it will go and check that the play between the top of the teeth on the toothed racks and the catch is $\frac{3}{64}$ – $\frac{1}{16}$ in (1–1.5 mm). Use a piece of wire as a gauge. Adjust the pull rods if required.



7. Fit the sunroof top (with the panel as far forward as possible). Insert the leaf springs at the rear of the cover plate and press downwards and backwards under the spring clips at the rear of the panel.



8. Carefully slide the sunroof back. (Note. Check that the sunroof runs clear of the mounting frame). Refit the four screws in the front edge of the sunroof.

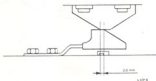


9. Close the sunroof completely and check that the gaps at the sides of the panel are equal. Check that the rear edge of the sunroof is flush with the roof of the car.

Adjusting the height of the rear edge of the sunroof during closing

Slightly before the sunroof closes, the rear end should slide up at the correct moment to come flush with the roof of the car. This is controlled by the guide shoes on either side of the sunroof.

- A. When the sunroof is closed, the adjustable guide shoe should overlap the top of the fixed guide shoe by about 0.08 in (2 mm).



- B. When completely closed, the rear edge of the sunroof should be flush with the roof of the car. Adjust by removing the sunroof top and turning the adjusting screw in the underside of the guide shoe. The guide shoe can be slid out of its mounting. (Note. Tape the aperture edge which comes into contact with the screwdriver to protect it from damage.)





Removing the sunroof assembly complete

After the headlining has been removed, the sunroof frame and entire assembly can be removed as follow: Remove the four drainage hoses from the corners of the sunroof frame and remove the screws securing the sunroof frame to the roof mounting frame and then lower the sunroof frame.

When refitting, check that the weather strip between the sunroof frame and the car roof is undamaged and correctly fitted.



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Windows

General

The windshield is made of laminated glass and all other windows of toughened glass. When fitting new windows, use only Saab original parts to ensure approved glass quality and a perfect fit.

Windshield and moulding

The windshield can be changed without removing the rubber moulding from the body.

If the windshield moulding has been removed, apply sealing compound to the roof and windshield cross-member, in order to avoid wear damage to the paintwork. The moulding includes a water drain passage. Any water that may seep in is drained through holes in the corners of the windshield cross-member. So never apply sealing compound onto the windshield pillars. If the windshield moulding has come away from the body, proceed in the same manner as for fitting the rear window.



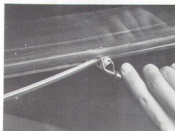
Draining holes in the body

To remove

1. Raise the windshield wiper. Crank the door windows down.
2. Remove one of the connecting pieces for the windshield moulding and mark the end position of the moulding on the rubber strip with a pen. Remove the moulding.
3. Remove the moulding from the windshield by inserting a properly bent special tool under the strip and sliding it along the moulding.
4. Push out the upper left corner of the windshield by pressing carefully from the inside.
5. Free the upper edge and the sides of the windshield from the moulding.
6. Free the bottom edge of the windshield. Remove the windshield.

To refit

1. Adjust the moulding so it follows the windshield frame.
2. Apply paraffin oil to the moulding to facilitate the installation of the windshield.
3. Place the new windshield on the moulding and align the windshield in its proper position in the frame.
4. Fit the bottom edge and corners of the windshield into the moulding using the special tool.
5. Fit the top edge of the windshield into the moulding. Begin by pulling out a small bit of the rubber edging from the inside of the windshield about 6 in (15 cm) from a corner. Complete the fitting of the moulding and make any necessary adjustments.
6. Apply seoding compound under the moulding at the roof and at the windshield cross-member if the moulding has been removed.
7. Apply paraffin oil in the groove for the windshield moulding to facilitate fitting.
8. Fit the moulding using tool 82 91 023. Begin at the mark made previously on the rubber strip. Complete the fitting of the moulding.
9. Clean off any excess sealing compound with a wooden putty knife.
10. Clean with undiluted methylated spirits.
11. Clean the inside and the outside of the glass with window cleaning liquid.


*Fitting the decorative strip**Tool 82 91 023***Rear window**

To prevent wear of the paintwork by the moulding, apply sealing compound between the moulding and the body.

To remove

1. Remove the joint piece and the decorative strip.
2. Prise the lip of the moulding away for the rear window.
3. Disconnect the heating wire connections for the rear window.
4. Start pressing the window from the inside outwards at one corner. Continue pressing around the edges until the entire moulding is free from body.

To refit

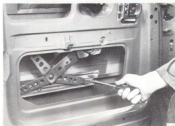
1. Apply tape to the trim around the opening to prevent soiling of the headlining, etc.
 2. Apply paraffin oil to the inside of the moulding to facilitate fitting.
 3. Fit a new moulding round the window and lay a piece of string in the slot in the moulding. Leave the ends of the string in the middle at the bottom of the window.
 4. Check that there is tape around the edge of the window opening. Apply new tape if the original tape has come off or is damaged.
- 
5. Place the window in position.
 6. Pull on the string from the inside of the car so that the edge of the moulding will fold in over the edge of the frame. Start from the middle and work towards the sides while pushing the glass down towards the edge of the frame. Continue around the whole rear window and ensure that the inside flange of the moulding overlaps the inside of the frame all the way around.
 7. Apply sealing compound between the moulding and roof.
 8. Fit the trim moulding using tool 82 91 023. Connect the heating wires for the rear window.
 9. Clean off any excess sealing compound with a wooden putty knife.
 10. Clean with undiluted methylated spirits.
 11. Fit the padding.
 12. Clean the inside and outside of the glass with window cleaning liquid.

Door, window

The door window is clamped at the bottom in a U-shaped retainer with a slot for the operating arms of the window regulator. The leading and trailing edges of the panel are located in U-shaped runners inside the door.

To remove

1. Take off the inside door trim.
2. Remove the inner longitudinal weatherstrip at the bottom of the window opening.
3. Remove the two setscrews holding the window retainer to the window regulator.



4. Rotate the pane to the vertical position and remove it.



5. Remove the retainer from the pane (if necessary).

To refit

1. If the pane has been removed from its retainer, start by fitting the rubber pad to the pane and pressing on the U-shaped retainer. Make sure that the retainer grips the pane securely. The measurement shown in the illustration must be exact, as the window will otherwise be difficult to operate.

When refitting, check that the retainer is pressed on evenly. If, for instance, the middle of the retainer is pressed on harder than the ends, the retainer can be deformed, with the result that the glass will come away from the retainer.



S 9/022

Dimension for mounting the window pane retainer.

2. Lower the pane vertically into the door with the retainer to the rear and work it round into the horizontal position.
3. Fit the pane to the regulator arm.
Wind up the window once so that it is properly seated in the grooves and tighten the screws.
4. Fit the weather strip at the bottom edge of the window opening.
5. Check the operation of the window and refit the door trim.

Rear view mirrors

To remove and refit

1. Remove the handle.
Remove the plastic clip and the bezel.



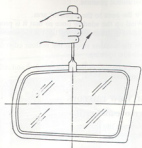
2. Remove the two mirror retaining screws.



To replace the mirror glass

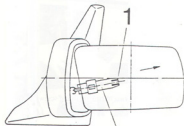
To remove

1. Rotate the mirror so that a screwdriver can be inserted between the glass and the upper edge of the holder.
2. Prize out the mirror glass. The screwdriver should be inserted in the middle of the upper edge of the glass to avoid unnecessary tension.
Note: The plastic moulding is very brittle at low temperatures.



S 8232

3. Position the mirror so that the rear side is visible and the runner comes into contact with the stop on the plastic arm.

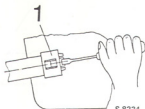


S 8231

1. Stop
2. Arm

4. Use a screwdriver to depress the stop and remove the glass

Refitting is the reverse of the removal procedure. Press the *middle* of the glass when refitting the mirror. Lubricate the joints and ball cup if required.



S 8234

1. Runner

Upholstery and interior fittings

Door trim

The door trim is stretched over a fibreboard and hard-board backing and is secured to the door by screws and conventional snap fasteners.

To remove and refit

1. Remove the crank bezel using a small screwdriver. Remove the retaining screw and remove the crank.



2. Remove the locking knob.
3. Remove the armrest.
4. Remove the screw at the front edge of the trim.
5. Remove the cover plate under the inner door handle and carefully free the snap fasteners, by pulling the trim away from the door. When all the snap fasteners have been freed, lift the trim off the door.

Refit the trim in the reverse order.

Make sure that the holes on the inside of the door are covered with felt with the bottom edge of the felt inside the door (to protect the inside trim from getting wet).



Rear side trim

The side trim is stretched over a frame consisting of a fibreboard sheet at the bottom and a moulded board at the top.

To remove the side trim, proceed as follows:

1. Undo the strap cover and the seat belt mounting at the floor.
2. Remove the cover of the lug on the door pillar and unbolt the lug mounting.
3. Remove the strap guide from the side trim.
4. Unsnap the snap fasteners holding the side trim and ease the trim out carefully without damaging the rear seat cushion or backrest. Withdraw the strap, lug and mounting through the hole in the armrest.

Refit in the reverse order.



Headlining

The headlining is made of moulded glass fibre covered with velour. During transport the lining is covered with plastic which should be removed after the lining is mounted in the car. Because of its rigidity, the lining is sensitive to breaking, especially around the edges of the recess for the dome lamp and the sun visors. The fitting of the lining must therefore be made with great care.

To remove

1. Open the left door. Remove the left seat and lower the backrest of the right seat.
2. Put the gear lever in reverse.
3. Remove the rear view mirror, the roof light, the sun visors and the grab handles and the coat hooks.
4. Remove the seat belt mountings on the door pillars and remove the padding.
5. Remove the screws and the clips from the padding at the windshield pillars and move the pads inwards.
6. Free the headlining from the padding at the rear window by moving the lining forwards. Now lift out the lining through the left door.



To refit

If the windshield or rear window has already been removed, pass the lining through the window opening.
Note: Leave the plastic cover on the lining during fitting.

1. Put the gear lever in reverse. Pass the lining in through the left door if neither the windshield nor the rear window has been removed.



2. Lift the lining onto the front pillar padding and slide it backwards until it comes to a stop above the rear padding. Feed the electric cables for the dome lights through the openings in the lining.



3. Screw the padding to the windshield pillars and door pillars.



4. Fit and connect up the dome lamps, fit the rear view mirror and sun visors.



5. Check that the lining has been correctly fitted. Removed the safety pins in the plastic cover and tear off the cover from the sides and around the rear view mirror, sun visor attachment points, the grabhandle and dome light. Pieces of plastic visible at the edges can be tucked back between the lining and the roof (use a small putty knife or the like).

N.B. To prevent the headlining from being soiled by adhesive when a window is being fitted, cover the edges with pieces of plastic.

Seats and carpeting

Seats

General

The front seats are built up on a sheet steel frame to which the backrests are mounted. The upholstery consists of moulded rubber cushions laid on rubber sheets and covered with textile and plastic-coated fabric. Both front seats are mounted on rails to allow legroom adjustment.

At the front of the driver's seat, between the rails, is the bar for adjusting the seat height. The ends of the rails at the back of the seat are supported by a bracket with two notches in it. Operation of the adjusting bar enables the seat to be raised or lowered, and the front and back of the seat cushion to be raised or lowered independently. Underneath the seat rails at the back is a system of springs which assists adjustment of the seat height. The adjusting bar is operated by a handle with a catch which is released when the handle is depressed.

To enable rear-seat passengers to enter or leave the car, the front seat backrests can be folded forward after releasing the catch by one of the release levers. The one at the side of the seat is for operation from outside the car, while the one at the back of the seat is for operation by a rear-seat passenger. The driver's seat is electrically heated. The heating elements, in the seat cushion and backrest, incorporate resistance wires and reflectors assembled in a plastic net and connected to the ignition switch across a thermostat. The heating elements will come on if the ambient temperature falls below about 12 °C. The thermostat, which is fitted in the seat cushion, will break the circuit when the temperature rises above approximately 27 °C.

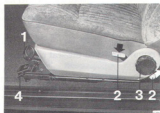
To remove and refit

Driver's seat

The driver's seat is removed and refitted complete with the slide rail assemblies.

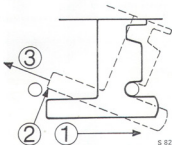
1. Slide the seat right back as far as it will go.
Disconnect the electric cables.
Remove the two socket head screws securing the seat and adjusting mechanism to the seat cross-member.
2. Slide back the seat to the limit of its travel, thereby releasing the front catch.
 - Tilt the seat backwards
 - Lift out the seat forward and upwards.
 - The seat can be removed from the car most easily when the backrest is folded forward.

Refit in the reverse order.



Driver's seat

1. Legroom adjustment handle
2. Backrest release, to drop backrest forward
3. Backrest angle adjusting knob
4. Vertical adjustment handle (driver's seat only)



To remove the seat

1. Slide the seat backwards as far as it will go.
2. Tilt the seat backwards.
3. Lift out the seat forwards and upwards.

Passenger's seat

Slide the seat right back. Disconnect the electric cables and then remove the screws securing the seat rails to the cross-member.

Slide the seat fully forward.

Undo and remove the nuts securing the rails to the floor.

Refit in the reverse order.

Legroom adjustment

The legroom can be adjusted after the lever has released the catches which engage notches in the upper rails. To release the catches, lift the handle at the front of the seat.

To remove and refit the seat rails and controls

Remove the two locknuts in each rail and then separate the rails from the seat. After the rails have been unbolted, the legroom adjustment handle will also be free.

To refit secure one of the rails to the seat. Make sure that the spacers are in position on the selected side. Fix the legroom adjustment control to the catch mechanism on the rail that has been secured. Next, fix it to the other rail and fit the rail. Tighten the nuts.

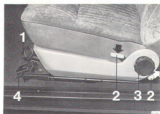
Dropping the backrest forward

To drop the backrest forward, release catch 2.

Backrest adjustment

Turn knob 3 forward to raise and backward to lower the backrest.

Note. Do not press on the backrest while adjusting it.



Driver's seat

1. Legroom adjustment handle
2. Backrest release, to drop backrest forward
3. Backrest angle adjusting knob
4. Vertical adjustment handle (driver's seat only)

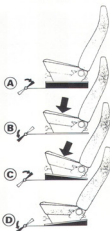
Adjusting the height of the driver's seat

The lever under the front of the seat, which is provided with a catch, is used to adjust the front and rear of the seat to two alternative heights. As the front and rear adjustments are independent of each other, four different combinations are possible. The lever has three positions: forward, middle and back.

Adjusting seat cushion height and angle

Release the lever/handle catch by pulling the lever/handle and moving it to the middle position. The seat can now be adjusted to the desired position as follows:

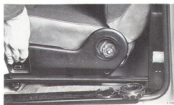
- A. Front and back raised:
Move lever/handle back, without any weight on the seat.
- B. Front and back lowered:
Move lever/handle forward, pressing down on seat.
- C. Front raised, back lowered:
Move lever/handle back, pressing down on seat.
- D. Front lowered, back raised:
Move lever/handle forward without any weight on the seat.



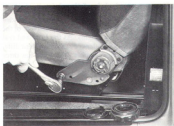
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Separating the backrest from the seat cushion

1. Remove the cover from the backrest adjusting knob, rotate the bayonet clip and then remove the knob.
2. Remove the plastic cover from the side of the seat.



3. Remove the two screws as illustrated.



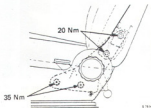
4. Remove the circlip on the opposite side. (The circlip locks the backrest frame pivot in against the seat frame.) The backrest can now be separated from the seat.



Tightening torques backrest mountings

In backrest: 20 Nm

In seat: 35 Nm



Changing the backrest cover

1. Raise the head restraint to the upper position.
2. Remove the self-tapping screw from the upper front edge of the backrest (accessible if the cover is carefully pulled down).



3. Press the two spring-loaded tongues of the head restraint mounting catch towards each other. Pull up the head restraint and remove it.



4. Unzip the cover at the bottom and unhook both the hooks at the bottom of the backrest (one on either side).



5. Roll up the cover and unhook both the wires which hold it front and back. Remove the cover.



Checking the heating element

1. Disconnect cable 140 (yellow) at fuse 3. Connect a test lamp between the connector and the fuse terminal.
2. Switch on the ignition. In cars fitted with heating of the passenger's seat, the seat switch should be closed during checking.
3. Find the thermostat in the seat (feel with fingers) and cool the area in a suitable manner, for example with a cooling spray of the same type used for radio and TV servicing.

After a while the thermostat will cut in and the lamp should light.

If the lamp does not light it may be due to:

- Faulty fuse
- Wire fracture in the wiring or the heating element
- Faulty thermostat
- Defective earthing
- Defective test lamp



Possible wiring fracture in heating element, check using a buzzer (Dismantled, seat warm)

A. Backrest heating element

Connect one of the leads of the buzzer to the element leads (the connecting block is inside the PVC tube). If there is no fault in the wiring, the buzzer will sound when its other lead is connected to one of the two pins in the dual-pole connecting block.

B. Seat heating element

Cool the thermostat until it is below the cut-in temperature and connect the buzzer as under A but to the other pin in the dual-pole connecting block. Note that even a thermostat fault can mean that the buzzer will not sound in this case.

Changing the heating element

1. Take out the seat.
2. Remove the seat upholstery. Remove the backrest cover (see under "Changing the backrest cover"). The seat cover is removed by undoing all the lower clips, the rib on the right-hand side of the seat and the base rib. Pull up the cover from the right, and tuck it out of the way so that the heating element is accessible.
3. Remove the heating element (or elements). Dissolve the glue with pure gasoline (cleaning gasoline) so as not to tear off large pieces of the foam rubber cushioning.
4. Glue on the new heating element (or elements) with suitable impact adhesive such as Bostik A3. Connect the wiring so that the elements are in series.

Note

If the wiring is incorrectly connected so that the heating pads are not supplied across the thermostat, the temperature may rise to such a value that the upholstery may catch fire.

5. Replace the upholstery and fit the seat.

Changing the thermostat

Remove the seat cover (see items 1-2 "Changing the heating element"). Remove the binding threads from the thermostat cables, after which the thermostat can be pulled out and replaced. Fit binding threads to the new thermostat to eliminate the risk of the cables working loose after a time.



Rear seat

The rear seat cushion and backrest are of spring interior construction with upholstery and covers. The cushion has a plywood base, while the backrest has a backing of pressed sheet steel. The cushion is attached to the body by two hinges at the front edge, while the backrest pivots on two hinges at the bottom. In the upright position, the backrest is secured by a catch so that it cannot be knocked forward by loose objects in the luggage compartment if the brakes are applied hard.

The luggage compartment can be extended to provide additional cargo space at need by the following rearrangement of the seat cushion and backrest:

To fold the seat cushion forward, pull up the strap located between the seat cushion and the backrest. By pulling the strap forwards and upwards, the seat catch will be released and the seat will slide slightly forward before the back lifts, allowing the cushion to fold forward.

Next, free the backrest catch and fold the backrest forward and down.



Backrest catch

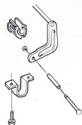


Lifting strap seat

To remove the seat cushion

1. Fold the seat cushion forward.
2. Remove the locking clip and withdraw the hinge pins.
3. Lift out the seat cushion.

Refit in the reverse order.



To remove the backrest

1. Fold the seat cushion forward.
2. Remove the safety catch retaining the hinge pin in the bracket.



3. Lift out the backrest.

Refit in the reverse order.

Carpets

The floor carpets are of nylon fibre on fabric. The carpets are secured by means of press studs and tape fasteners. They are secured at the sides by the scuff plates which are screwed to the sill beams by means of self-tapping screws.

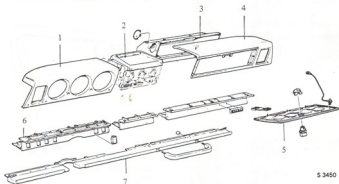


Interior equipment

Instrument panel

The instrument panel comprises several sections. The top consists of two safety pads with a tidy box mounted between them. The lower part is made up of a three-part switch panel and a knee guard mounted along the bottom edge of the switch panel. The knee guard also incorporated a courtesy handle below the glove compartment.

A three-section trim panel is fitted under the instrument panel.



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Instrument panel

1. Safety pad, instrument side
2. Tidy box
3. Glove compartment
4. Safety pad, glove compartment side
5. Glove compartment lid
6. Switch panel
7. Knee guard

Padding, instrument side

Removal and refitting

1. Remove the three screws at the bottom and in the front of the safety padding.
2. Pull the padding backwards to release the spring clips.



3. Remove the safety padding.
- Refit in the reverse order.



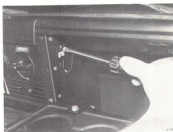
Safety padding, instrument side, secured by spring clip

Tidy box

Removal and refitting

1. Remove the safety padding on the driver's side (see foregoing directions).
2. Remove the retaining screws from both sides of the tidy box. The screw on the passenger side can be reached by removing the cover inside the glove compartment.
3. Lift out the tidy box.

Refit in the reverse order.



Padding, glove compartment side*Removal and refitting*

1. Remove the lid to the glove compartment by removing the hinge screws inside the glove compartment.
2. Remove the two screws at the bottom of the compartment opening and the screw on the side nearest the lid.
3. Remove the clip at the centre hinge.
4. Pull the safety padding backwards to release the spring clips.
5. Remove the safety padding and glove compartment by lifting them backwards.

Refit in the reverse order.

**Knee guard***Removal and refitting*

1. Remove the three section trim panel under the instrument panel.
2. Remove the two screws securing the top end of the steering column tube. Slacken the two screws at the bottom end of the tube slightly so that the steering column can be lowered.
3. Remove all the screws in the bottom of the knee guard and lift the guard away.

Refit in the reverse order.



Switch panel

Removal and refitting

A. Middle section

1. Remove the middle trim panel under the instrument panel.
2. Undo the two top retaining screws of the panel section.
3. Remove the four retaining screws from the knee guard below the panel section.
4. Insert a hand under the panel and withdraw the panel as illustrated. Replace the two outer knee guard screws.
If the panel is hard to move, slacken more screws along the knee guard so that the knee guard can be pressed down slightly.
5. Disconnect the cable to the seat warning light.



B. Section on glove compartment side

1. Remove the trim panel on the glove compartment side under the instrument panel.
2. Remove the retaining screws for the knee guard under the panel so that the knee guard can be lowered.
3. Undo the five retaining screws from the top of the section, after which the section can be removed.

C. Section on driver's side

1. Remove the trim panel under the instrument panel.
2. Remove the two retaining screws from the top of the steering column tube and slacken the two screws at the bottom slightly so that the steering column can be lowered.
3. Remove the retaining screws from the knee guard under the section so that the knee guard can be lowered.
4. Cars with carburetor engines:
 - a. Undo the setscrew and remove the choke control handle.



- b. Remove the rectangular, transparent plastic washer from behind the choke control and withdraw the warning light holder.



- c. Remove the choke control by unscrewing the retaining nut. Disconnect the cable for the choke warning light.



5. Push out the switches from behind and pull the switches and contact pieces apart. Note the positions of the terminals on the hazard warning signal switch.



6. Undo the five retaining screws from the top of the panel section, after which the section can be removed.

To refit panel sections, proceed in the reverse order.

Seat belts

Saab cars are equipped with seat belts for the front and rear seats in accordance with the requirements made on the respective markets. This can involve different combinations of fixed belts and inertia-reel belts.

All belts have received type approval.

A label on the belt gives the make, the manufacturer's part number, the year of manufacture, type approval codes and the Saab part number.

Note

The label should not be removed from the belt.

Seat belts should not be modified or repaired, nor should their anchorage points be changed. Ensure that the correct type of belt is fitted and that it is positioned in accordance with the spare parts instructions.

In the event of an accident any seat belt which has been subjected to a shock load should, in the interests of further safety, be removed from the car and destroyed.



Front seat belt

1. Reel
2. Door pillar guide
3. Belt lock
4. Strap attachment

3-point Inertia-Reel Belt

At rest the seat belt is retracted into an inertia reel (1). When the belt is extracted it runs through a guide fitted near the top of the door pillar (2). When fastened, the belt is inserted in a buckle lock (3) which is attached to a flexible arm anchored between the front seats. Belts for rear seat passengers are anchored direct to the body, or to an arm, under the seat.

The inertia reel consists of a holder with a strap reel which has a return spring in one end. This automatically adjusts the length of the belt. There is a locking mechanism at the other end of the reel which is activated by centrifugal force in all directions or by excessive acceleration of the strap. If the belt does not always retract satisfactorily, check that it has not become twisted between the door pillar guide and the reel, that the guide cover is correctly positioned and that the movement of the strap at the pivoted anchorage point is not restricted by the webbing cover lying too close to the carpet.

Tightening torque for all anchorage bolts: 33 ± 7 lb ft (45 ± 10 Nm).



Buckle lock, rear seat belt

Heating and ventilation system

General

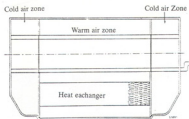
The heating and ventilation system consists of the following components:

Air intake and valve housing in the engine compartment. Located below the fascia are the damper housing, defroster nozzles, hoses to the side window defrosters, fresh air duct, fresh air outlets and heater controls.

In the passenger compartment are the warm air ducts for the rear seat.

The fan casing contains the fan and heat exchanger. The casing is partitioned into three zones. The two outer zones admit cold air and are connected to the fresh air duct and the three fresh air outlets. In the centre zone, the air passes through the heat exchanger which thereby supplies hot air to the interior.

The fan is a cross-flow fan with a common impeller for all three zones. The flow of the air is regulated by a pear-shaped guide vane around which the air circulates.



Three zones of the fan casing as seen from the front

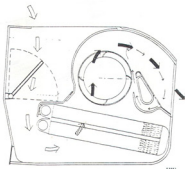
The air flows into the fan casing through the air intake in the bulkhead.

The air is distributed by a damper housing to the defroster nozzles and other outlets in the interior. A continuous moulded plastic duct leads from the damper housing to the three fresh air outlets.

The intakes for the cold-air zones are equipped with a damper which can be set to the "Summer" or "Winter" position from the engine compartment.

When the outside temperature is low, the heating of the passenger compartment will be more efficient if the cold-air intake is closed (valve in "Winter" position), as this eliminates any warm air losses through the impeller or fresh-air ducts. However, when the damper is in this position, cold air cannot be admitted through the fresh air vents.

The ventilation air is discharged through an outlet below the rear bumper. This outlet is fitted with a flap.



Path of air

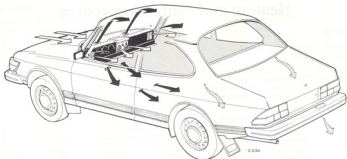
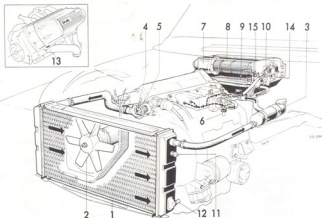


Diagram of heating and ventilation air flows

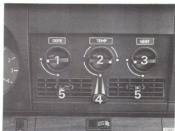


Heating and ventilation system

- | | |
|-------------------------------------|---------------------------------------|
| 1. Radiator | 9. Heat exchanger |
| 2. Radiator fan | 10. Thermostatic valve |
| 3. Expansion tank with pressure cap | 11. Thermostatic switch, radiator fan |
| 4. Thermostat | 12. Radiator drain cock |
| 5. Temperature transmitter | 13. Engine drain cock |
| 6. Coolant pump | 14. Bleeder nipple |
| 7. Fan motor | 15. Air damper, cold air regulation |
| 8. Impeller | |

The system is controlled as follows:

- a. Defroster valve, windshield, controlled by the lefthand knob on the control panel.
- b. Defroster valve, rear window, controlled by the righthand control between the front seats.
- c. The water valve is controlled by means of the centre knob on the control panel. The valve is thermostatically controlled to keep the warm air temperature constant.
- d. Ventilation valve, front floor, controlled by means of the right-hand knob on the control panel.
- e. Ventilation valve, rear floor, controlled by the left-hand control between the front seats.
- f. The fresh air valve is controlled by the three controls adjacent to the outlets on the instrument panel. The fresh air outlets can be directed as desired.
- g. The valve for the intakes for the cold-air zones is mounted on the fan casing and is operated from the engine compartment. In the "Summer" position the valve is open and in the "Winter" position the valve is closed.



Controls for:

1. Windshield and front side window defroster
2. Temperature control
3. Air flow to front floor area
4. Fresh air flow
5. Flow direction



Outer fresh air vent



Controls for cold-air valve

Heater controls

To remove and refit

1. Remove the safety padding on both sides and the tidy box from the instrument panel (see under "Interior equipment").
2. Disconnect the cables from the heater controls. Release the cable clamps by pulling them up and twisting them off at the same time.
3. Undo the four retaining screws from the heater control assembly.
4. Lift the control assembly up until it has detached itself from the fresh air channel. The control assembly can now be removed.

Refit in the reverse order.

Fan motor and fan

To remove

1. Remove the windshield wiper motor (see group 3).
2. Disconnect the fan motor cables.
3. Undo the three fan motor retaining screws and pull out slightly the motor with the impeller. Separate the motor from the impeller at the rubber coupling, and first remove the motor and then the impeller



4. Remove the plate with the fan bearing on the opposite side of the fan casing.

To refit

1. Push the impeller part-way into the fan casing and connect the impeller and the motor to the rubber coupling.
2. Guide the fan into the casing and secure the motor to the casing.
3. Fit the plate with the fan bearing.
4. Connect the fan motor and check that the fan is rotating freely.
5. Fit the windshield wiper motor.



Heat exchanger and water valve

The components can be removed and refitted with the fan casing in position in the car.

To remove and refit

1. Drain about 4 quarts (4 liters) of coolant. Remove the alternator and radiator fan relay.

2. Remove the front part of the fan casing. Then unscrew the heat exchanger retaining plate.



3. Remove the cap from the water valve, remove the control cable and remove the water valve retaining screw.
4. Loosen the hose clips on the heat exchanger and the water valve and disconnect the hoses.
5. Disconnect the thermostat coil from the heat exchanger and remove the water valve with coil.
6. Withdraw the heat exchanger from the thermostat casing.

Refit in the reverse order.

Fan casing

To remove and refit

For removal or installation of the fan casing, it is recommended that the engine be removed. On refitting, the insulating felt should first be glued to the fan casing. Slide the casing into position from the front. Check that the insulation felt does not slide out of position during fitting. The fan casing retaining screws become accessible from inside the car once the safety padding with glove compartment and the instrument section have been removed.



Removing the air discharge box

1. Remove the rear bumper.
2. Remove the cover panel on the inside of the rear member.
3. Remove the screws (six) securing the box to the rear member and remove the box.

Refit in the reverse order.

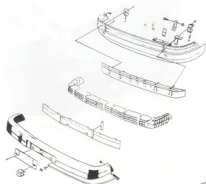


Bumpers and front spoiler

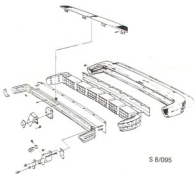
General

The bumpers consist of channel-section light-alloy bars to which the bumper brackets are fixed. Inside the channel are energy absorbing cellular blocks of polyethylene (nine blocks in the front bumper and ten in the rear bumper). The blocks are contained by a polyethylene brace and the bumpers are enclosed in a rubber sheath which is secured by clamping bars on the inside. Provision is made in the front bumper for the number plate brackets.

Certain models are fitted with a front spoiler. The spoiler is made of thermoplastic rubber. This is shade at the top and painted below the bumper see section 890 on painting.



Front bumper

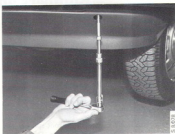


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Rear bumper

Front bumper and spoiler

The spoiler is secured to the car together with the bumper.



Removing the bumper

To dismantle

The bumper is secured by means of two vertical hexagon head cap screws fitted from the underside through mounting lugs in the body and two vertical welded tubes in the outer bumper members.

The bumper can be removed by removing both of these screws.

Refit in the reverse order.



Locations of the mounting screws

To remove the spoiler

1. Remove the self-tapping screws in the ends and the mountings.
2. Remove the spoiler.

Refit in the reverse order.

To remove the rear bumper

The rear bumper is secured to the body by means of two brackets on each side. To remove the bumper, remove the two nuts on the mounting bolts.

To change the cellular blocks

1. Remove the bumper.
2. Remove the centre clamping bar and the bar on the side of the bumper on which the block is to be changed.

3. Remove the rubber sheath, and the cellular blocks are now accessible for removal.

Assemble in the reverse order.



General description of treatment

Body finishing

The entire car body receives treatment which includes phosphatizing, and the application of primers, undercoats and finishing coats plus underseal.

The top coat is applied either as one coat of solid paint or as two coats for metallic finisher.

The degree of corrosion-resistance and finish required varies with different parts of the bodywork. This section contains a description of the paintwork components.

Paintwork – technical data

Phosphatizing

Type	Zinc phosphate
Coat density	1.5–2.3 g/m ²
Mode of application	Spraying

Chromic acid treatment

Type	Water solution with chromic acid
Mode of application	Spraying

Primer

	External bodywork	Internal bodywork
Mode of application	Automatic and manual cold spraying	Electrocoating
Spraying viscosity	Approx. 25 s at 23 °C (ref. SIS 184115)	
Precuring	10 min at material temperature of 90 °C	
Curing		15 min at 175 °C
Coat thickness	30 ± 5 µm	23 ± 3 µm
Binder	Phenolic epoxy resin	Modified polyester
Supplier	Various suppliers	Herberts

Undercoat, stone damage protection

Mode of application	Cold spraying
Spraying viscosity	22 s at 73 °F (23 °C) approx. (Ref. SIS 184115)
Curing	20 min at material temperature of 150 °C
Coat thickness	20 ± 5 µm
Binder	Polyester
Supplier	Herberts, AB Wilhelm Beckers

Undercoat

Mode of application	Electrostatic-automatic cold spraying
Spraying viscosity	30 s at 73 °F (23 °C) approx. (Ref. SIS 184115).
Curing	20 min at material temperature of 150 °C
Coat thickness	30 ± 5 µm
Binder	Alkyd melamine-epoxy
Supplier	AB Wilhelm Beckers, Herberts

Finishing coat, solid

Mode of application	Automatic and manual cold spraying
Spraying viscosity	15–25 s at 73 °F (23 °C) (Ref. SIS 184115)
Curing	15 min at material temperature of 266 ° – 284 °F (130 ° – 140 °C)
Coat thickness	45 ± 5 µm
	Alkyde-melamine, solid paints
Binder	Acrylate, metallic paints
Suppliers	AB Wilhelm Beckers Herberts BASF Farben & Fasern AG (Glasuritwerke)

Finishing coat, 2-coat metallic

	Base colour	Clear varnish
Mode of application	Conventional auto + manual	Electrostatic automatic + manual
Spraying viscosity	Approx. 14 s at 73 °F (23 °C) (Ref. SIS 184115)	Approx. 25 s at 73 °F (23 °C) (Ref. SIS 184115)
Curing	15 min at material temp. of 284 ° – 302 °F (140–150 °C)	
Coat thickness	15 µm approx.	35 µm min.
Binder	Acrylate-melamine resin	Acrylate-melamine resin or NAD
Supplier	AB Wilhelm Beckers, BASF Farben & Fasern AG (Glasuritwerke), Herberts	

Undersealing**Compound**

Mode of application	Spraying
Curing	20 min at material temperature of 150 °C
Coat thickness	75–200 µm
Binder	Polyester
Supplier	Sv Herberts AB

Anti-corrosion agent for cavities

Mode of application	Spraying
Type of material	Thixotropic, penetrating
Coat thickness	Covering

Anti-corrosion agent

Mode of application	Automatic spraying
Type of material	Thixotropic, non-penetrating
Coat thickness	Approx. 500 µm

General description of bodywork treatment

Phosphatizing

The entire car body undergoes the phosphatizing process.

The layer of phosphate enhances the protection against corrosion provided by the other coats and also improves adhesion between the primer and the base metal.

Primer

The primer for the external bodywork is sprayed on and the paint is then pre-cured. The internal bodywork is then primed by electrocoating, after which the entire car body is subjected to a further curing process.

Intermediate coat, stone damage protection

This coat is applied on the outside of the body below the waist line on the front panel, the front of the bonnet (approx 300 mm) and the upper section of the bulkhead. The elasticity of this layer increases the resistance of the paintwork to impact and, consequently, more effectively prevents stones from chipping the paint down to the metal.

Intermediate coat

On surfaces already having received a coat for stone damage protection, this intermediate coat is applied wet on wet. In other cases, the coat is applied on top of the primer.

Finishing coat, solid

Alkyd-melamine based binder is used for solid-colour paints.

Finishing coat, 2-coat type

2-coat paint is applied in two stages. The first coat, the base colour, contains pigments, metal flakes, a binder, etc. This is covered by a coat of clear varnish which gives the paintwork its gloss and protects the base colour from moisture and damage by the environment.

2-coat paint should not be confused with 2-can (2K) paint.



S 9-006

Intermediate coat, stone damage protection

Finished bodywork standards

All external and visible interior surfaces are sprayed with a finishing coat. Exceptions are openings in the bonnet and the luggage compartment door, the inside of the rear edge of the front wheel housings and the leading edges of the front doors.

Finishing coats are not applied to interior surfaces over which trim or upholstery is fitted. In cars where trim has not been fitted to the wheel housings inside the luggage compartment, primer-finished bodywork will therefore be visible.

Underseal

Polyester-type underseal is applied under the wheel housings, sills, recesses in the car floor and inside the rear axle tunnel.

Anti-corrosion agent for cavities

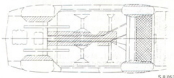
Low-level cavities on the inside of the body and the doors are treated before final assembly. A wax product is used for the treatment. After application, the body is heated so that the wax will flow into the joints between sheet metal components.

Anti-corrosion agent

Thick (non-penetrating) oil is applied to the underside of the car and to the inside of the wheel housings. The outer edge of the body underside is not treated with thick anticorrosion agent. This prevents fouling of the clothes of people getting into and out of the car.

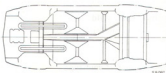
Note

These sections are protected by means of polyester type underseal.



Polyester-type underseal

	coat thickness	$200 \pm 25 \text{ } \mu\text{m}$
	coat thickness	$100 \pm 25 \text{ } \mu\text{m}$
	coat thickness	$75 \pm 25 \text{ } \mu\text{m}$



Thick anti-corrosion agent

Instructions for repairs to paintwork

Repairs to the paintwork should be of such a standard that the resistance of the paintwork to environmental damage and wear and tear is equal to that of the original finish.

The use of 2-can paints is recommended to enable these requirements to be best met. If these are unavailable, then 1-can paint may be used.

Suitable paints of both types are recommended in "Summary of Paints for Paintwork Repairs".

The recommended materials are available as spare parts.

All paints employed should be compatible with each other and should be applied in the correct sequence.

The most reliable results are obtained if paints of the same make are employed.

Always follow the manufacturer's instructions carefully. Failure to do so may prejudice subsequent claims.

Data sheets for Saab recommended materials can be obtained from agents for Herberts GmbH or from Saab.

The tables on the next pages are collations of the basic recommendations of the manufacturers.

Saab workshops are responsible for ensuring that paintwork repairs are carried out to a high professional standard.

Materials for solid and metallic paints

A colour code plate adjacent to the chassis number plate indicates the colour code of the finishing coat. The code refers to the part number in the Spare Parts List.

System 1.

2-can paints. These include products containing isocyanate. Follow the relevant safety regulations when using these products.

System 2.

One-can paints. Isocyanate-free system. Only recommended for paint jobs on older cars.

Note

Repairs under a guarantee should be performed using 2-can paints only.

Summary Paints for Paintwork Repairs, materials of Herberts make

System 1 (containing isocyanate)

Filler

Stando Soft Plastic
Stando Härtepaste

Spray filler

Standex Polyester Aluspritz plastik
Hardener

Primer

Standex Reaktionsprimer
Zusatzlösung
Standex 1:1 Füllprimer
1:1 Härte-Lösung

Undercoat

Tinted sealer Standex 2K-Sealer
Standex 2K-sealer-Härter
Standex Verdünnung 11012

Colourable sealer

Standex 2K-Sealer
Standex 2K-Sealer-Härter
Standex Verdünnung 11012
Standex Spezial-Metallic Basislack
(base colour) or Standex Finishing
coat, 1-coat type.

Finishing coat, 1-coat type

Standex 2K Standoxyl-Autolack
2K Spezial-Härter
Standex Verdünnung 11012

Finishing coat, 2-coat type

Base colour

Standex Spezial-Metallic Basislack
(base colour)
Standex Verdünnung 11118

Clear varnish

Standex 2K Standoxyl Klarlack
Standex 2K-Spezial-Härter
Standex Verdünnung 11012

Degreasing agents and cleaners

Standex Silicentferner 11130
Standex Nitro Verdünnung

Note. For part Nos. and pack sizes,
see Spare Parts literature.

System 2 (isocyanate-free)

Filler

Standex Polyester Soft Plastic
Härtepaste

Spray filler

Standex Polyester Aluspritz plastik
Hardener

Primer

Standex Reaktionsprimer
Zusatzlösung

Undercoat

Standex EP Grundierfüller
Standex EP Härter
Standex Verdünnung 11012

Finishing coat

Standex Konsthartz-Autolack
Standex Konsthartz-Verdünnung 11016

Recommendations for body repair spraying

Rubbing-down scratches and improperly finished edges to areas where filler has been applied cause pronounced contours in, and possible swelling of, the finished surface.

Rubbing down should therefore be performed carefully and to a high quality.

Preparation

Areas where filler has been applied and existing paint-work that has been sanded must be rubbed down using wet and dry 400 paper (P 600).

Caution

Rubbing down should be performed in one direction. The surface must be completely dry and dust-free before the next coat of paint is applied.

An additional coat of filler over scratch marks is recommended for light colours. Apply a cross coat of 2K-Sealer thinned to 16 s AK4/68 °F (20 °C). Apply low viscosity sealer without allowing mist to form. Allow to dry for 1 hour at 68 °F (20 °C) and apply the finishing coat without rubbing down the surface.

Sanding down and sealing stone damage protection undercoat

Irregularities in the finished surface can result from scratch marks and level differences at the edges of the treated area if the rubbing-down paper employed is too coarse.

Stone damage protection undercoat is an elastic material that requires special measures for rubbing down and sealing. The following procedure is recommended in order to obtain a good finish:

Rub down the edges with sandpaper 400 (P 600).

Wash with Silikonentferner.

Spray on two applications of primer (1:1 Fullprimer)

First application – one coat (10 – 15 µm).

Allow to cure for 5 min at 68 °F (20 °C).

Second application – two covering coats (25 – 30 µm).

Rub down wet or dry once dry (see Technical Data).

Undercoat

There is a transparent type of sealer which can be applied with the base colour as a complement to the conventional type (see Technical Data). This eliminates the risk of the undercoat showing through and tinting the finishing coat. There is a special danger that paint runs will form when light colours are being used because of the thick application required to cover. 2K-Fillsealer is not suitable for application to unprimed surfaces.

Clear Varnish – Important

This material reacts adversely to moisture. (This is true for 2-can paints in general.) Ensure that compressed air, containers and tools are dry. The relative humidity in the workplace should not exceed 80 %.

Excessively high spraying temperatures and long drying times in conjunction with very thick coats of varnish can cause bubbles in the paintwork when oven dried. The risks, however, can be reduced by using the type of hardener recommended here.

Two layers of masking tape are recommended. The upper, more accurately positioned layer should be removed from the under layer of tape prior to oven drying. There is a danger of the varnish peeling off with the tape if it is removed after drying as adhesion to the underlying surface will not yet have been fully achieved.

Faults or dust in the varnish coat can be rubbed or polished off directly after drying.

If the layer of clear varnish is sanded off, then undercoat (2K-Sealer) must be used to seal the underlying surface before applying the base colour and clear varnish, otherwise there will be a risk of the solvent working its way under the edges of the existing finish and lifting it off.

Technical data for Herberts Standox 1-coat paints

System 1 Primer

Undercoat *)

Finishing coat

System 2 Primer

Undercoat

Finishing coat

Reaktionsprimer Zusatz-Lösung (see description system 2) Alternative 1:1 Füllprimer 1:1 Härte-Lösung	2K-Sealer 2K-Sealer Härter	2K-Standocryl Autolack 2K-Special-Härter	Reaktionsprimer Zusatzlösung	EP-Grundierfüller EP-Härter	Kontuharz-Autolack Kontuharz-Verdünnung
Basic materials Artificial resins, zinc chromate pigment. Härte solution contains phosphoric acid.	Polyurethane. The hardener con- tains isocyanates.	2-can acrylic resins. The hardener contains isocyanates.	Basic materials Artificial resins, zinc chromate pigment. Zusatz solution contains phosphoric acid.	2-can filler	Combination of alkyd resins
Density (g/cm ³) Primer: 1.08 Härte solution: 0.84	1.30 approx.	0.95-1.1 (depending on colour)	Density (g/cm ³) Primer: 1.20 approx. Zusatz solution: 0.82 approx.	1.43 approx.	0.9-1.15 approx. (Depending on colour)
Flash point Below 70 °F (21 °C)	Above 70 °F (21 °C)	73 °F (23 °C) approx.	Flash point Below 70 °F (21 °C)	Above 70 °F (21 °C)	81 °F (27 °C) approx.
Colour Beige	Sand yellow	As per colour code plate in car	Colour Grey beige	Beige grey	As per colour code plate in car
Mixing ratios 1:1 Primer-Härte solution. Stir thoroughly.	2:1 Sealer-hardener	2:1 Paint-hardener	Mixing ratios 2:1 Primer-Zusatz solution. Mix and stir thoroughly 30 min before use.	Mixing ratio as shown on tin.	4:1 approx. Paint- thinner.

*) Colourable undercoat, 2K Füllprimer. See Technical Data, 2-coat paints.

System 1 Primer		System 2 Primer		Undercoat *	Finishing coat	Undercoat	Finishing coat
Spraying viscosity (as per DIN 53211) 18 s approx. AK408 °F (20 °C) 11012 thinners Or Nitro-Ver- dünnung	16 s AK408 °F (20 °C) 11012 thinners (20 % approx.)	16 s approx. AK408 °F (20 °C) 11012 thinners	Spraying viscosity (as per DIN 53211) 18 s approx. AK408 °F (20 °C) Nitro thinners or 11012 thinners	18-20 s AK4/ 68 °F (20 °C) 11012 thinners	18-20 s AK4/ 68 °F (20 °C) Artificial resin thinners		
	3-5 bar	3-5 bar	Spraying pressure 3-5 bar	3-5 bar	3-5 bar		
	Nozzle 1.2-1.5 mm	1.0-1.2 mm	Nozzle 1.2 mm	1.0-1.5 mm	1.0-1.2 mm		
Coat thickness (as = dry film) 2 covering coats (25-30 µm) Note: Thicker films result in excessive phosphoric acid.	1-2 coats (25-30 µm)	Solid paints Apply 3 coats. 1st coat should be thick. Coats 2 and 3 should be applied in rapid succession with 2 min approx. drying time between them. (30-40 µm).	Coat thickness (as = dry film) Cross spray one covering coat. Note: Thicker films result in excessive phosphoric acid.	Cross spray 1-1 1/2 coats. (25-30 µm).	Cross spray approx. 1 1/2 coats approx. (25-30 µm).		
		One-coat metallic paint 2 thick coats regard- less of blooming. Thin to 13 s AK4. 68 °F (20 °C). Allow to dry for 5 min. Spray on one more coat. (30-40 µm).					

System 1
PrimerSystem 2
Primer

Undercoat *	Finishing coat	Undercoat	Finishing coat
<p>Drying 20 min at 68 °F (20 °C). Covering coat can be applied after airing for 10 min at 68 °F (20 °C).</p>	<p>At 68 °F (20 °C) Dust dry after 20 min Hand dry after 90 min Accepts tape masking after 8 hours. With oven drying: accepts masking tape after 30 min at 140 °F (60 °C) or 15 min at 176 °F (80 °C)</p>	<p>4 hours/68 °F (20 °C) approx. Forced drying 30 min at 176 °F</p>	<p>At 68 °F (20 °C) Dust dry 20 min Pressure dry 3 hours Accepts masking tape after 8 hours. At 140 °F (60 °C) After cooling can be fitted after 20 min approx. At 176 °F (80 °C) After cooling can be fitted after 20 min approx.</p>
<p>Rubbing down (sandpaper 400 P 600) Wet or dry rubbing down after 40 min at 68 °F (20 °C)</p>	<p>After 8 hours/68 °F (20 °C) After 60 min at 140 °F (60 °C) After 15 min at 176 °F (80 °C) Note. Subsequent coats must be rubbed down within 24 hours.</p>	<p>To be wet rubbed down.</p>	<p>Not suitable for rubbing down.</p>
<p>Put life (ready mixed) 8 hours at 68 °F (20 °C)</p>	<p>48 hours at 68 °F (20 °C)</p>	<p>12 hours at 68 °F (20 °C)</p>	<p>See storage times</p>
<p>Shelf life (unopened, stored in correct containers) Over 1 year</p>	<p>Over 1 year</p>	<p>Over 6 months</p>	<p>Over 1 year</p>

Technical Data for Herberts Standex 2-coat metallic paints

Primer	Tinted scaler	Undercoat Scaler for colours	Finishing coat
1:1 Fullprimer 1:1 Harte-Löung Or Reaction primer, see Service manual Section 890	2K-Scaler 2K-Scaler-Härter	<div> <div>Name of Product</div> <div> 2K-Fillscaler 2K-Spezial-Härter Base colour or finishing coat </div> </div> <div> <div>Material base</div> <div> Acryl/Polyurethane Hardener contains isocyanates </div> </div>	<div> <div>Spezial-Metallic Base varnish</div> <div>2K-Clear varnish 2K-Spezial-Härter</div> </div>
Artificial resins, zinc chromate pig- ment. Hardener contains phosphoric acid.	Polyurethane Hardener contains isocyanates	Artificial resin combinations	Acryl/Polyurethane. Hardener contains isocyanates
Primer: 1.08 Hardener: 0.84	1.30 approx	Density g/cm ³ 1.20	1.0 approx
Below 70 °F (21 °C)	Above 70 °F (21 °C)	Flash point Above 70 °F (21 °C)	Above 70 °F (21 °C)
Beige	Sand Yellow	Colour Uncoloured, suitable colour obtained from base colour or finish- ing coat, 1-coat type	Uncoloured

Primer	Tinted sealer	Undercoat		Finishing coat	
		Sealer for colours			
1:1 Primer: hardener	2:1 Sealer, hardener	Mixing ratios 1 part Fillesealer 1 part hardener 1 part basic colour or finishing coat		Ready for thinning	2:1 clear-varnish, hardener
18 s approx AK468 °F (20 °C) Or Nitro-thinners	16 s AK468 °F (20 °C) 11012 thinners 20% approx.)	Spraying viscosity (as per 16-17 s AK468 °F (20 °C) 11012 thinners		DIN 53211 → 16-18 s AK468 °F (20 °C) 11012 thinners	16 s AK468 °F (20 °C) 11012 thinners (30% approx.)
3-5 bar	3-5 bar	Spraying pressure → 3-5 bar		3-5 bar	3-5 bar
1.2-1.5 mm	1.2-1.5 mm	Nozzle → 1.0-1.2 mm		1.0-1.2 mm	1.0-1.2 mm
2 covering coats (25-30 µm) Note: Thicker films re- sult in excess phosphoric acid. Risk of bubble formation	1-2 coats (25-30 µm)	Coat thickness (µm = dry film) → 1-2 coats (15-20 µm)		1 covering cross coat (15 µm approx.)	2 cross coats (30-40 µm). In rapid succession. Low viscosity paint. Then quickly in oven. Air small sur- faces for 5 min

Primer	Tinted sealer	Undercoat Sealer for exposures	Finishing coat
20 min at 68 °F (20 °C). Covering coat can be applied after airing for 10 min approx. at 68 °F (20 °C).	Covering coat can be applied after airing for 10 min approx. at 68 °F (20 °C).	Drying (temperature of object) → Covering coat can be applied after 15 min at 68 °F (20 °C).	Dust dry — 90 min at 68 °F (20 °C). Can be fitted after 5–6 hours. Hard after 12 hours. Oven drying No airing. 30 min at 140 °F (60 °C) or 15 min at 176 °F (80 °C).
Wet or dry rubbing down after 40 min at 68 °F (20 °C)	Non-sanding surface. Can be rubbed down after 8 hours at 68 °F (20 °C) 15 min at 176 °F (80 °C) or 60 min at 140 °F (60 °C). Note: Must be rubbed down if finishing coat is applied after 24 hours.	Rubbing — down (sanding paper 400 (P400)) → Non-sanding surface. Can be rubbed down after 1 hour at 68 °F (20 °C). Wet or dry rubbing down. Note: Must be rubbed down if finishing coat is applied after 24 hours.	Immediately after drying. If the finishing coat is removed then new sealer and primer must be applied before the clear varnish is applied.
8 hours at 68 °F (20 °C).	48 hours at 68 °F (20 °C).	Pot life (ready-mixed) 12 hours at 68 °F (20 °C).	8 hours at 68 °F (20 °C).
Over 1 year	Over 1 year	Shelf life (unopened, stored in correct containers) Over 1 year	Over 1 year

Technical data for Herberts Standox body filler

Filler	Spray filler
Stando Soft Plastic Standox Härtepaste <i>Basic materials</i> Unsaturated polyester resins	Standox-Polyester-Alu-Spritzplastik Standox Härter <i>Basic materials</i> Unsaturated polyester resins
<i>Density (g/cm³)</i> 1.65 approx.	<i>Density (g/cm³)</i> 1.40 approx.
<i>Flashpoint</i> Above 70 °F (21 °C)	<i>Flashpoint</i> Above 70 °F (21 °C)
<i>Colour</i> Light grey	<i>Colour</i> Silver
<i>Mixing ratios</i> 3 % hardener to the estimated quantity of filler. One tube of hardener is sufficient for one tin of filler. NOTE Excessive hardener can cause discolouration in the finishing coat.	<i>Mixing ratios</i> 2 % hardener to the estimated quantity of filler. One tube of hardener is sufficient for one tin of filler.
<i>Mixing</i> Calculate the amount of filler - hardener required. Mix thoroughly so producing a homogeneous mass. Even distribution of the red hardener indicates correct mixing.	<i>Spraying viscosity</i> Should be applied as supplied. If the filler requires thinning for the final coat add 10 % max. Standox Polyester-Verdünnung or acetone.

Filler	Spray filler
<p><i>Viscosity</i> Ready for application once hardener has been added.</p>	<p><i>Spraying pressure</i> 2–4 bar</p>
<p><i>Application</i> Use a metal, plastic or rubber spreader.</p>	<p><i>Jet</i> 2.5 mm min</p>
<p>Roughen and clean the surface of the metal with Selconementflärer 11130. Apply the filler. Hold the spreader at right angles to the surface of the metal and work from all directions to ensure good application.</p>	<p><i>Coat thickness</i> 1000 µm (1 mm) at the viscosity supplied without causing runs on a vertical surface. Avoid thin layers of filler on edges and seams. * Spray over onto the surface of the old paintwork.</p>
<p><i>Drying</i> 12–30 min under normal conditions. Thick layers harden more rapidly than thin. Forced drying is possible. Will not harden below 41 °F (5 °C).</p>	<p><i>Air drying (hardening time)</i> 2 hours at 68 °F (20 °C) approx. A longer time is required at lower temperatures. Do not apply at temperatures below 41 °F (5 °C).</p>
<p><i>Post life</i> Hardening starts after 4–5 min at 68 °F (20 °C) The hardening time can be prolonged if the amount of hardener is reduced to 2 %.</p>	<p><i>Oven drying</i> 15 min at 176 °F (80 °C) after airing for 15 min approx.</p>
<p><i>Shelf life (containers in cold storage)</i> 6 months. Polyester materials have a limited shelf life.</p>	<p><i>Rubbing down</i> Coarse rubbing down: 180–220 paper. Fine rubbing down: 360 (P 500) paper.</p>

Filler	Spray filler
<p><i>Preparation</i></p> <p>Dry rubbing down. Always wash the surface thoroughly with Silicoenenfärmer 11130, before applying the next coat. PE-Füllplastik must not be applied to phosphating primer without the primer first being sealed with 2K-Sealer or EP Grundsierfüller. Phosphatizing primer (1:1 Fullprimer or Reaktionsprimer) should be applied as a sealer over the filler.</p>	<p><i>Pot life (mixed)</i></p> <p>45 min at 68 °F (20 °C). Higher temperatures shorten the pot life.</p> <p><i>Shelf life (container in cold storage)</i></p> <p>6 months. Polyester materials have a limited shelf life. The material should be heated to 68 °F (20 °C) before use.</p>
	<p><i>Preparation</i></p> <p>After wet rubbing down the surface must be entirely dry. Always wash the metal surface or filler thoroughly after rubbing down with Silicoenenfärmer 11130 or Konstharz-Verdünnung 11016, so that dust and residual sors are removed. PE-Alu-Spritzplastik should not be applied to phosphatizing primer without the primer first being sealed with 2K-Sealer or EP Grundsierfüller. Phosphatizing primer (1:1 Fullprimer or Reaktionsprimer) should be applied as a sealer over the filler.</p>

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