SERVICE MANUAL

CARS AND VANS

PV 444

Part 11

BODY

Export Service Department

AKTIEBOLAGET

VOLVO

GÖTEBORG . SWEDEN

CONTENTS

BODY

SYNTHETIC PAINTING

DESCRIPTION

Since the PV 444 has a self-supporting body, there is no chassis frame. The body consists of press-moulded steel plates. Each of these plates contributes to the bearing construction. The body (Fig. 1) may be conveniently divided into the following groups: floor section, cowl section, side sections, rear section, front section, rear fenders, doors and rear compartment.

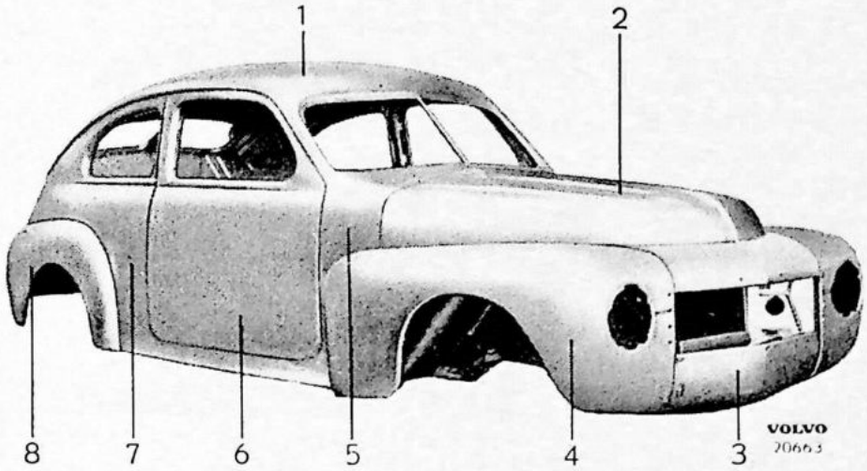

Fig. 1. Body.

1. Roof
2. Hood
3. Front section
4. Front fender assembly
5. Cowl
6. Door
7. Rear side panel assembly
8. Rear fender

The floor section consists of the forward (1, Fig. 2) and rear floor plates (Fig. 3), the forward and rear cross members and the tunnel. The floor plates are spot-welded together at the rear cross member. On the forward cross member (2) are four brackets (3) which serve as supports for the front seat adjuster slide rails. The rear cross member (5) forms the support for the front edge of the rear seat. The tunnel (4) for the propeller shaft is spot-welded to the floor plates. The rear floor plate (Fig. 3) is strengthened underneath on each side by means of a longitudinal reinforcement member with a cross member between. This cross member is fitted with an attachment device for the rear axle track bar. In the rear part there is a flanged hole for the fitting of the fuel tank, the top of which forms part of the floor in the rear compartment.

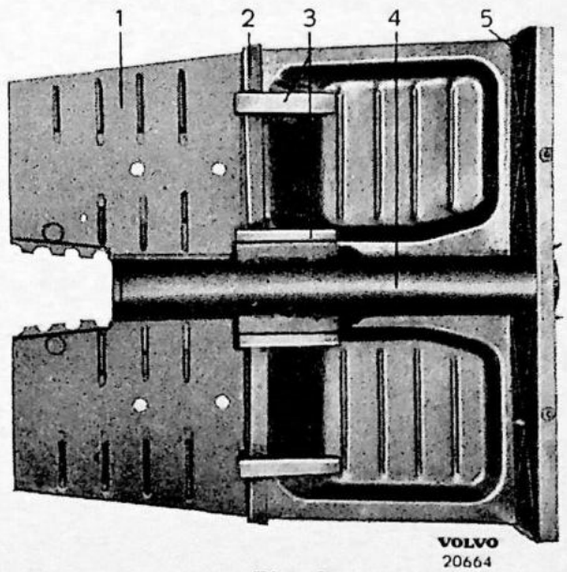

Fig. 2.

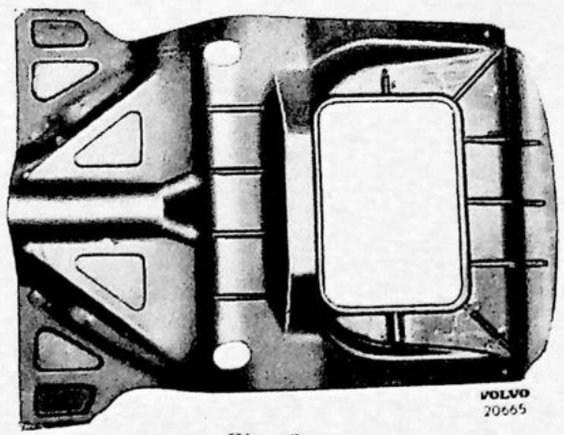

Fig. 3.

The bulkhead (1, Fig. 4) forms the front wall of the body and is constructed as a sloping recessed partition. The bottom of this forms the toeplate and the sides form the forward section of the cowl. Two side members (4) extend forwards and are connected through a tubular cross member (5). To the rear, these side members divide and form reinforcement mem-

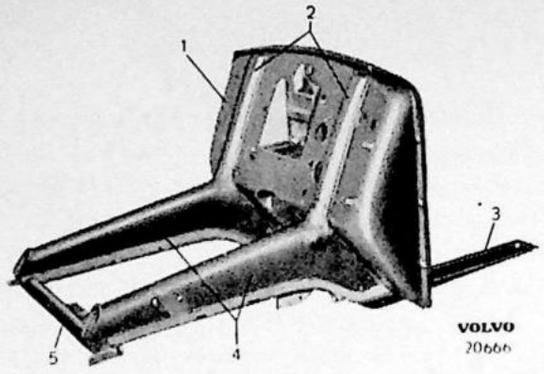

Fig. 4.

bers (2 and 3). These are spot-welded at the mounting plate and the forward floor plate. The front suspension cross member and the wheel housing plates are spot-welded to these side members. The steering-gear housing is fitted to the left-hand member. The bumper support and the radiator frame are attached to the tubular cross member.

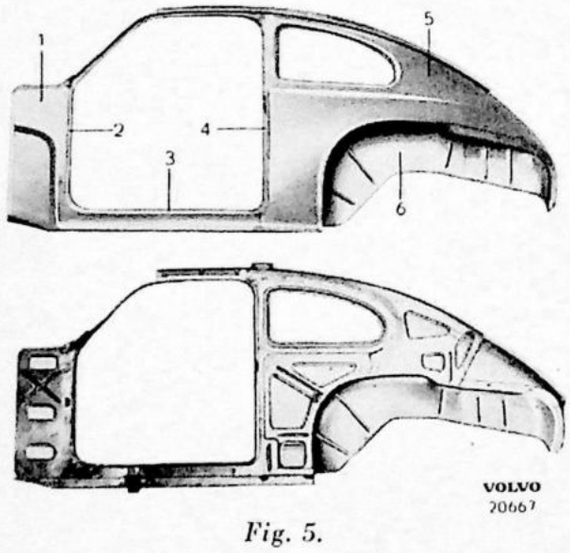

Fig. 5.

The side section consists of the cowl side (1, Fig. 5) and the side of the rear section (5). This section consists of one inner and one outer plate. The rear of the cowl side is reinforced and forms pillars (2) for the attachment of the doors. The lower part forms the door sill (3). The part of the body from the central pillar (4) to the rear compartment opening is the side of the rear section. The side has a flanged opening for the rear side window while the lower part forms the wheel housing (6). This continues into the side of the rear compartment.

Fig. 6.

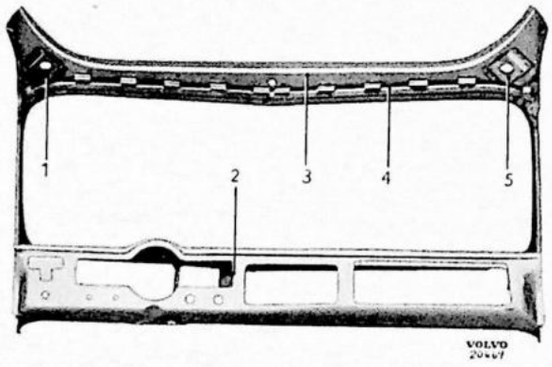

Fig. 7.

The roof section consists of the roof plate, Fig. 6, which is pressed in one piece from the bulkhead to the upper edge of the rear compartment. The roof plate thus forms the upper part of the cowl, windscreen opening, the roof itself,

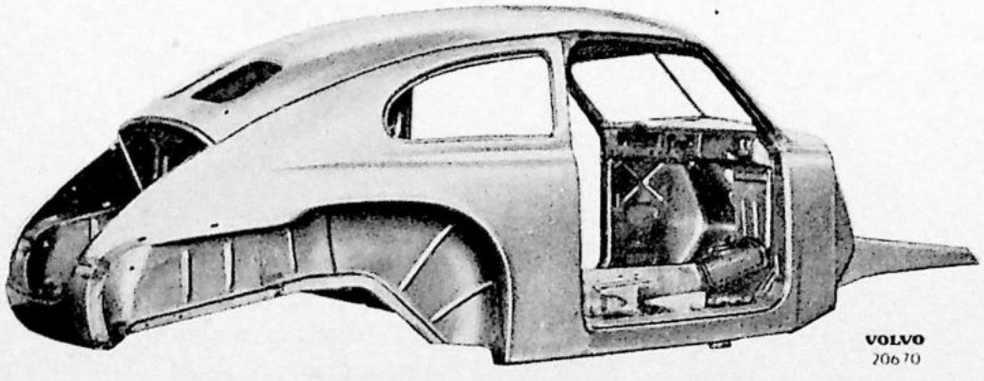

Fig. 8.

rear window opening and the upper limit of the rear compartment. The instrument panel (2, Fig. 7) is attached directly to the front end of the roof plate as is also the reinforcement plate (3) for the roof, this also serving as a support for the brackets (1 and 5) for the sun visors and the former rib for the roof upholstery (4).

All the above-mentioned details are spot-welded into one unit, the self-supporting body (Fig. 8).

The front fenders, wheel housing plates, radiator section and hood constitute the front section. This section is attached to the tubular cross member, the side members and the cowl sides.

The front fenders are pressed in two parts which are joined through the headlight cavities. The front fenders are attached to the wheel housing plates in their upper parts.

The radiator section constitutes the forward part of the front section together with the air duct to the radiator. The radiator itself is fitted in a frame in the rear part of the radiator grille section.

The hood is lifted up forwards on two hinges while its lower ends are hinged to the sides of the radiator grille section. In the lowered position the hood is held in place by means of a locking device which is fitted to the bulkhead. This locking device consists of a catch and a lever. The lever is placed under the instrument panel and is accessible from the driver's seat.

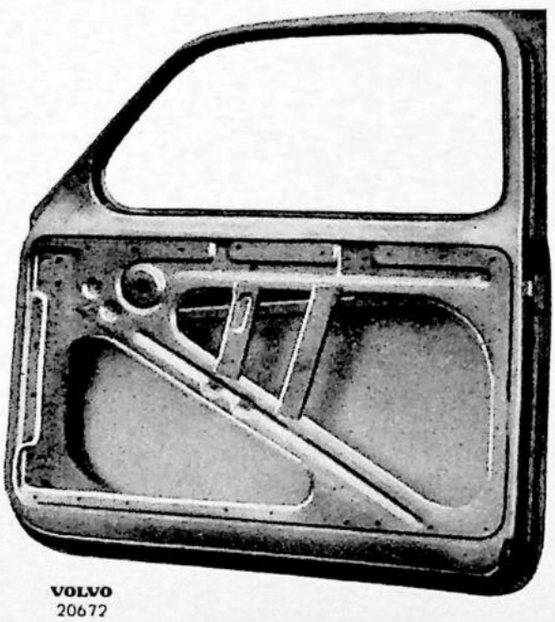

Fig. 9.

The rear fenders are attached to the side of the body by means of screws. The rear ends are drilled for the rear lights. There is also an extra hole bored in the left fender for the fuel tank filler pipe.

The doors consist of an outer and an inner plate which are flanged and spot-welded to one unit. See Fig. 9. The hinges are mounted on the inner plate. Holes drilled in the plates are of considerably larger diameter than the screws used which allows adjustment of the doors both horizontally and vertically. The body arms of the hinges are fitted to the cowl side with slotted screws and "floating" nuts. This makes possible transverse adjustment. The doors are fitted with door checks. These consist of a swinging arm fitted with a rubber buffer. This arm operates between two spring-loaded rollers, the function of which is to hold the door fully open.

The door lock is attached to the door by means of screws. The door handle on the outside operates a lever which, in its turn, presses the lock cylinder forwards. The inner door handle is attached to a remote control device which is attached by means of three screws to the inner door plate. This remote control is operated from the inner door handle through a link. The door is locked from the outside by means of a lock which is fitted in its cylinder under the left-hand door handle. The lock is connected through an eccentric to a plunger which engages the outer door handle when the key is turned to the locked position. The doors may be locked from the inside of the car by turning the door handles downwards. The link then moves backwards which prevents the forward movement of the plunger when the outer door handle is turned.

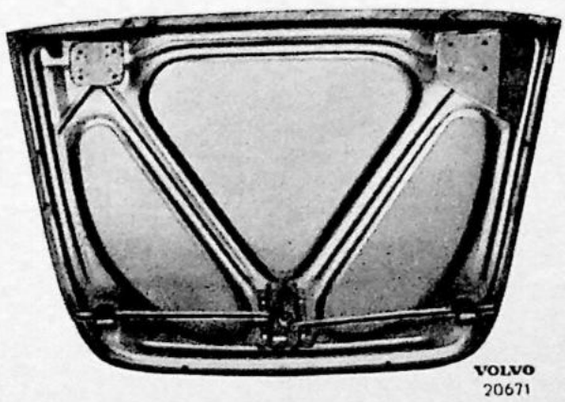

Fig. 10.

The window regulators are of the wire and chain type, that is to say movement of the window regulator is transmitted to the wire and chain which are joined to form a closed circle running on two rollers by means of a cog. The lower roller is fitted with a spring tension device.

The rear compartment door (Fig. 10) is constructed in the same way as the other doors. The locking device is fitted in the lower edge and consists of a lever and two links. These links tighten on the inner side of the rear section of the body. The hinges are attached to the upper edge of the rear compartment door. These hinges are attached to the body on a reinforcement plate on the rear part of the roof plate. The left hinge is fitted with a device which holds the rear compartment door in the raised position. The upper ends of the rear shock-absorbers are attached to a shock-absorber housing. Fig. 11 shows this housing on the right-hand side of the body.

The bumpers are mounted on two supports. Supports for the front bumpers are attached to brackets welded to each end of the tubular cross member outer ends. Supports for the rear bumpers are attached to the reinforcement in the rear part of the floor plate. Bumpers of later construction are of three-piece construction and are equipped with over-riders.

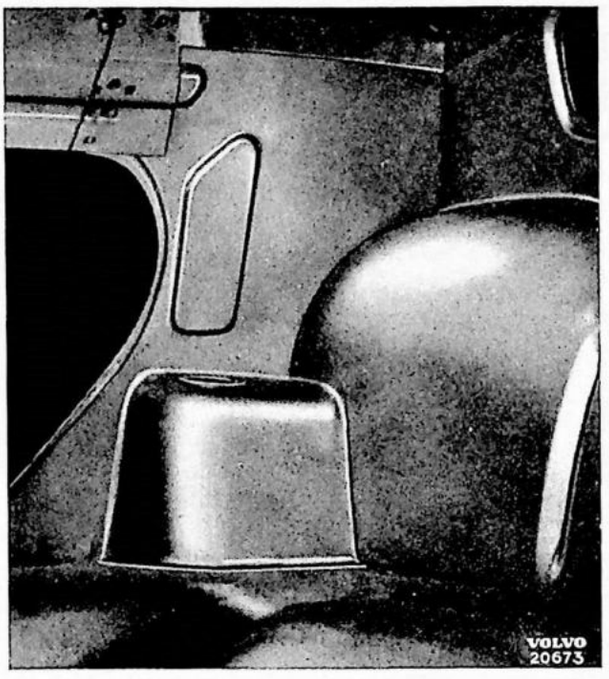

Fig. 11.

The body is noise and heat-insulated. This insulation consists of specially-treated "waffle" paper which is fastened directly to the plating with adhesive.

Front section

Disassembly and assembly

The front section may be removed in one unit which is very suitable for work on the tubular cross member and side members or more extensive repairs. Fig. 12 shows the front section detached from the rest of the body.

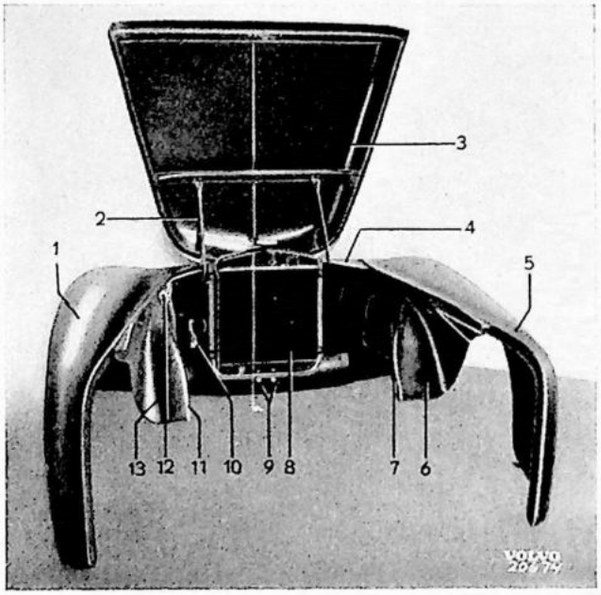

Fig. 12.

1. Front fender, left
2. Main hinge
3. Hood
4. Radiator grille section
5. Front fender, right
6. Wheel housing plate, right
7. Attachment opening
8. Radiator
9. Attachment bolts
10. Connector
11. Attachment opening
12. Connector
13. Wheel housing plate, left

The radiator grille section is held in position by two bolts (9) on the lower part of the radiator frame and by screws on each side (7 and 11) through the wheel housing plates (6 and 13). The rear part of the fenders are attached to the side of the cowl by four bolts in each fender.

For disassembly, the front bumper and supports are removed by loosening them from the tubular cross member. The radiator should be emptied before this operation is commenced. If there is anti-freeze in the radiator, drain into a clean container. Disconnect the cables to the headlights and the horn at the connectors (10 and 12). Loosen the wire to the radiator blind as well as the upper and lower radiator hoses. Remove the nuts from the bolts (9) at the tubular cross member. Loosen the fenders from the cowl sides and remove the bolts through the wheel housing plates. Remove the forward section.

Assembly is carried out in the reverse order. Always fit a new weatherstrip. Make sure that this is properly stretched and lies in its correct position on the joint.

Front fenders

The front fenders are removed, after the headlight cables have been disconnected at the connector, by removing the four bolts which hold the radiator grille in position. Remove also the bolts holding the fenders to the side of the cowl, the wheel housing plates and the radiator grille section as well as the cross member for the splash plate.

As far as the disassembly of the headlight is concerned, see Part 10.

The fenders are assembled in the reverse order. A new weatherstrip should also be fitted.

Hood and hood lock

The hood is disassembled by removing the two bolts holding the hinges. These bolts are accessible under the fenders and are keyed to facilitate the work.

The attachment of the hinges is adjustable since the holes are larger than the bolts. The bolts are tensioned in the desired position by means of a washer on each side of the plating as well as nuts.

The hood lock is fitted to the bulkhead with three screws which are accessible under the instrument panel.

The hole in the bulkhead is rectangular so that the hood tension may be adjusted.

Radiator grille section and mouldings

The radiator grille section is attached partly to the tubular cross member with two bolts and partly to each front fender with four bolts and to the wheel housing plates with three bolts.

When dismantling the radiator grille section, the hood is first removed. Uncouple the wire to the radiator blind. This is best done by bending up one of the hooks in the centre of the wire. Loosen the upper and lower radiator hoses.

Loosen the bumper supports from the tubular cross member and remove both the bumper and the supports.

Remove the radiator grille itself. This is attached to each front fender by means of four bolts (which are accessible from under the fender) as well as three screws on the central pillar at the radiator grille. Disconnect the cables to headlights and horn. Loosen the bolts which hold the radiator grille section to the fenders, tubular cross member and wheel housing plates. Remove the radiator grille section and take out the radiator and the radiator blind.

When reassembling use a new weatherstrip.

Rear fenders

The rear fenders are attached to the side of the rear section with bolts. These bolts are accessible partly from the rear compartment and partly from the underside of the fenders.

When disassembling, remove the wheel first to facilitate the work. Loosen the cables to the rear lamps.

Loosen the splash plate bracket. Remove the screws holding the fender to the body and lift it off. Before removing the right-hand splash plate, the fuel filling pipe and the air pipe must be dismantled.

A new weatherstrip should be used when reassembling.

Rear compartment and lock

The rear compartment lid operates on two hinges which are screwed to the inner plate of the lid by means of brackets on the body. The holes in the hinges are oval making possible vertical and horizontal adjustment of the lid. Horizontal adjustment is carried out by moving the hinges on their support on the inside of the lid, in the desired direction. Vertical adjustment is carried out in a similar way on the hinge supports in the body.

The edges of the rear compartment opening may be adjusted to fit the lid tightly by pressing them inwards or outwards with a hammer and a suitable driver.

In order to get the lid to fit more tightly against the rubber weatherstrip on the sides and top, the hinges are bent slightly. This is simply done by placing a wooden wedge between the inner part of the hinge and the body after which the lid is pressed carefully downwards.

If an even harder contact surface between the bottom and sides is desired against the rubber weatherstrip, then the outer ends of the lock links (4 Fig. 13) and the guides (5) are driven towards the edge slightly with a brass hammer.

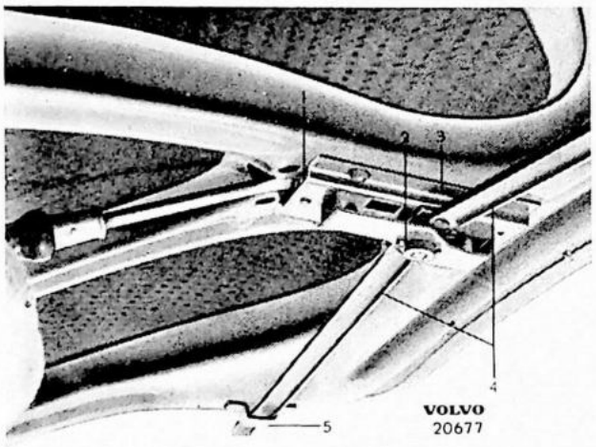

Fig. 13.

The locking device is attached to the inner plate of the lid by means of four screws. The handle is retained by a cotter pin (2). The lock cylinder is held in place by means of a screw (1) which is accessible with a screw-driver from the underside of the lid. See illustration.

When disassembling, the lock cylinder and handle are first removed. After having loosened the four screws (3) the lock may be removed by easing it forwards. Assembly is carried out in the reverse order.

Doors

Disassembly and assembly

1. Remove first the door handle, arm rest and window regulator. The door handle and the window regulator are removed as shown in Fig. 14.
2. Remove the door upholstery by inserting a screw-driver under the edge and bending outwards until it loosens. This is shown in Fig. 15 and should be carried out very carefully.

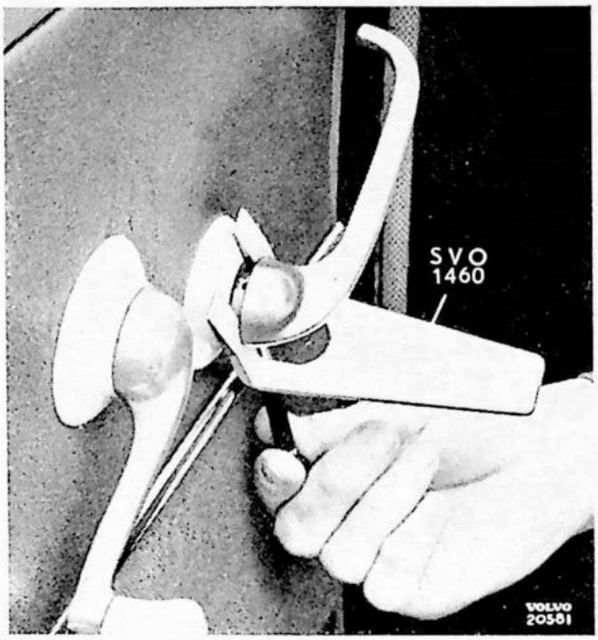

Fig. 14.

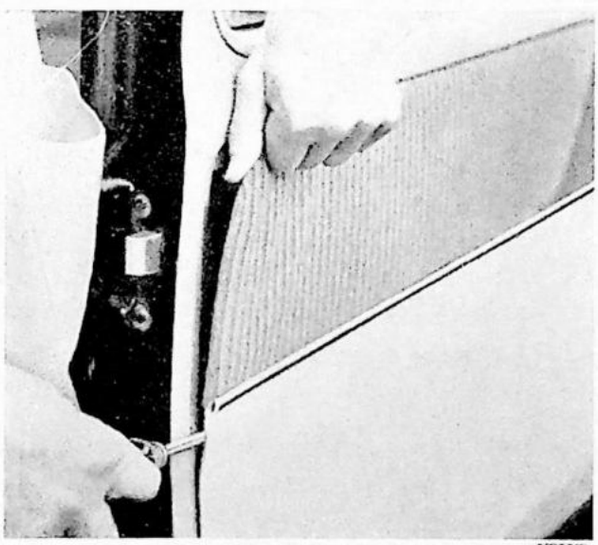

Fig. 15.

3. Remove the cotter pin (6), the washer (5) and the rubber buffer (4) on the door check as shown in Fig. 16.
4. Loosen the hexagonal bolts attaching the door to the upper and lower hinges and lift off the door in a backward direction.
5. Assembly of the door is carried out in the reverse order.

Adjustment of the door is carried out in the following way:

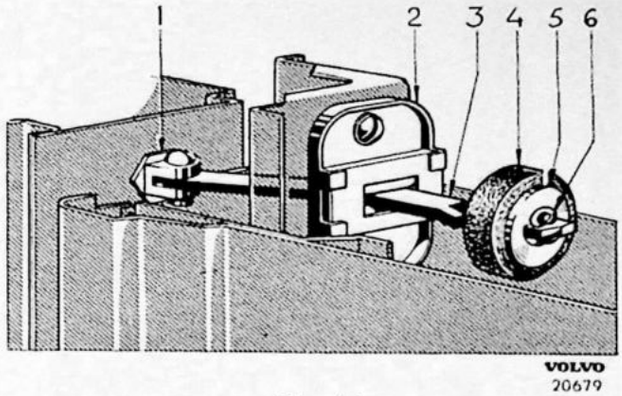

Fig. 16.

The door is moved either outwards or inwards on the hinge side. This is carried out by loosening the slotted screws on the hinge attachment on the side of the cowl, moving the hinge in the desired direction and then re-tightening the screws. The holes are oval in a transverse direction as shown in Fig. 17 and the nuts are "floating" in their position on the inside of the plate.

The door is moved sligthly upwards, downwards or sideways. This is carried out by loosening the screws where the hinges are attached to the door, moving the door into the desired position and then re-tightening the screws. The holes in the inner plate are larger than the diameter of the screws which permits the above-mentioned adjustment as shown in Fig. 17. If the door must be moved more backwards or forwards than the size of the holes permits then the hinge halves are straightened or bent slightly.

If the door is warped then it can be bent straight if the distortion is not too great.

The block shown in Fig. 18 may be adjusted both in relation to the striking plate and to the door lock.

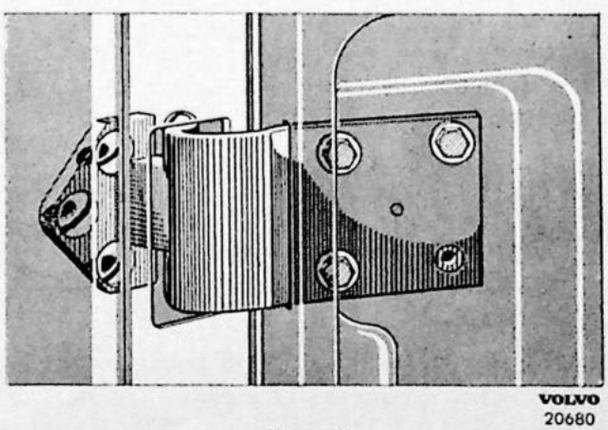

Fig. 17.

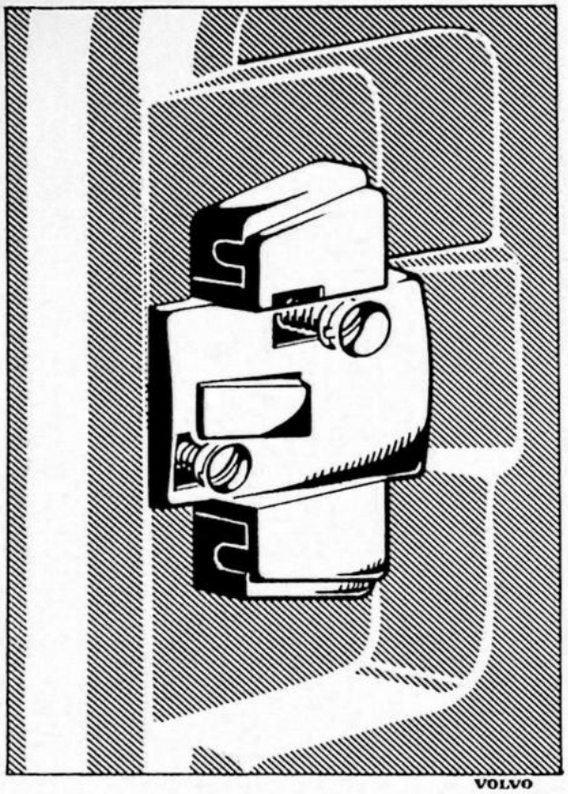

Fig. 18.

After the door is mounted and has been adjusted for the door opening make sure that it does not open so much that the forward edge of the door bumps against the fender. If there appears to be risk for this then more washers should be added between the rubber buffer and the cotter pin.

Door check

The door check may be replaced without it being necessary to remove the door.

1. Proceed according to points 1—3 in "Doors" above.
2. Remove the upholstery from the side of the cowl.
3. Loosen the nut on the door check fork bolt (1, Fig. 16) and remove it together with the link (3).
4. Replace the ratchet (2) if necessary. It is attached by means of screws.
5. Assembly is carried out in the reverse order.

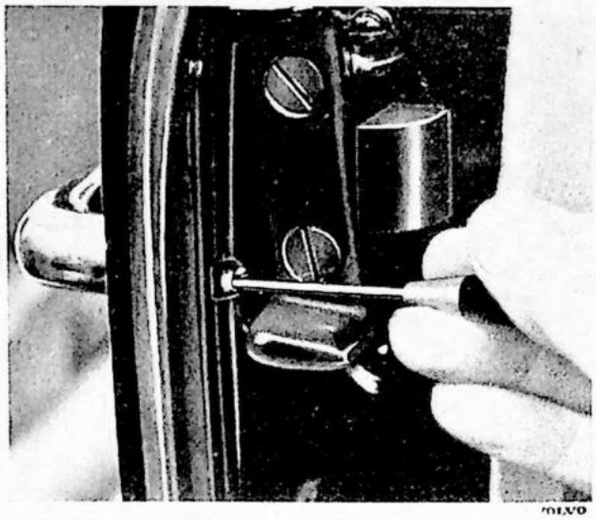

Fig. 19.

Door locks

Disassembly

1. Remove the arm rest, the inner door handle and the window regulator. The door handle and the window regulator are removed by using tool SVO 1460 as shown in Fig. 14.
2. Remove the door upholstery. Use a screwdriver which is inserted under the cloth and then bent outwards as shown in Fig. 15.
3. Remove the cotter pin on the outer door handle with the help of a small driver. This cotter pin is self-locking so the ends are not bent. See Fig. 19. Remove door handle.
4. Loosen the screw holding the lock cylinder and pull it out together with the lock unit.

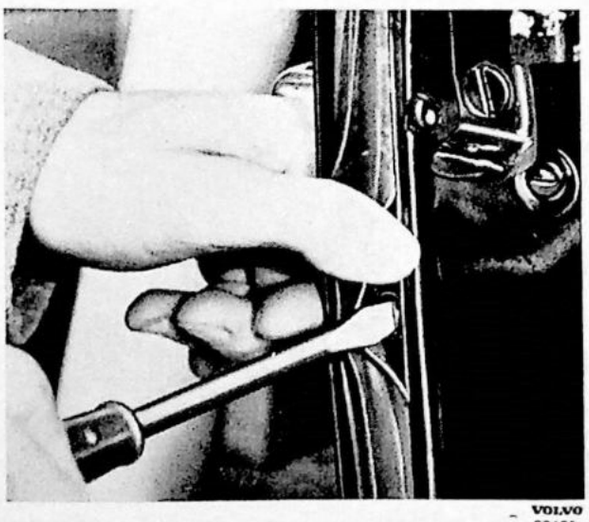

Fig. 20.

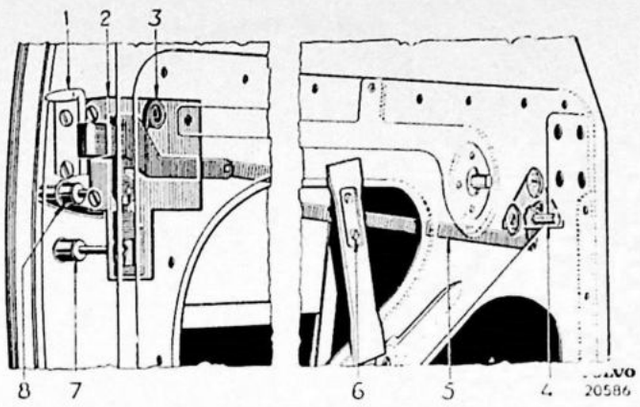

Fig. 21.

1. Door striking plate
2. Door lock
3. Lock spring
4. Remote control
5. Link
6. Guide
7. Lock cylinder
8. Door handle

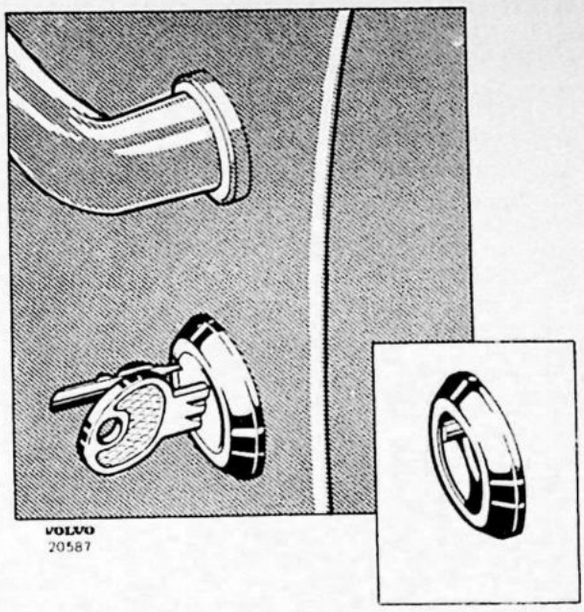

Fig. 22.

This screw is accessible under the rubber weatherstrip as shown in Fig. 20.

5. Loosen the screws holding the lock (2, Fig. 21), the guides (6) for the link (5) and the remote control (4). Lift out the door lock in a downwards direction.
6. Assembly is carried out in the reverse order.
7. If the lock unit itself is to be removed from the lock cylinder, then the key is inserted and turned into its left-hand position. Then push in a small, pointed object such as a pen nib in the small recess in the lock plate. In this way a small catch is released and the lock unit may be drawn out after rotating slightly in an anti-clockwise direction as shown in Fig. 22.

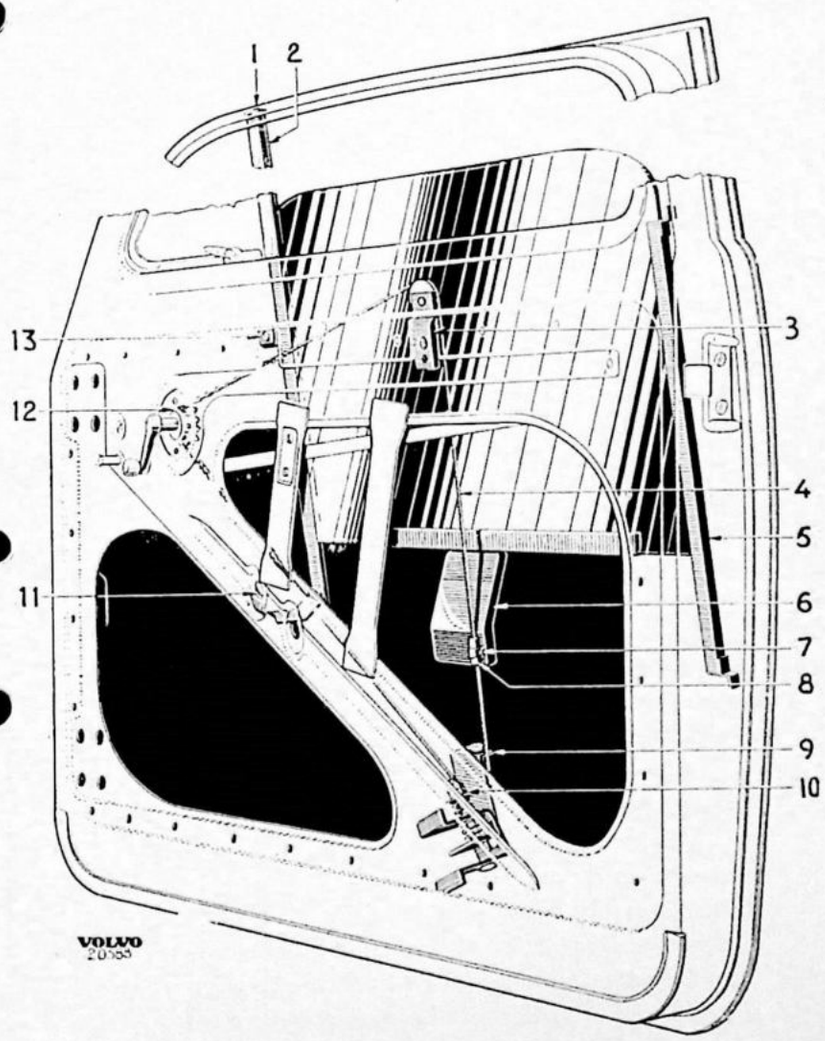

Fig. 23.

1. Screw for front run channel
2. Front run channel
3. Roller, upper
4. Wire
5. Front run channel
6. Regulator channel
7. Connector sleeve
8. Connector
9. Tension device with lower roller
10. Nuts for tension screw
11. Screw for front run channel
12. Window regulator cog
13. Screw for front run channel

Windows and window regulators

Disassembly and assembly

1. Remove the arm rest. This is attached by means of four screws.
2. Remove window regulator and inner door handle. These are removed by using tool SVO 1460 as shown in Fig. 14.
3. Remove the door upholstery. Use a screwdriver which is inserted under the upholstery and bent outwards as shown in Fig. 15.
4. Loosen the window weatherstrip and lift out this as well as the ventilator.
5. Remove the upper screw (1, Fig. 23) and the central screw (13) which retain the forward front run channel (2).
6. Remove connector sleeve (7) which retains connector to regulator channel (6).
7. Release load on the tension device (9) by loosening the nuts (10) to the tension screw on the lower roller. Remove the wire and chain.
8. The upper roller (3), the lower roller with tension device (9) and the window regulator cog (12) as well as the front run channels are removed if required.

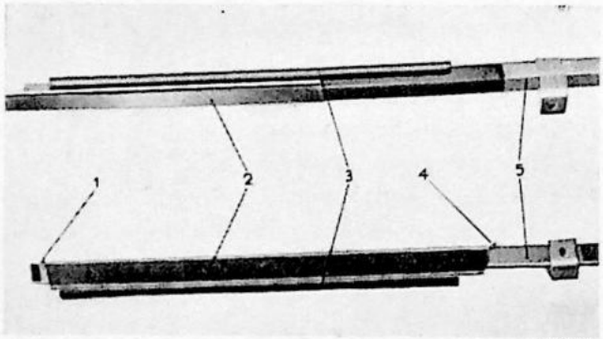

Fig. 24.

9. Assembly is carried out in the reverse order.

Before installing the window make sure that the weatherstrips are in good condition. Worn or damaged weatherstrips should be replaced. The weatherstrip on the ventilator in the forward front run channel is taken out by removing the two nails (1 and 4, Fig. 24) by pulling the retainer (2) from the channel (5). The new weatherstrip (3) is fitted so that it lies on the front run channel after which the retainer is slid on and the nails driven home.

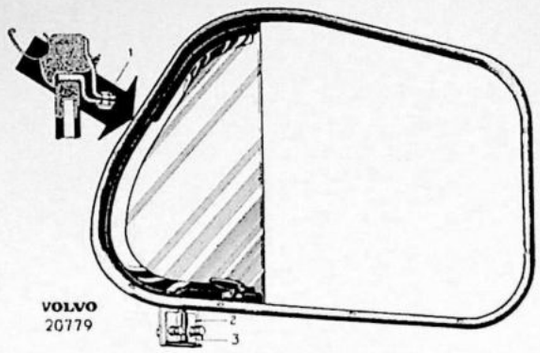

Fig. 25.

The wire should be properly stretched but not too much.

After re-assembly, check that the window runs smoothly in the channels. The channels may be adjusted by bending their brackets into the desired position. Lubricate the wire and the chain with grease and use a few drops of oil on the rollers and window regulator cog.

Ventilator window

The ventilator window is attached to the window frame and is removed before work on the window frame is commenced or weatherstrips are to be replaced.

Remove the rivet (1, Fig. 25) which holds the upper side of the ventilation window to the window frame. Loosen both the tension screws (3) and remove the lower cap (2). Lift out the window and the rubber weatherstrip is then accesible for replacement.

The rubber weatherstrip on ventilation windows of later models is fitted with a drainage point at the rear end and is of improved tighter fitting. When fitting this improved rubber weatherstrip on a ventilation window of earlier production, a hole must be drilled in the holder for the collar which has been added to the rubber weatherstrip. The hole is drilled 10×18 mm ($^{25}/_{64}$″×$^{45}/_{64}$″) and is begun at a point 5 mm ($^{1}/_{5}$″) from the rear edge.

Assembly is carried out in the reverse order to disassembly.

The opening action of the ventilation window may be adjusted so as to be harder or easier by adjusting the tension of the spring on the lower pivot pin. This may only be carried out after the window frame has been removed from the door.

Weatherstrips

The lower weatherstrip on the door and the weatherstrip on the door flanges are attached by means of strips which are spot-welded to the door.

This weatherstrip is removed by pulling outwards until the edge is free from the welded strips.

When fitting weatherstrips, the inner edge is laid in its position in the welded strip after which the outer edge is pushed behind the strip with a screw-driver. See Fig. 26.

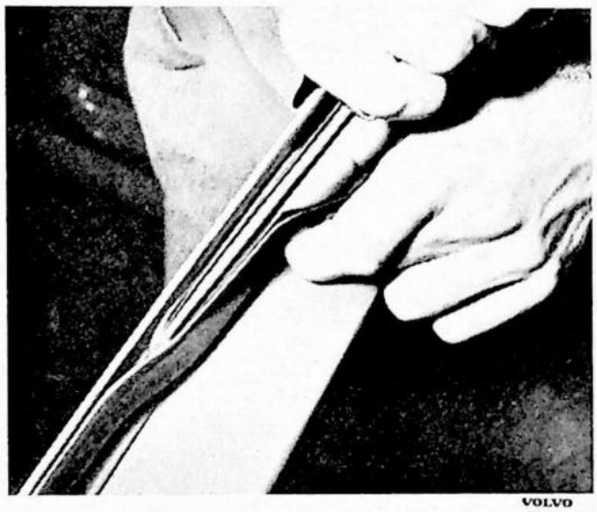

Fig. 26.

Windows with rubber weatherstrips

Windshield

Disassembly

1. Spread a blanket or similar soft cloth over the cowl and the top of the instrument panel.
2. Loosen the three screws holding the inner and outer garnish mouldings at the central pillar and lift out both these and the outer rubber weatherstrips.
3. Remove the rubber weatherstrip adhesive from the body.
4. Press hard on the glass outwards in the outer corners and the rubber weatherstrip clears the guide edge in the windshield opening. Remove the rubber weatherstrip from the glass at the central pillar and push out the other pane. Lift out the pane and the rubber weatherstrip.
5. Clean thoroughly so as to remove all traces of the sealing compound. Damaged or hardened rubber weatherstrips should be replaced.

Assembly

1. Check that the windshield opening is not deformed in any way by holding a glass pane pressed against the opening. The pane should be in close contact with the metal all the way round. The edge must be straightened if there is any indication of unevenness or deformation.
2. Fit one of the panes in its rubber weatherstrip and lay the cord in the groove in front of the guide edge of the bodywork. See Fig. 27.
3. Lay the pane with the rubber weatherstrip in the opening and push it firmly against the body. Use the other hand to pull the cord so that the edge of the rubber weatherstrip comes into its place. See Fig. 28.

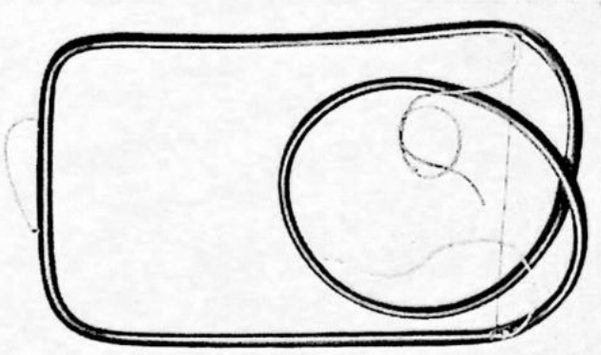

Fig. 27.

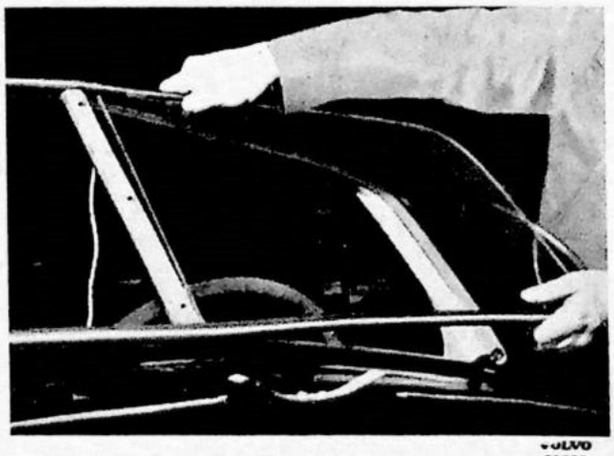

Fig. 28.

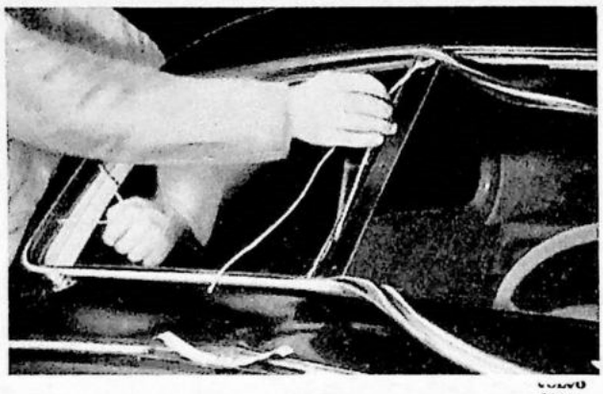

Fig. 29.

4. Place the centre pillar rubber weatherstrip in its position.
5. Fit the other pane in its weatherstrip and lay the cord in the groove. See Fig. 29. Press the pane against the opening and pull away the cord.
6. Place the outer rubber weatherstrip on the central pillar and fit the outer and inner garnish mouldings.
7. Press in the sealing compound under the outer flanges of the rubber weatherstrip. See Fig. 30.

Rear side windows and rear window

1. The side windows or the rear windows are removed, after the rubber weatherstrip adhesive has been removed from the body,

Fig. 30.

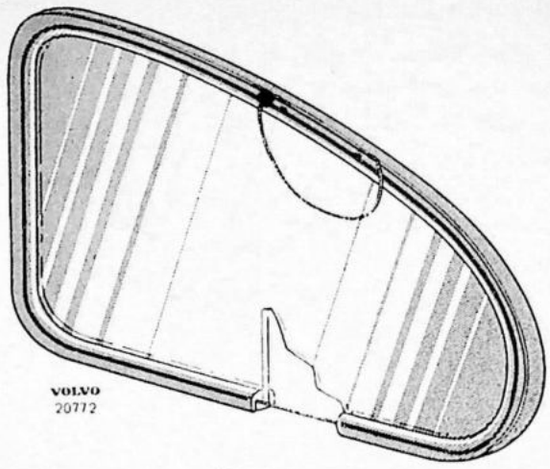

Fig. 31.

by pressing two corners of the pane inwards until the edge of the rubber weatherstrip clears the guide edge on the body.

2. Clean the rubber weatherstrip and the guide edge very carefully until free of sealing compound. Damaged or hardened weatherstrips are replaced.
3. Check by holding a pane pressed against the opening so that it is in contact with the metal all the way round. If there is any indication of deformation or unevenness then the edge is straightened.
4. The pane is fitted by placing both it and the cord in the rubber weatherstrip as shown in Fig. 31. Hold the pane pressed against the opening and pull the cord, Fig. 32.
5. After fitting, press in sealing compound under the outer flanges.

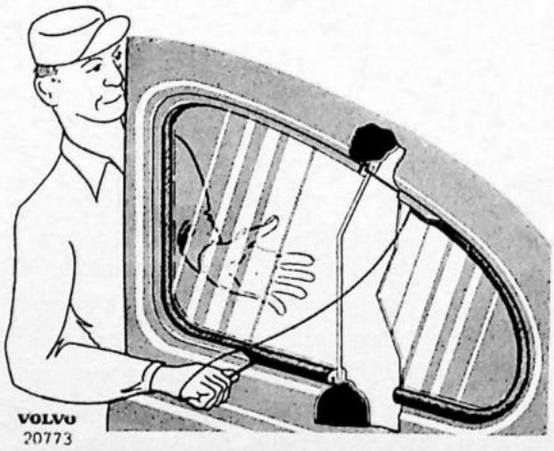

Fig. 32.

Windshield wiper

Disassembly and assembly

1. Remove the arms (1, Fig. 33).
2. Remove the nut (2) on the bearing (4) and remove washer and seal (3).
3. Release the control unit from the instrument panel.
4. Take off the rubber hose from the windshield wiper motor and loosen this from the mounting panel.
5. Assembly is carried out in the reverse order. Ensure that all seals are in good condition.

Instruments

All the instruments (Fig. 34) are attached to a panel which is secured by means of two clips and screws.

Disconnect one of the battery cables before commencing work on the bodies of instruments behind the instrument panel.

The actual panel with the instruments is removed in the following way. Remove the bulbs for the instrument lighting and the check lamps. Loosen the speedometer cable and the pipe connection to the oil pressure meter. Remove the sensitive head of the thermometer from the engine and disconnect the cables to the ammeter and the fuel gauge. Notice the cable markings very carefully so that they are connected correctly when re-assembling.

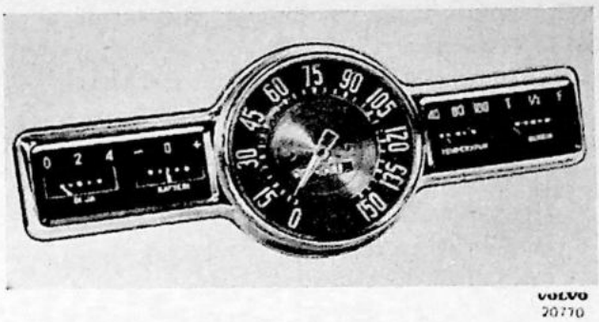

Fig. 34.

Remove the nuts and clips which hold the panel in position and remove it.

When replacing individual instruments see under headings for the instrument in question.

Replacement of speedometer

If the speedometer does not register at all or the mileometer does not show the correct distance travelled, then the matter should be placed in the hands of an instrument maker. In the case of more extensive repairs being necessary then it is best to replace the instruments in question.

If the instrument fails to register both speed and the distance travelled or there is excessive swing on the pointer then it is very likely that the transmission cable is either broken or else jamming in the sheath.

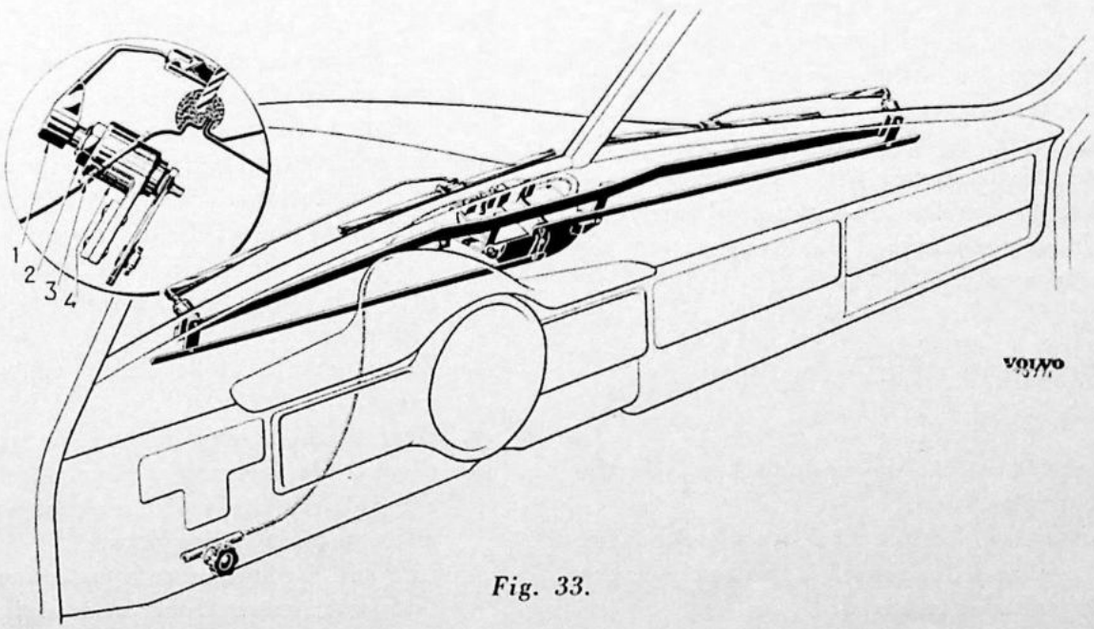

Fig. 33.

Replacement of speedometer is carried out in the following way:

1. Disconnect one of the battery cables.
2. Loosen the cable from the instrument.
3. Pull out the bulb-holders for the control and instrument lights in the speedometer.
4. Remove the screws with which the speedometer is attached to the panel and lift it out.
5. Assembly is carried out in the reverse order.

Replacement of thermometer or fuel gauge

The thermometer and the fuel gauge are fitted to a mounting plate which is screwed to the rear of the instrument panel. See Fig. 35. On cars of later construction they are, however, fitted separately so that they may be removed individually. Replacement procedure is as follows:

1. Disconnect one of the battery cables.
2. Loosen the cables from the fuel gauge and be careful to note which cable comes from which terminal.
3. Remove the screws which hold the mounting plate to the instrument panel. Use a small screw-driver fitted with a screw-holder or else a magnetic screw-holder.
4. Lift out the instruments and take great care to avoid sharp bends in the thermometer tube. Remove the faulty instruments from the mounting plate and, if it is the thermometer which is faulty, remove also the sensitive head from the engine.
5. Fitting of new instruments takes place in the reverse order. Make sure that the contact screws on the fuel gauge, which also serve as attachment screws, do not come into contact with the bulkhead and that the cables are connected correctly. Wrongly connected cables burn out the instruments.

Replacement of the fuel gauge tank unit

1. Make sure that the ignition key is in the neutral position.
2. Loosen and lift out the spare wheel holder. The work is facilitated if the box over the wheel is also removed.
3. Blow the tank unit thoroughly clean.
4. Disconnect the cable and the tank unit and remove.
5. Assembly is carried out in the reverse order. Always use a new cork gasket which should be smeared with sealing compound (Plastifix or similar) in order to prevent the smell of petrol in the car.

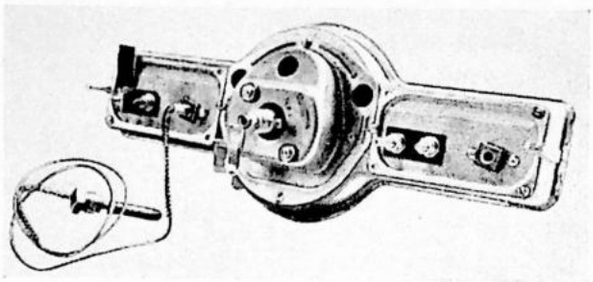

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Fig. 35.

The cable from the tank unit to the instrument is very difficult to replace in the case of serious damage and it is much simpler to pull a new cable from the rear compartment through the tunnel under the left-hand door, behind the wall panel to the left of the pedals and to the instrument panel.

Replacement of ammeter or oil pressure gauge

The ammeter is fitted together with the oil pressure gauge on a mounting plate which is attached to the rear side of the instrument panel as shown in Fig. 35. On later models, these two instruments are fitted separately so that they may be removed individually. Replacement is carried out as follows:

1. Disconnect one of the battery cables.
2. Disconnect the cables from the ammeter. Mark the cables which are attached to one of the screws.
3. Disconnect the tube on the oil pressure gauge.
4. Remove the screws holding the mounting plate to the instrument panel. Use a small screw-driver fitted with a screw-holder or else a magnetic screw-driver.
5. Lift out the instruments and remove the faulty instrument from the mounting plate.

6. Assembly is carried out in the reverse order. Make sure that the contact screws on the instruments do not come into contact with the bulkhead and that the cables are correctly connected. If the cables from the instrument to the regulator and the battery happen to get exchanged then the instrument in question will register in the wrong direction.
   Do not forget to connect the oil pressure gauge before the engine is started.

Fuel tank

The fuel tank is replaced in the following way:

1. Remove the bottom plug and empty the tank into a clean receptacle. While the fuel is running out, remove the spare-wheel shelf and disconnect the tank unit cable.
2. Disconnect the tube to the filler pipe, the air tube and the fuel pipe to the engine.
3. Remove the screws with which the tank is secured to the body.
4. Lift up the tank and clean it thoroughly externally.
5. Remove the tank unit of the fuel gauge.
6. The fuel tank is assembled in the reverse order. Ensure that all joints are tight by using sufficient sealing medium.

Radiator

The radiator is replaced in the following way:

1. Disconnect the radiator blind wire while the coolant is draining from the engine. If there is anti-freeze in the tank, collect it in a clean receptacle.
2. Disconnect the hose clips on the upper and lower radiator hoses.
3. Remove the two screws on each side of the radiator, after which the radiator may be lifted up.
4. Assembly of the radiator is carried out in the reverse order. Ensure that the hoses and clips are in good condition.

Fittings and upholstery

The inside of the body is insulated by means of specially treated "waffle" paper. This serves as heat insulation and prevents vibrations in the body.

Front seat

Both the seats and the backs of the front seats are built on a tubular steel frame. Springs in both seat and back consist of spiral springs. These are formed to one unit through the use of binding springs. Stuffing consists of jute, fibre-matting and wadding in that order and the top upholstery.

The front seats are retained in place by brackets on the front seat adjustor assembly. The seats may be removed by holding the adjustor knob to the side and pushing the seat forwards.

Rear seat

Both the seats and the backs of the rear seat are constructed in the same way as the front seats the only difference being that the frame is constructed of wood. Upholstery stuffing is the same as that in the front seats. There is, however, no fibre matting in the back section.

The actual seat portion of the rear seat is held in place by two pins on the rear seat support and is accessible from the rear compartment. In cars of later production the back of the seat is held in position by the arm rests and may be removed merely by lifting upwards.

Door and side-wall upholstery

Door and side-wall upholstery consists of 3 mm (1/8") thick masonite covered with wadding and surface cloth. Sections are attached to the doors and body by means of clips.

The front seat arm rests consist of brackets which are covered with sponge rubber over which the cloth is stretched. They are attached to the inner plate on the door by means of screws.

Headlining

The headlinings consists of cloth which is stretched on the roof bows and attached to the former rib at the upper limit of the side section.

Bulkhead and floor

The sides of the bulkhead are covered with embossed paper sheeting which is attached by means of screws. The bulkhead itself is covered by a rubber mat which is held in place by means of studs.

The floor is covered with rubber mats which are attached by studs in the floor plate.

For removal and installation of fittings and upholstery, see Part 14.

TOOLS

SVO 1460 Depressor tool for escutcheon plates when fitting and removing inner door handles and window regulators (see Fig. 14).

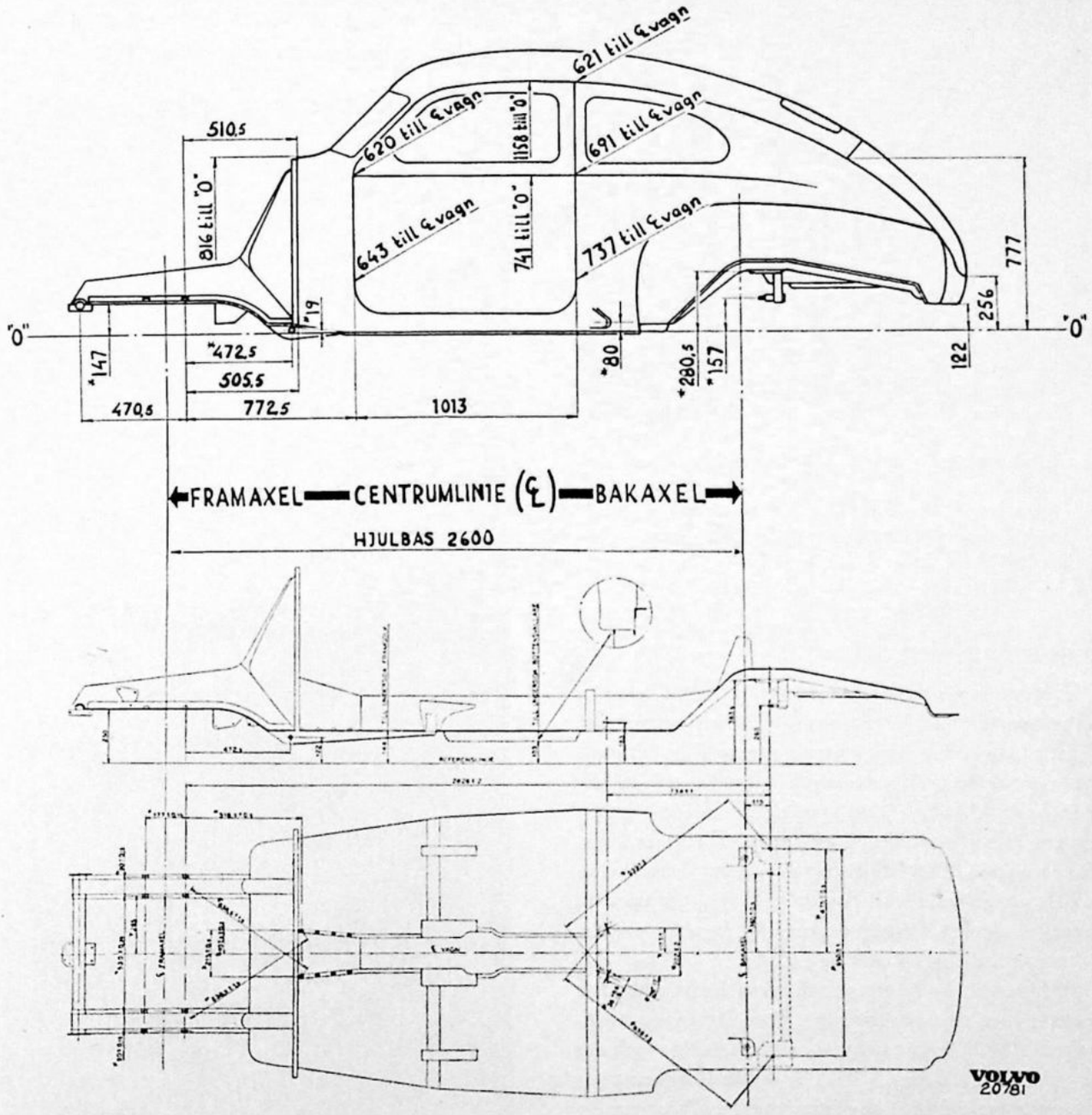
SPECIFICATIONS

Dimensions and weight of complete body

Max. length	161 1/2"
Max. width	57"
Max. height	51 1/2"
Weight with doors and rear compartment lid	approx 507 lb.

Checking the body

Fig. 36 shows the most important body dimensions. The measurements which can affect tracking and driving characteristics are marked with an asterisk. Other measurements are intended for checking purposes to facilitate repair work when aligning a damaged body.



Dimensions in mm (1" = 25.4 mm). *Fig. 36.*

Centrumlinje (C_L) Bakaxel = Rear axle
vagn = Car center line. Hjulbas = Wheelbase
Framaxel = Front axle

SYNTHETIC PAINTING
DESCRIPTION

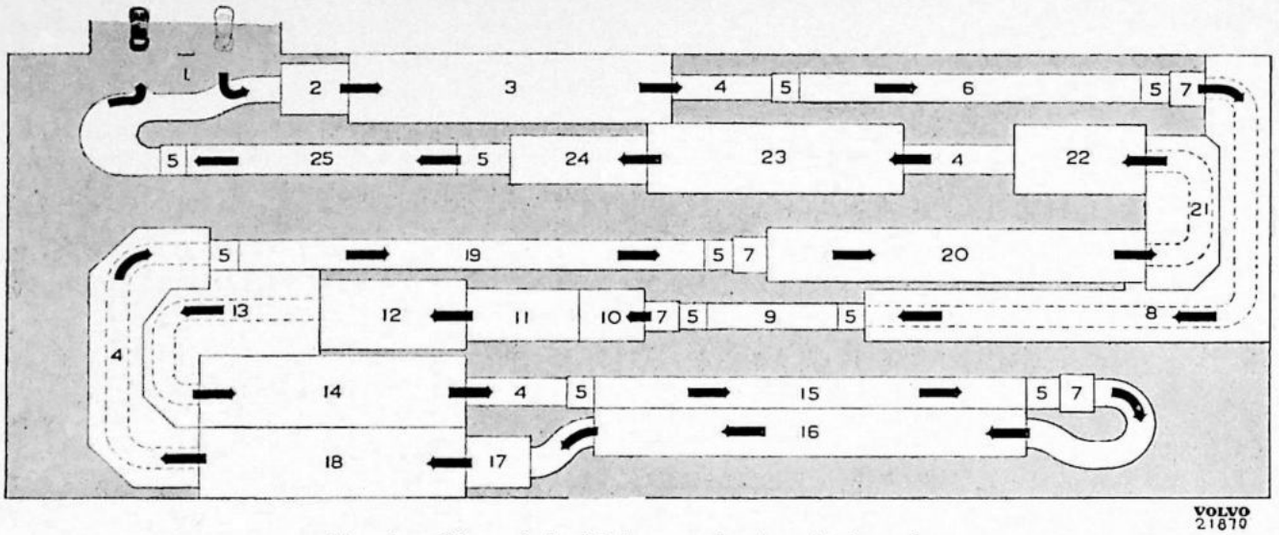


Fig. 1. Plan of the Volvo synthetic painting plant.

1. Loading and unloading points
2. Tack-wiping
3. Warm spraying of primer-surfacer
4. Air-drying
5. Air-lock
6. Stoving for 15 minutes with a surface temperature of 320° F (160° C)
7. Cooling zone
8. Wet sanding
9. Drying oven
10. Blow-off
11. Washing with methyl acetate
12. Spot painting booths
13. Drying zone
14. Enamel spraying
15. Stoving for 21 minutes with a surface temperature of 320° F (160° C)
16. Sanding and washing with methyl acetate
17. Tack-wiping
18. Enamel spraying
19. Stoving for 21 minutes with a surface temperature of 320° F (160° C)
20. Fine sandpapering and polishing
21. Masking and drying
22. Spot painting of primer-surfacer
23. Spot painting of enamel
24. Air-drying and removal of masking
25. Stoving for 12 minutes with a surface temperature of 320° F (160° C)

Factory painting

Before assembly, the body of a PV 444 passes through two different surface treatments. The first of these is a bonderizing process which rust-proofs the body. The second is the passage of the car body through the synthetic painting plant where it is sprayed with primer-surfacer and surface enamel. The following is a short description of the synthetic painting plant. The figures in brackets refer to corresponding figures on the plant at the top of this page.

When the body enters the synthetic painting plant from the bonderizing line, it is first tack-wiped. (2). Warm spraying with primer-surfacer is then carried out. (3). The body has one coat externally and one coat internally. The primer-surfacer is sprayed in a warm condition since both the primer surfacer and the air have been heated up to 140° F (60° C) in a special aggregate before reaching the spray gun. The body

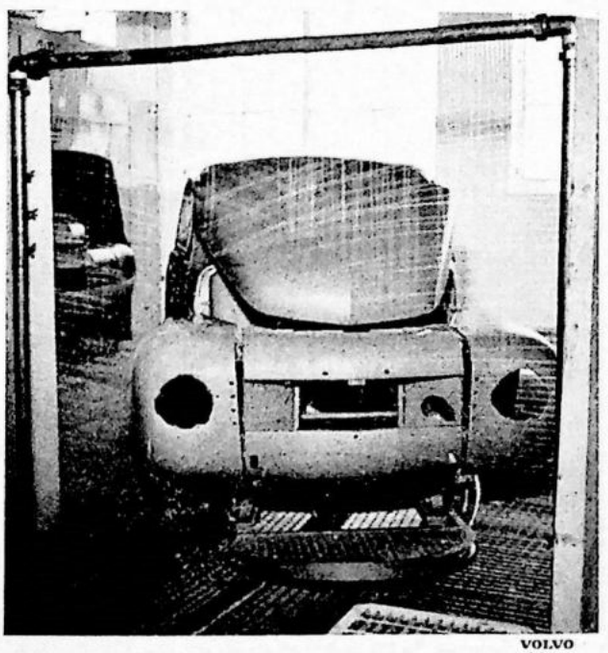


Fig. 2. Body on way in to primer-surfacer sanding.

passes from the primer-surfacer booth to a built-in drying zone where the solvent evaporates at a temperature of 85—95° F (30—35° C) (4) before it reaches the stoving oven (6) through an air lock. The stoving time is 15 with a transport band speed of 7 ft./min. and a surface temperature of 320° F (160° C).

From the stoving oven, the body proceeds through another air lock and a cooling zone and is then wet sanded. This provides the smoothest possible surface for the surface enamel (8). See Figs. 2 and 3.

Fig. 3. Wet sanding of primer-surfacer.

After wet sanding, the car is washed down with water and is dried in an oven (9). Any water remaining in crevices and cracks is then blown out with compressed air (10). The body now enters a covered zone where it is washed with methyl acetate (11) which removes any remaining traces of stoved sand from the surface. It then passes through small booths for spot-painting of the primer-surfacer by grinding down to the bare metal (12).

The body is then tack-wiped 13) and then passes into the booth for enamel spraying (14). One coat of this enamel is sprayed externally, one internally and one in the luggage compartment and engine compartment. Air drying and an air lock are then passed and oven stoving is carried out (15) for 21 minutes with a surface temperature of 320° F (160° C). See Fig. 4.

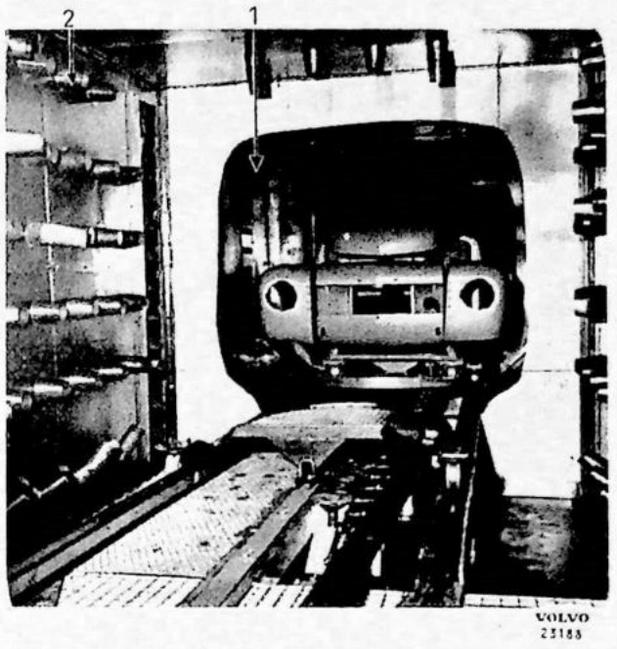


Fig. 4. A body on the way out from the storing oven.

1. Air lock 2. Cooling zone

The body leaves the stoving oven through an air lock and a cooling zone. In the following open zone, light sanding is carried out to remove any impurities from the body surface (16). In order to have as clean a surface as possible, methyl acetate washing is carried out before it proceeds to the drying zone where thorough tack-wiping is carried out (17). At this stage, it is extremely important to ensure that the body is not touched with the bare hand since fingerprints will be visible through the final spraying which is then carried out in a booth of the same type as used earlier (18). The enamel, in common with the other spray material used, is fed to the booths through pipes from a central paint store on the ground floor. Three coats are applied externally and two internally.

In this spraying booth, as in the others, it is possible to work with ten different colors. From the central paint store and mixing plant on the ground floor (Fig. 6) the enamel is taken through pipes from ten different color mixing units to the

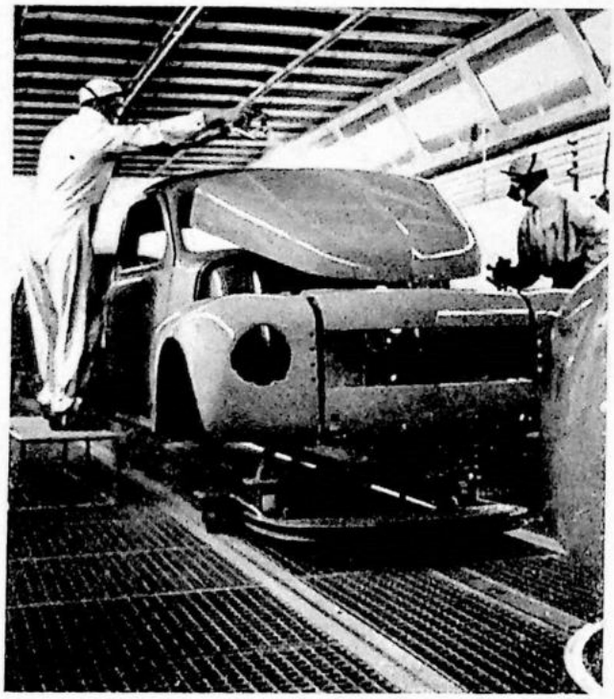


Fig. 5.

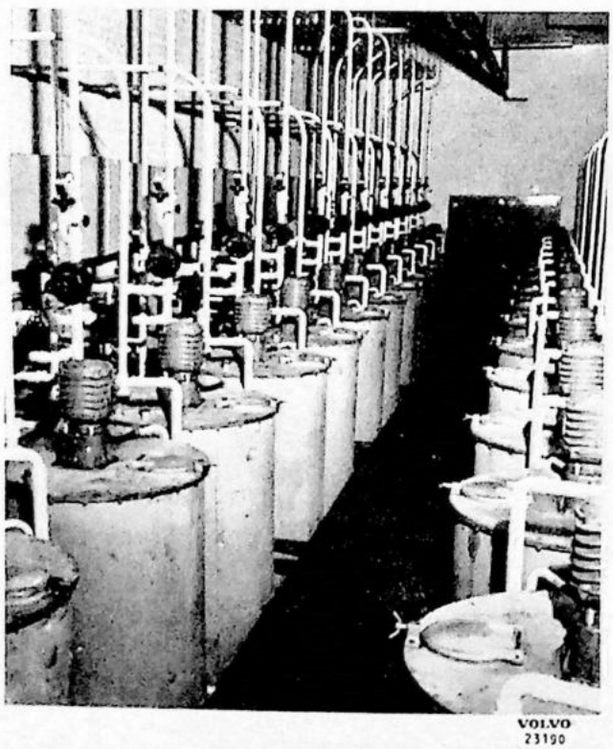


Fig. 6. The central paint store and mixing plant.

spraying booths and then down return pipes so that the enamel is circulating all the time. Each mixing system incorporates two paint tanks holding 317 U.S. gallons. One of these tanks feeds the spraying booths, the other tank being used for mixing. Thinner for this purpose is pumped directly to the mixing tank from three other tanks holding 400 U.S. gallons each, these tanks are buried in the ground outside the painting plant.

From the spraying booth, the body goes through a drying zone and an air lock into a "black heat" oven of the same type as used earlier (19). The surface temperature here is again 320° F (160° C).

The finally sprayed body then passes through an air lock and a cooling zone and is then thoroughly checked.

Any slight defects, small places where the enamel has run, etc. are lightly sanded with a very fine sanding paper and then polished with a sponge-rubber polisher (20). Defects that must be touched up are ground (21,22), washed with methyl acetate, tack-wiped and masked. The body then passes into a spraying booth for spot painting with 180° F (80° C) enamel (23). After this, it passes through a drying zone (24) and an air lock into an oven where the touching-up enamel is stoved (25). This oven is of the same type as the other ovens used. When the masking has been removed, stoving dust is washed off.

When the body has passed through the oven air lock on the outlet side, it is ready for final checking. It is lifted off the transport band and moved over to the assembly line.

Paint improver plant

After the car has been completely assembled and test-driven, it is washed and carefully examined. Any damage to the bodywork that can have occurred during assembly is taken care of in a special paint improver plant. This is divided into two parts one of which is for the spot-painting of small scratches etc. while the other, which is larger, is for the improving of complete components. In this larger plant 180° F (80° C) enamel is used. In the spot-painting plant, 285° F (140° C) enamel is used. See under the heading "Spot painting". The larger plant for the paint improvement of complete components consists of three departments separated by electrically-operated doors. These three departements are: sanding zone, spraying booths and drying oven.

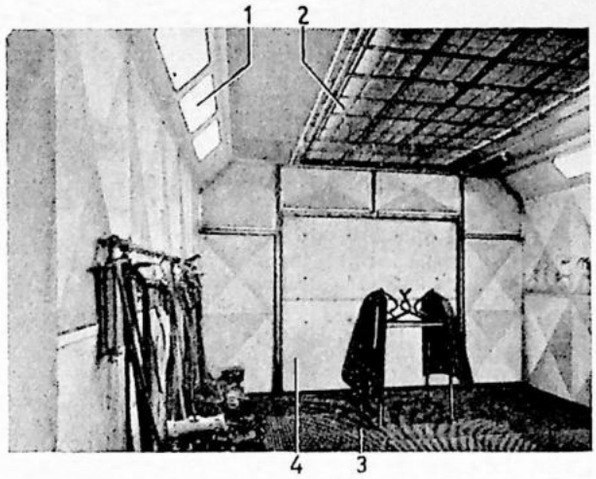


Fig. 7. Spraying booth.

1. Lighting
2. Warm air inlet through glass-wool filter
3. Floor grilles with running water
4. Door to drying oven.

All preliminary work such as sanding, washing with methyl acetate and tack-wiping is carried out in the sanding zone. This zone has continuous running water in the floor to eliminate dust. Filtered, dust-free air is blown in through glass-wool filters in the roof and is sucked out through the floor.

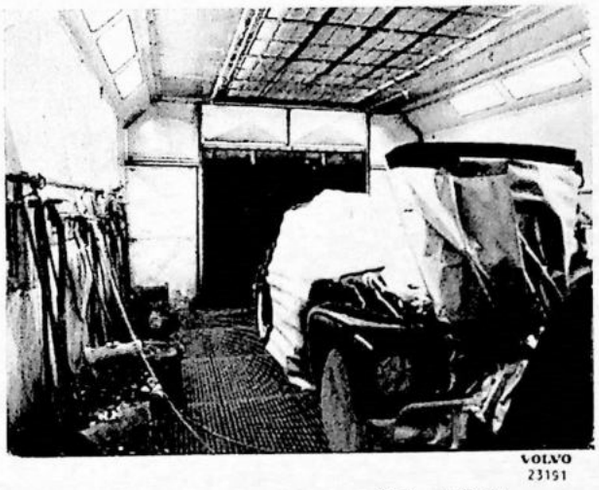


Fig. 8. Car on way into 180° F (80° C) oven.

The spraying booth is connected directly with the sanding zone. Air is blown in through glass-wool filters in the roof here as well and sucked out through the floor. The amount of air blown in here is so great that there is excess pressure to prevent dust from penetrating in through crevices in the doors and walls of the booth. The running water under the grille floor traps and removes the paint dust resulting from spraying.

Since complete freedom from dust is extremely important when working with synthetic enamel, sanding work may never be carried out in the spraying booth.

From the spraying booth, the car passes to the drying oven. This is a steam-heated oven which gives the car a surface temperature of 180° F (80° C) so as not to damage the upholstery and rubber equipment on the car. The drying time at this temperature is one hour.

Synthetic enamel

The colored enamel used to spray a car consists of a mixture of several different components. These can be divided into three main groups as follows:

A. Binding agent — to bind together the various materials.

B. Pigment — to give an opaque color to the enamel.

C. Thinner — to reduce the enamel to the most suitable consistency for spraying or brush application.

By the suitable combination of these three main groups, enamels with different properties can be obtained for airdrying or oven-stoving, primer surface enamels etc.

A. Binding agents

These can be divided into two main groups:

1. Synthetic binding agents.
2. Cellulose binding agents.

It is from these groups that the names cellulose enamel and synthetic enamel have been taken. Cellulose enamels made possible the first series-production car painting. The binding agent in this case is chemically-prepared cellulose. Enamel of this type hardens only through the evaporation of the solvent. Heat that may be used serves only to accelerate the drying process.

Synthetic binding agents consist of synthetic resins of different types (alkyd resins, melanin resins, phenolic resins etc.). Similar materials are used in the production of plastics. Manufacturers of enamels have a great many materials to choose from and can modify the properties of enamels by mixing different binding agents.

Here, as with cellulose enamels, there are synthetic enamels which harden by evaporation. In the series-production of cars, however, hardening

occurs through a chemical reaction in the binding agent when the solvent has evaporated. In order to bring about this reaction, comparatively high temperatures are required — sometimes as high as 340—360° F (170—180° C).

B. Pigment

The color of an enamel is very rarely obtained by the use of only one pigment. The most usual system used is the mixing of several pigments of different colors. The different pigment grains have different specific weights and grain size so that they sink to the bottom container att different rates if the enamel is allowed to stand still. That is why it is important to keep the enamel well mixed to avoid different color tones. The pigment grains are extremely small and the pigment must be added by means of a special process when the enamel is manufactured. The covering properties of the enamel depend on the type and content of pigment.

Different types of pigment are used in surface enamel and primer-surfacer depending on the various properties required from the point of view of sanding etc.

C. Thinner

Thinner is an important factor from the point of wiev of drying time, volatility, spraying characteristics etc. It is also intended to keep the binding agent in solution. This can, generally speaking, not be accomplished by any one single solution and a mixture of several chemical solvents is used. The type of binding agent used plays an important part. Thinner used for cellulose enamel and thinner used for synthetic enamel are quite different. Thinner used for cellulose enamel can consist of butyl alcohol, ethyl acetate etc., while thinner used for synthetic enamel consists mainly of mineral oil hydrocarbons.

When working with synthetic enamels, always use the thinner recommended by the manufacturer. Never mix different makes of thinner.

Types of enamel

The synthetic enamel used consists mainly of three types which have exactly the same color tones but differ considerably from one another as far as drying is concerned.

The three types are as follows:

285° F (140° C) enamel. Used in our factory plant for spot-painting. Drying is carried out either in an oven or with a heat lamp since air drying is not possible.

180° F (80° C) enamel. Used for paint-improving of complete components and when re-spraying. Drying must be carried out in an oven or with the help of a lamp since airdrying is not possible.

Air-drying enamel. Used when re-spraying and spot-painting. Air dries at 77° F (25° C) in six hours or at 140—160° F (60—70° C) in one hour.

The synthetic enamel used by Volvo comes from several different factories. Any touching-up work on the car should be carried out with enamel of the same type as originally used on the car and only the thinner recommended by the enamel manufacturer should be used. As far as enamel and thinner are concerned, see the "Specifications" at the end of this book.

Spot-painting and re-spraying

In principle synthetically painted cars should be spot-painted or re-sprayed with synthetic, oven-drying or air-drying enamel of the same make as the enamel originally used since this is made from the same raw material as the original enamel and better matching will be obtained as far as gloss, color tone and durability is concerned.

In order to obtain the right color when spot-painting or re-spraying any part, make a note of the code numbers of both external and internal paintwork. These are stamped on the car chassis number designation plate. The code numbers should always be stated when ordering enamel from Aktiebolaget Volvo or our dealers.

If spot painting or partial re-spraying is carried out with cellulose or combination enamel, this will mean that the re-sprayed section will not have the same durability as the rest of the body and the color tone will show a more and more marked difference as time goes by. This color tone difference depends on the differences in the binding agents used and can take some time to appear even if exact agreement is obtained when the spraying is actually carried out.

The most important factor as far as perfect re-spraying is concerned is, naturally, perfect agreement from a color tone point of view. Even when synthetic enamel is used, some slight adjustment of the color tone is sometimes necessary since the original color may have altered slightly with the passage of time though this alteration is never as marked as with cellulose.

In order to get exactly the right color tone, a test plate should first be sprayed, then allowed to dry. After it has dried, it should be compared with the original enamel on the car.

If the enamel to be used differs in color tone from the original enamel, it should be tinted with another shade and another test plate sprayed and compared.

If a first-class spraying job is to be carried out with air-drying synthetic enamel, it is extremely important to ensure that the correct equipment is used and that the workshop is thoroughly clean and free from dust. There must no large air movement in spraying shops and spraying booths etc. must be kept wet all the time.

It should also be pointed out that re-spraying with synthetic enamel is always correct from a technical point of view and should always be used when possible. Spot-painting or re-spraying with cellulose or combination enamel should only be carried out in exceptional cases where there is no possibility to use synthetic enamel.

Preliminary work

If the old paintwork is scratched or damaged, it must be removed in order to provide a good foundation for the adhesion of the new.

The paint remover should be applied with a brush and should be left for 30 minutes to one hour depending on the type of enamel. The softened paintwork is then removed by scraping with a putty knife. Then clean the body with hot soda solution followed by a wash with lead-free gasoline.

If paint remover it not used and the new finish is to be sprayed directly onto the old, this must be thoroughly cleaned with lead-free gasoline to remove all traces of polish and wax.

The body or body section to be treated should be aligned and ground, using a file if necessary. Sanding is then carried out using wet sanding paper 220—240, care being taken to ensure that all traces of rust are removed and that the remaining enamel is well worn down. Washing is then carried out with lead-free gasoline or methyl acetate.

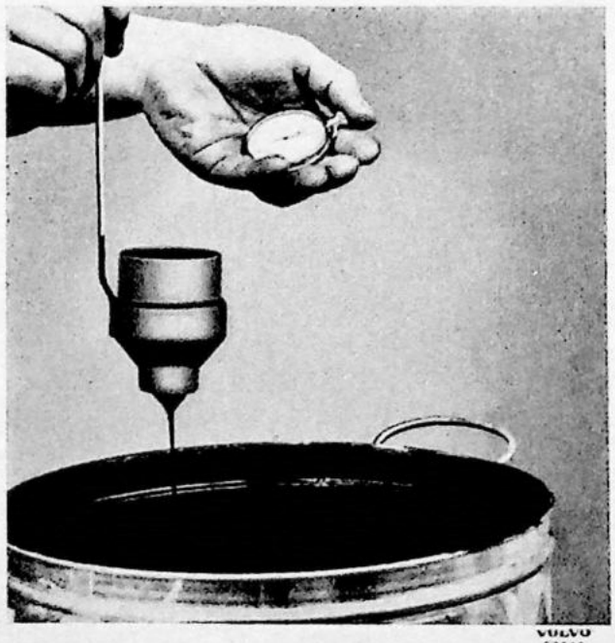


Fig. 9. Determining viscosity.

Note. This washing is extremely important and is carried out to remove all impurities which could have a detrimental effect on drying and adhesion.

Spray primer-surfacer on all bare metal surfaces (synthetic, air-drying primer surfacer diluted to about 20 seconds in a Ford no. 4 beaker or a 4 mm DIN beaker). This should, preferably, be of the same make as the original finish. See the "Specifications" at the end of this book. Viscosity determination is shown in Fig. 9.

After being allowed to air-dry for a few minutes, baking is carried out by using infra-red heaters at a distance of about 16". Make sure that the specified time and distance are carefully observed to avoid the occurence of blisters in the primer-surfacer.

When the primer-surfacer has cooled, glazing putty should be applied as required. This should be applied in thin layers, each coat being allowed to dry before the next coat is applied. A drying time of 2—3 hours is normally required after the last coat has been sprayed. The primed and puttied surface is then sanded with wet sanding paper no. 360—400 and finally with wet sanding paper no. 500—600.

After all water has been carefully dried off, washing with gasoline is carried out followed by tack-wiping. The car is then taken to the spraying booth.

Fig. 10. Tack-wiping.

Spot-painting

Small spots, gravel damage, scratches etc., can be spot-painted with 285° F (140° C) enamel which is baked by means of an infra-red heater.

Fig. 11. Sanding.

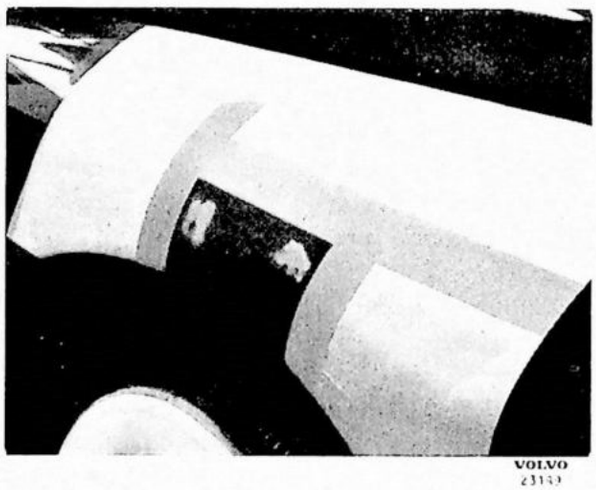


Fig. 12. Masking.

The spot in question should be sanded (after necessary alignment work has been carried out) with wet sanding paper 400. See illustration. The outer edges of the spot should be worn down by using sanding paper no. 600. Masking is then applied, Fig. 12, and the primer-surfacer is sprayed, Fig. 13.

Masking is fitted so that the primer-surfacer is only sprayed onto the sanded surface since it may not be applied to an unsanded enamel surface. After spraying with primer-surfacer, it should be allowed to dry for 20—25 minutes. See Fig. 14.

After drying, the primer-surfacer is sanded and the surface enamel is sprayed on. See Fig. 15.

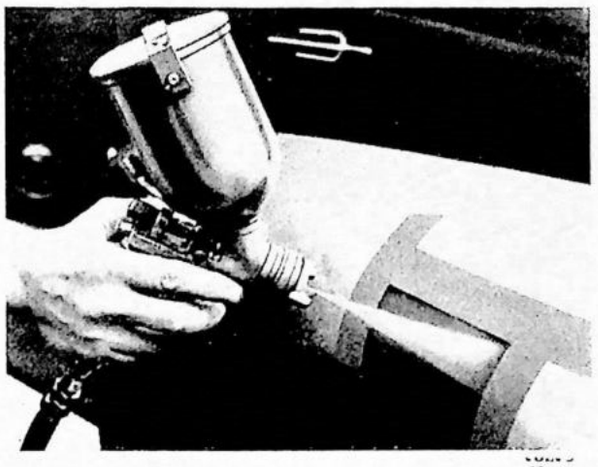


Fig. 13. Spraying primer-surfacer.

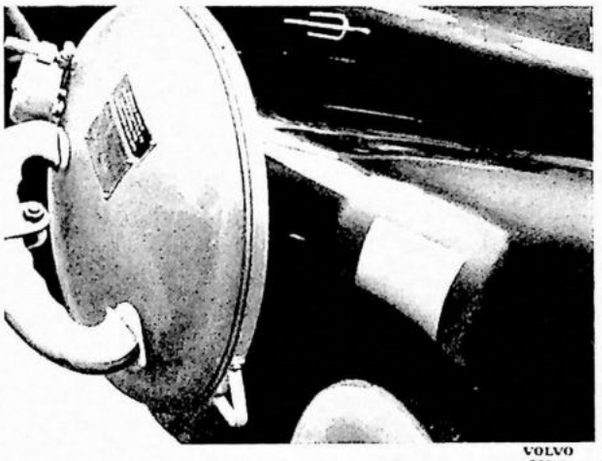


Fig. 14. Baking the primer-surfacer.

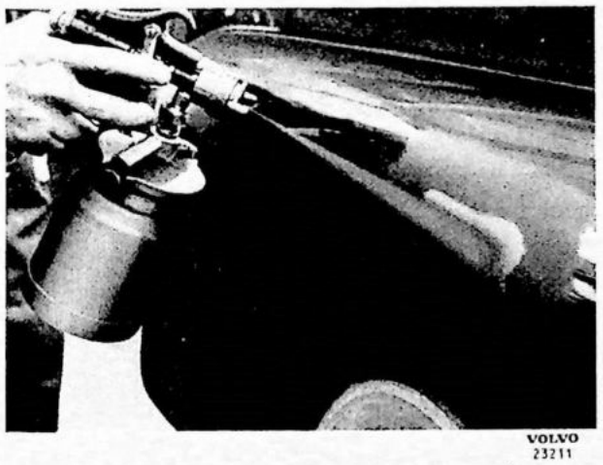


Fig. 15. Spraying surface enamel.

Thinner is sprayed on the line where the new enamel meets the old. See Fig. 16. The masking is then removed and the enamel is baked for about 40 minutes at a temperature of 300° F (160° C). The heating lamps should be arranged

Fig. 16. Spraying thinner.

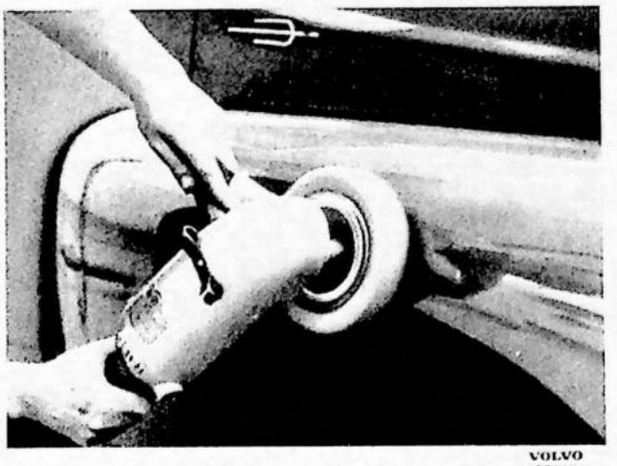


Fig. 17. Polishing with sponge-rubber disk.

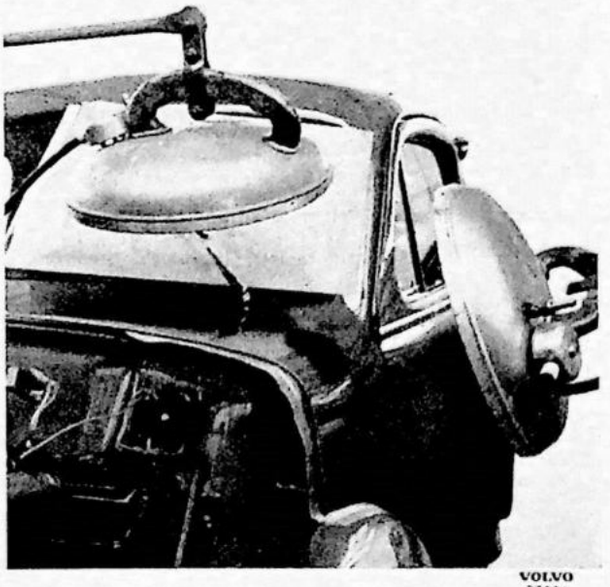


Fig. 18. Baking spot-painting close to glass.

so that the entire spotted area receives the same amount of heat. If the section treated is on the hood, for example, two lamps should be used.

See Fig. 18. When baking is completed, rubbing with rubbing compound is carried out. Use the special rubbing compound intended for use with synthetic enamel, preferably of the same make as the enamel. See Fig. 17. If the line where the old enamel and the new meet shows a tendency to move inwards, this shows that the spot has not been baked sufficiently and the lamps should be used for a further period.

Note. When carrying out baking of enamel close to glass, insulation with asbestos must be carried out. See Fig. 18. Weatherstrips can be protected by using two layers of masking tape.

Re-spraying or spot-painting with 180° F (80° C) enamel

Re-spraying of synthetically-enamelled vehicles or the re-spraying of body components such as a door, the hood etc., should be carried out by using oven-drying synthetic enamel where possible. A suitable enamel for this purpose is the 180° F (80° C) enamel which has a drying time of one hour at a temperature of 180° F (80° C). This low baking temperature means that the entire vehicle can be placed in the oven without the risk of damage to the upholstery or rubber components. The battery should be removed, however, since it can be damaged and for the sake of safety, the fuel tank cap should be removed.

The enamel used in the factory has a drying temperature of 285° F—320° F (140° C—160° C). This is not possible when the vehicle has been completely assembled since the upholstery etc. would be severely damaged.

Note. 180° F (80° C) enamel must be sprayed in a dust-free spraying booth and drying must be carried out in an oven.

Air-drying is not possible in this case.

The working procedure is as usual be removing the old paintwork etc. See under the heading "Preliminary work".

As far as spraying jets, spraying pressures and enamel viscosity are concerned, see under the heading "Specifications" at the end of this book.

The enamel should be sprayed evenly and not too thinly since this gives a poor gloss. Excessively thick spraying, however, makes drying more difficult and can easily cause run. When spraying is completed, the vehicle is moved to the oven. The drying time is one hour with a surface temperature of 180° F (80° C).

The enamel can also be dried by using lamps or "black heat" units at a distance of 12—16" for 20—30 minutes. See Fig. 19.

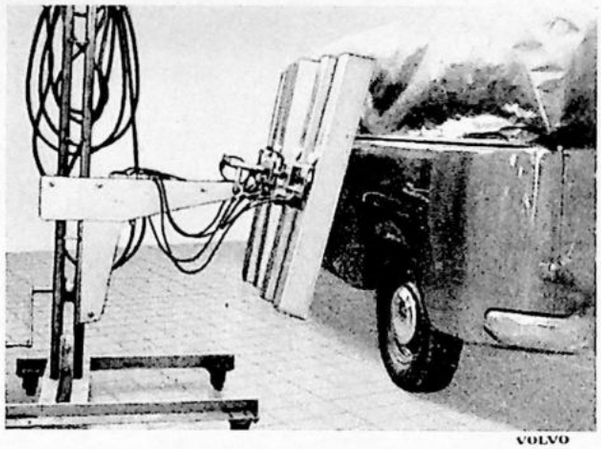


Fig. 19. Baking with the help of "black heat" units.

After baking, the surface should be carefully examined and baked dust can be removed by rubbing carefully with sanding paper no. 600 after which the sanded area is carefully rubbed with synthetic rubbing compound. The spot is then polished with the polish specially made for use on synthetic enamel.

Note. Sanding, rubbing and polishing may not be carried out before the enamel is absolutely dry.

Air-drying enamel

Air-drying synthetic enamel is used where an oven is not available. Due to the relatively long drying time required, however, it is difficult to maintain complete freedom from dust if special spraying booths are not available where the vehicle can stand and dry. This is poor workshop economy, however, since only one vehicle a day can be sprayed in each spraying booth.

If a vehicle is to be sprayed with air-drying synthetic enamel, care must be taken to ensure that the spraying booth or workshop is completely free from dust. The best way to do this is by spraying water. The vehicle must be absolutely clean and free from dust and dry before the actual spraying operation is commenced.

See under the heading "Preliminary work".

See under the heading "Specifications at the end of this book for enamel viscosity, spraying pressure, jets etc.

The enamel should cover well without running. Excessively thick spraying can easily cause run.

The vehicle must be allowed to dry after spraying has been carried out. No work may be done in the workshop during the drying period. The car can be touched after six hours drying at 77° F (25° C) or after one hour at 140—160° F (60—70° C). Final hardness is not reached, however, for several days. Final polishing to remove any unevenness in the enamel surface may not be carried out until about one month has passed.

Determining the thickness of the enamel layer

When a vehicle comes into the workshop for spraying and when spraying has been completed, the thickness of the enamel coat should be checked. A thin enamel coat means poor coverage, a thick coat means poor elasticity and can cause mosaic or cracks in the surface of the enamel. The thickness of the enamel coat should be about 0.0040″ including the thickness of the primer-surfacer.

Many instruments are available for this purpose, working on different principles, for example: the needle principle (a graduated needle is stuck through the enamel coat), the induction principle or the magnetic principle. The magnetic principle is used in a compact little instrument which is very handy for workshop use. It operates on the principle that the strength of a magnetic field varies with the distance between the poles of a magnet and a magnetic base. The instrument is designed with the magnet poles in the form of two balls on the bottom of the instrument. The body plating forms the magnetic base. The thickness of the coat to be measured functions as a magnetic air gap and the instrument pointer indicates a value in direct proportion to the air gap, i.e. the thickness of the coat. Fig. 20 shows this instrument being used for measurement.

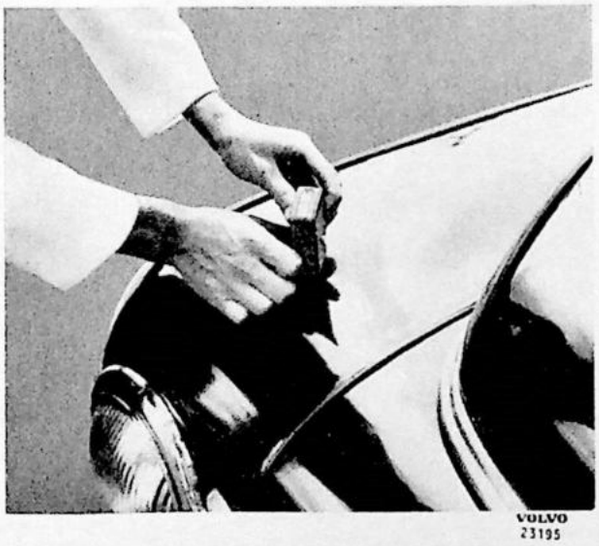


Fig. 20. Elcometer measurement.

Washing

New vehicles should be washed often since this makes the enamel surface stronger, harder and glossier. Dust and dirt which is allowed to remain in contact with the enamel for a long time has a detrimental effect on the enamel. The use of water alone is recommended since the use of cleaning additives can dry out the enamel and make it brittle.

If, however, water alone is not sufficient then a 1—2 % soap solution can be used. The cleaning agents available should not be used unless specifically recommended by an expert since some of them can have a damaging effect on the enamel.

If soap solution has been used when washing the car, it must be polished afterwards. This is to avoid any drying out of the enamel. Otherwise washing is carried out as usual with the help of a soft natural sponge and drying is done with a clean soft leather. High-pressure washing with the jet aimed at the body should be avoided. Washing should never be done in strong, direct sunlight particularly when the water available is hard since flecks can form which are very difficult to remove.

Polishing

The gloss on a synthetically-enamelled vehicle is always superior to that of a cellulose-enamelled. Polishing must, however, be carried out now and then.

Polishing serves two purposes, partly to give the enamel a high gloss and, which is even more important, to supply the enamel with grease in order to prevent cracking.

Use only polish intended for use on synthetically-enamelled surfaces. Cellulose polish may not be used. The reason for this is that if the polish contains any grinding agents the synthetic surface can be ruined. The polish should not contain silicon either, since this is very difficult to remove before spot-painting of the body. Should

there be any silicon remaining on the area to be spot-painted, then blisters will occur. Wash and dry the vehicle thoroughly before polishing. Never polish a dusty or dirty surface since this will scratch the enamel. Apply the polish with a soft cloth. Take only one small area at a time. Then polish up to a high gloss by using a clean soft pad or cloth. If polish is applied to the whole vehicle at the same time, it will dry too much so that it will be more difficult to produce a high gloss and the desired result will not be obtained. Never polish in direct sunshine since the polish will adhere to the surface and produce a stripy result.

Waxing

A synthetically-enamelled vehicle should never be waxed for the first six months so that the enamel has a chance to harden thoroughly. The car should be clean and dry before waxing. Apply the wax with a flannel cloth or spray on (liquid wax) with the lowest possible pressure and the smallest possible jet. Polish up to a high gloss with a flannel cloth or a sheepskin bonnet on a rotary polisher.

Never wax in direct sunshine. Take only one small area at a time, for example a fender, the hood, a door etc.

SPECIFICATIONS

Enamel and primer-surfacer

320° F (160° C) — Improver primer

Spray jet	0.8—1 mm (0.032″—0.040″)
Pressure in container	14—17 lb./sq.in.
Spray pressure	60—70 lb./sq.in.
Make	Glasurit Werken
Designation	Glassomax Heizspritsgrund 60—602 c
Thinner	Glassomax Verdünnung 540—683

285° F (140° C) — Enamel

Spray jet	0.8—1 mm (0.032″—0.040″)
Pressure in container	14—17 lb./sq.in.
Spray pressure	60—70 lb./sq.in.

Black	
Code	19
Make	Glasurit Werken
Designation	Glassomax Lackemaille Schwarz 68—Volvo 40/1
Pearl-grey	
Code	20
Make	Glasurit Werken
Designation	Glassomax Lackemaille Grau 68—Volvo 102
Metallic red	
Code	21
Make	Glasurit Werken
Designation	Glassomax Metallackemaille Rot 68—Volvo 103
Riviera blue	
Code	33
Make	Glasurit Werken
Designation	Glassomax Lackemaille Mittelblau 68—Volvo 108
Ivory	
Code	42
Make	Glasurit Werken
Designation	Glassomax Lackemaille California 68—Volvo 117
Viscosity, Ford beaker or 4 mm DIN beaker	20—22 seconds at 68° F (20° C)
Thinner	Glassomax Verdünnung 540—683
Rubbing compound	Glasurit Feinpolerpasta 562—708
Polish	Glasurit Unipolish 560—536
Midnight blue	
Code	31
Make	Dr Herberts
Designation	Standofix Einbrennemaillelack DKH-No. R 4350/35519 Dunkelblau

Viscosity, Ford beaker or 4 mm DIN beaker	18—20 seconds at 68° F (20° C)
Thinner	Standofix Verdünnung DKH-No. R0209/35271
Rubbing compound	Herberts Feinpolerpasta R 35415
Polish	Glasurit Unipolish 560—536

180° F (80° C) — Enamel

Spray jet	0.8—1 mm (0.032″—0.040″)
Pressure in container	14—17 lb./sq.in.
Spray pressure	60—70 lb./sq.in.

Black

Code	19
Make	Glasurit Werken
Designation	Glassomax Lackemaille Schwarz 42—Volvo 40/1

Pearl-grey

Code	20
Make	Glasurit Werken
Designation	Glassomax Lackemaille Grau 42—Volvo 103

Metallic red

Code	21
Make	Glasurit Werken
Designation	Glassomax Lackemaille Rot 42—Volvo 103

Riviera blue

Code	33
Make	Glasurit Werken
Designation	Glassomax Lackemaille Mittelblau 42—Volvo 108

Ivory

Code	42
Make	Glasurit Werken
Designation	Glassomax Lackemaille Luftrockend California California 42-VOLVO 117
Viscosity, Ford beaker or 4 mm DIN beaker	20—22 seconds at 68° F (20° C)
Thinner	Glassomax Verdünnung 540—683
Rubbing compound	Glasurit Feinpolerpasta 562—708
Polish	Glasurit Unipolish 560—536

Midnight blue

Code	31
Make	Dr Herberts
Designation	Standofix Emaillelack DKH— No. R 4350/35586 Dunkelblau
Viscosity, Ford beaker or 4 mm DIN beaker	18—20 seconds at 68° F (20° C)
Thinner	Standofix Verdünnung DKH-No. R0209/35271
Rubbing compound	Herberts Feinpolerpasta R 35415
Polish	Glasurit Unipolish 560—536

Air-drying enamel

Spray jet	0.8—1 mm (0.032″—0.040″)
Pressure in container	14—17 lb./sq.in.
Spray pressure	60—70 lb./sq.in.

Black

Code	19
Make	Glasurit Werken
Designation	Glassomax Lackemaille Luftrockend Schwarz 20—Volvo 40/1

Pearl-grey

Code	20
Make	Glasurit Werken
Designation	Glassomax Lackemaille Luftrockend Grau 20—Volvo 102

Metallic red

Code	21
Make	Glasurit Werken
Designation	Glassomax Metallackemaille Luftrockend Rot 20—Volvo 103

Riviera blue

Code	33
Make	Glasurit Werken
Designation	Glassomax Lackemaille Luftrockend Mittelblau 20—Volvo 108

Ivory

Code	42
Make	Glasurit Werken
Designation	Glassomax Lackemaille Luftrockend California 42-VOLVO 107
Viscosity, Ford beaker or 4 mm DIN beaker	20—22 seconds at 68° F (20° C)
Thinner	Glassomax Verdünnung 540—683
Rubbing compound	Glasurit Feinpolerpasta 562—708
Polish	Glasurit Unipolish 560—536

Midnight blue

Code	31
Make	Dr Herberts
Designation	Standofix Ausbessermaillelack Luftrockend DKH-No. R 4450/97306 Dunkelblau
Viscosity, Ford beaker or 4 mm DIN beaker	18—20 seconds at 68° F (20° C)
Thinner	Standofix Verdünnung für Standofix Ausbessermaillelack Luftrockend DKH-No. R 0209/24068
Rubbing compound	Herberts Feinpolerpaste R 34415
Polish	Glasurit Unipolish 560—536