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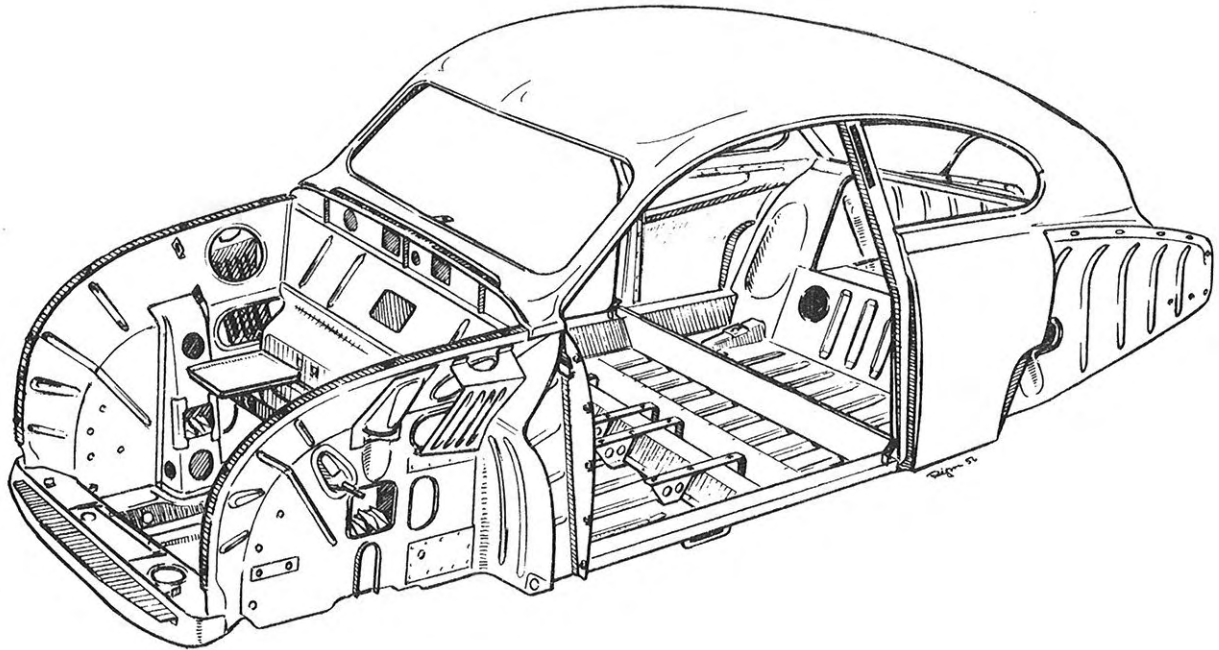


Fig. 1. Body. Welded unit

1. DESCRIPTION

1.1. General

The Saab 93 has a self-supporting body which means that there is no chassis frame. Fenders, doors, engine hood and trunk lid can be removed. The body is built up of a relatively small number of parts pressed in sheet steel. These parts are assembled with overlapped joints which are spot and seam welded and in addition, all intersections are fully welded. Fig. 1 shows the parts if the body which together comprise the welded unit.

1.2. Roof

The roof is pressed in one piece of sheet steel which extends from the cowl to the front edge of the trunk lid. Pressed reinforcements are inserted around the windshield and rear window. There are reinforcing tubes in the windshield pillars, and the steel section roof gutters reinforce the sides of the roof.

1.3. Fresh-air intake and collector box

The front of the roof ends in a vertical wall which together with the cowl and the windshield reinforcing frame, forms a closed chamber. This is used as a collector box for the fresh air which enters through the air intake and is admitted into the car either directly through an opening in the cowl or through the fresh-air heater.

1.4. Floor

The floor consists of a smooth floor plate with longitudinal corrugations for stiffening. The middle part of the floor is bounded at the front by the cowl plate (firewall) and at the rear by the rear axle tunnel and its sides are stiffened by the door sills, under which the jack pick-up points are attached; The floors of engine and baggage compartments are welded to the middle floor at the wall and behind rear axle tunnel respectively.

1.5. Wheel housing walls

The wheel housing walls are pressed in sheet steel with stiffening corrugations. Those at the front have holes for spring arms, drag rods and for evacuation of the air flow through the radiator. The two evacuation holes are fitted with covers which should be removed in summer, and from below the holes are covered by two louvered splash protectors. The bearing support for the front spring arms are welded to the inside of the wheel housing wall and to the floor of the engine compartment.

The rear wheel housing walls have a hole for the fuel filler pipe and a bracket for mounting the rear muffler respectively. The upper spring seats and upper shock absorber attachments are welded to both front and rear wheel housing walls.

1.6. Trunk

The trunk, which has a volume of 0.3 cu. m. (10 cu. ft.), consists of the rearmost part of the body and is bounded at the front by the removable back of the rear seat. Its floor consists of two

plywood sheet under which the fuel tank and the spare wheel are placed. The trunk lid is carried on two hinges and is equipped with lock and a spring-loaded stay.

1.7. Insulation of body

The passenger and baggage compartments are insulated internally and the underside of the body and the interior of the wheel housings are coated with an insulating compound. This treatment gives protection against flying stones and rust, and in addition it gives a certain amount of acoustic insulation. When the car is cleaned, the inside of the wheel housings should therefore never be scraped.

1.8. Power unit suspension

The power unit is suspended on three rubber cushions. The two front brackets are mounted on the raised front portion of the engine compartment floor, and the rear bracket is screwed into the cowl. On the left-hand side of the engine there is a stay which is connected by a rubber damper to the left-hand wheel housing wall.

3. REMOVAL AND INSTALLATION OF REMOVABLE PARTS

3.1. Engine hood and hood lock

3.1.1. Removal

1. Open hood and disconnect the electric cables
2. Loosen the hood strap
3. Lift engine hood backwards off hinge pins

3.1.2. Installation

1. Place hood on hinge pins. Make sure that rubber bushings of pins are undamaged.
2. Check that the hood is correctly positioned in relation to cowl and front fenders. The position of the hood can be adjusted by moving the hinge pins slightly.
3. Attach the hood straps and connect the electric cables. The cables are colour-coded as shown in the wiring diagram in Chapter 12, "Electric system and instruments".

3.1.3. Engine hood lock

If the hood lock required adjustment, the outer attachment hooks can be trimmed, or the grip arm can be bent to the desired shape.

3.2. Grill

The centre grill is attached to the engine hood by means of sheet metal clips inside the hood and can be detached by removing these clips. The side grill strips are attached to the hood in the same way.

3.3. Pedal board

The pedal board is in two parts which can be removed independently. The dimmer switch is located in the left-hand part of the pedal board and if this part of the board is to be removed completely, the switch must be unscrewed or its cables disconnected.

3.4. Instrument panel

The instrument panel is attached by two screws at each side and is stabilized in the middle by the rear view mirror support.

3.5. Door window, window lift and door lock

3.5.1. Replacement of door window

The bottom of the door window is cemented into a channel shaped holder. The underside of this channel, which by a hinge is attached to the front edge of the door frame, has a guide slot for the pin on the window lift lever. The window is guided by two fabric clad rails and rests against a rubber stop when fully lowered. To replace a door window, proceed as follows:

1. Lower the window entirely
2. Remove window crank, inner door handle and door upholstery. Collect pins, bakelite washers and coil springs.
3. Remove the two screws for the hinge at the front of the door frame.
4. Turn the window so that the hinge comes on top and free the window guide slot from the pin. The window is now free and can be lifted out of the door, see Fig. 2.

To install a door window, reverse the above procedure.

3.5.2. Removal of window lift

1. Remove inner door handle, window crank and door upholstery. Collect pins, washers and springs.
2. Remove the four screws which are accessible through the holes in the window lift segment. Keep the window in position during this operation.
3. Free the lever pin from the guide slot and remove the window lift.

To install a window lift, reverse the above procedure.

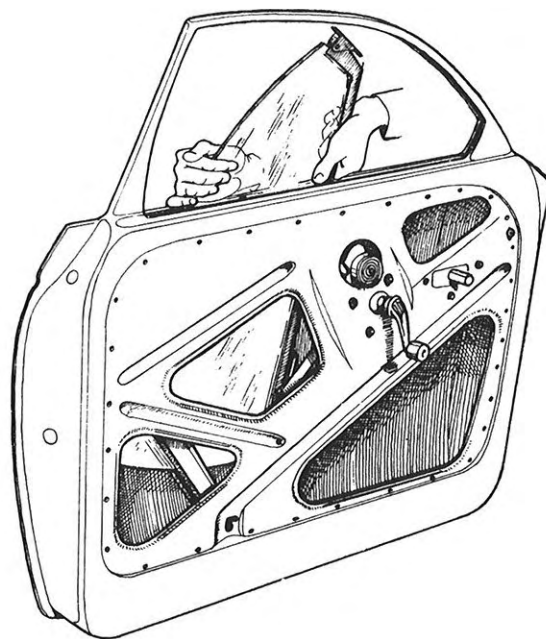


Fig. 2. Removal of door window

3.5.3. Replacement of door lock

To serial number 26400

Removal

1. Raise the window
2. Detach the two fixing screws of the outer door handle.
3. With the aid of the inside door handle, pull back the lock bolt. Keep the inside handle in this position until the outer handle has been removed.
4. Push the catch aside by means of an awl inserted through the hole in door frame below the lock bolt.
5. Pull out the outer handle after having turned it down slightly.
6. Remove the inner handle, window crank and door upholstery.
7. Push the catch spring of the key lock along the inside of the door plate and remove the key lock.
8. Detach the six fixing screws and remove the lock.

Installation

1. Fasten the door lock by the six fixing screws.
2. Pull back the lock bolt slightly with the inner handle and push back the catch a little with an awl or the like to allow the outer handle to be inserted.
3. Fix the outer handle with its two screws.
4. Insert the key lock, attach the catch spring before the lock pin is positioned and secure the key lock with the catch spring. Make sure that when the lock is in position, the toothed edge of the key should be inserted downwards in unlocked position.
5. Replace upholstery, inner handle and window crank.

Striker plate, buffer and door shoulder
The striker plate is adjustable and should always be firmly secured in position.

The door buffer can also be adjusted to fit into the shoulder which is welded on the front pillar.

Removal

1. Rise the door window.
2. Remove the door upholstery and collect handles, pins, bakelite washers and coil springs.
3. Detach the internal locking device (right-hand door) by removing the two self tapping screws.
4. Remove the seven screws for the door lock, four on the inside of the door and three at its front then free and remove the door lock.
5. If necessary, the outer door handle can be detached by removing its retaining screws, one inside and one at the front of the door.

Installation

Install door handle and door lock in reversed order. Check before installation that all moving parts of the lock and the lock springs are well lubricated with chassis grease.

After installation, the striker plate must be adjusted so that the door can be closed and opened easily. Make sure that the teeth engage satisfactorily along their whole length.

3.5.4. Replacement of lock cylinder

1. Remove outer handle on left-hand door which is fastened by two screws, one on the inside and one at the front of the door.
2. Remove the screw at the inner end of the lock cylinder and collect washers, actuator arm and coil spring.
3. Pull out lock cylinder

When installing the lock cylinder, the actuator arm should point towards the front edge of the door when the toothed edge of the key points upwards, that is, when the door is locked.

Cold-resistant grease should be used when the lock is lubricated.

3.6. Lock of trunk lid

3.6.1. Replacement of handle, lock cylinder and lock mechanism

1. Remove rubber cap on inside of lock
2. Remove cotter pin, washer and spring
3. Remove the four screws and take out the lock. Collect the two brackets in the lid.
4. Lower the lid, undo the screws and remove the handle.

The lock is installed by reversing the above procedure. Before installing, lubricate the lock with cold-resistant grease.

3.7. Windows

Only safety glass should be used when installing new windows.

3.7.1. Replacement of windshield

1. Protect instrument panel with a cover.
2. Free the rubber strip from body all around
3. Press put the windshield carefully with the palm of the hand, working along the edges, see Fig. 3.
4. Remove old sealing compound from the body.
5. Fit new glass of the prescribed type in a new rubber strip. Start at the middle of the lower edge and press on the strip so that the glass fits snugly into it all around.
6. Insert a cord into the groove intended for the edge of the body sheets, see Fig. 4.

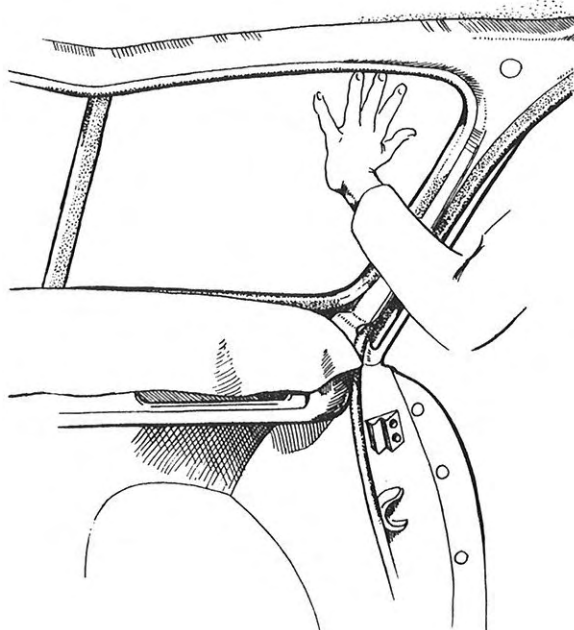


Fig. 3. Removal of windshield

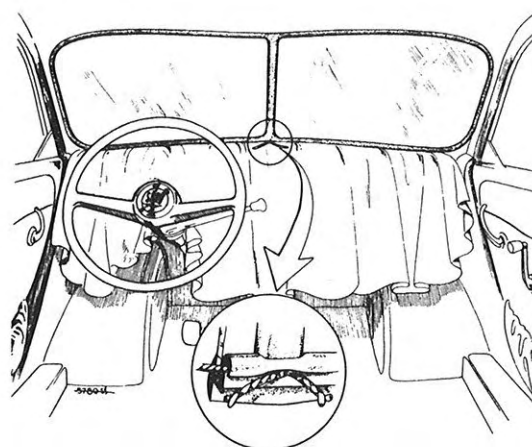


Fig. 4. Installation of windshield

7. Place the windshield into position from outside and check that it is correctly located vertically and laterally.

8. Pull the cord from inside the car so that the edge of the rubber strip comes over the edge of the body plates. Pull at left and right alternately while an assistant strikes from outside on the rubber strip with a rubber mallet.

9. Strike the strip with a rubber mallet so that it gets properly seated onto metal and glass.

10. Apply sealing compound all round between rubber strip and glass, see Fig. 5, and between strip and body.

11. Clean body and glass.

3.7.2. Replacement of rear window

To replace the rear window, proceed in the same way as for the windshield, but first the shelf over the trunk must be removed.

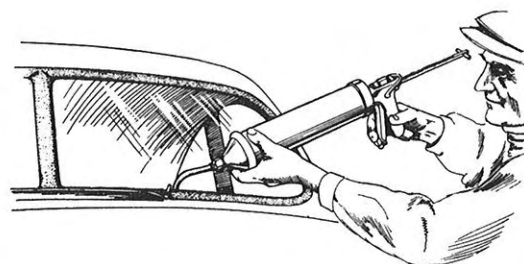


Fig. 5. Sealing of windshield weather strip

3.7.3. Replacement of side window

1. Press the window towards the inside of the car while folding up the external flange of the rubber strip starting at the rear edge of the window.

2. Fit new glass of the prescribed type into the rubber strip. Install glass and rubber strip with the aid of a cord as described for the windshield, see also Fig. 4. Start at the front edge of the window.

4. INSPECTION WORK

When supplied, the car is treated with underseal which protects the sheet metal against rust and flying gravel and also gives a certain amount of acoustic insulation. After a long period of service, especially on grave roads the underseal may, however, wear off exposed parts and it should therefore be inspected from time to time and improved if necessary.

The rear fenders are particularly exposed to flying gravel and stones. A pair of shields may therefore be fitted inside the fenders behind the wheel. These shields, which are of sheet metal, are braced to the wheel housing wall and available as optional extra.

4.1. Fenders

4.1.1. Removal

1. Remove wheel.
2. Remove fender retaining screws, starting at C and D, see Fig. 6.
3. Remove screw B last. Disconnect the electric cables at terminal boards or connectors.
4. Free and remove fender and lay aside the joint strip.

When removing the left-hand rear fender, stuff a clean linen rag into the fuel filler pipe so as to prevent dirt from dropping into the fuel tank when the cap is removed.

4.1.2. Installation

After treating the fender with underseal and attaching decorative strips, lamps and rubber collar (left-hand rear fender), proceed at follows:

1. Fit fender and joint strip and insert screws B and C.,
2. Align corner A and tighten screws B and C loosely so that the fender remains in place but can be further aligned if necessary.
3. Screw in the other screws.

4. Check that the fender is correctly located and tighten all screws. Do not tighten them so hard as to dent the fender near the joint strip.

5. Connect electric cables and push up fuel filler pipe thorough rubber collar (left rear fender), the screw on filler cap after removing linen rag.

6. Trim off the ends of the joint strip if they hang down below the fender, and fit the wheel.

4.2. Doors

4.2.1. Removal

1. Loosen door stopper band
2. Loosen all hinge screws at door pillar half a turn.
3. Support the door on a block or suspend it with a rope so as to take up its weight.
4. Detach the lower hinge from the door pillar.
5. Detach the upper hinge from the door pillar and remove the door .

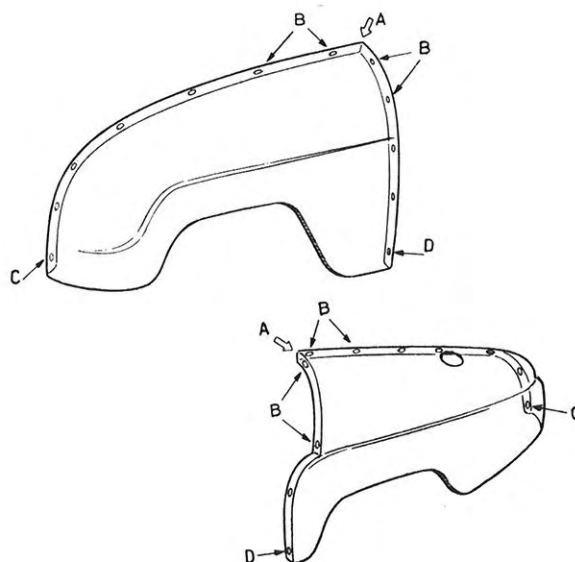


Fig. 6. Removal and installation of fenders

4.2.2. Installation

1. Block up the door in position
2. Attach each hinge with two screws, see Fig. 7.
3. Check that the door is correctly located vertically and longitudinally and that it fits against the seal.
4. Make sure that the hinge pins are aligned so that the door moves easily.
5. Adjust the hinges in desired direction with a wooden mallet.
6. Tighten all hinge screws firmly when the door hangs correctly.
7. Fit the door stopper and adjust the striker plate if necessary. Make sure that the teeth on the lock and striker plate engage properly also longitudinally.

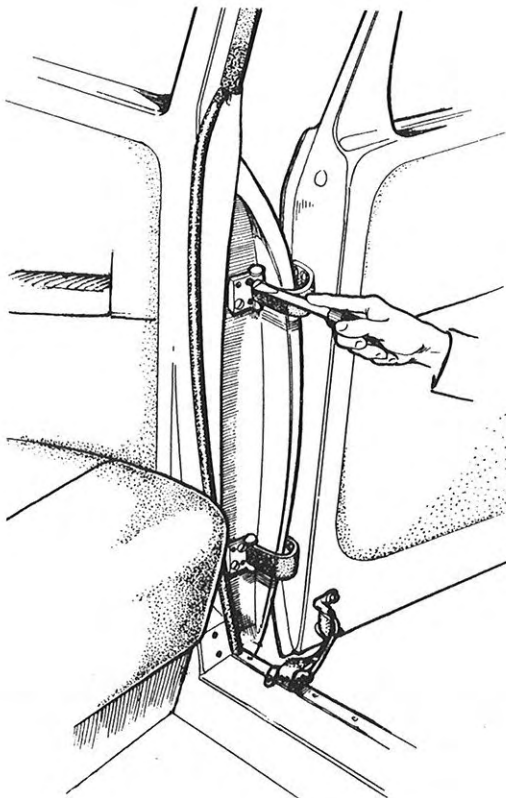


Fig. 7. Installation of door

4.3. Trunk lid

4.3.1. Removal

1. Open lid of trunk and disconnect the stay at lid.
2. Remove cotter pins and hinge pins and lift off lid.

When removing an undamaged lid, it is not advisable to remove the hinge attachments at body or lid, as the fit of the lid may be disturbed and installation made more difficult.

4.3.2. Installation

1. Hang up lid and fit hinge pins, which must be locked with cotter pins.
2. Attach stay to lid.

4.4. Welded body unit

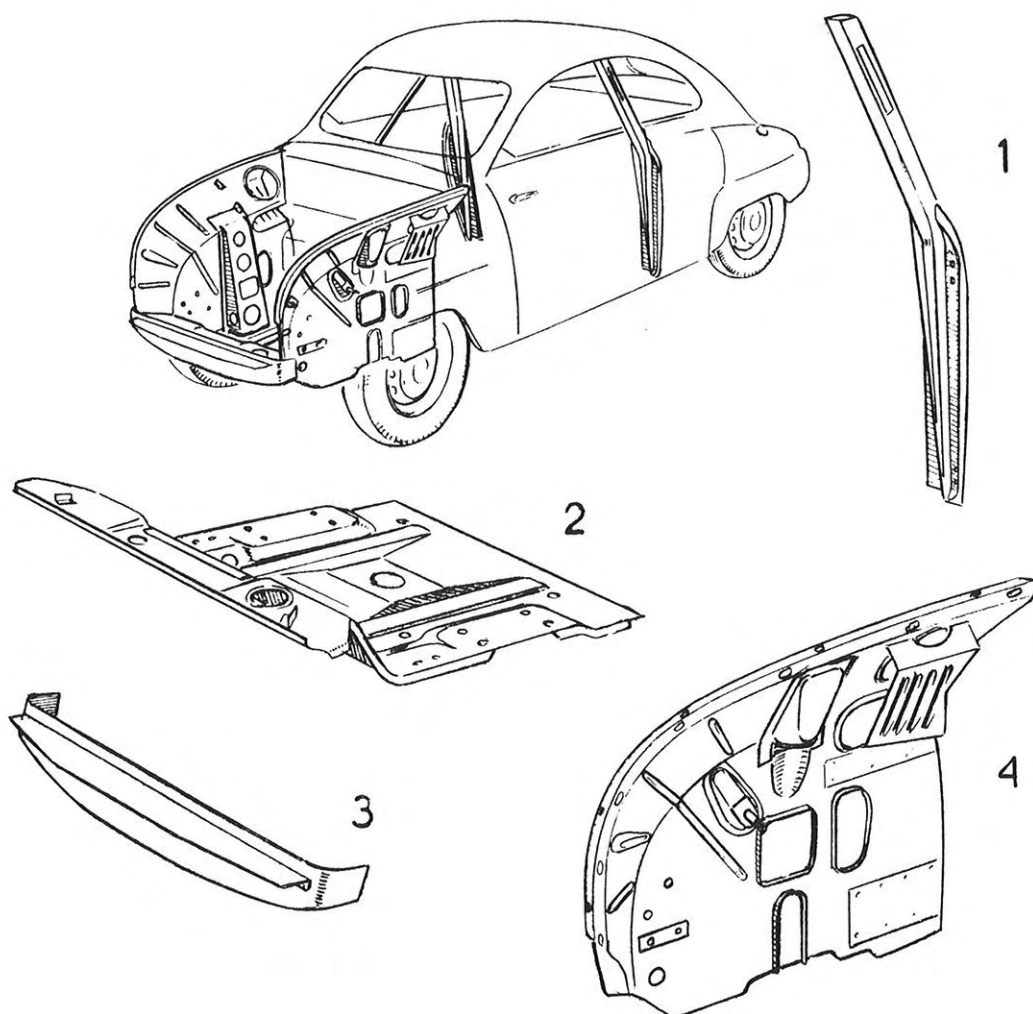
If, after a serious collision, any part of the body is so badly deformed that it cannot be straightened, it is possible to replace the damaged parts with new ones. Some of the sheet metal components included in the welded body unit are available as spare parts and Fig. 8 shows the parts which are particularly recommended for replacement if perfect results are to be obtained.

In order to avoid deformation due to thermal stresses, damaged parts should be removed by cutting with a welding torch only under exceptional circumstances.

4.4.1. Repair of damage to front body

Serious collisions involving damage to the front end of the car usually cause deformation of fenders, engine hood, front plate, wheel housing and front floor, that is, the engine compartment floor.

In the case of minor accidents where one or both of the wheel housings are deformed only in front of the bearing bracket carrying the spring arms, the wheel housing can be straightened or partly replaced, but if the damage is so extensive that the wheel housing is deformed at or behind the bracket, the damaged parts (front plate, wheel housing(s) and front floor) should be replaced. In most cases only one of the wheel housings will be so badly damaged that it must be entirely replaced.



1. Door pillar 2. Front floor plate 3. Front plate 4. Wheel housing wall

Fig. 8. Parts included in the welded body unit which are available as spare parts.

4.4.1.1. Removal of body components, front end.

1. Remove engine hood, see 3.1.1.
2. Remove front wheels, see Chapter 8, "Wheels and hubs".
3. Remove the fender(s). See 4.1.1.
4. Lift out power unit. See Chapter 3, "Transmission".
5. Remove springs, spring arms, radiator, steering gear and other parts affected by further stripping down. Follow the instructions for removal given in the chapters covering the respective units.

Removal of wheel housing

Before removal measure and note down the distance A, Fig. 12, if the body tools are not available.

6. Grind off tack welds at front and cowl plates.
7. Drill out spot weld at floor plate.
8. Grind off welded joint and tack weld at floor plate.
9. Chisel off remaining tack welds and remove wheel housing.

Removal of front plate

10. Grind off tack weld at floor plate.
11. Grind off tack weld at wheel housing (if not removed) and remove front plate.

Removal of front floor

12. Drill out spot welds at wheel housing (if not removed).
13. Grind off welded joint and tack weld at wheel housing.
14. Cut off floor plate about 30 mm. in front of firewall.

If the entire wheel housing is not to be replaced, the floor plate should be cut off about 30 mm. in front of the front holes for the lower spring arm attachments.

4.4.1.2. Installation of body components, front end.

1. Remove rear engine attachment and straighten firewall if it is deformed.

2. Straighten and trim the cut edge of floor plate (and wheel housing wall).

3. Fit the new front floor plate, preferably using a jack and tool Saab 93-150, see Fig. 9. The tool is applied to the holes for the rear side links under the body after removing links. Fit the two front attachment holes for the stabilizer bearings in the front floor plate to the pins on the tool and lift the floor plate into its correct position.

If the above-mentioned tool is not available, the floor plate can be aligned according to the dimensions given in Fig. 12.

4. Mark the new floor plate at the trimmed edge of the old floor.

5. Remove the floor plate and trim it to the mark.

6. Replace the floor plate and clamp it to the rear edge.

7. Level the floor plate and check that the distance between the front and rear power unit suspension points is correct. Use tool Saab 93-152, see Fig. 10. If the distance is not correct, the cowl must

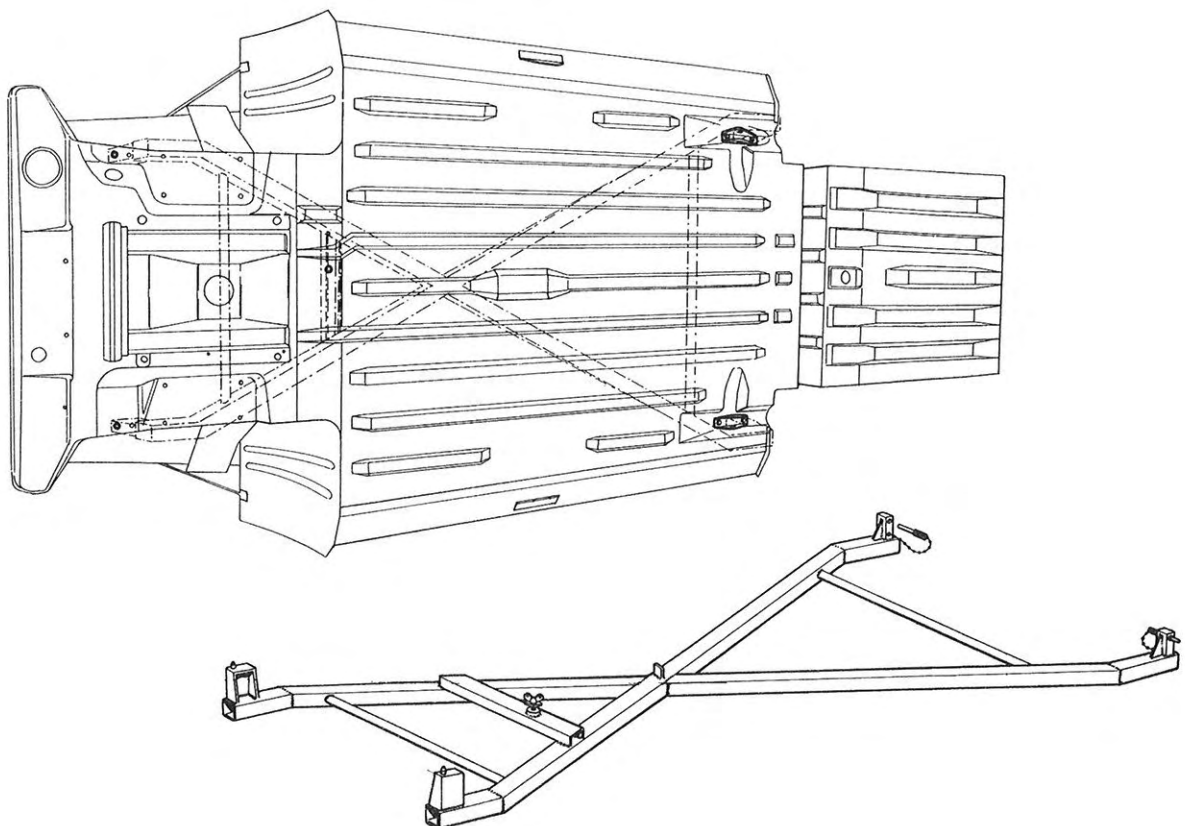


Fig. 9. Checking the body dimensions. Tool Saab 93-150

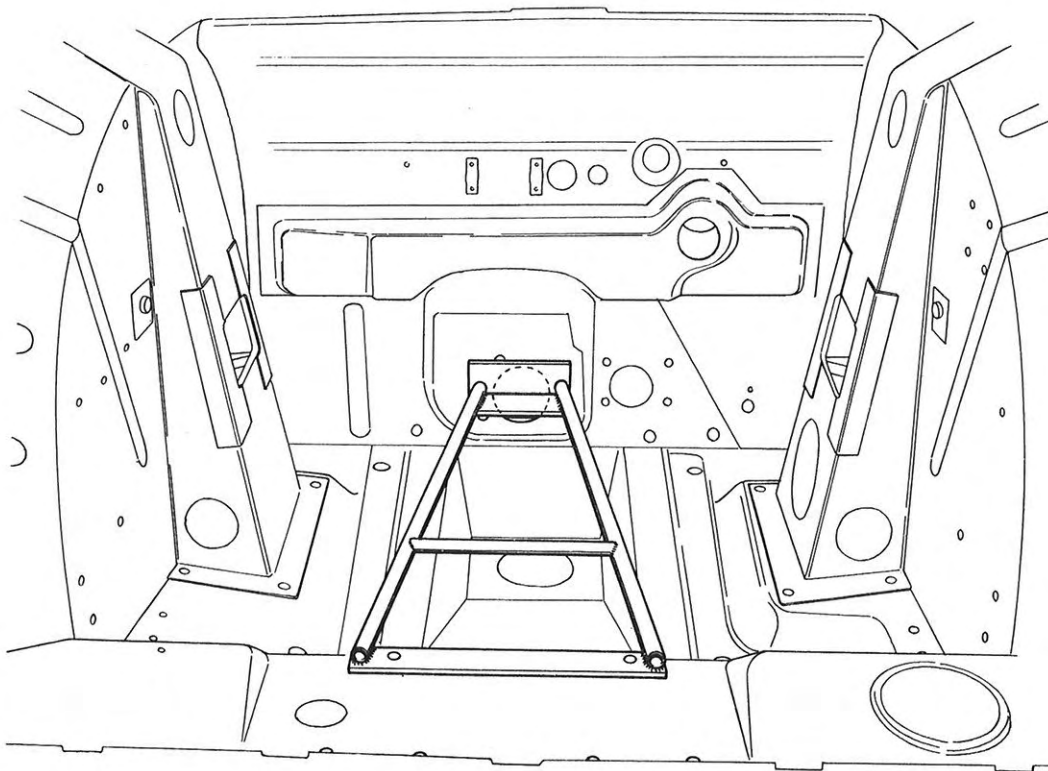


Fig 10. Checking dimensions of front floor. Tool Saab 93-152

be straightened further. Without the tool the distance should be checked according to Fig. 12.

8. Weld the rear edge of the floor plate and remove the tool. Start welding with a tack-weld in the middle and weld with 50-60 mm. (2-2 1/2 in.) long welds on left and right alternately. Hammer down each weld before it cools.

9. Attach the wheel housings to the floor plate with bolts through the holes for the lower spring arm front bearings.

10. Tack-weld bearing brackets to floor and hammer weld before it cools using a dolly.

11. Fit tool Saab 93-151. Attach tool along underside of door sill with clamps or the like and fit it at the front into the rear hole for the stabilizer bearing in the floor plate and insert the pin into the hole in the wheel housing wall under the two holes for the bumper support, see Fig. 11. Using a jack, adjust wheel housing wall and floor plate to correct height.

If this tool is not available, the wheel housing can be aligned using the dimension A in Fig. 12, which was measured before removal of wheel housing wall.

12. Mount the engine hood and check the fit between wheel housings and hood.

13. Lift up engine hood and weld top of wheel housing rear edge to cowl plate. Weld on the wheel housing side stay.

14. Tack-weld wheel housing rear edge to the cowl plate, first from outside, then remove engine hood and tack-weld from inside.

15. Tack-weld wheel housing wall to floor plate and weld on transverse member between bearing brackets.

16. Fit and tack-weld front plate.

17. Complete welds of wheel housing and front plate against floor plate.

18. Take up any holes required, surface and paint,

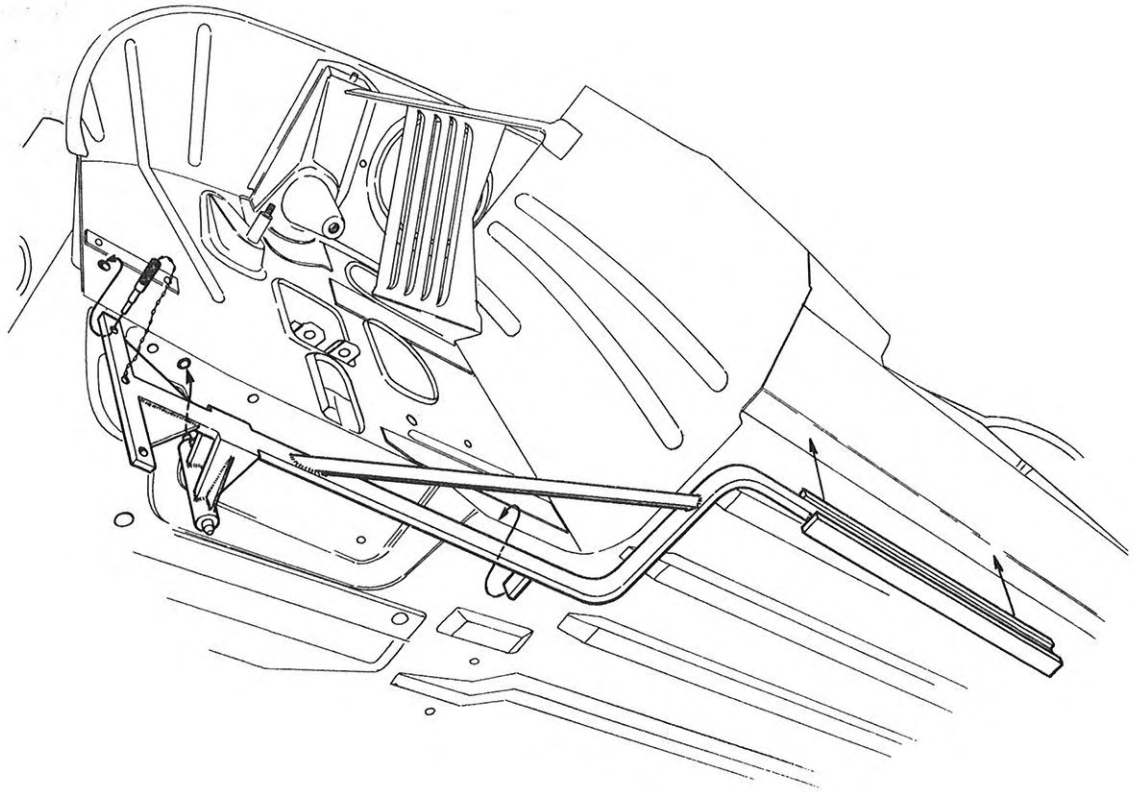


Fig. 11. Aligning of front floor. Tool Saab 93-151

then install rear axle side links, front suspension, power unit, etc.

While installing the various parts as described in the appropriate chapters, check that damaged parts are replaced by new ones. This applies in particular to spring arms and steering components.

4.4.2. Replacement of door pillar

If the side of the car has been damaged in a collision, the side plate and door pillar may be damaged in addition to the door. If the door pillar has been pushed in and is badly deformed it should be replaced. Proceed as follows:

4.4.2.1. Removal

1. Remove door side window (direction indicator) and any parts of the upholstery which might be damaged during work.
2. Grind off the outer weld between the side plate and the door pillar.

3. Drill out the spot welds on the front of the door pillar.

4. Grind off the tack weld at the folded edge of the side plate and the welded joint between side plate and door pillar.

5. Chisel loose weld at extension of inner side plate towards upper hinge attachment.

6. Saw off door pillar at the roof.

7. Chisel off welded joints between pillar and door sill and remove the pillar.

4.4.2.2. Installation

Before a new door pillar is installed, the remaining welds must be removed from the pillar attachment points at roof gutter and door sill. If necessary, bend out the fold at the front edge of the outer side plate and then adjust the side plates so that they have the correct shape at the door pillar attachment.

1. Bend in the fold of the outer side plate and weld the door pillar temporarily in place. Hang the new or straightened door to check its fit.
2. Adjust the width of the door gaps.
3. Remove the door and weld the door pillar into place, together with the inner and outer side plates.
4. Fill up with melted tin and trim all welds with a file.
5. Apply filler and rub down wet where necessary.
6. Fit and adjust door.
7. Install side window, door upholstery, (direction indicator) etc., after painting.

4.4.3. *Repair of damage to rear of body*

In the case of collisions when the rear of the car is damaged, the wheels and the rear axle must be

inspected. If the rear axle attachments are deformed, the axle must be dismantled, see Chapter 6, "Axles and suspension", and the middle bearing attachment adjusted. Remove also the front, lower spring arms and stabilizer from the attachment in the body, then fit tool 93-150 for checking the attachment points of the rear axle side links, see Fig. 9. The middle bearing attachment must also lie on the centerline of the car exactly between the two rear side link brackets.

4.4.4. *Checking of body dimensions*

It is important that door openings and attachment points for suspension and power unit should be checked after adjustment of the body. Diagonal measurements should also be made so that no twist or asymmetry remains after adjustment.

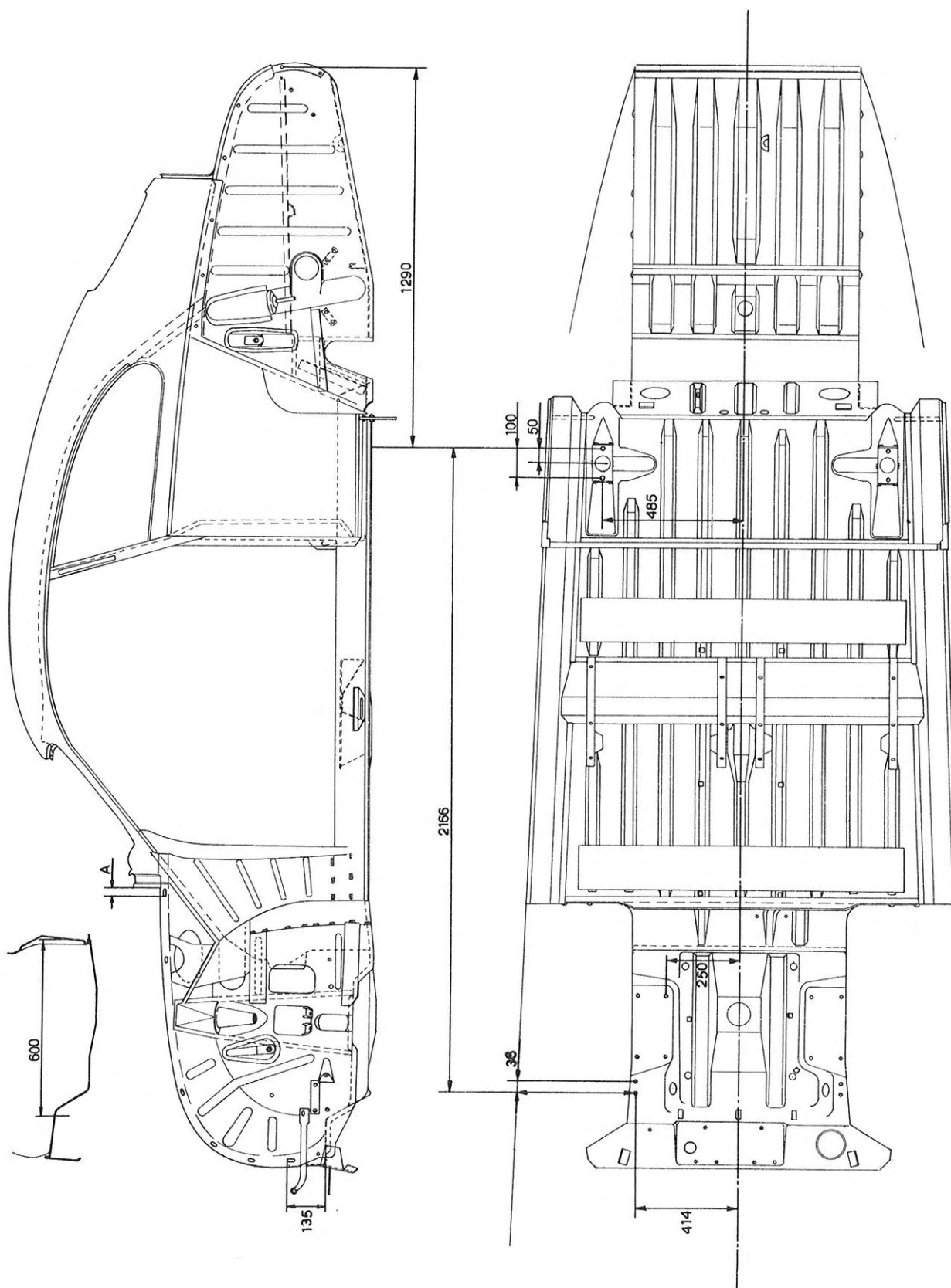


Fig. 12. Measures for checking the body dimensions