



Body — Karmann Ghia Coupé

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Description of Body

Karmann Ghia Coupé

General

The two-door, all-steel, open bottomed body of streamlined pontoon shape is bolted to the widened platform frame and sealed with U-section rubber sealing strips. The strong side members under the doors combine with the platform frame and tunnel to form a bend and twist proof foundation. The fenders are welded to the outer body panels.

The body is divided into front luggage compartment, passenger compartment and rear engine compartment by partitions. The engine compartment is ventilated by means of a series of slots in the rear hood. The area of these cooling air slots must not be restricted by the installation of accessories.

The body is comprised of the following parts, which are welded together:

- a - Front section outer panel, inner wheel housings, reinforcement plate, instrument panel and hinge pillars.
- b - Rear luggage compartment floor plate
- c - Rear quarter panels with wheel housings
- d - Side members
- e - Roof
- f - Front and rear panels

Doors

The 1000 mm (39.3") wide half doors have no top frames and are attached to the front body pillars by concealed, adjustable hinges. When the vertically curved window panes are in the closed position they bear directly on the body weatherstrip.

The doors are lockable and have press button controls in the rigid outer handles and buttons on the inside. The door opening angle is controlled by a check strap with an intermediate stop. A strap on the driver's side and an arm rest with grip recess on the passenger's side are provided for pulling the doors from inside. The door is sealed in the door frame by means of an all-round, moulded foam rubber strip.

The hood of the front compartment, which contains the fuel tank, spare wheel and tools, and the engine compartment hood have locks which are controlled from the vehicle interior by Bowden cables. The control knob for the front hood is located underneath the instrument panel on the left hand side. After the front hood has been released the safety catch near the lock must be pushed to the rear before the hood can be opened. The rear hood is released by means of a knob situated on the left side of the emergency seat reinforcement panel. The number plate lamp is shaped to form a handle for lifting the hood which is held in the open position by springs at the hinges.

Windows

The windshield is curved and inclined at approx. 50°. The maximum clear width is 1200 mm (47.275") and the max. clear height 425 mm (16.73"). The rear window extends round the sides of the roof contour and is inclined at 60°. The maximum clear width is 1100 mm (43.33") and the height 430 mm (16.93").

The windows can be fully lowered by rotary handles and are sealed at the fixed side windows and the roof by a rubber weatherstrip.

All windows are of heat-treated safety glass. The windshield has a specially treated zone which remains clear even when the glass is damaged. For certain countries windshields of laminated glass are installed.

Front Seats

The wide, adjustable, individual seats are held in runners which rise slightly towards the front. The seat backs can be adjusted to three different angles. The seat frames are of tubular steel and the spring interiors are of interlocked coil springs. Seats and seat backs are padded with rubberised hair.

Rear Seats

The seat and back rest of the rear bench are upholstered and serve as an emergency seat. The backrest can be folded down and the space used as an additional luggage compartment.

Instrument Panel

In front of the driver, to the left of the steering column, is the speedometer which reads up to 140 k.p.h. (87MPH) with the warning lights let into the dial. In the center is the fuel gauge and on the right the electric clock. The center portion of the instrument panel is prepared for the installation of a radio set and loud speaker. On the right side is an ashtray and a glove box with lid. The combined ignition/starter switch and the choke control are on the left near the speedometer, the light switch and the windshield wiper switch are on the right by the clock. The top part of the instrument panel is covered with padded, non-reflecting material.

Interior Trim

The door and side trim panels are covered with leatherette. The seats are finished in leatherette or cloth according to choice. The floor, front partition, frame tunnel and side members are covered with rubber matting. The floor is also coated with an additional sound absorbing material. The luggage compartment and the luggage space inside the body is lined with haircord carpet. Both doors are fitted with pockets. The rear view mirror on a ball and socket mounting and two padded sun visors are attached in the center of the roof. A grab handle is provided on the instrument panel in front of the passenger.

Heating and Ventilation

Air warmed by the engine is taken via flexible metal pipes, sound dampers and frame side members to the outlets at foot level in the front compartment and at the windshield. Fresh air for ventilation enters at openings in the front panel and passes via ducts arranged on each side to the defroster vents. The fresh air flow is regulated by valves in the ducts. The valves are operated by regulator levers — one for each side — located under the instrument panel at the left side. The warm and cold air can be controlled separately or mixed in the desired quantities.

Luggage Space

Access to the rear luggage space with a capacity of 6.4 cu.ft., is obtained by folding the emergency seat back rest down. Under the front hood is another luggage compartment of 2.5 cu. ft. capacity. If the emergency seat back rest is left folded down the rear luggage space is increased by a further 7.1 cu.ft.

Exterior Trim

Chrome-plated, wrap-round bumpers with over-riders.

Chrome-plated trims on headlamps, direction indicator lamps, tail and number plate lamps and windows.

Trim strips on body and door lower edges, on the window slots and on the fresh air intake grilles in the front panel.

Chrome-plated door handles, exhaust tail pipes, wheel rims and ornamental hub caps.



Front Hood Removal and Installation

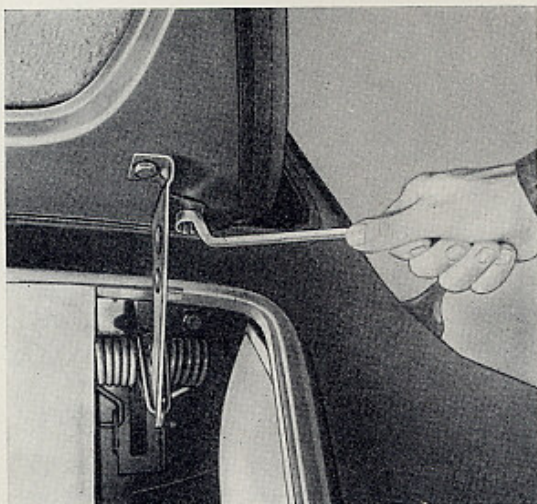
Removal

The removal and installation of the front hood is simplified if the job is carried out by two mechanics. The hood can then be properly supported and damage to the front cowl panel avoided.

If this is not possible, a suitable piece of woollen or plastic material should be placed over the cowl before work commences.

1 - Open hood.

2 - Remove two bolts from the hinges on each side of the hood and take off the hood.



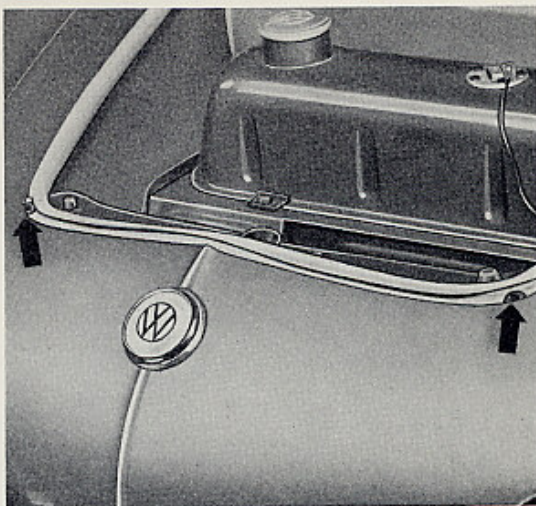
3 - If necessary, unhook the spring and after removing the fiberboard luggage compartment lining unscrew the hinge securing bolts and remove hinges.

4 - If necessary, remove the lock bolt and safety hook from the hood.

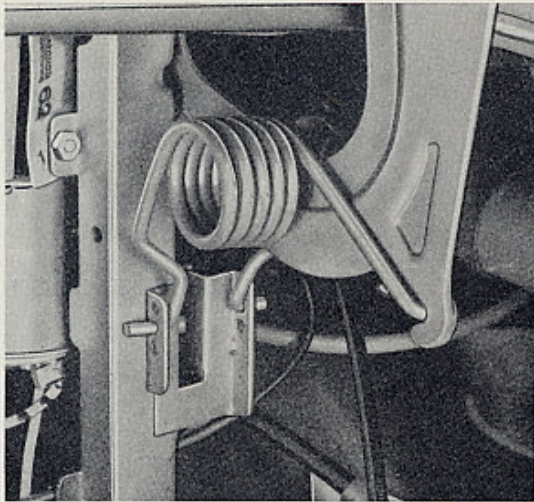
Installation

1 - Check condition of weatherstrip and replace if necessary.

When renewing the front hood weatherstrip remove all traces of old cement with benzene and secure the new weatherstrip in position with Genuine VW Universal Adhesive D 12. Take care that holes in the weatherstrip line up with the holes in the front panel.



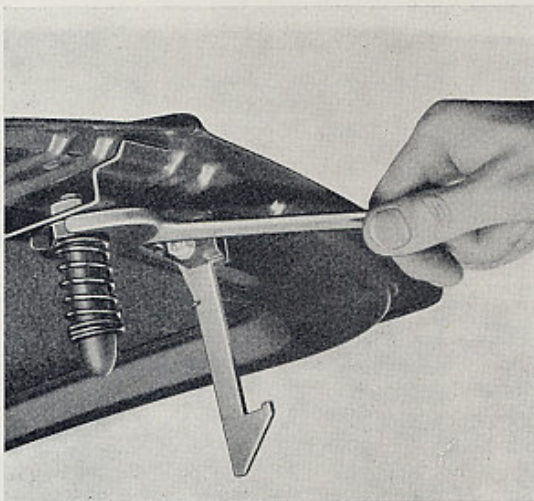
2 - Bolt the hood loosely to the hinges so that it can be moved in the elongated holes to obtain proper seating and sealing all round. Then fully tighten the bolts.



3 - Attach the springs to the hinges so that the hood remains in the open position.

4 - Open and close the hood several times to check lock operation. If necessary adjust the lock in the elongated holes.

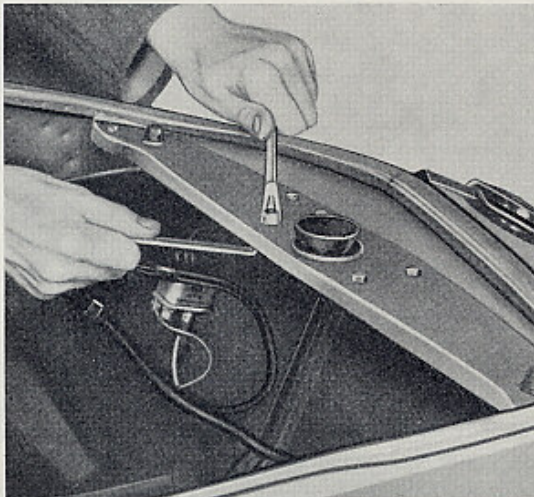
Front Hood Lock Removal and Installation



Removal

1 - Open front hood.

2 - Remove lock bolt and safety hook.



3 - Unscrew five retaining nuts and bolts.

4 - Loosen lock cable clamp screw and withdraw cable from catch. Remove lock.

5 - Pull lock cable out of guide tube.



Installation

1 - Grease hood lock cable and insert into guide tube.

2 - The lock is so constructed that if the lock cable breaks the latch plate, which retains the lock bolt when the hood is closed, springs back automatically. The bolt is then free and the hood can be opened after pushing back the safety hook.

When attaching the lock cable the arm under the lock which carries the cable clamp screw must be turned against the spring tension until the latch plate projects into the opening for the lock bolt. In this position the lock cable should be inserted into the lock and secured to the arm by tightening the clamp screw. Bend surplus cable back.

3 - Secure hood lock.

4 - Install lock bolt and safety hook.

5 - Open and close the hood several times to check length of lock bolt and position of lock.

If necessary, adjust the position of the lock by moving it in the elongated holes, and the lock bolt length by loosening the lock nuts and turning the bolt in or out.

6 - Check the lock cable adjustment. If required adjust cable. Bend surplus cable back again.

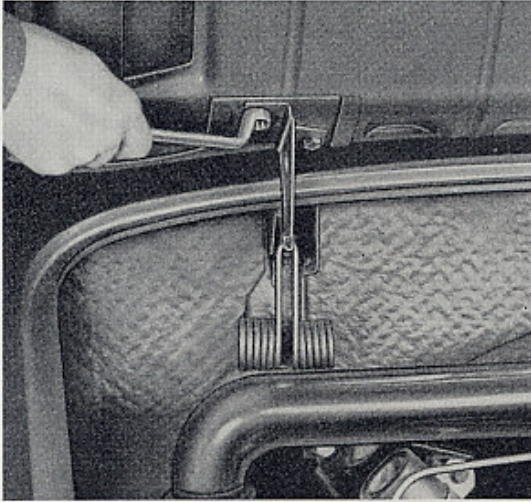
7 - Grease lock bolt.

Rear Hood Removal and Installation

Removal

The removal and installation of the rear hood is simplified if the job is carried out by two mechanics. The hood can then be properly supported and damage to the rear upper panel avoided.

If this is not possible, a suitable piece of woollen or plastic material should be placed over the rear upper panel before work commences.



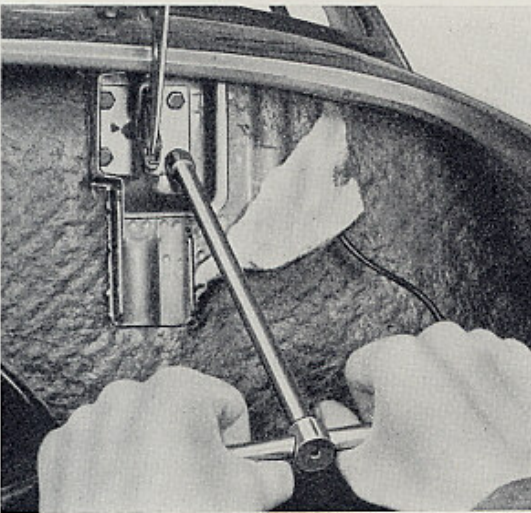
1 - Open rear hood.

2 - Unclip the license plate lamp cable and pull it out of the clamping plate on the hood.

3 - Remove two bolts from the hinges on each side of the hood.

4 - Remove the hood.

5 - If necessary, remove the hinges after lifting the sound damping material, or remove the hood lock.



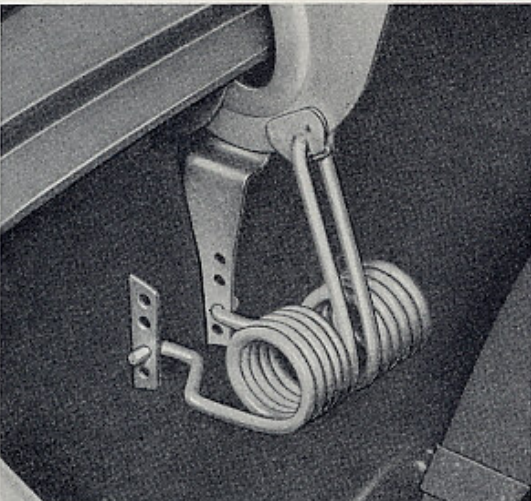
Installation

1 - Check condition of weatherstrip and replace if necessary. When renewing the rear hood weatherstrip remove all traces of old cement with benzine and secure the new weatherstrip in position with Genuine VW Universal Adhesive D 12.

2 - Bolt the hood loosely to the hinges so that it can be moved in the elongated holes to obtain proper seating and sealing all round. Then fully tighten the bolts.

3 - Attach the springs to the hinges so that the hood remains in the open position.

4 - Open and close the hood several times to check lock operation. If necessary, adjust the lock in the elongated holes.



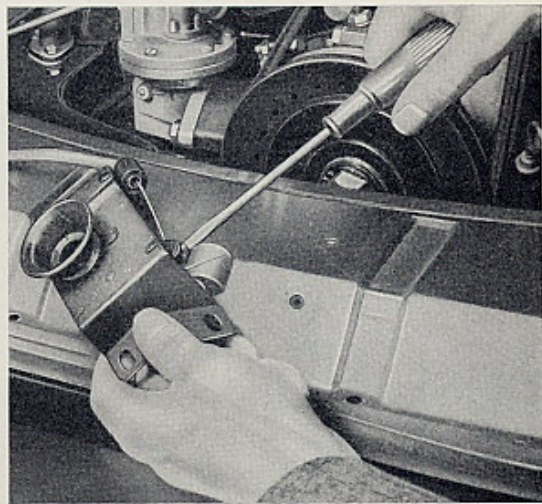
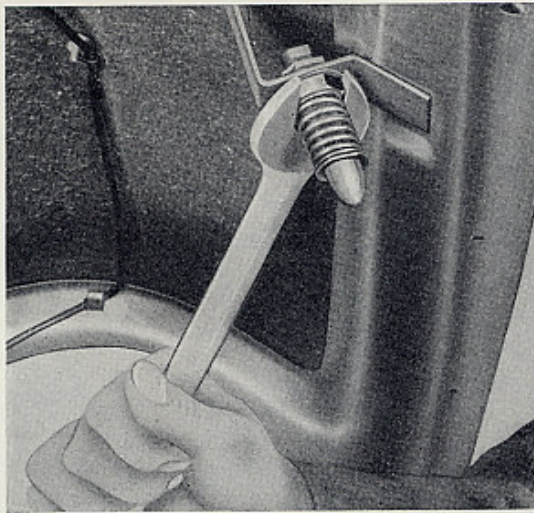
Rear Hood Lock Removal and Installation

Removal

1 - Open rear hood.

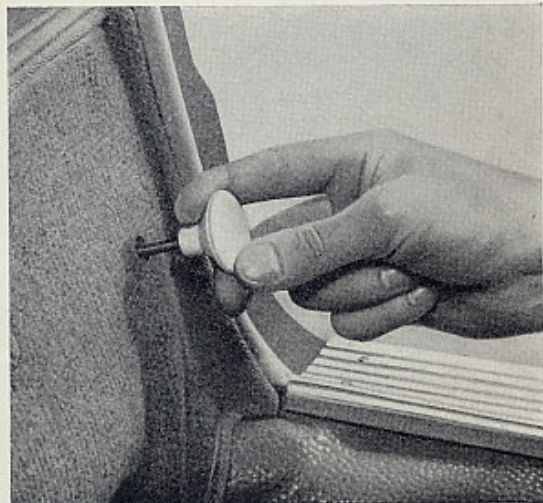
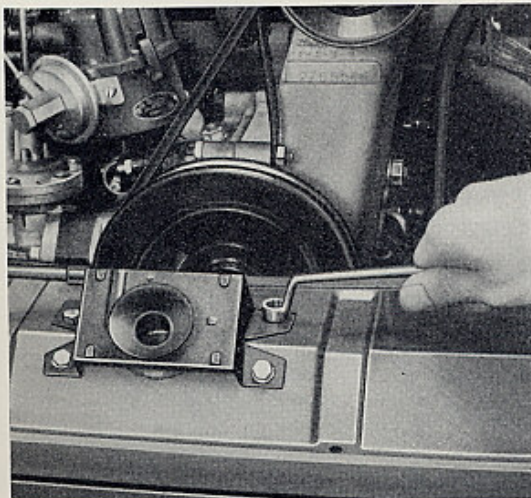
4 - Loosen cable clamp screw and remove cable from catch. Remove lock.

2 - Unscrew lock bolt.



3 - Remove four bolts.

5 - Pull lock cable out of guide tube.



Installation

- 1 - Grease lock cable and insert into guide tube.
- 2 - The lock is so constructed that if the lock cable breaks, the latch plate, which retains the lock bolt when the hood is closed, springs back automatically. The bolt is then free and the hood can be opened.

When attaching the lock cable the arm under the lock which carries the cable clamp screw must be turned against the spring tension until the latch plate projects into the opening for the lock bolt. In this position the lock cable should be inserted into the lock and secured to the arm by tightening the clamp screw. Bend surplus cable back.

3 - Secure hood lock.

4 - Install lock bolt.

5 - Open and close the hood several times to check length of lock bolt and position of lock.

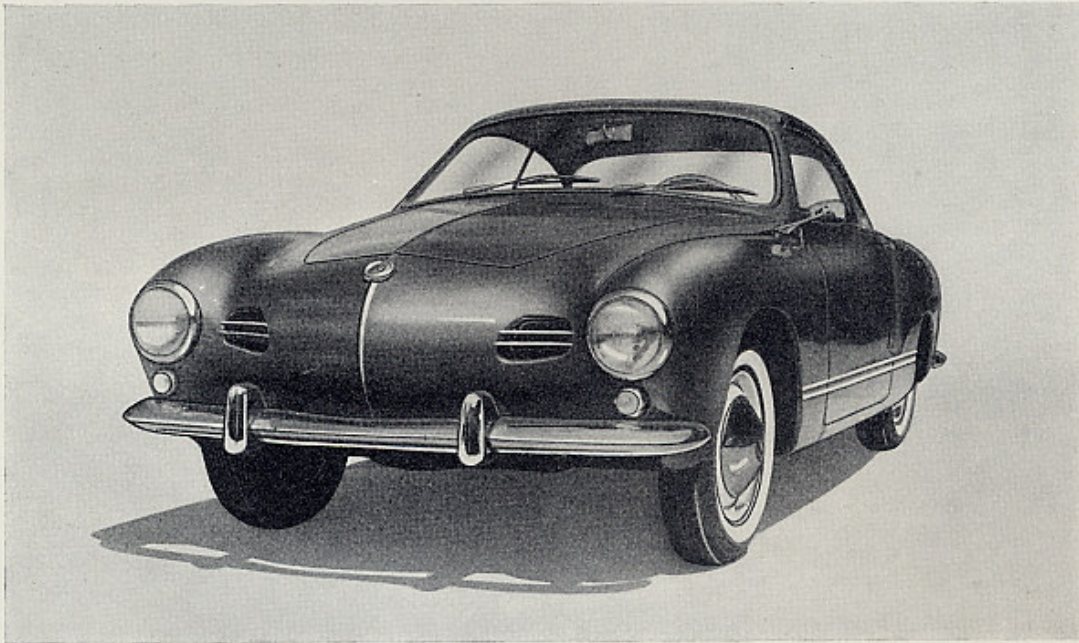
If necessary, adjust the position of the lock by moving it in the elongated holes, and the lock bolt length by loosening the lock nuts and turning the bolt in or out.

6 - Check the lock cable adjustment. If required, adjust cable. Bend surplus cable back.

7 - Grease lock bolt.



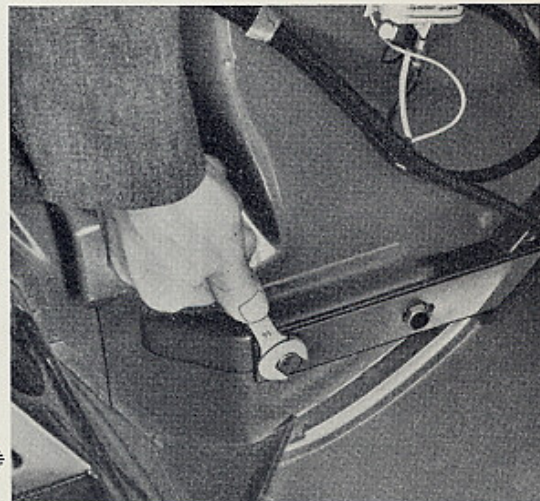
Front Bumper Removal and Installation

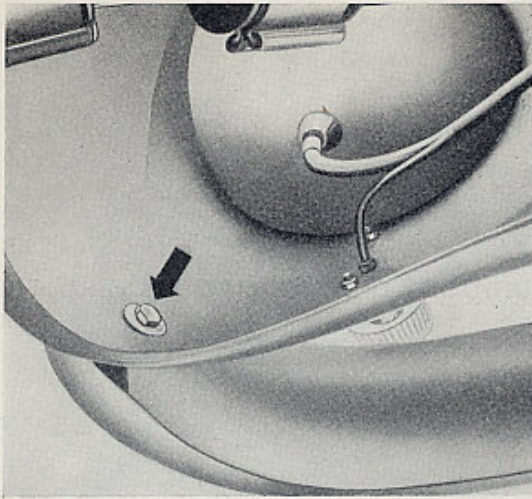


Removal

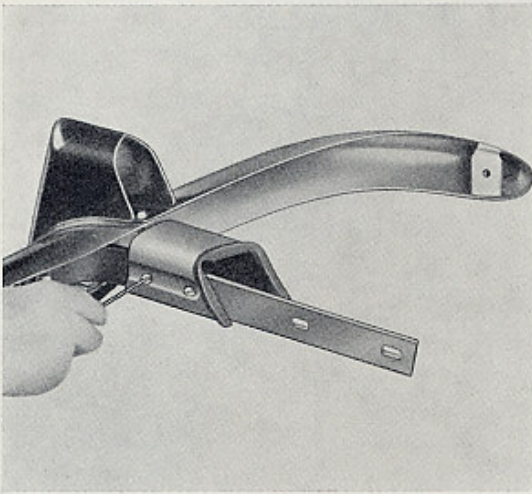
1 - Lift front hood and remove spare wheel.

2 - Remove bumper brackets bolts on each side.

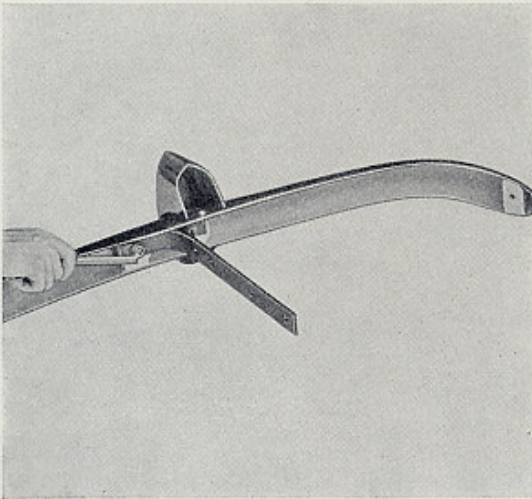




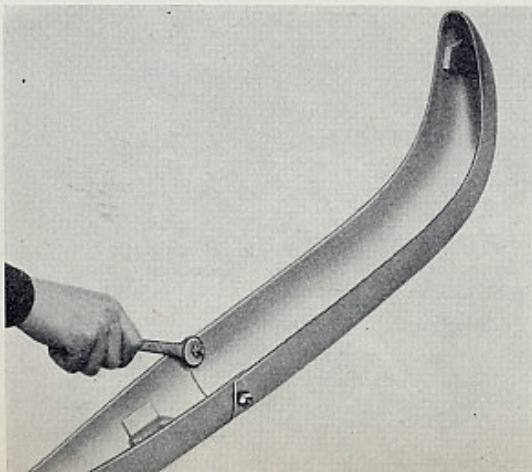
3 - Remove retaining bolts from both outer parts.



4 - Pull bumper complete with overrides and brackets, out of the front panel.



5 - Remove bumper bracket covers.



7 - Unscrew two bolts at each side and detach outer parts from bumper center part.

8 - Remove bumper bracket grommets.

Installation

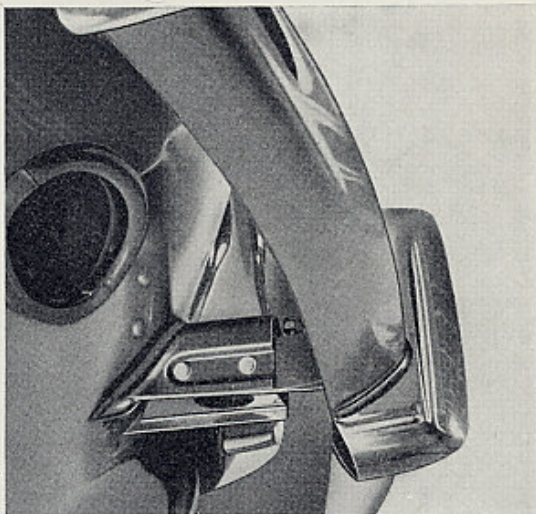
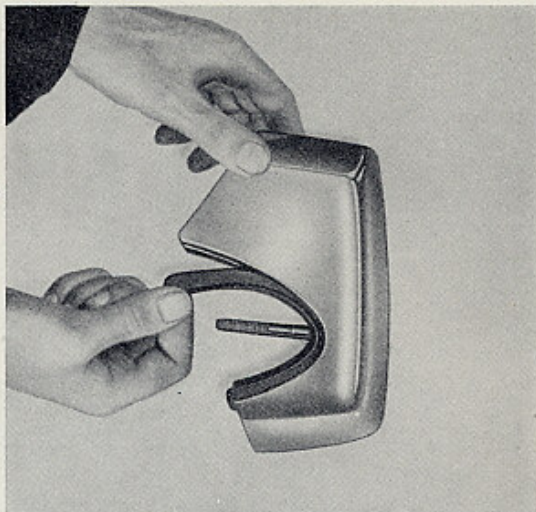
1 - Check condition of seals for overriders, bumper brackets and bumper bracket covers and renew if necessary.

2 - Bolt outer parts to bumper center part.

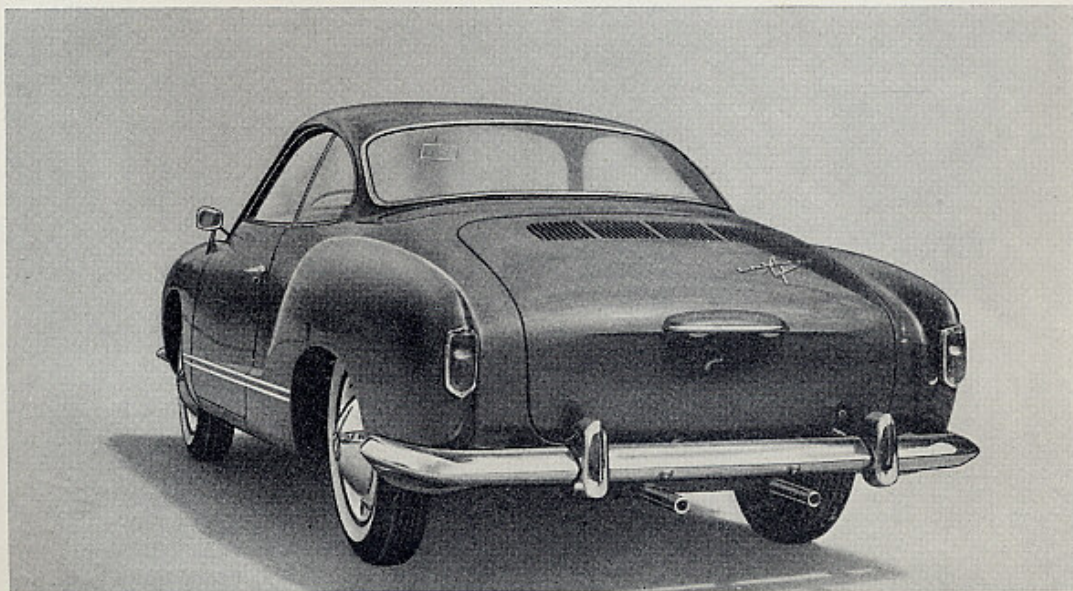
3 - Bolt brackets with bumper to body.

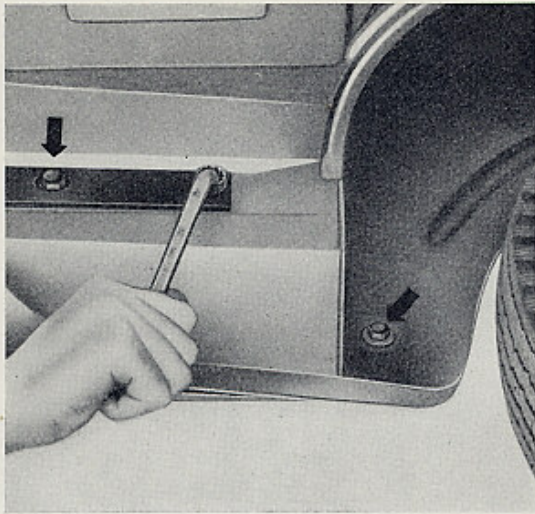
4 - Replace both outer part bolts and check that clearance between bumper and body is uniform.

5 - Replace bumper bracket covers so that the rubber seal contacts body all round.



Rear Bumper Removal and Installation

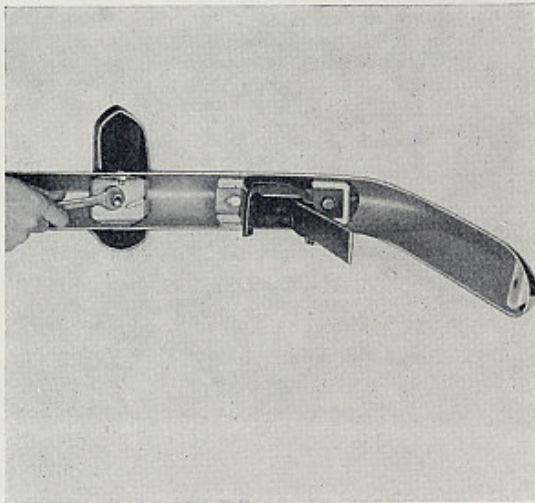




Removal

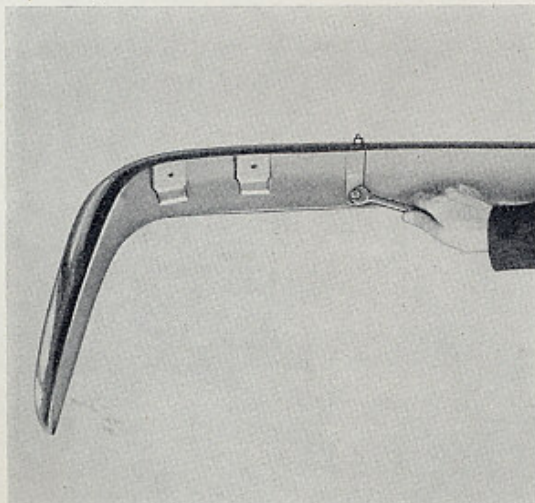
1 - Remove two bumper bracket bolts and one outer part securing bolt on each side.

2 - Pull bumper, complete with overrides and brackets out of the rear panel.



3 - Remove one override bolt on each side and detach overrides and spacers.

4 - Remove bumper bracket covers.

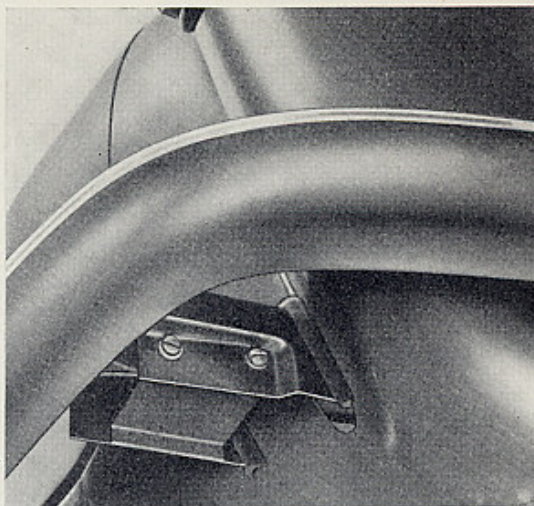


5 - Detach brackets from bumper.

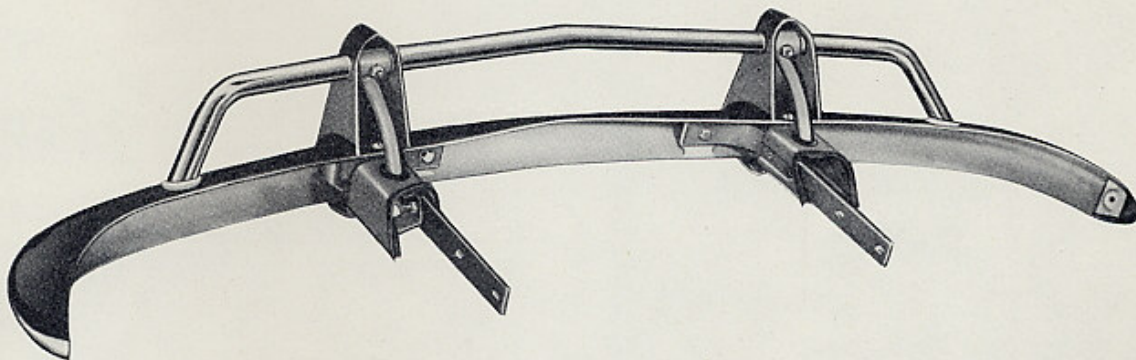
6 - Unscrew two bolts at each side and detach outer parts from bumper center part.

Installation

- 1 - Check condition of seals, renew if necessary and replace.
- 2 - Install bumper with brackets.
- 3 - Secure outer parts and check that clearance between bumper and body is uniform.
- 4 - Replace bumper bracket covers so that the rubber seal contacts body all round.

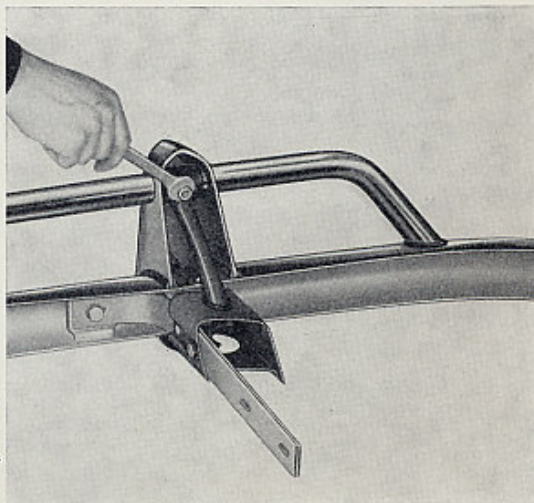


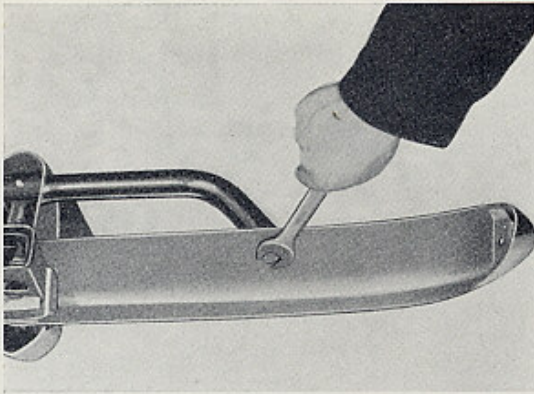
Front Bumper Removal and Installation (USA Version)



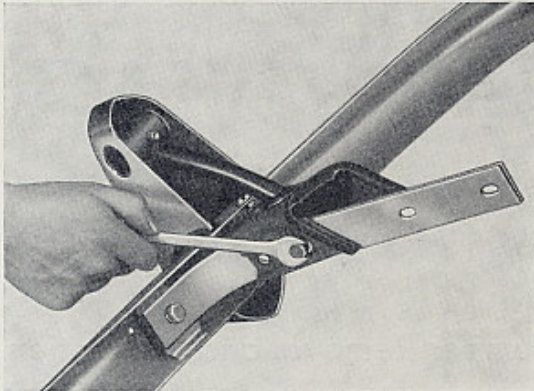
Removal

- 1 - Remove bolts from both brackets.
- 2 - Remove bolts from both outer parts.
- 3 - Pull bumper, complete with bows, overriders and brackets out of the front panel.
- 4 - Remove two overrider support nuts on each side.





5 - Detach bow after removing the bolts on both sides.

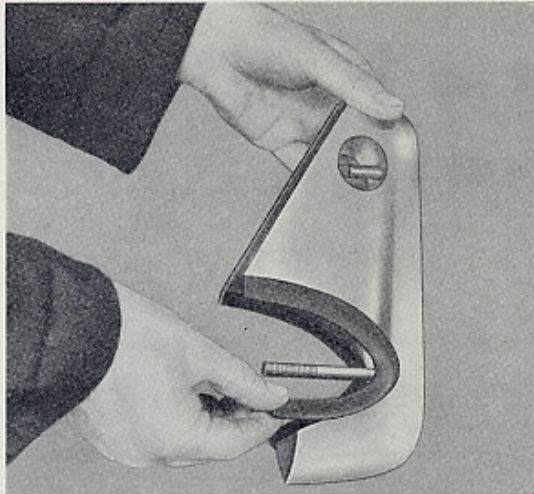


6 - Remove bumper bracket covers.

Unscrew two bolts at each side of bumper and remove brackets, spacers and overrides.

7 - Unscrew two bolts at each side and detach outer parts from bumper center part.

8 - Remove bracket grommets from front panel.



Installation

1 - Check condition of seals, renew if necessary and replace.

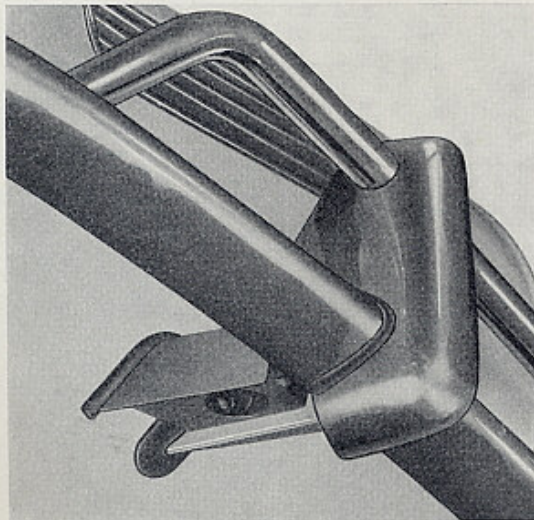
2 - Bolt outer parts to bumper center part.

3 - Bolt bumper, bows, overrides, spacers and brackets together.

4 - Bolt bumper with brackets to body.

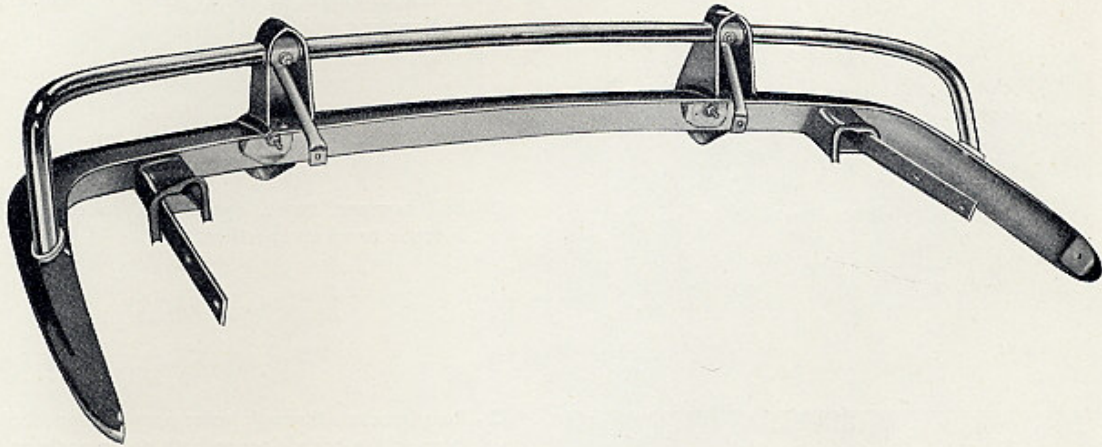
5 - Secure outer parts and check that clearance between bumper and body is uniform.

6 - Replace bumper bracket covers so that the rubber seal contacts body all round.



Rear Bumper Removal and Installation

(USA Version)



Removal

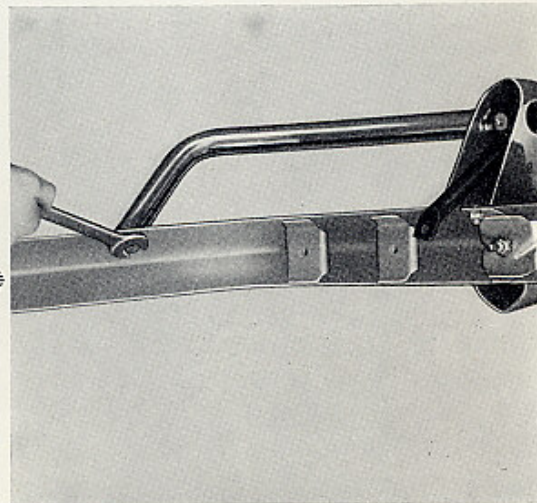
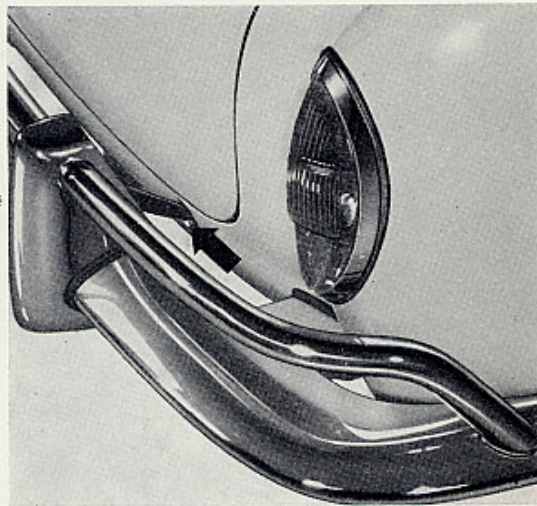
1 - Remove two override support bolts on each side.

2 - Remove two bracket bolts and one outer part securing bolt on each side.

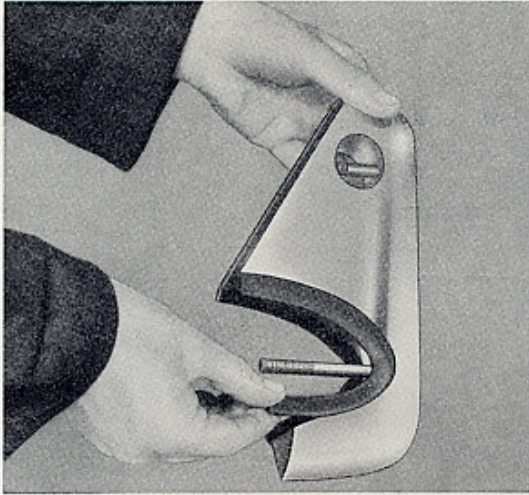
3 - Remove bumper, complete with bows, overrides and bumper brackets.

4 - Detach bow after removing the bolts on each side.

5 - Unscrew two bolts at each side and detach outer parts from bumper center part.

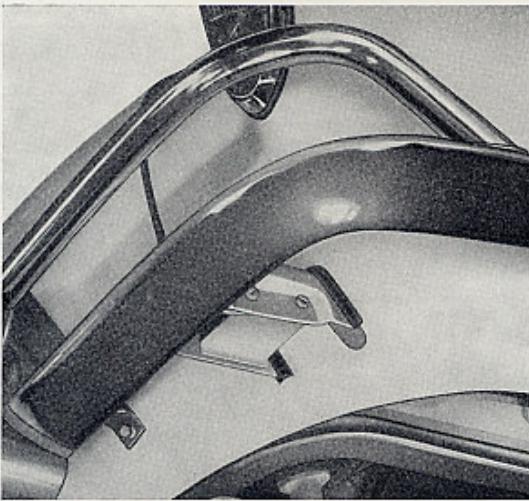


Installation



1 - Check condition of seals, renew if necessary and replace.

2 - Bolt bumper, bows, overrides, spacers and bumper brackets together.



3 - Pass brackets through holes provided and bolt them to the body. Secure both outer parts and check that the clearance between bumper and body is uniform.

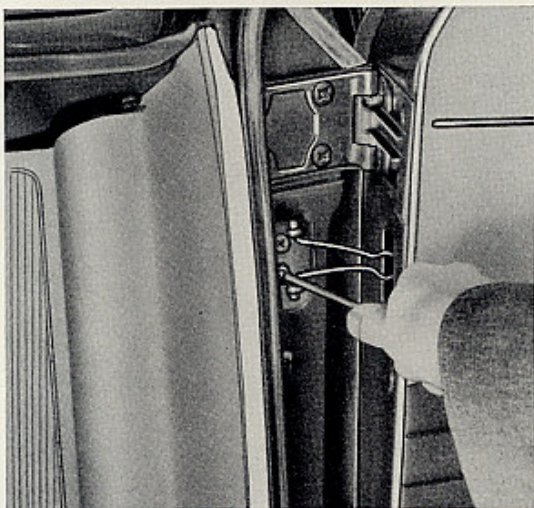
4 - Bolt override supports to body.

5 - Replace bumper bracket covers so that the rubber seal contacts the body all round.

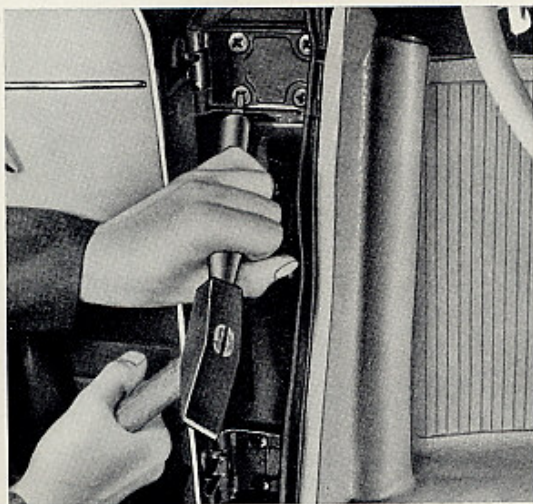


Removal

- 1 - Remove two screws holding door check spring mounting.



- 2 - Loosen the four Phillips screws of the door hinge with a punch screwdriver. Hold the door and remove the screws with a Phillips screwdriver.



- 3 - Remove the door.

Door Removal and Installation

Installation

- 1 - Install door and fit into the opening in the body, so that it aligns correctly with the body front side panel.

The hinges are screwed to movable threaded plates to facilitate correct door alignment.

- 2 - Check door weatherstrip and renew if necessary. Cement new strip into position with Genuine VW Universal Adhesive D 12.

- 3 - Adjust the striker plate so that door is flush with the quarter panel and opens and closes easily. (See Adjustment of Striker Plate.)

- 4 - Check rubber buffer for wear and replace if necessary.

Note:

With effect from 6th August 1959 and Chassis No. 2 533 139 a buffer (Part No. 141 837 277) was provided on the lower part of the door to ensure a proper fit in the door opening. The housing (Part No. 141 837 289) for the buffer is secured in a recess in the quarter panel lock pillar. The door buffer cannot be installed in vehicles of previous types.

- 5 - Oil the hinges, making sure that the oil slots are clean.

Note:

The hinges were modified on 28th April 1959 at Chassis No. 2 395 181 and are now made of light metal. The hinge pins (Part No. 141 831 421) now have plastic bushes which require no maintenance. When installing new type upper door hinges in vehicles of previous types the cast lugs for the rollers must be cut off or an opening of corresponding size made in the hinge pillar. In this case it is advisable to install the new type door check strap as well.

The door lock cylinder must be lubricated only with powdered graphite and never with oil or grease. The key should be dipped in the graphite powder, inserted in the lock and turned back and forth several times.

Door and Striker Plate Adjustment

When the doors and striker plates have been installed the position of the door in the door opening must be checked as follows:

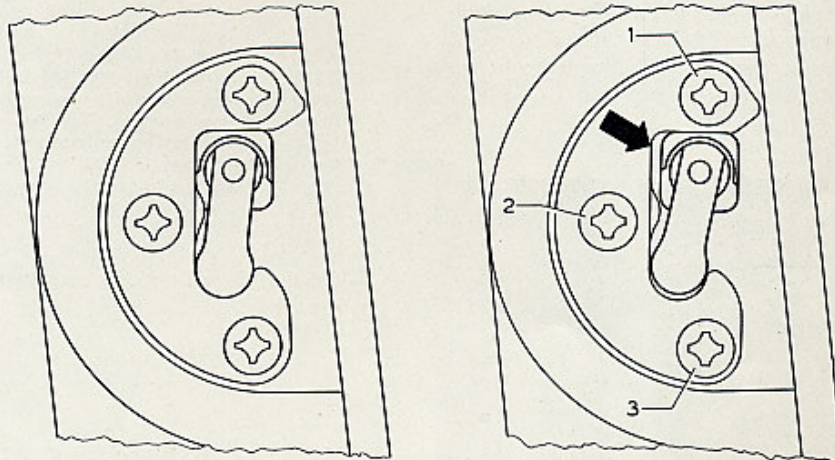
- 1 - Door to front side panel alignment.
- 2 - Door to quarter panel alignment.

If these positions are incorrect the following measures must be taken:

- 1 - Remove striker plate and loosen hinges at the hinge pillar. Move door in or out as necessary and tighten hinge screws.
- 2 - Install striker plate and adjust. The adjustment is correct when:
 - a - The door is flush with the quarter panel.
 - b - No play can be felt between lock and striker plate when forcing the door in and out by the handle.

To align the door with the quarter panel move the striker plate in or out the required amount.

Play will exist between lock and striker plate if the top part of the door latch does not rest against the striker plate.



Correct

Incorrect

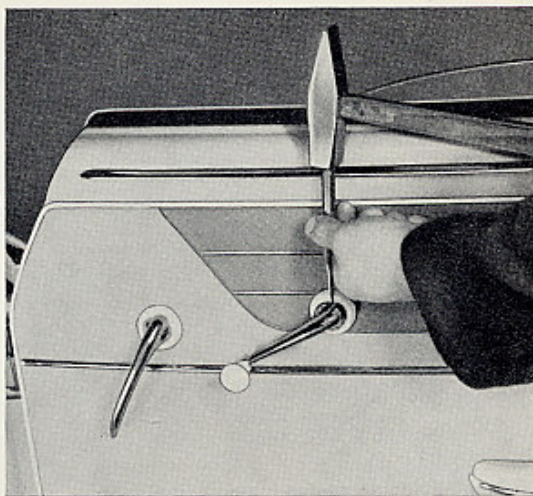
In this case the screws 1 and 2 should be loosened slightly and the striker plate moved out at the top a small amount. Tighten the screws again and check play.

If the door springs back when slammed to, the screws 1 and 2 should be loosened again and the striker plate moved inwards slightly at the top.

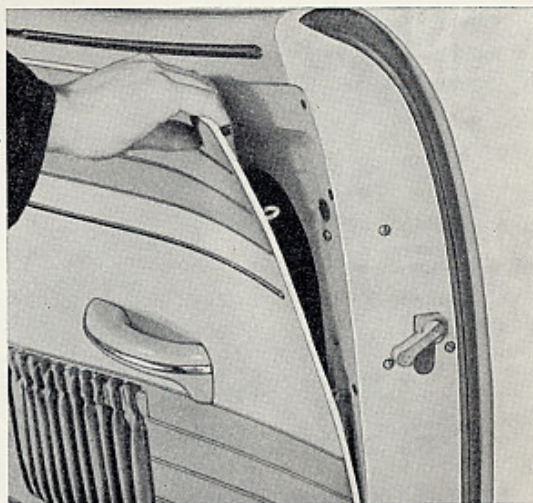
Door Window Removal and Installation

Removal

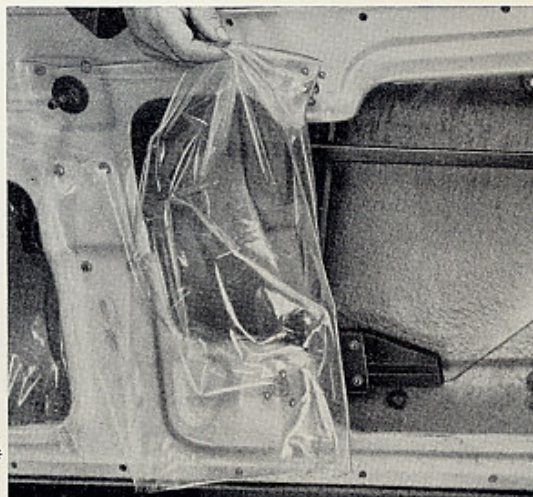
- 1 - Press window regulator handle and inside door handle escutcheons against the door trim panel until the dowel pins are visible. Knock out the pins with a punch and remove window regulator, door handle and escutcheons.



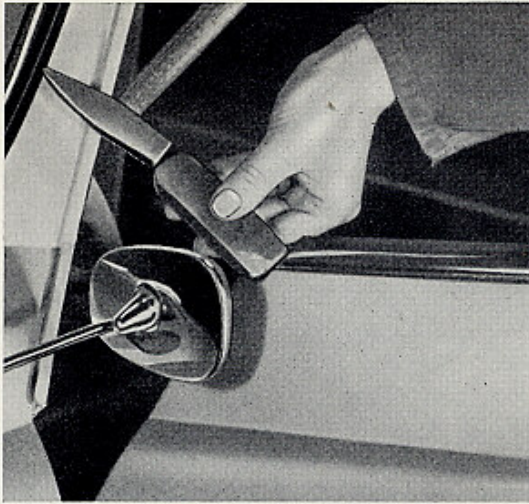
- 2 - Remove the door trim panel by pulling the clips out of the door. Care must be taken to avoid damaging the paintwork.



- 3 - Remove escutcheon springs and rubber inserts from the window regulator and door handle shafts.



- 4 - Remove plastic sheet.



- 5 - Unscrew the four window bottom channel screws and lower the glass downwards out of the door window aperture.

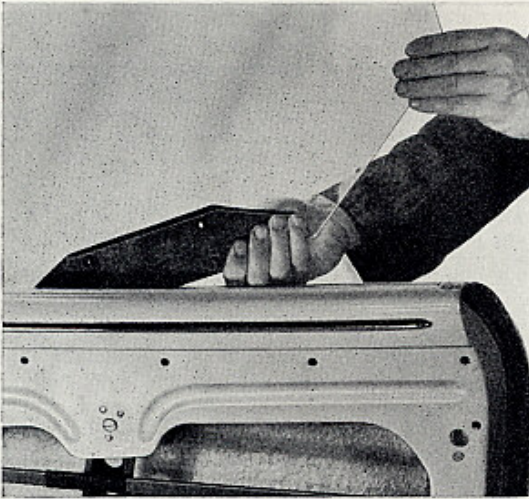
- 6 - Tap the outer trim moulding and window aperture rubber seal back slightly with a wooden block and remove.

Note:

The outer trim moulding for the window aperture and the method of securing it were altered on 23th March 1959 from Chassis No. 2 336 743.

Trim moulding clips (Part No. 141 853 335) are now used instead of the countersunk head screws over which the moulding was pushed.

The new type trim mouldings (Part No. 141 853 333 A /334 A) can be installed in former pattern vehicles if the screw holes are drilled out to 4.5 mm (0.176") dia.



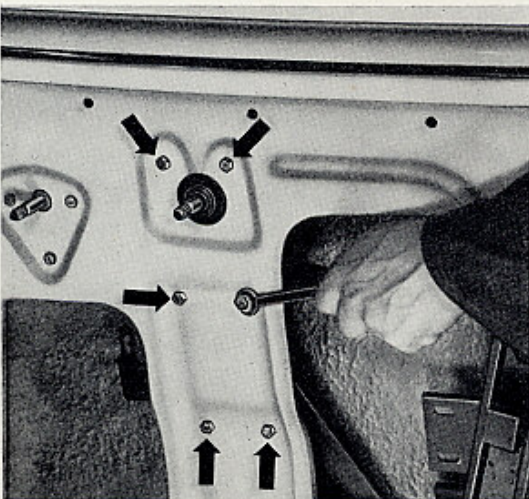
- 7 - Remove outer glass run channel with support bracket and weatherstrip and inner run channel after pressing out the clips.

Note:

With effect from 6th August 1959 and Chassis No. 2533139 four outer and three inner plastic plugs (Part No. 141 837 491) have been installed instead of the outer glass run channel, to improve the window operation.

These plugs must be removed before the door window glass is taken out.

- 8 - Lift the glass upwards out of the door.



- 9 - If the window glass lift channel or the rubber seal is damaged it can be replaced.

The window lift channel should be tapped off with a rubber hammer and a suitable block of wood and replaced in a similar manner.

- 10 - Remove six screws from window regulator.

11 - Push the regulator inwards and pull downwards. Take the regulator linkage with the ball joint sideways out of the window lift channel guide rail and remove regulator from the door.

12 - Remove two screws from the guide rail and window lift channel and take the guide channel out.

Installation

1 - Check condition of door window weatherstrip and renew if necessary.

To eliminate friction noises between the window glass and the weatherstrip it is recommended that brake cylinder paste (Part No. B 1) is rubbed into the rubber lip and the weatherstrip finally wiped with a clean cloth.

To stop friction noises with the softer weatherstrip the lip should be roughened with coarse emery cloth where it contacts the glass, as this rubber is self lubricating and the use of the usual chemical substances will only increase the noise.

2 - Grease the guide rail runners and all moving parts of the regulator mechanism with Universal Grease VW 052.

3 - Check the roller in the window lifting channel for ease of operation.

4 - Insert door window into the window aperture from above and place it on the bottom of the door.

5 - Install outer and inner glass run channels or the plastic plugs.

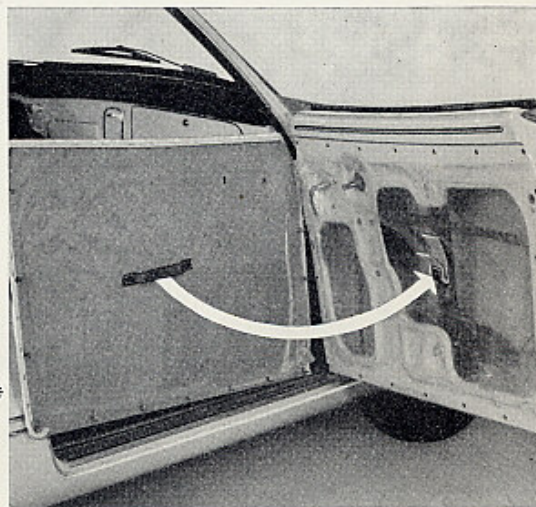
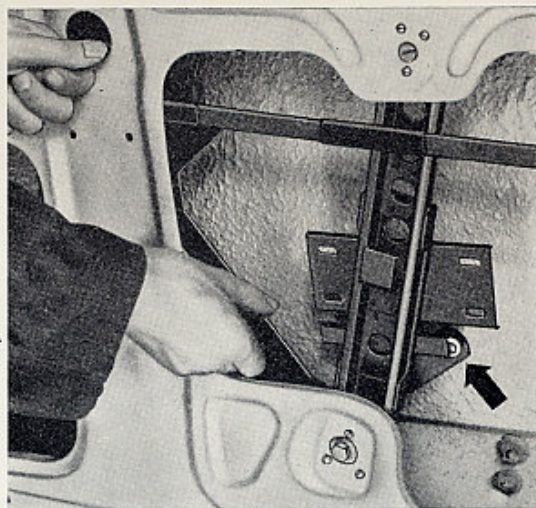
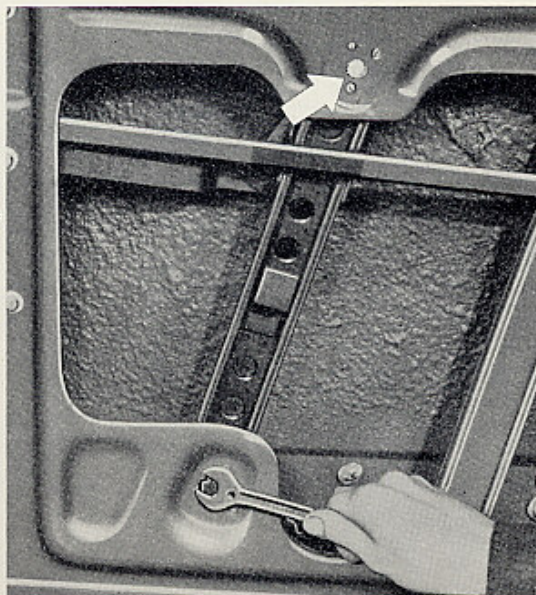
6 - Install outer trim moulding with window aperture weatherstrip.

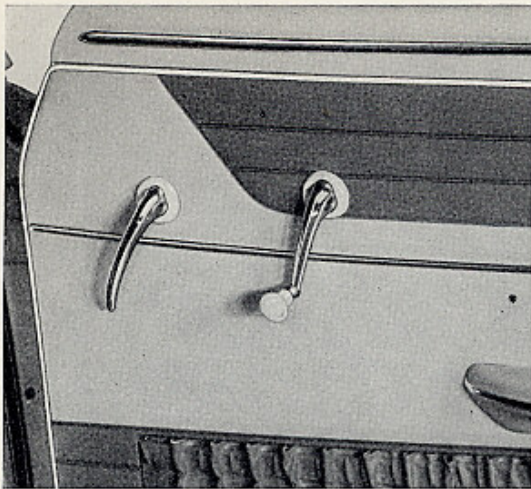
7 - Bolt window lift channel to window lifting slide.

8 - Adjust door window glass as shown under **Adjustment of Door Window Glass**.

9 - Cement plastic sheet into position. The lower edge must be fixed so that the sheet hangs like a bag in the window aperture with the lowest corner below the metal edge of the door (Drip edge).

Hang door trim panel in position by hooking the arm rest retainer strip over the bracket of the arm rest support on the guide channel.



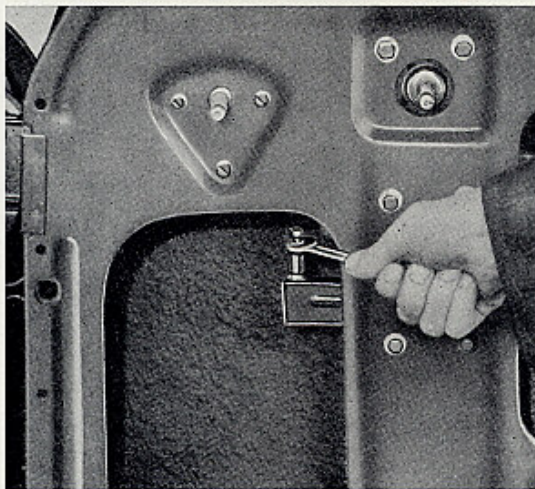


10 - Install rubber inserts, cone springs and door trim panel. The larger diameter of the cone springs must face the trim panel.

11 - Install door inner and window regulator handles.

12 - Check that all parts are functioning properly by operating several times.

Adjustment of Door Window Glass



One requirement for correct window adjustment is that the door fits properly in the door opening.

Vertical Adjustment

1 - After removing the window regulator and door handles, the door trim panel and the plastic sheet, slacken the adjusting screw lock nut.

2 - Adjust the window position by turning the screw to the left or right.

Turning to the left = lowers the window
Turning to the right = raises the window

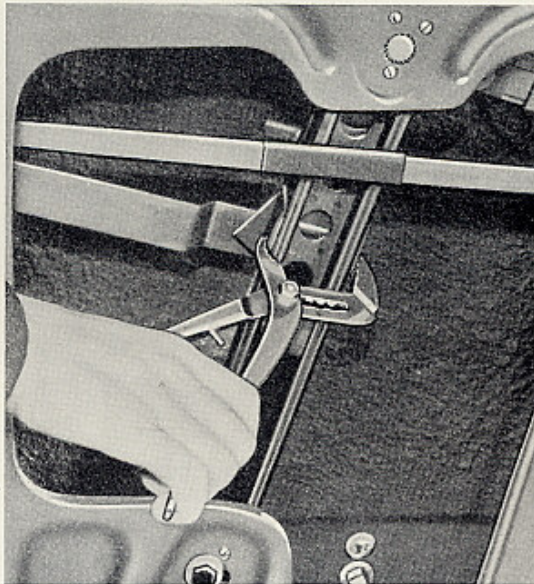
3 - Close the door and check that window height is correct.

4 - Secure adjusting screw by tightening lock nut.

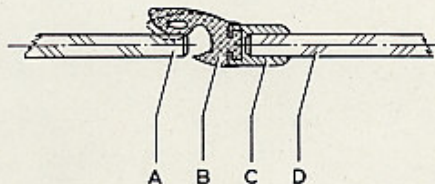
Longitudinal Adjustment

1 - Check that the moulding with weatherstrip between door and quarter windows is straight and secure. If necessary slide the weatherstrip out and tap the moulding evenly off the rear quarter window with a rubber hammer and a suitable block of wood. Coat the inside with adhesive, reinstall, and insert weatherstrip.

2 - Check the play between the runners of the window lift channel and the guide rail. If required reduce the play by squeezing the runners together with a pair of suitable pliers (Waterpump pliers).



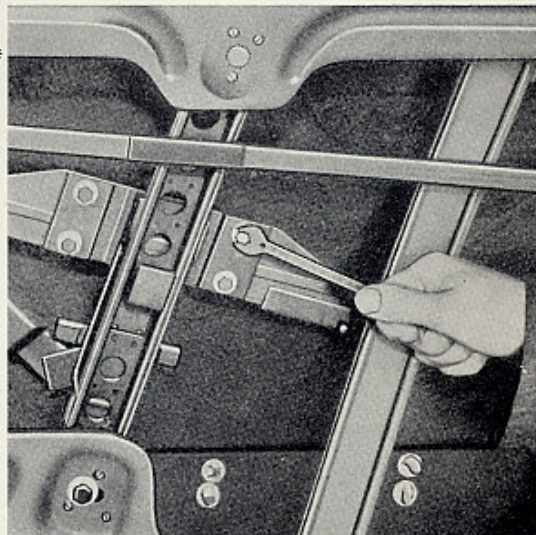
3 - Make sure that the clearance between the door window glass and the outer lip of the door and quarter window weatherstrip is uniform.



- A - Door window glass
- B - Weatherstrip
- C - Moulding between door and quarter window
- D - Quarter window glass

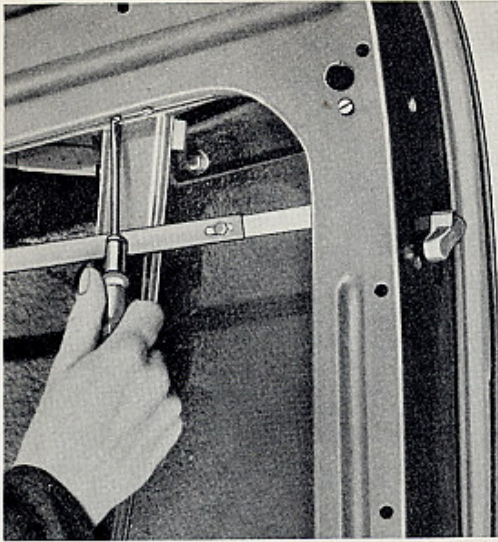
4 - Loosen four hexagon head screws on window lift channel.

5 - Move door window glass with lift channel forward or backward as required.

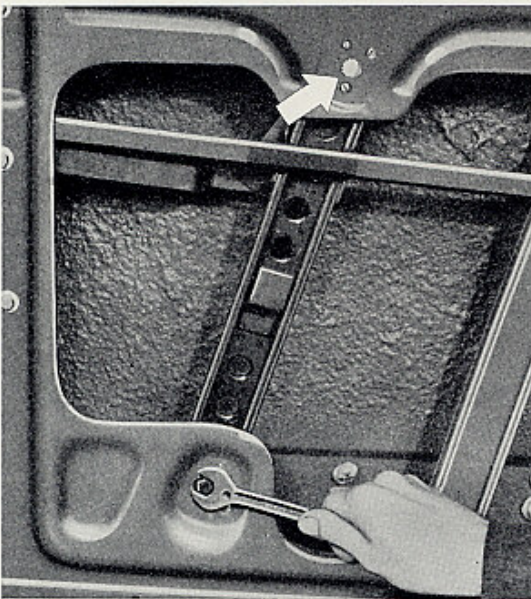


6 - Tighten hexagon head screws.

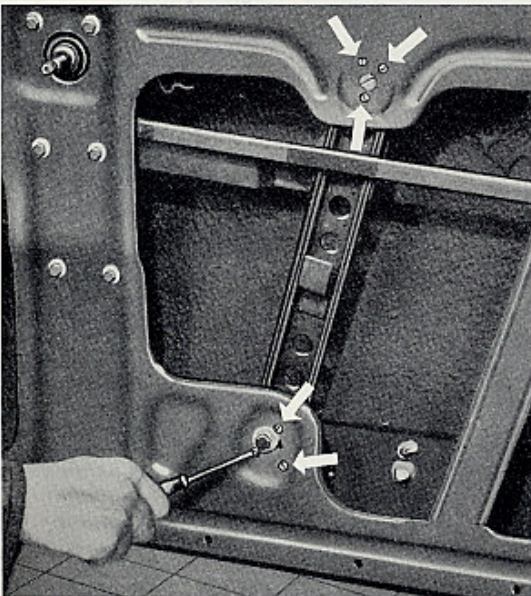
Side Adjustment



- 1 - Check door window for side rock. If required, loosen the top retaining screws of the window roller bracket and with the window in the fully raised position press the bracket hard against the window roller and retighten screws.



- 2 - Loosen hexagon head and countersunk screws of window guide rail.



- 3 - Correct window position by turning the three screwed pins at top and bottom of guide rail in or out.

The location for the adjustment of the door window glass is given by the weatherstrips on the roof and the quarter window.

- 4 - Tighten hexagon head and countersunk screws.

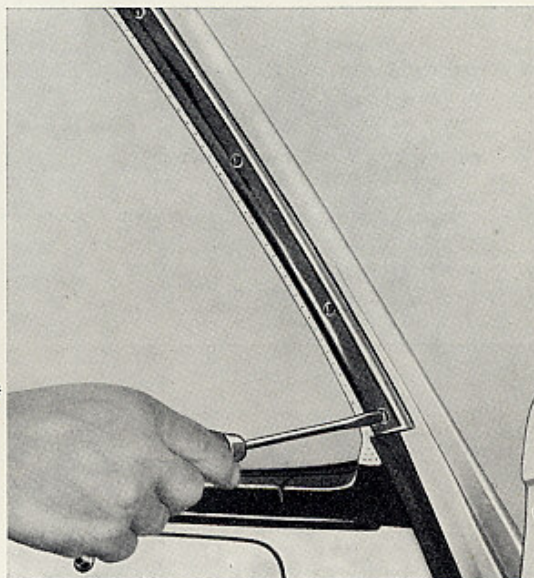
Trim Moulding for Door Window Weatherstrip Removal and Installation

Removal

1 - Pull weatherstrip for door window sealing out of the moulding.

2 - Remove tapping screws.

3 - Take off moulding.

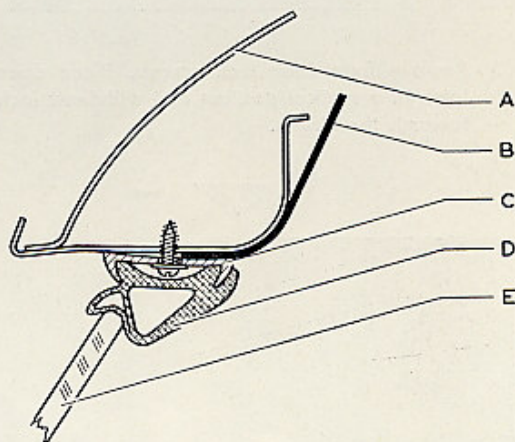
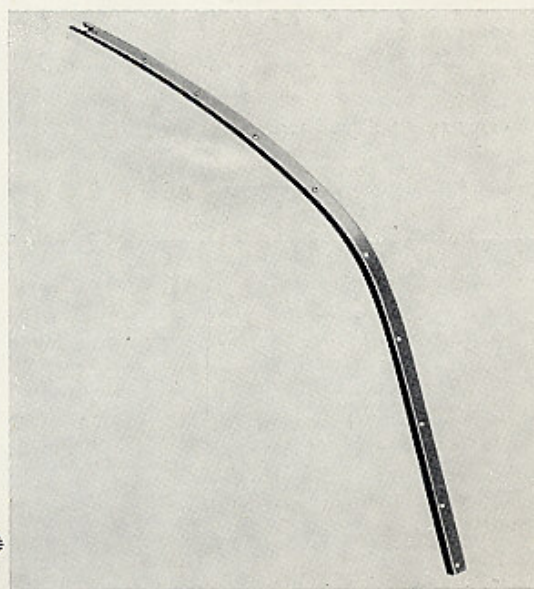


Installation

1 - Check condition of moulding and weatherstrip and renew if necessary.

2 - Cement a length of sealing strip (Part No. 151 871 435) to the moulding.

3 - Attach the moulding to the roof frame so that a good contact between weatherstrip and door window is obtained.

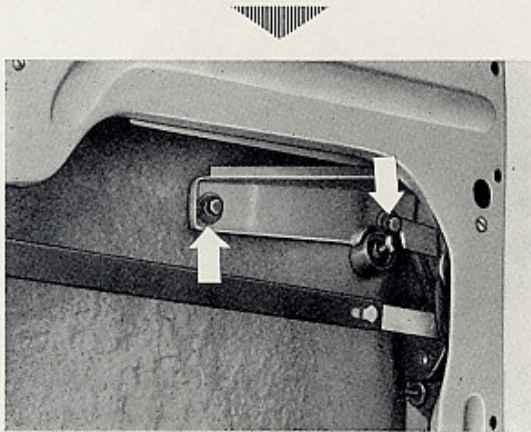


- A - Roof
- B - Headlining
- C - Moulding
- D - Weatherstrip
- E - Door window glass

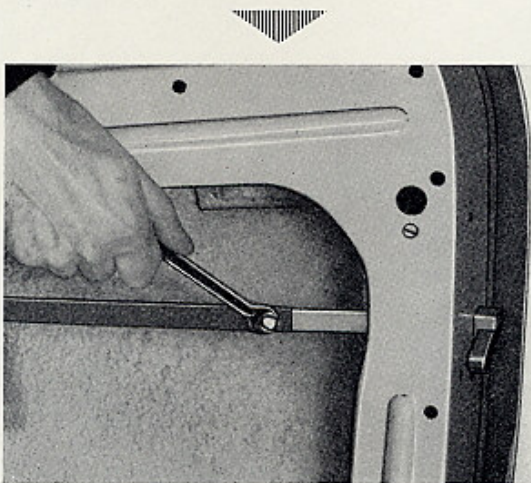
Door Lock Removal and Installation

Removal

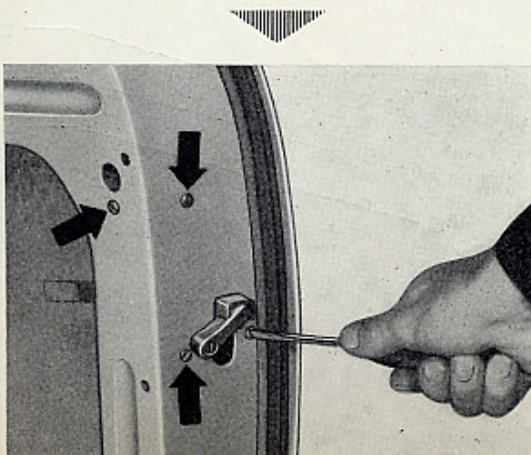
- 1 - Remove inner door handle and window regulator handle.
- 2 - Remove trim panel and plastic sheet.
- 3 - Remove outer door handle retaining screws and take off handle.



- 4 - Unscrew pull rod screws.



- 5 - Remove four door lock screws. Place door latch in a vertical position and withdraw lock towards the hinges.



Installation

- 1 - Check all parts for wear and replace where necessary. Grease all moving parts.

- 2 - Where necessary, the remote control assembly or the pull rod can be renewed separately after removing the rivets.

- 3 - Check the position of the anti-rattle rubber sleeves on the pull rod.

- 4 - The pull rod has an elongated hole to facilitate movement in either direction. When the lock is installed the pull rod should be pushed towards the hinge until light resistance is felt and then bolted to the lock.

- 5 - Operate the inner door handle and check that the lock opens properly before reassembling door. If this is not the case the pull rod must be readjusted. When the inner handle is in the "open" position the clearance between the latch and the latch stop in the lock must be 2 mm.

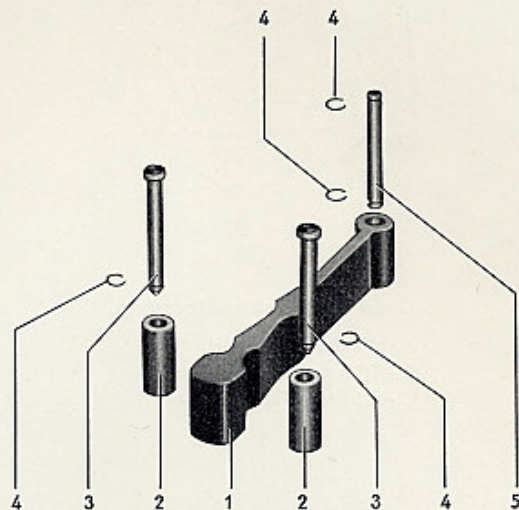
- 6 - Install outer door handle and tighten screws. Check that 2 mm play exists between the hexagon head bolt on the door handle press button and the lock when the door is closed.

- 7 - Reassemble door and ensure that the position of window regulator and door handles is correct.

Door Check Strap Removal and Installation

Removal

- 1 - Remove door upper hinge.
- 2 - Detach circlips from pins.
- 3 - Knock pins out with a drift.
- 4 - Take rollers and check strap out.



- 1 - Door check strap
- 2 - Rollers
- 3 - Pins for rollers
- 4 - Circlips
- 5 - Pin for check strap

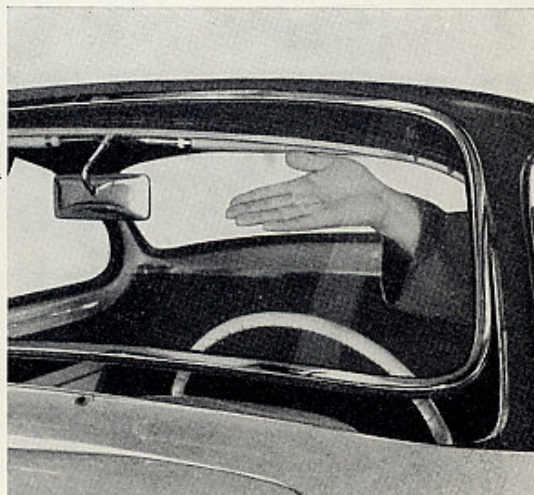
Installation

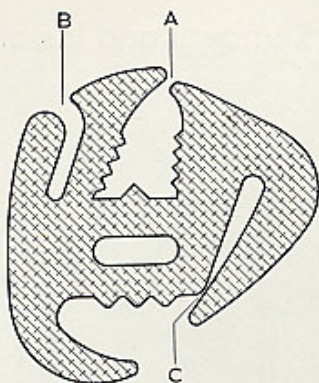
- 1 - Insert check strap and secure rollers in the hinge with the pins.
- 2 - Install door hinge.

Windshield Removal and Installation

Removal

- 1 - Remove windshield wiper arms.
- 2 - Starting in the top corner on the passenger's side, on account of the clear visibility area, push the windshield and weatherstrip outwards.
- 3 - Slide upper and lower trim mouldings sleeves to one side with a piece of wood until the moulding ends are free.
- 4 - Pull weatherstrip downwards off the windshield and out of the moulding at the same time to avoid distorting the moulding and making installation very difficult.





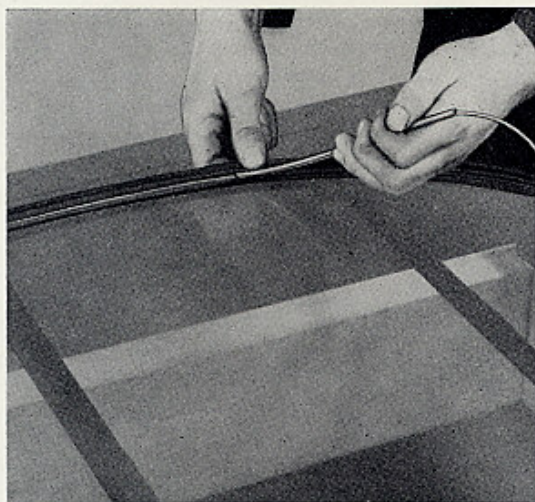
Cross section of weatherstrip

- A - Windshield channel
- B - Trim moulding groove
- C - Windshield frame groove

Installation

The mounting of the weatherstrip and trim moulding on windshield and rear windows is rendered much easier by the use of assembly jig VW 738/1 (Local manufacture) and mounting tools VW 739/1 (Local manufacture).

- 1 - Check condition of weatherstrip and renew if necessary.
- 2 - Place weatherstrip over window glass edge. The joint should be in the center at the top of the windshield.
- 3 - Press the weatherstrip into position with the rubber retaining bands.



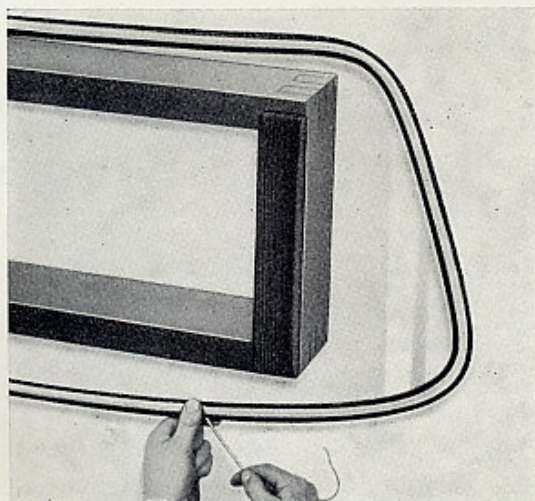
Trim Moulding Installation

- 4 - Insert a length of cord in the moulding groove.

This can be done by passing the cord through a short piece of tube, one end of which has been slightly flattened. Place the flat end of this tube in the groove and pass it right round the windshield, laying the cord in the groove. The ends should be in the center of the upper or lower edge of the windshield.

- 5 - To make the task of getting the trim moulding over the raised lip of the weatherstrip easier it is recommended that it be smeared lightly with brake cylinder paste.

Hook the corner of the moulding behind the weatherstrip lip and check carefully to see that the shape corresponds with that of the weatherstrip. Corrections can be made by bending the moulding by hand.



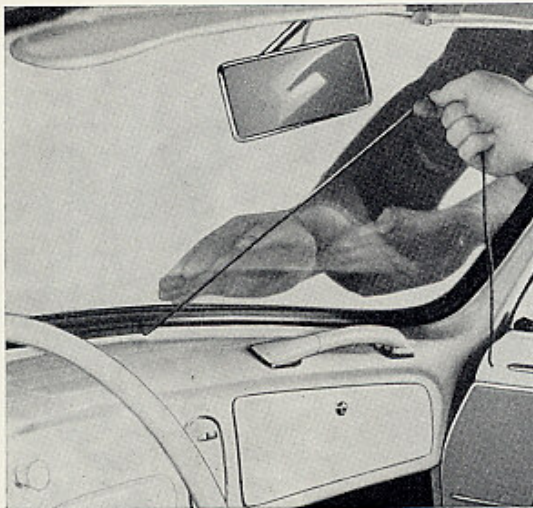
- 6 - Starting at the corners, clip the moulding halves, one after the other into the weatherstrip. Pull the cord out slowly and follow round pressing the moulding into the groove.

- 7 - Push the sleeves over the moulding ends.

- 8 - With a screw gun and suitable nozzle force VW Window Cement D10 between the window glass and the weatherstrip all round.

Windshield Installation

- 9 - Insert a cord in the outer groove so that the ends meet in the center of the lower windshield edge.
- 10 - The inside of the lip which contacts the outer body panel when the windshield is installed should be coated with VW Window Cement.
- 11 - Lay the windshield in the windshield frame from outside with the cord ends hanging down inside.
- 12 - The installation of the windshield requires two persons.



Starting at one end, one fitter pulls the edge of the lip over the frame edge, keeping the cord parallel to the windshield.

The second fitter strikes the outside of the windshield with the hand, following the pull of the cord and seating the windshield firmly around the entire frame.

- 13 - Remove the excess sealing compound with benzine. Test for leakage and then clean the glass with spirit.

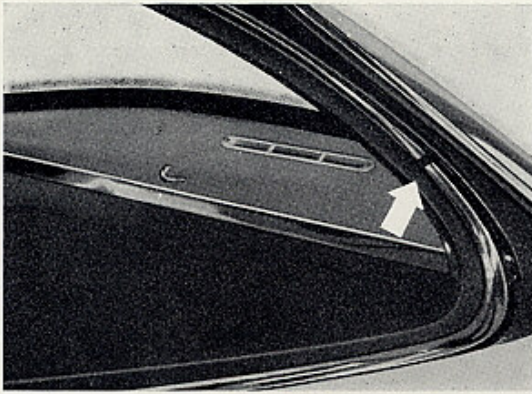
Important!

If a windshield of laminated glass is being installed instead of the toughened glass type, pressure must be applied evenly with both hands to seat the assembly while the second fitter inside the car lifts the lip of the weather-strip over the frame edge. Rubber mallets must not be used owing to the danger of shattering the glass.

Rear Window Removal and Installation

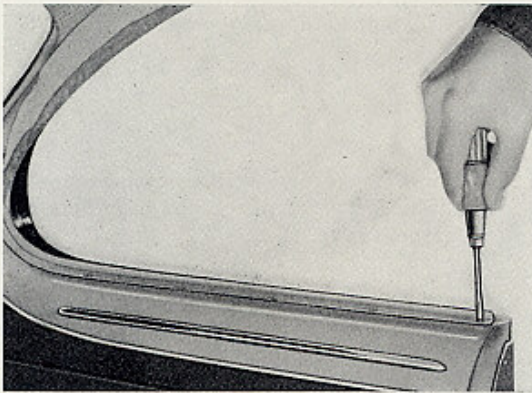
The operations described for the windshield can also be followed for removal and installation of the rear window.

Quarter Window Removal and Installation

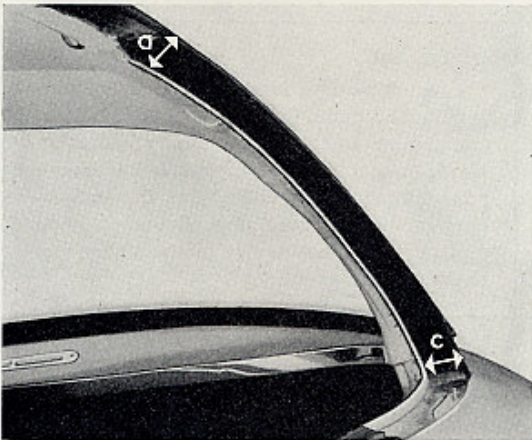


Removal

- 1 - Detach weatherstrip and trim moulding for door window at the top.
- 2 - Pull quarter window out forwards. Take weatherstrip and channel off the glass.
- 3 - Push moulding sleeve to one side with a piece of wood so that moulding ends are free.



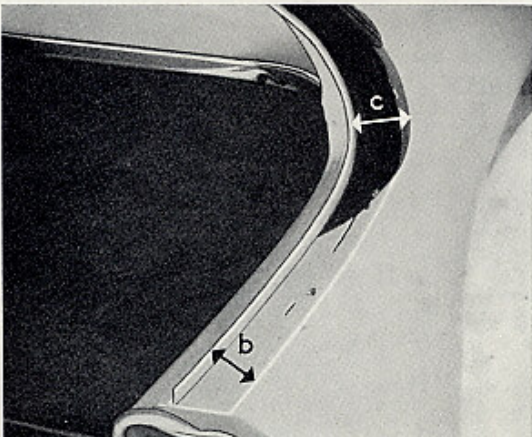
- 4 - Push trim moulding forwards and take off.
- 5 - Take off weatherstrip and unscrew retaining channel.



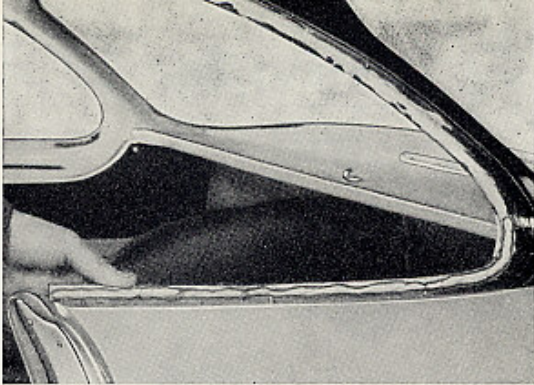
Installation

- 1 - Install retaining channel, observing the measurements given as far as possible.

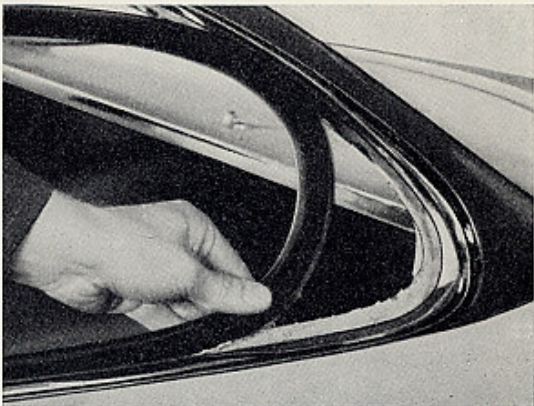
a = 30 mm (1.18")
b = 34 mm (1.34")
c = 38 mm (1.50")



2 - Coat retaining channel on the outside with plastic sealer D 15.



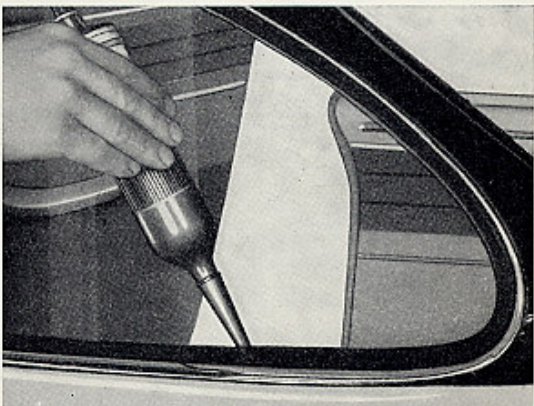
3 - Insert trim moulding and slide sleeve over the ends.



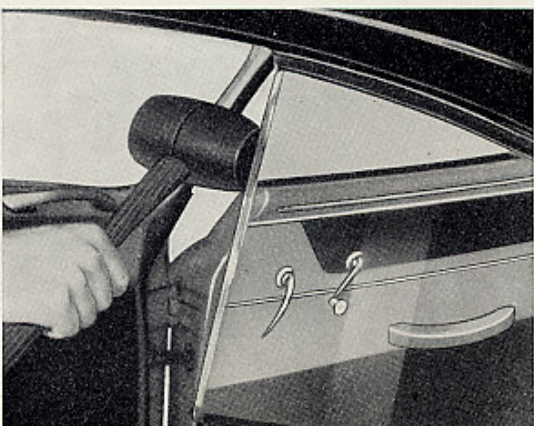
4 - Place weatherstrip in the quarter window opening.



5 - Insert quarter window glass in the weatherstrip and lift the lip over the edge of the glass with a wooden wedge.

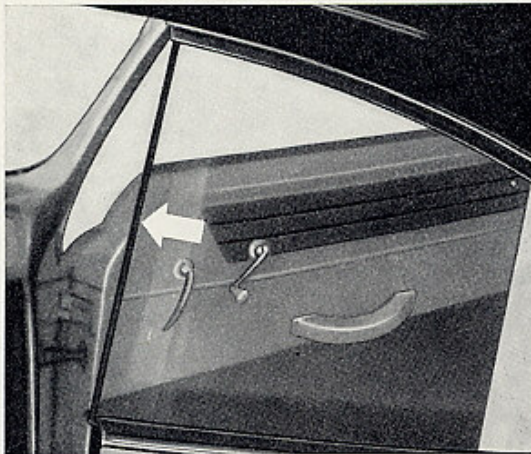


6 - With a screw gun and a suitable nozzle force VW Window Cement D 10 between the quarter window glass and the weatherstrip.

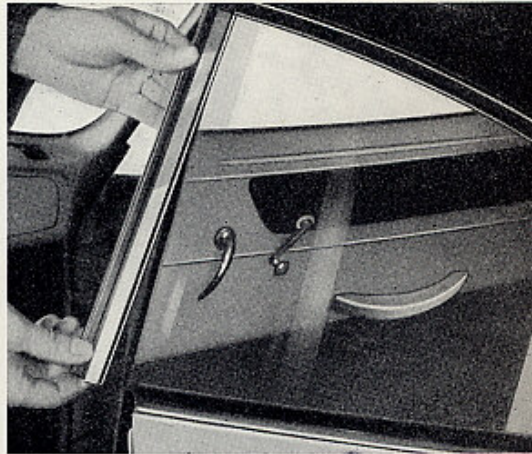


7 - Tap the glass fully into the quarter window opening with a rubber hammer.

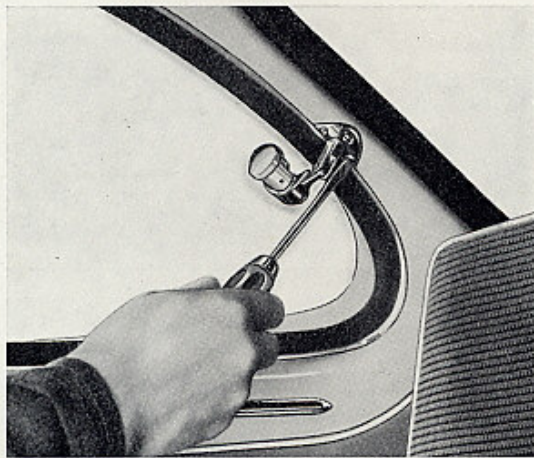
8 - Place a strip of insulating tape on the straight edge of the window.



9 - Install channel with weatherstrip. Screw door window trim moulding to the roof frame.



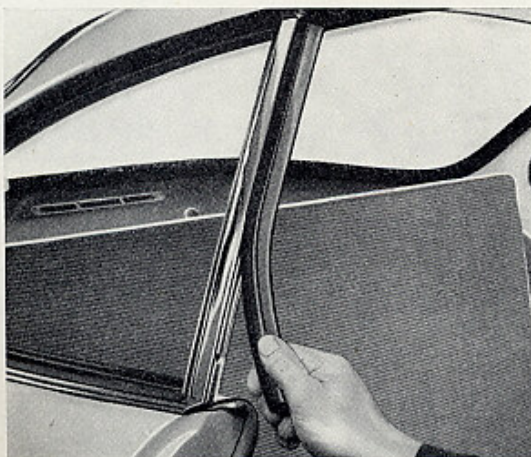
Quarter Window Removal and Installation (Hinged)



Removal

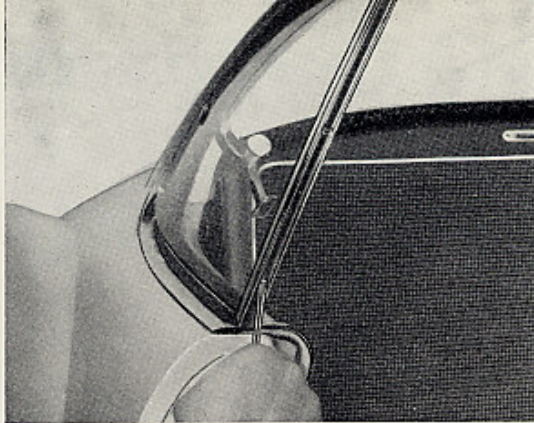
1 - Open window.

2 - Unscrew the three toggle retaining screws inside the body.

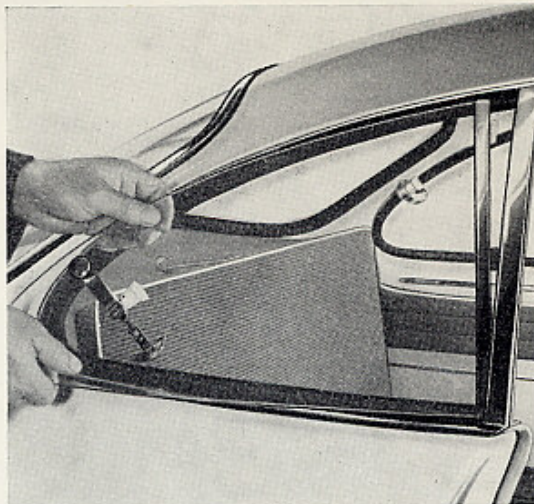


3 - Pull weatherstrip out of the channel at the door side.

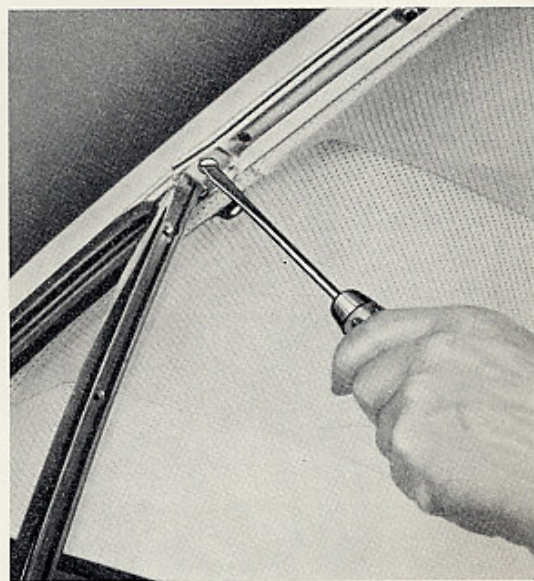
4 - Unscrew three countersunk screws.



5 - Pull window out to the rear. Remove toggle and channel.



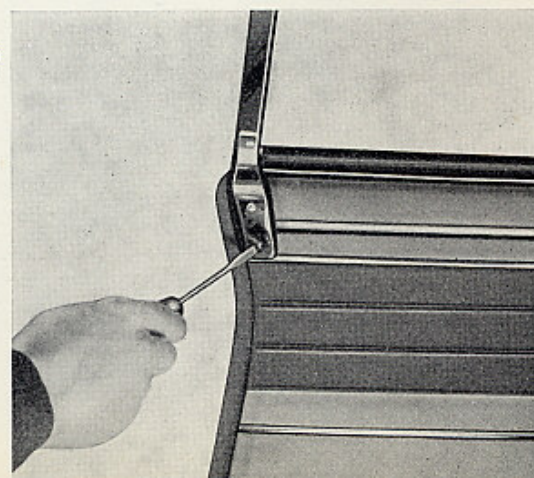
6 - Take door window weatherstrip out of the moulding and remove the screw then visible.



7 - Unscrew three countersunk screws on the inside of the quarter panel and remove channel.

8 - Take weatherstrip out of moulding. Unscrew the countersunk screws then visible and remove the quarter window moulding.

9 - Remove trim moulding from the quarter window shoulder.



Installation

1 - Remove all traces of the old, hard sealer from the body.

2 - Place a piece of sealing strip under the trim moulding and a length of sealing band under the trim frame.

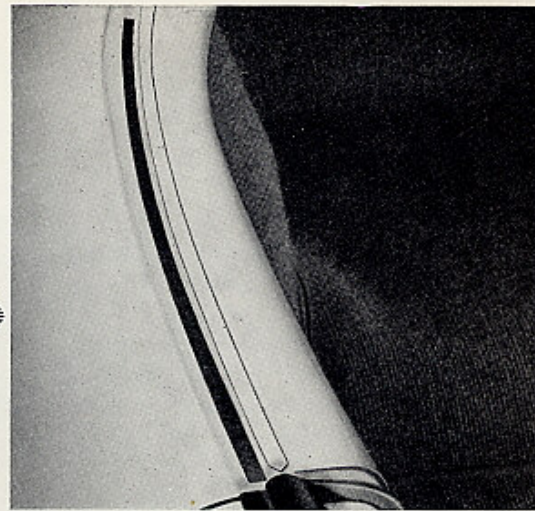
3 - Secure trim moulding on the quarter window shoulder.

4 - Secure trim frame in quarter window opening.

5 - Check condition of weatherstrip, renew if necessary. Insert weatherstrip in the trim frame.

6 - Secure channel between quarter and door windows with three countersunk screws at the bottom and to the roof frame with one hexagon head screw.

7 - Check condition of connection pieces and rubber hinge. Renew if necessary.



8 - Lay rubber hinge round the channel for the quarter window glass.

9 - Place quarter window in the frame and secure with three countersunk screws.

10 - Screw toggle to body and check the contact between glass and weatherstrip.

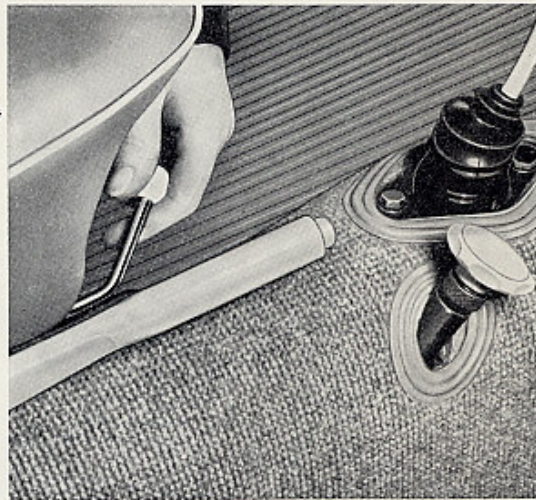
11 - Insert weatherstrip between quarter and door window into the channel.



Front Seat Removal and Installation

Removal and Installation

- 1 - Lift up the locking mechanism on the right hand side of the seat and push the seat forward out of the guide rails on the floor.



- 2 - Take the seat out.

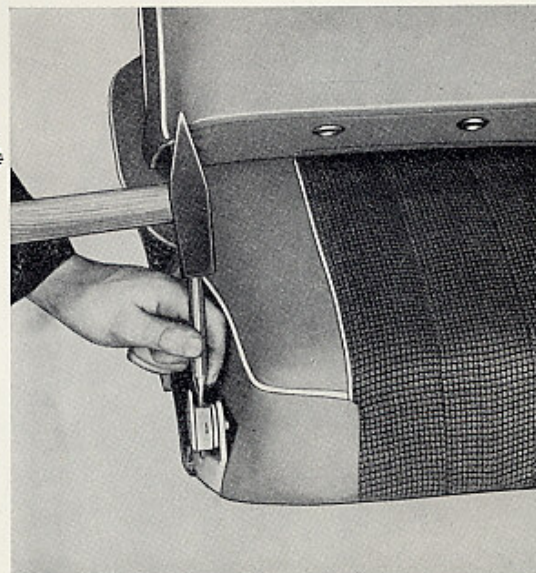
Grease the guide rails with VW Universal Grease A 052 before installing the seat.

Adjusting Cam Removal and Installation

- 1 - Remove seat.

- 2 - Knock the pin out of the left or right hand adjusting cam with a punch.

- 3 - Take cam off.

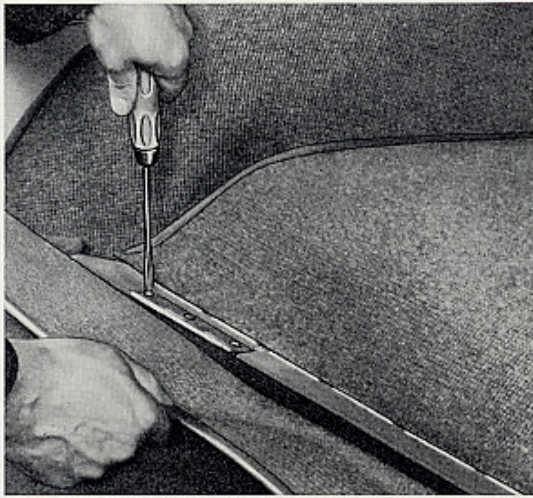


Note:

The adjusting cams must not be interchanged.

Before reassembly the cams should be lightly greased with VW Universal Grease A 052 at the face which contacts the guide tube.

Emergency Seat Removal and Installation



Removal

1 - Lift emergency seat and take it out of the support channels.

2 - Fold emergency seat back rest down. Lift luggage compartment lining on the reverse side of the back rest slightly and unscrew four hinge screws on each side.

3 - Take out back rest.

Installation

1 - Check back rest retaining strap for damage and renew if necessary.

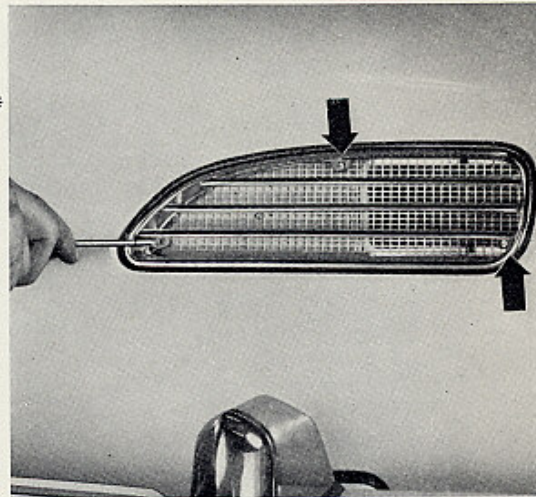
2 - Screw back rest to hinges and cement lifted part of luggage compartment lining into position with VW Universal Cement D 12.



Fresh Air Inlet Trim Frame Removal and Installation

Removal

- 1 - Remove three retaining screws.
- 2 - Take trim frame out of front panel opening.
- 3 - Remove three screws and take grille and flyscreen off.



Installation

- 1 - Check condition of trim frame, rubber seal, grille and screen and renew parts as required.
- 2 - Place flyscreen and grille in the fresh air opening and secure with three screws.

- 3 - Place rubber seal round trim frame.

Insert trim frame in fresh air opening and secure with three chrome-plated screws.

Front Side Panel Trim Mouldings

Removal and Installation

- 1 - Push moulding clips out of the holes in the front side panel from inside and remove moulding.

- 2 - Renew bent or damaged moulding clips.

- 3 - Seal moulding clips inside the front side panel with plastic sealer D 15.

Door Trim Mouldings

Removal

- 1 - Remove window regulator handle and inner door handle.
- 2 - Remove door trim panel.

- 3 - Remove plastic sheet.

- 4 - Remove plastic sealer from the moulding clips.

- 5 - Push the moulding clips out of the holes from inside the door and take moulding off.

Installation

1 - Renew bent or damaged moulding clips.

2 - Seal moulding clips inside the door with plastic sealer D 15.

Quarter Panel Trim Mouldings

Removal

- 1 - Remove side trim panel.
- 2 - Remove plastic sealer from moulding clips.
- 3 - Push moulding clips out of the holes from inside the rear quarter panel and remove moulding.

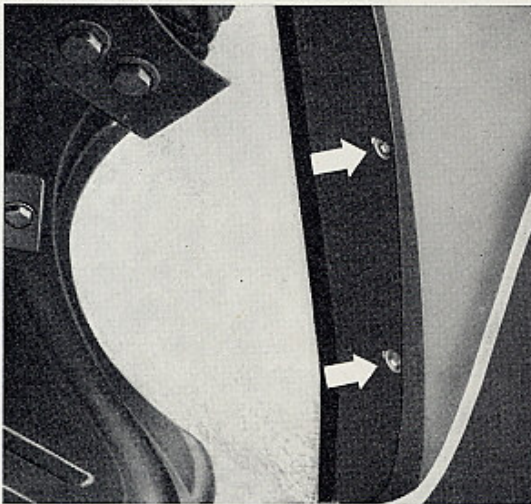
Installation

- 1 - Renew bent or damaged moulding clips.
- 2 - Seal the clips with plastic sealer D 15.

Outside Rear View Mirror

Removal

1 - Unscrew two hexagon head screws from cover plate on hinge pillar.



2 - Remove cover plate and rubber seal.

3 - Unscrew two hexagon head screws on the inside of the front side panel and remove mirror and packing.

Installation

- 1 - Bolt mirror, with packing and reinforcement plate, to side panel.
- 2 - Check condition of cover plate rubber seal and renew if necessary.
- 3 - Secure cover plate to hinge pillar with two hexagon head screws.

VW and "Karmann Ghia" Sign Removal and Installation

Removal and Installation

1 - Pull speed nuts off and remove signs.

2 - Check speed nuts and signs and renew if necessary.



Removal and Installation of Luggage Compartment Lining

Removal

- 1 - Fold emergency seat back rest down.
- 2 - Remove luggage compartment lining.
- 3 - Remove sound-absorbing felt from luggage compartment.

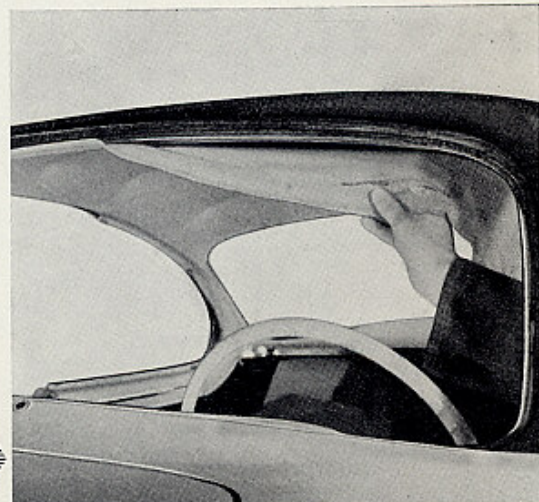
Installation

- 1 - Before cementing the sound-absorbing material into position, thoroughly remove all traces of old cement and felt. Benzine is suitable as a solvent.
- 2 - Coat the floor with VW Universal Adhesive D 12 and cement the sound-absorbing felt smoothly into position.
- 3 - Cement the carpet on to the felt.

Headlining Removal and Installation

Removal

- 1 - Remove windshield, quarter window and rear window.
- 2 - Remove door window weatherstrip trim moulding and quarter window trim frame.
- 3 - Remove interior rear view mirror and coat hooks.
- 4 - Dismantle interior lamp.
- 5 - Pull headlining off. The lining is cemented into position and must be pulled carefully to avoid damage.



6 - Unhook stretcher bars and take lining out.



Installation

- 1 - Check that the sound-absorbing felt on the roof is firmly in position, and refix with VW Universal Cement D 12 if necessary.
- 2 - Clean remains of cement from the roof side members, windshield and rear window frames. Benzine is suitable as a solvent.
- 3 - Hook stretcher bars in so that headlining is lightly tensioned and free from creases.
- 4 - Coat roof side members, windshield and rear window frames lightly with VW Universal Adhesive D 12 and cement headlining into position without creases.
- 5 - Reinstall all parts removed.

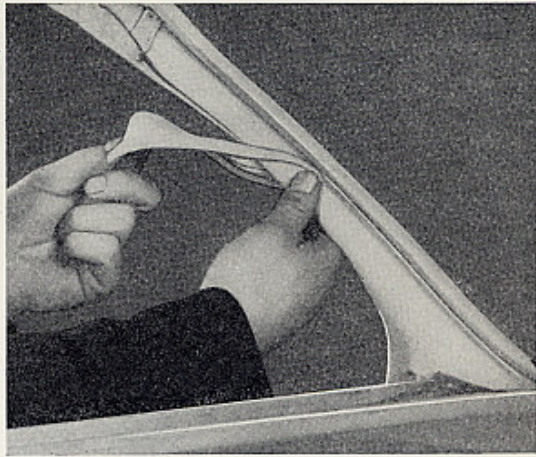
Front Roof Pillar Lining Removal and Installation

- 1 - Remove windshield.
- 2 - Remove door window weatherstrip trim moulding.
- 3 - Loosen headlining slightly and pull roof pillar lining off.
- 4 - Thoroughly clean remains of cement from the roof pillar before refixing lining. Benzine is suitable as a solvent.
- 5 - Cement roof pillar lining in position with VW Universal Adhesive D 12, without creases.
- 6 - Reinstall all parts removed.

Rear Roof Pillar Lining Removal and Installation

- 1 - Remove rear and quarter windows.
- 2 - Remove quarter window trim frame.
- 3 - Loosen headlining slightly and pull roof pillar lining off.
- 4 - Thoroughly remove remains of cement from roof pillar before refixing lining. Benzine is suitable as a solvent.

- 5 - Cement door pillar lining in position with VW Universal Adhesive D 12, without creases.



- 6 - Reinstall all parts removed.

Quarter Panel Lining Removal and Installation

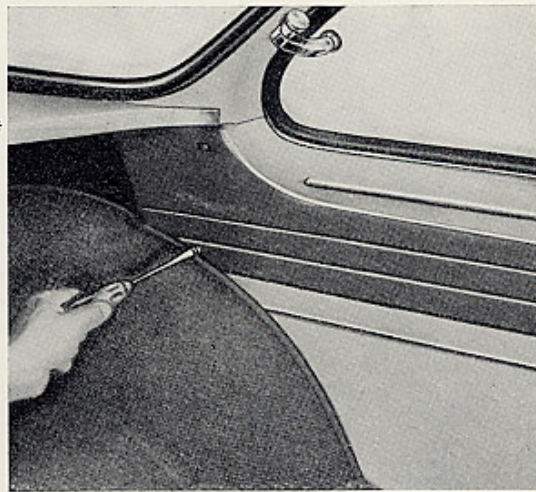
- 1 - Fold emergency seat back rest down.

- 2 - Unscrew two countersunk tapping screws.

- 3 - Pull quarter panel lining and clips from the inner panel.

- 4 - The quarter panel lining trim moulding can be removed after bending up the retaining lugs.

- 5 - Renew broken clips.



Front Panel Lining Removal and Installation

The right and left front panel linings can be lifted after the retaining channel lip has been bent up. Pull the remainder of the lining off. Unscrew the retaining channel.

The following points must be observed during installation:

- 1 - Thoroughly remove the remains of cement from the inside of the body before refixing the lining. Benzine is suitable as a solvent.
- 2 - Install retaining channel.
- 3 - Cement front panel lining into place with VW Universal Adhesive D 12. Take care that the

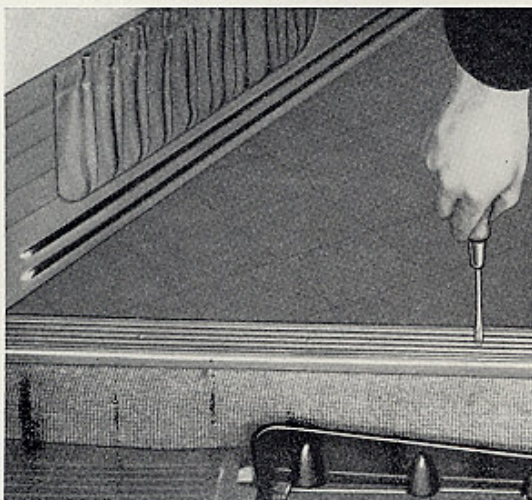
lining makes good contact with the body all round and is correctly located round the warm air outlets.

- 4 - Bend the lip of the retaining channel down again.

Body Side Member Carpet Removal and Installation

1 - Remove eight screws and take off scuff plate.

2 - Remove carpet nail and pull carpet off.



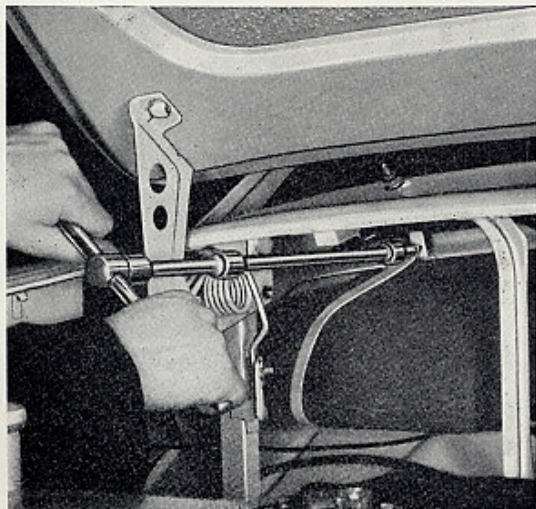
3 - Thoroughly clean the remains of cement and sealing compound from the body side members before refixing the new carpet. Benzine is suitable as a solvent.

4 - Cement carpet in position with VW Universal Adhesive D 12.

5 - Place a strip of sealing band D 16 under the scuff plate and reinstall plate.

6 - Secure the rear end of the carpet with a carpet nail.

Glove Compartment Removal and Installation



1 - Open front hood and remove luggage compartment fiber board lining.

2 - Unscrew retaining strap screw and take out glove compartment.

3 - Remove two hinge screws on glove compartment lid and take lid off.

4 - To detach the hinges it is necessary to remove the compartment lid spring and the two riveted pins.

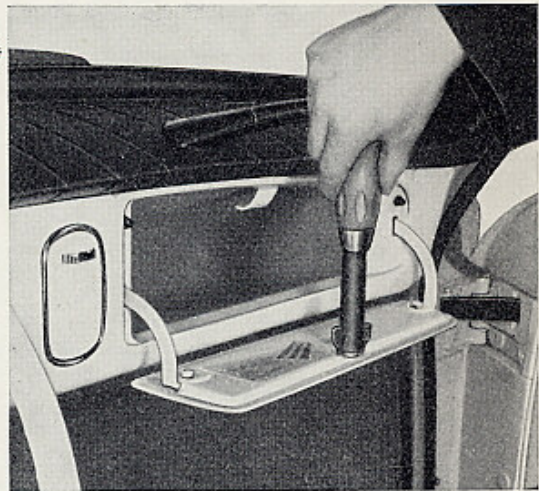
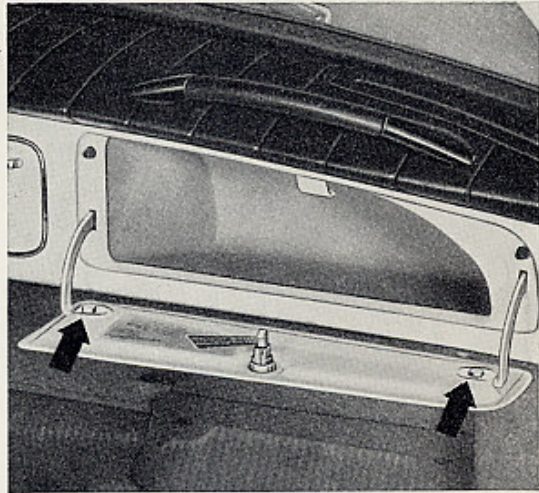
5 - The two rubber plugs for the lid can be pulled out.

6 - The lid lock can be removed with circlip pliers VW 122 b or a suitable tool of local manufacture.

7 - When installing the glove compartment and tightening the retaining strap, take care that the glove compartment is correctly seated against the instrument panel. If contact between glove compartment and instrument panel is poor, rectify with adhesive tape.

8 - Check condition of rubber plugs for lid and renew if necessary.

9 - Check lid alignment by opening and closing several times.



10 - Apply a few drops of oil to the lid lock.

11 - If the lid is difficult to open or close bend the sheet metal catch slightly.

Package Shelf Covering Removal and Installation

Removal

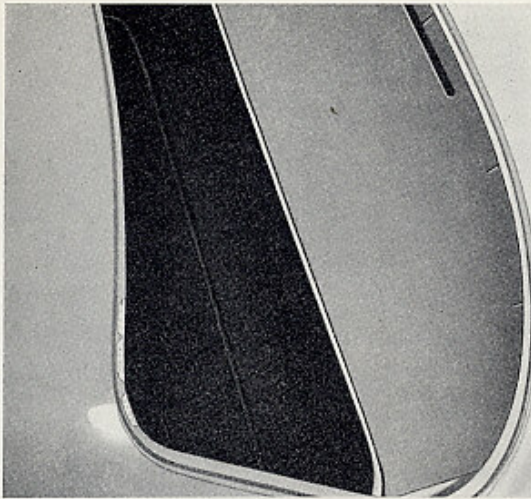
1 - Remove rear window.

2 - Remove emergency seat back rest hooks and retainer plate for warm air outlet.

3 - Remove package shelf trim moulding.

4 - Carefully pull off the package shelf covering.

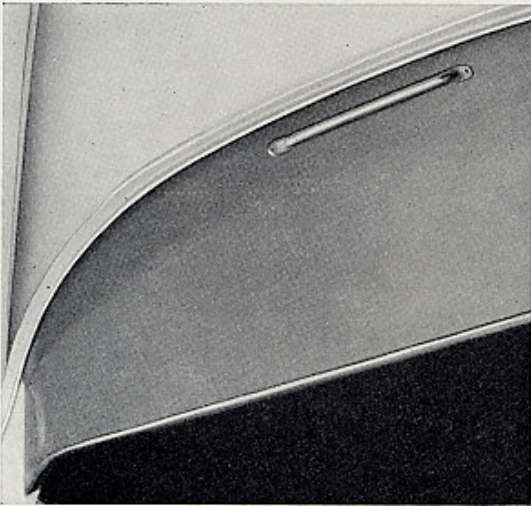
The cardboard is cemented on and can be damaged if insufficient care is taken when pulling off.



Installation

1 - Thoroughly remove all cardboard and cement remains from the package shelf before refixing the cardboard. Benzine is suitable as a solvent.

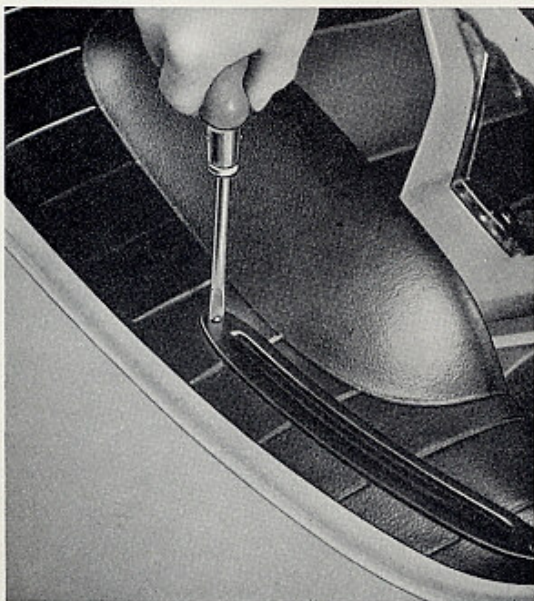
2 - Coat package shelf with VW Universal Adhesive D 12 and cement cardboard smoothly into position.



3 - Coat cardboard with adhesive and cement covering into position smoothly and without creases. Cut out opening for the warm air outlet.

4 - Reinstall all parts removed.

Instrument Panel Cover Removal and Installation



Removal

1 - Remove windshield.

2 - Remove fiberboard lining from luggage compartment.

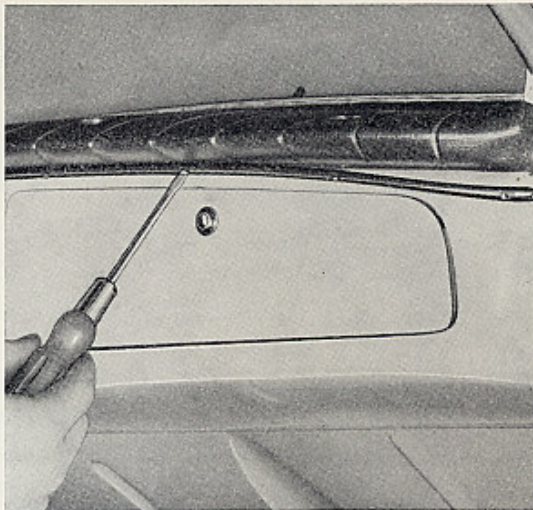
3 - Remove glove compartment.

4 - Remove passenger's grab handle.

5 - Remove loud speaker opening insert.

6 - Remove two screws from each defroster vent retainer plate.

- 7 - Unscrew retaining strip. Loosen roof pillar lining slightly and pull off instrument panel cover.

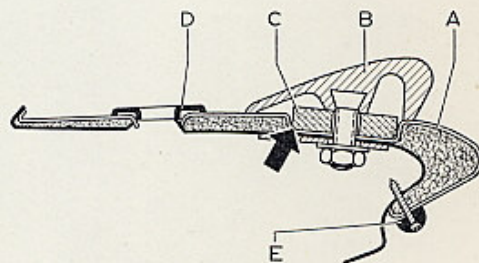


Installation

- 1 - Clean the cement remains thoroughly from the instrument panel with fine sand paper.
- 2 - Coat the contact area of instrument panel evenly with BOSTIK 675 or 475. Allow the adhesive applied to the instrument panel 5 or 6 minutes to dry off. The application of the adhesive to the instrument panel cover must be carried out so that the drying time of 2 to 3 minutes is not exceeded. These drying times must be strictly adhered to in order to ensure good adhesion. Apply two coats of adhesive around the defroster vents.
- 3 - Place instrument panel cover in position, press down and smooth evenly from the loud speaker outwards to both sides, taking care that the various openings line up correctly. The adhesion must be particularly good at the outer edges.

It is essential to press the instrument panel cover down evenly and thoroughly, as BOSTIK is a contact adhesive which bonds only under pressure.

- 4 - Place rubber spacers under passenger's grab handle with the thicker spacer in the recess nearest the center of the vehicle. The rounded edges of the spacers must be at the bottom, facing the panel cover (see arrow).



- 5 - Install defroster vent retainer plates and retaining strip.
- 6 - Paint all screw heads with matt black lacquer.
- 7 - Reinstall all parts removed.

- A - Instrument panel cover
- B - Passenger's grip
- C - Spacer
- D - Retaining plate
- E - Retaining strip

Note:

Only BOSTIK 675 or 475 should be used for fixing the instrument panel cover. This adhesive can be obtained from the following firms:

Australia: Boston Blacking Chemical Company of Australia (Pty.) Ltd., Epping Road, Thomastown, Victoria.

Canada: Boston Blacking Chemical Company of Canada Ltd., 2610, Bennet Avenue, Maisonneuve, Montreal P.Q.

Great Britain: Boston Blacking Chemical Co. Ltd., Ulverscroft, Leicester.

South Africa: Boston Blacking Chemical South Africa (Pty.) Ltd., Newark Street, Port Elizabeth.

U.S.A.: Boston Blacking Chemical Co., 784 Memorial Drive, Cambridge 39, Mass.

A supply of BOSCODUR A is included in every consignment of adhesive. One part of BOSCODUR A must be mixed with nine parts of BOSTIK 675 or 475 shortly before application. The mixture must be used within 8 hours of being prepared otherwise it will solidify.



Replacement of Body Sections

General

The description of the replacement of individual body sections serves as a guide for the sequence of operations. A reasonable knowledge of body repair is essential and the work should wherever possible, be carried out by a skilled man, well versed in body repair.

As opposed to the Sedan or VW Convertible, the body sheet metal of both Karmann Ghia Models must often be butt welded. This work in particular calls for great care during operations, as lack of skill and material knowledge can cause structural alteration, stress and distortion in the thinly walled panels which is impossible or very difficult to eliminate.

Although gas welding is not expressly stipulated it is mentioned in the individual sections in addition to the more generally used spot welding.

It must be emphasised however, that spot welding with spot welding tongs or a push type welding gun is preferable to gas welding.

For various operations, especially the replacement of large body parts, the body must be taken off. The use of the specially designed repair frame is recommended as it guarantees the body measurements being kept accurate when replacing body parts and enables any distortion to be detected and eliminated. The frame can be used for all Passenger Car Models and is described in detail, with other gauges and jigs, under the heading "Workshop Equipment" in "Body General" section.

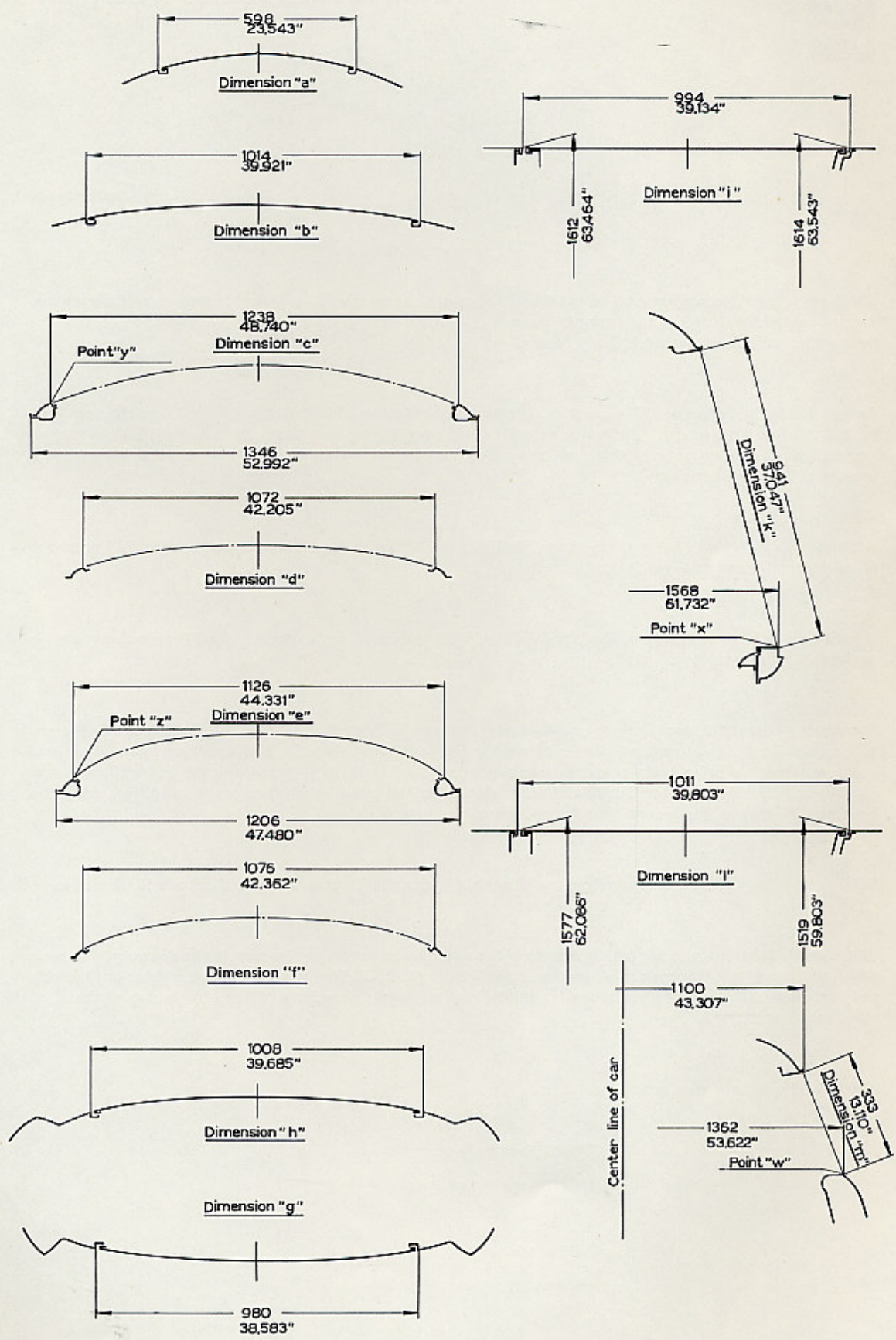
Before commencing to cut out any sheet metal parts it is essential to plan the individual cuts to be made.

The separate parts and the interchangeability of the outer body panels can be seen in the drawing. The parts which are supplied as spares are shown by capital letters (A, B, C). The heavily marked weld seams indicate the joints between the spare parts and the thinly marked seams show, in addition, the joining places of all other spare parts.

The following can be seen in the drawing:

- Individual body parts
- Parts supplied as spares
- Weld seams
- Dimensions
- Measuring lines and points

When cutting damaged body panels out make sure that the cutting line does not follow the weld seam but is roughly 10 mm above or below it. The remaining metal is removed when the new part has been matched up.



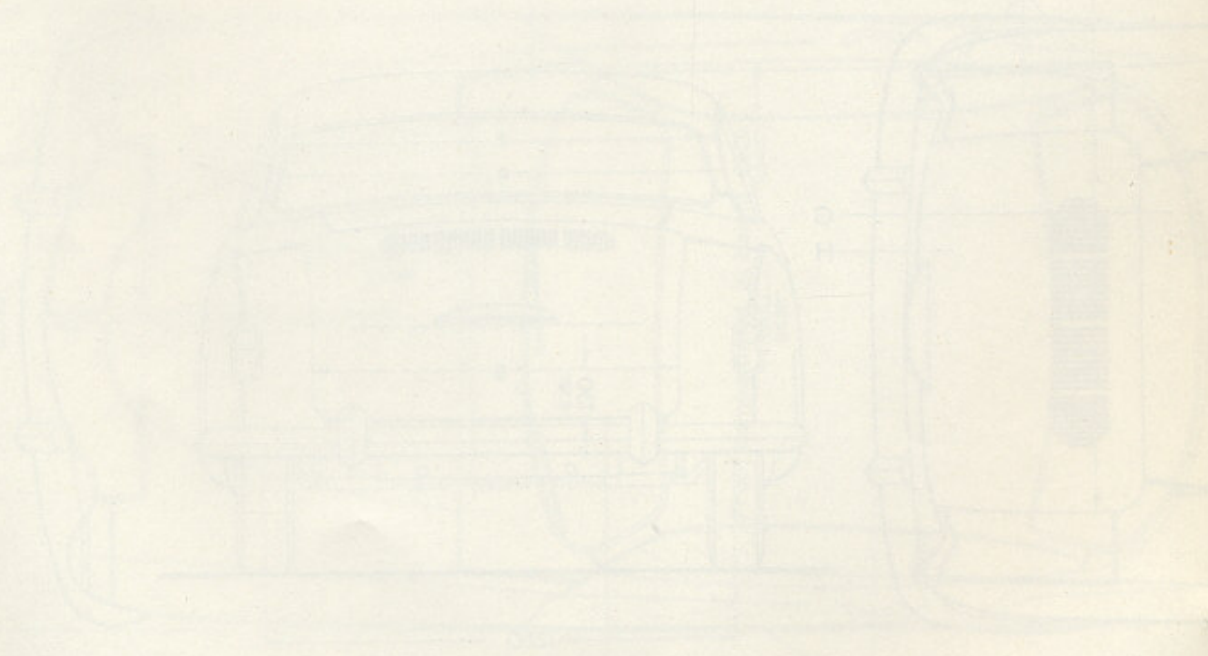
Identification

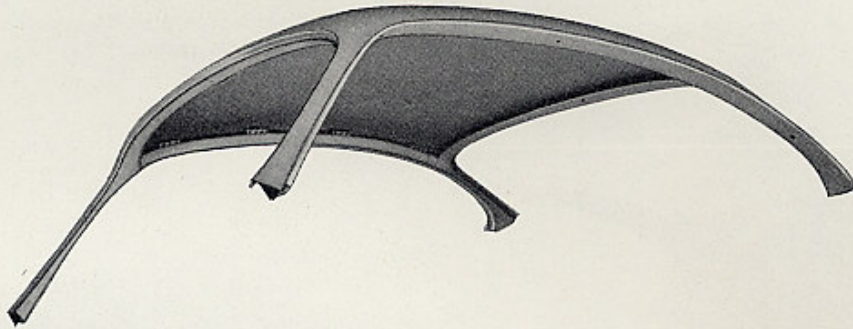
Description of Part

| Identification | Description of Part |
|----------------|---|
| A | Front panel |
| B | Front hood |
| C | Front side panel, left Front side panel, right |
| D | Cowl panel |
| E | Roof |
| F | Quarter panel, left Quarter panel, right |
| G | Rear top panel |
| H | Rear hood |
| I | Door bare, left Door bare, right |
| K | Sill panel, left Sill panel, right |
| L | Rear panel |

240

A

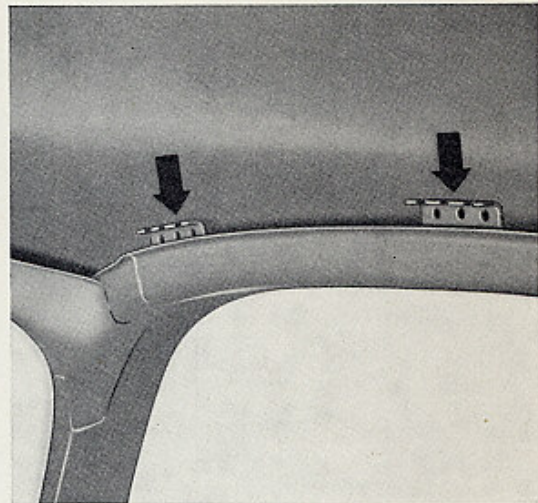




The roof panel is supplied complete with roof pillars. The roof pillars can be replaced separately if required and the operation is described at the end of the section.

Four perforated angle plates are welded to each side member inside the roof. The stretcher bars for the headlining are hooked into the holes in these plates.

When replacing the roof or a roof pillar the use of the specially designed gauges is essential in every case. Details of body gauges and jigs are given under the heading "Workshop Equipment" in the "Body General" section.

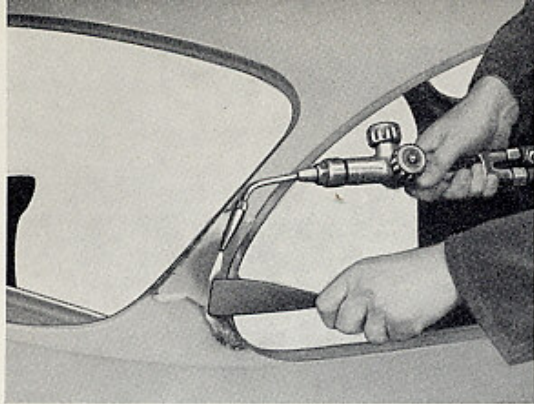


Roof Replacement

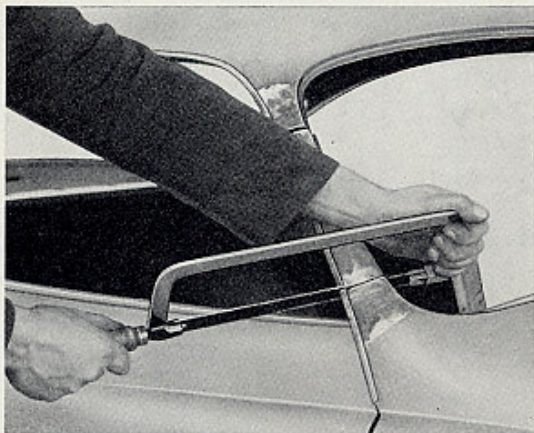
Preparation

- 1 - Disconnect the battery.
- 2 - Remove all seats and mats or cover adequately.
- 3 - Remove windshield, rear window and both quarter windows.
- 4 - Lower the door windows and cover the window slots.
- 5 - Remove all interior trim including rear view mirror and sun visors. Cover the rear luggage compartment.
- 6 - Remove steering wheel.
- 7 - Remove windshield wiper fittings. Cover or remove the instrument panel parts as necessary.
- 8 - If no other body repairs are to be carried out, adequately cover all body parts within the area of the operation.

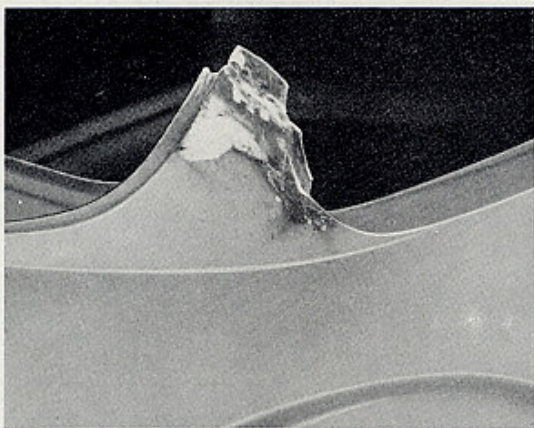
Body Repair Work



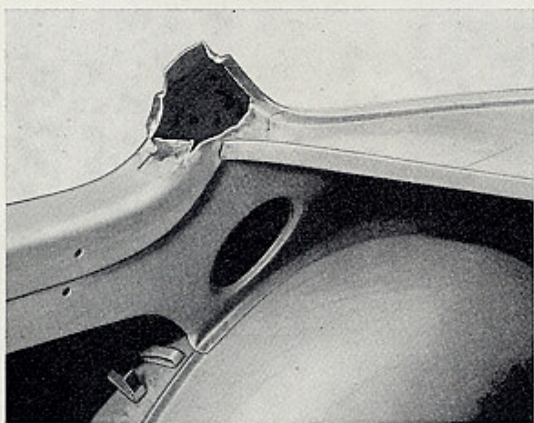
- 1 - Heat the solder in the area of the lower roof pillar welds with a welding torch and remove with a suitable spatula.



- 2 - Saw the roof pillars off about 50 mm above the weld seams.



- 3 - Remove the remaining metal down to the welds. Clean up the welds by grinding or filing. If necessary remove dents and straighten the sheet metal.

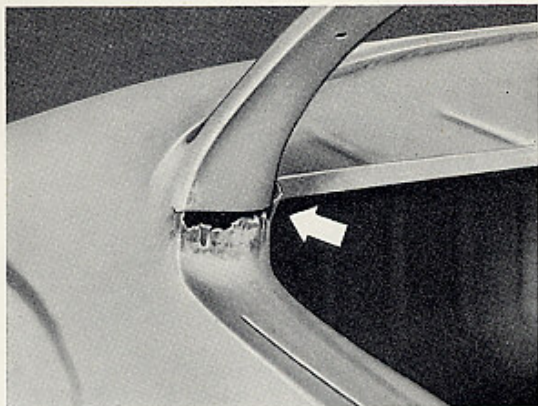


- 4 - Take care that the inner panels on the rear roof pillars, which serve as overlaps, are not distorted.

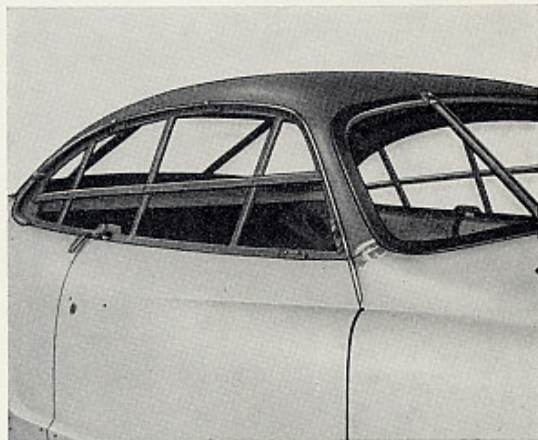


- 5 - Place roof in position.

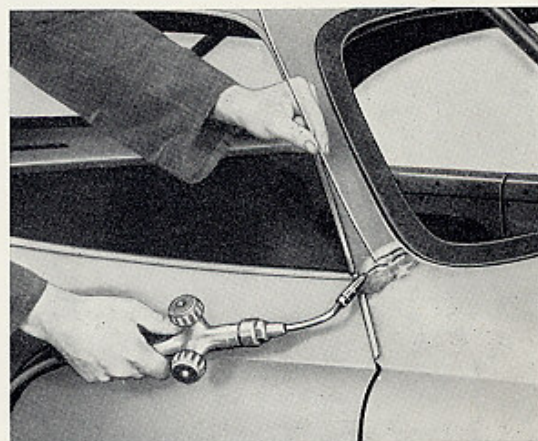
6 - Check that the inner panels on the rear roof pillars are overlapping.



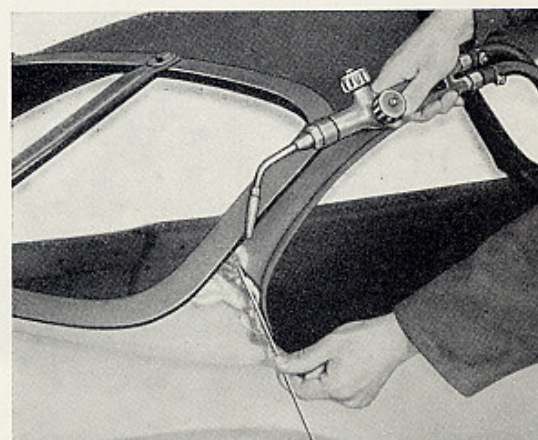
7 - Install window gauges and fit the roof.

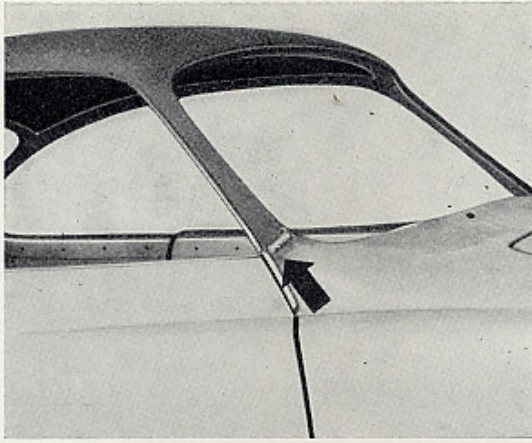


8 - Tack-weld the roof at the front first.

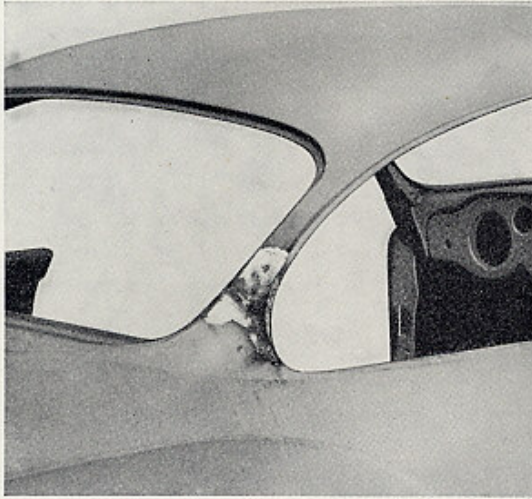


9 - Tack-weld the rear roof pillars with the welding torch with the window gauges in position.





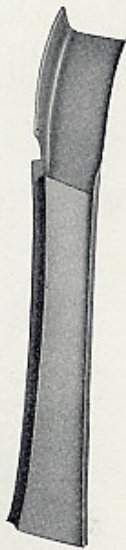
Gas weld the roof pillars inside and out. Insert the window gauge occasionally to check that the position of the roof is correct.



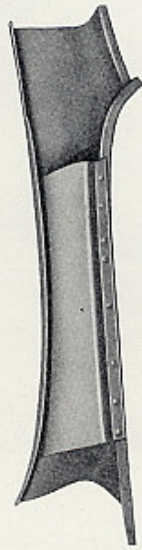
10 - Grind the weld seams down as far as possible. Fill the welded and reworked areas with solder until a smooth contour is obtained.

11 - Grind the joints smooth and prepare vehicle for painting.

Roof Pillar Replacement



Front roof pillar



Rear roof pillar

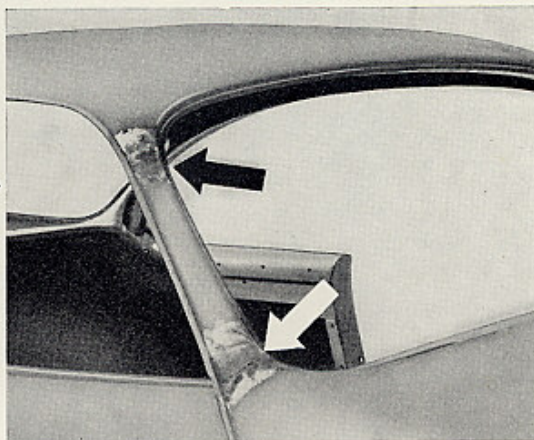
Front and rear roof pillars are supplied as spares.

When replacing one or more roof pillars, the use of the specially designed gauges is essential.

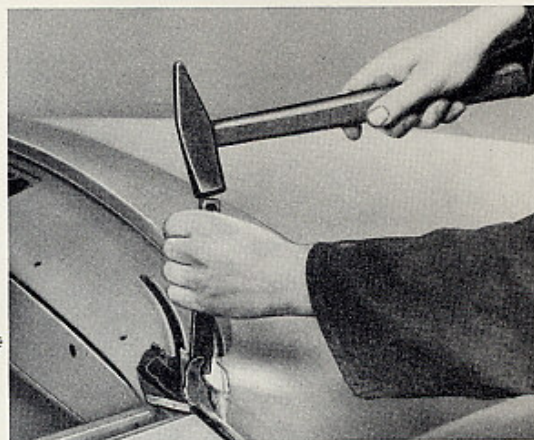
The preparatory work is roughly the same as that required when replacing the roof. All parts within the vicinity of the pillar being repaired must be removed or covered up as necessary.

Body Repair Work

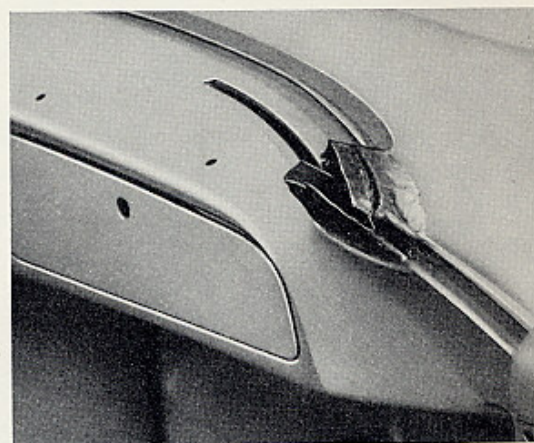
- 1 - Heat the solder on the appropriate pillar in the area of the upper and lower weld seams with a welding torch and remove with a suitable spatula.



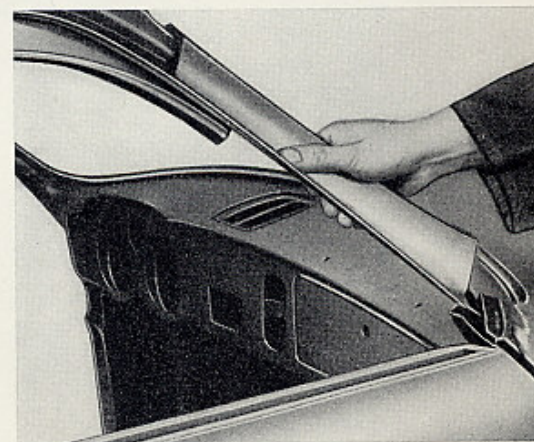
- 2 - Saw the roof pillar off 50 mm above the lower and below the upper weld seams.



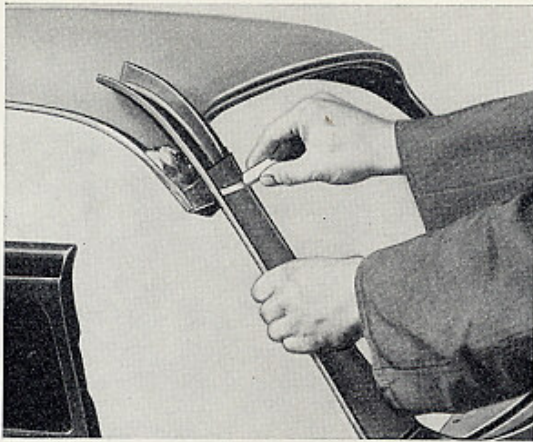
- 3 - If the upper part of the roof pillar concerned is not damaged it is recommended that the work be simplified by merely pushing the bottom of the pillar over the bottom joining flange and butt-welding the top joint. In this case it is only necessary to remove the remaining metal on the body.



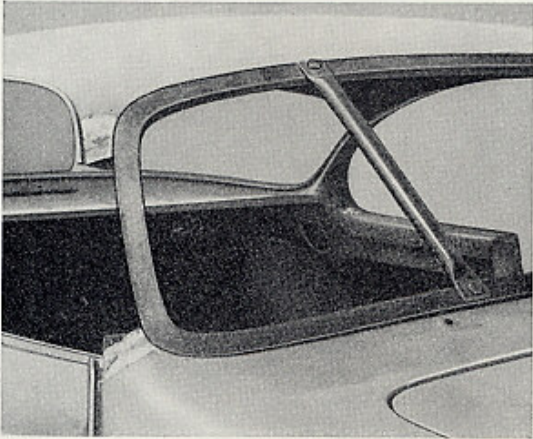
- 4 - Grind or file the top weld area and edges of the cut clean. If necessary remove dents and straighten sheet metal.



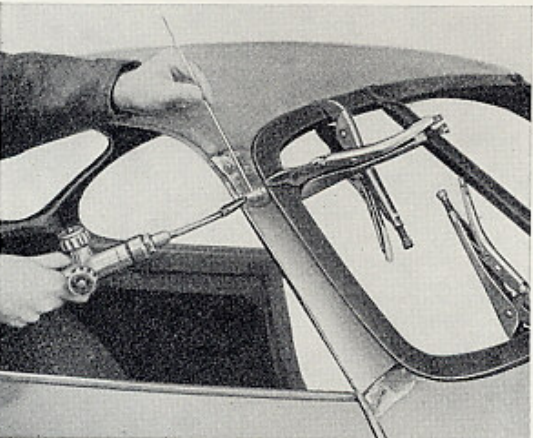
- 5 - Push roof pillar over the bottom joining flange.



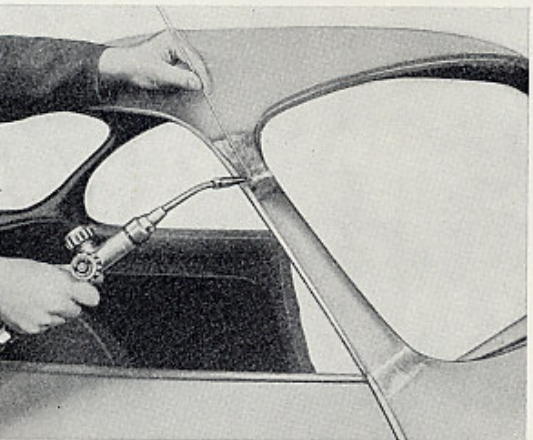
6 - Fit pillar to the roof and mark off for cutting.



7 - Cut roof pillar as marked.



9 - Push roof pillar over the joining flange on the body, clamp it to the window gauge with body clamps and tack with gas welding.



10 - Take window gauge out and gas weld roof pillar.

11 - Grind the weld seams down where necessary. Fill the welded and reworked areas with solder until a smooth contour is obtained.

12 - Grind the joints smooth and prepare vehicle for painting.



Front Side Panel



The front side panel is composed of two parts, the side panel proper and the so-called front panel. As a spare part the front side panel is supplied with the front panel welded to it.

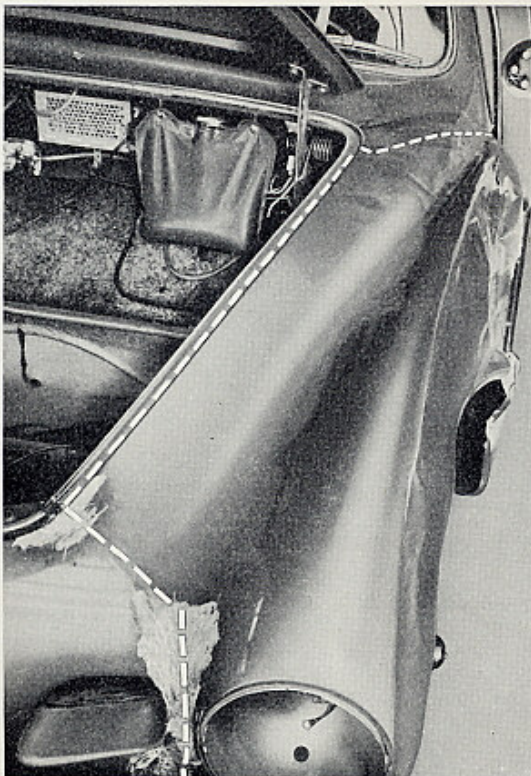
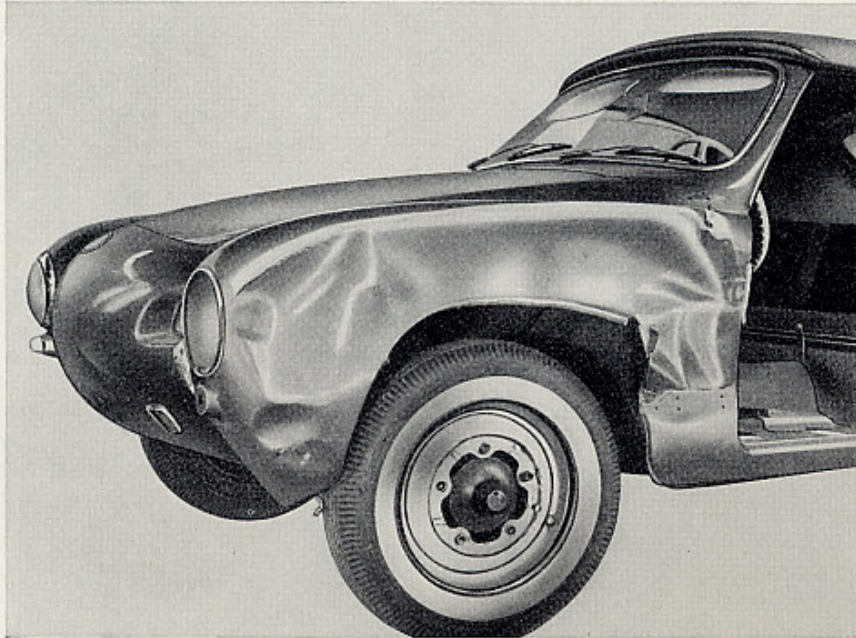
The replacement of the front panel can only be carried out with the specially designed gauge (see section "Body General", Workshop Equipment).

Preparation

- 1 - Disconnect the battery.
- 2 - Remove door and front hood.
- 3 - Remove front wheel.
- 4 - Remove bumper bar.
- 5 - Remove hinge pillar cover plate in front wheel housing.
- 6 - Remove front hood weatherstrip.

Body Repair Work

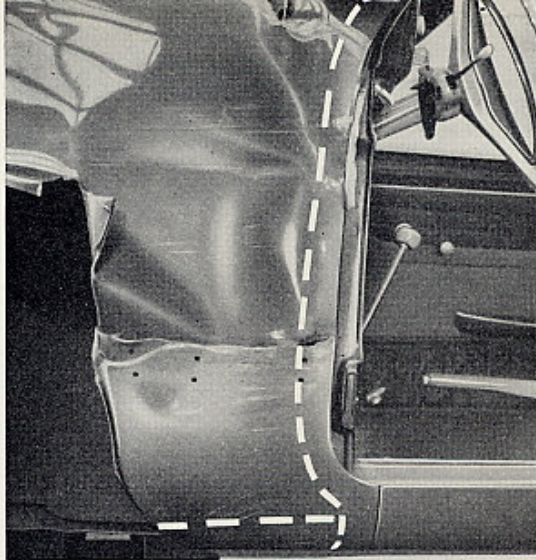
The following repair operation was carried out on a Karmann Ghia Convertible, the front side panel and hinge pillar of which was so badly damaged that part replacement or straightening was not possible.



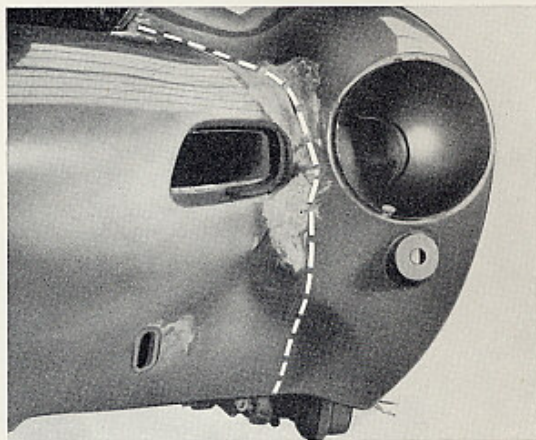
1 - With a sheet metal chisel (Local Manufacture Drawing VW 732) cut the side panel out at the places shown.

Top

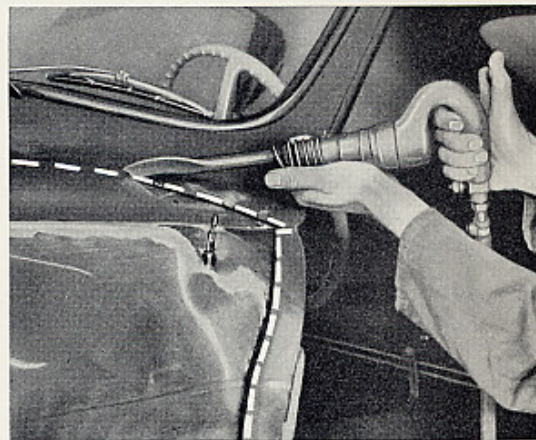
Side (Hinge pillar)



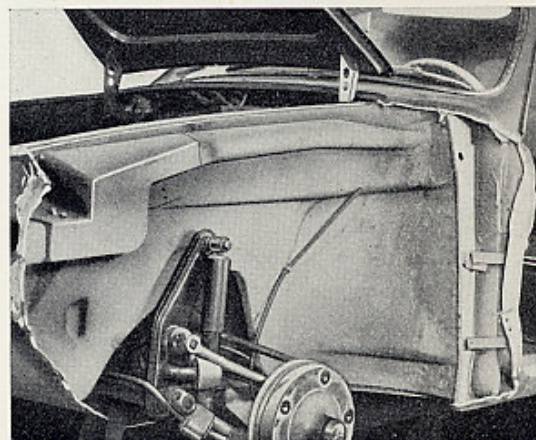
Front



2 - It is best to commence cutting at the hinge pillar.

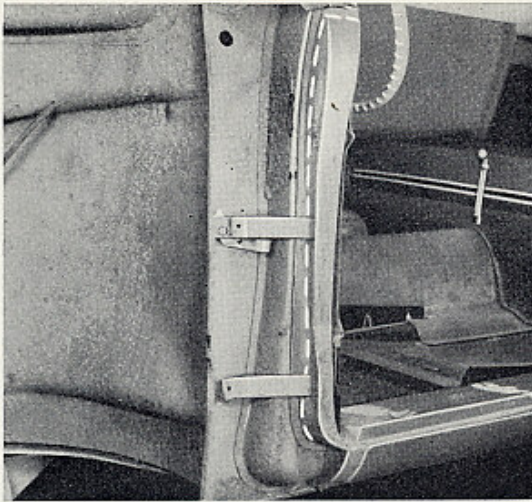


3 - Remove cut out side panel.

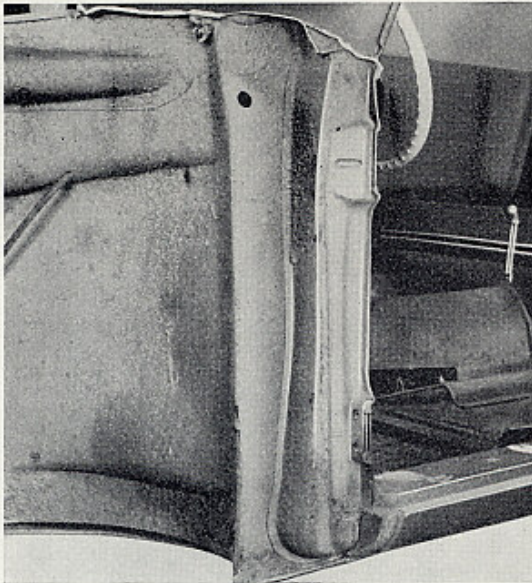


Attention

Protective gloves should be worn when removing or installing the side panel.



- 4 - Where damage to the side panel makes replacement necessary it is generally also necessary to replace the hinge pillar gusset plate. (The gusset plate is a separate part.) The parting cut to remove the gusset plate should be made as shown in the instructions (see picture).



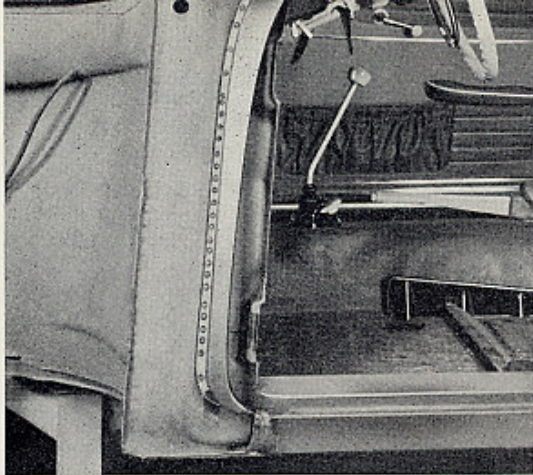
- 5 - A complete hinge pillar replacement is not advisable for repair technical reasons if the roof is not being replaced. The top of the hinge pillar fits into the roof pillar and it is recommended therefore, that only parts of the hinge pillar are replaced. To do this, it is necessary to saw the hinge pillar off at the bottom of the roof pillar in such a manner that the new hinge pillar section, cut to fit, can be butt-welded into position.

- 6 - Remove remaining pieces of the old gusset plate and grind spot welding marks flat.

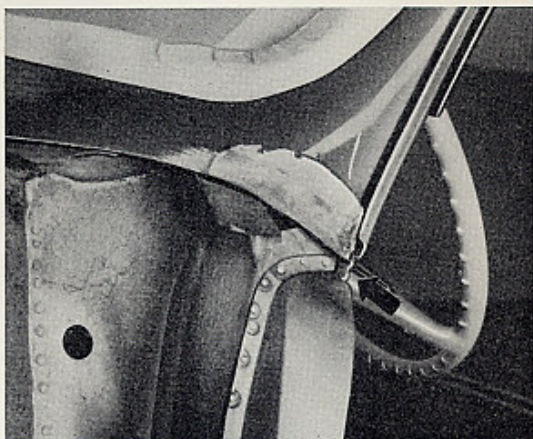


- 7 - Coat all spot welding areas with spot welding paint or paste (see Special Hints, page A 76-1). Fit new gusset plate and clamp in position with body clamps.

Spot weld gusset plate with a push type spot welder.



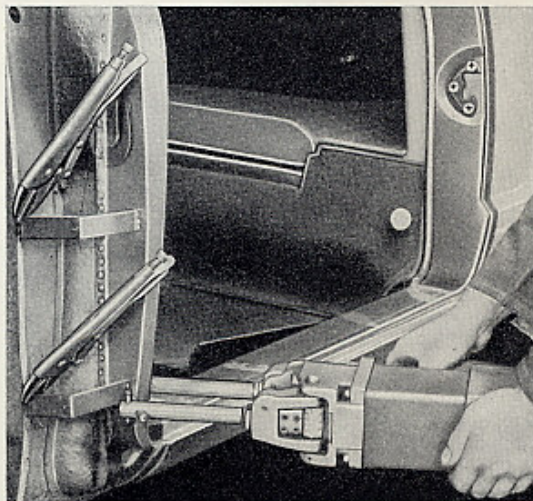
Gas weld top

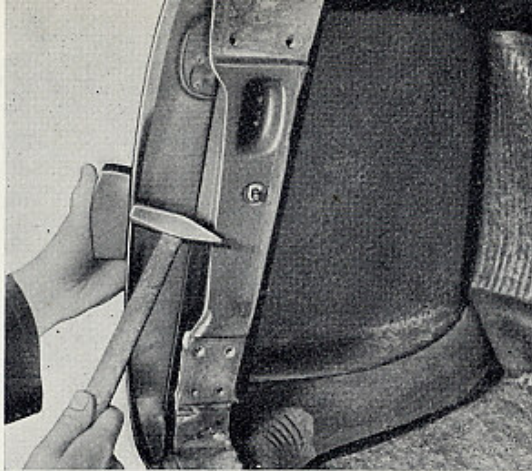


and bottom joints

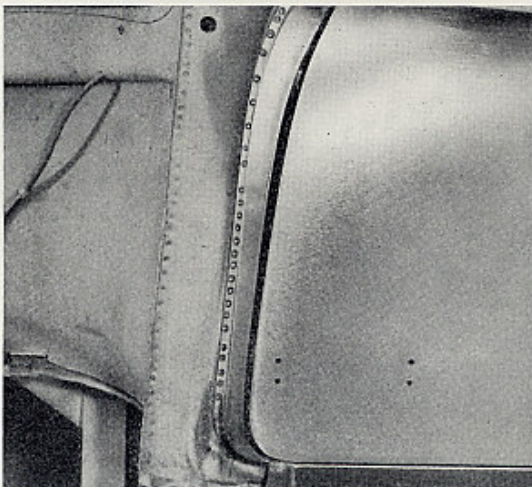


8 - Spot weld brackets for cover plate.



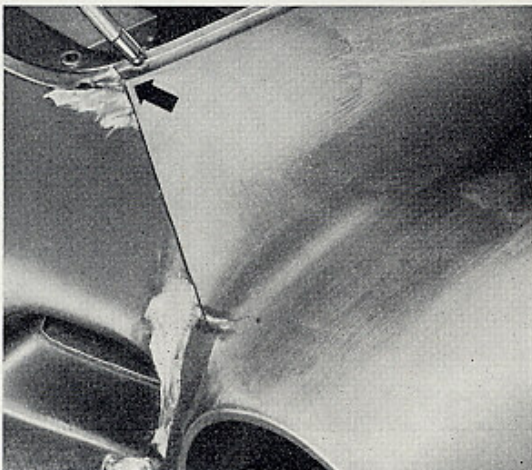


9 - Fold the gusset plate outer edge over.



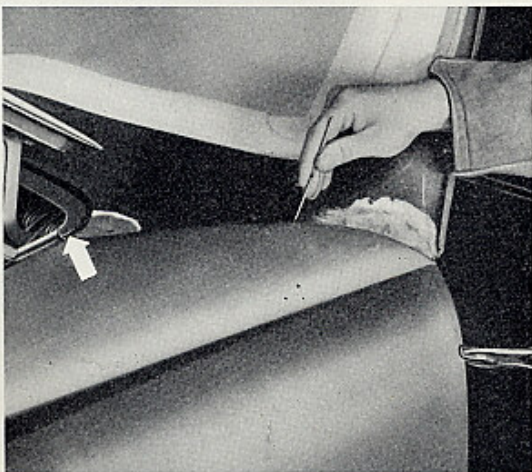
10 - Before proceeding any further it is essential to install the door and check that the clearance between door and gusset plate is uniform over the whole length. The clearance should be approximately 8—10 mm.

This comparatively large clearance is necessary in order to leave sufficient space for the folded edge of the side panel which is to be installed.



11 - Remove door again.

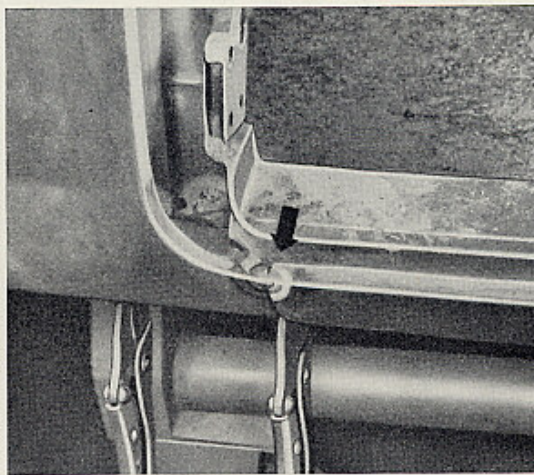
12 - Install new side panel and check fit. Location at front and rear is given by the weld seams (see arrow).



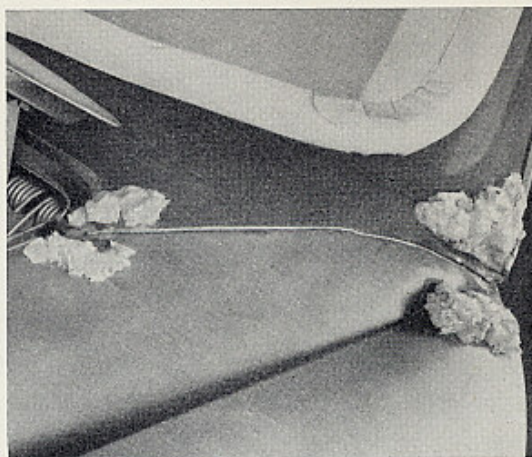
Mark off new side panel on the body.

Remove side panel and cut overhanging edges on body back to the marked line. Install side panel again, position and prepare for welding.

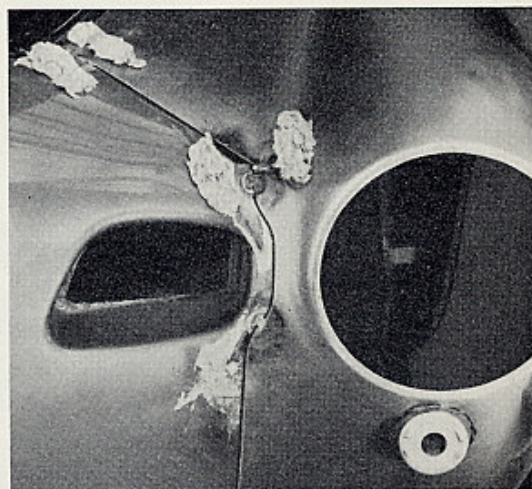
13 - Tack weld side panel to sill panel.



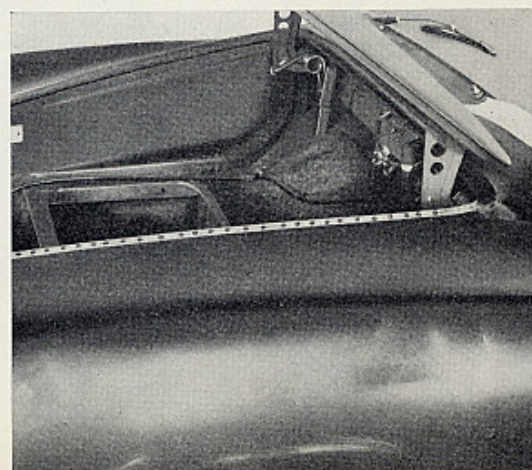
Tack weld inner and outer ends of joint at windshield frame.

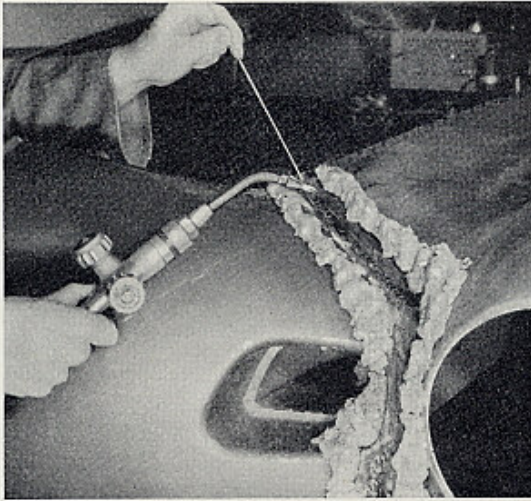


Tack weld at front panel.

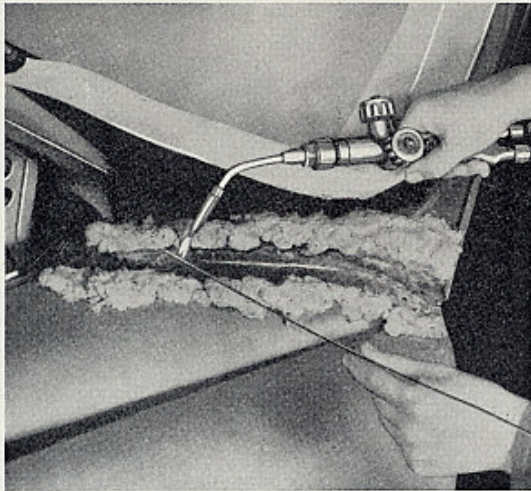


14 - Spot weld to body along the front hood opening.





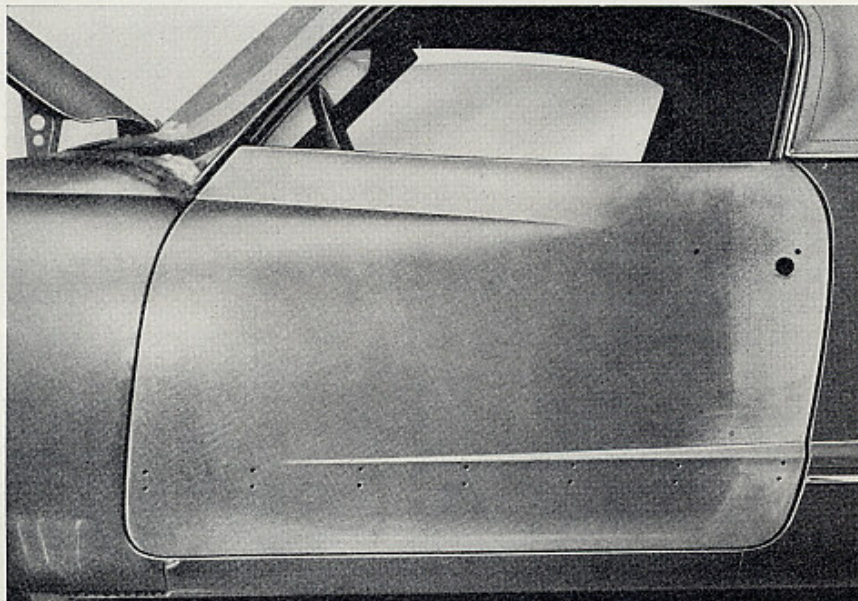
15 - Butt weld the new side panel to the body with gas welding.



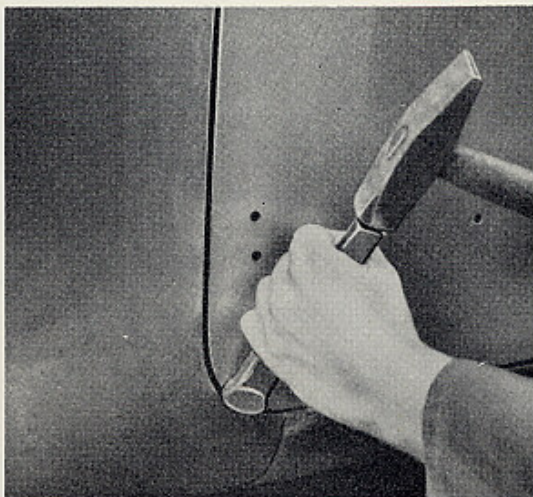
Note:

Pack the windshield frame, front and side panels adequately with asbestos along the areas to be welded.

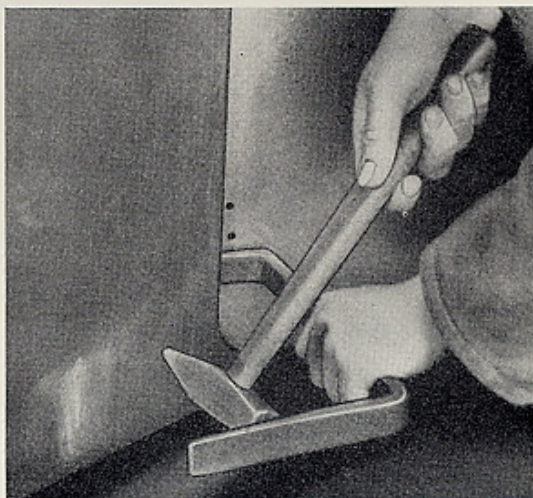
16 - Install door again and check fit.



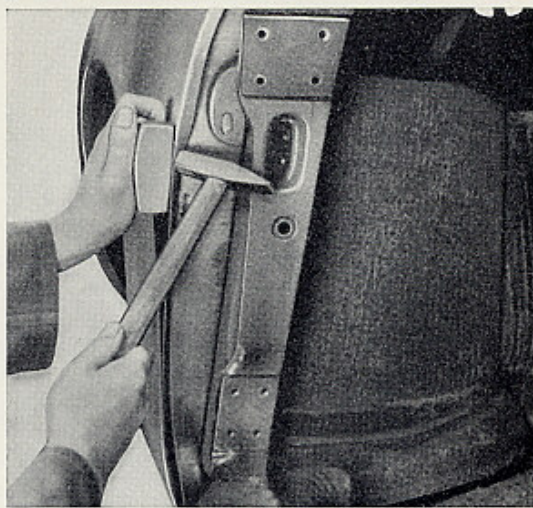
If necessary, the edge of the front side panel can be corrected with the Door Frame Tool VW 740 (Local Manufacture).



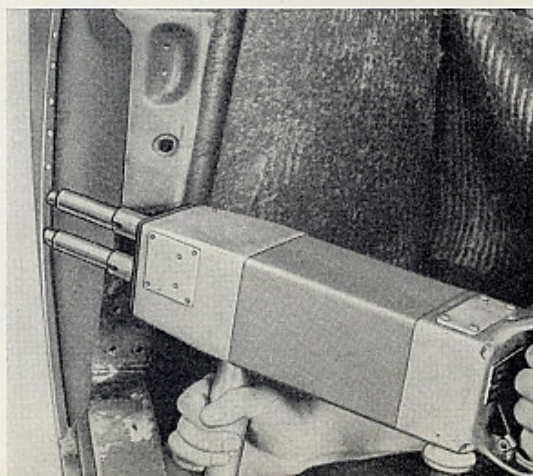
To pull the side panel outwards slightly in the door opening the bending bar VW 741 (Local Manufacture) can be used.

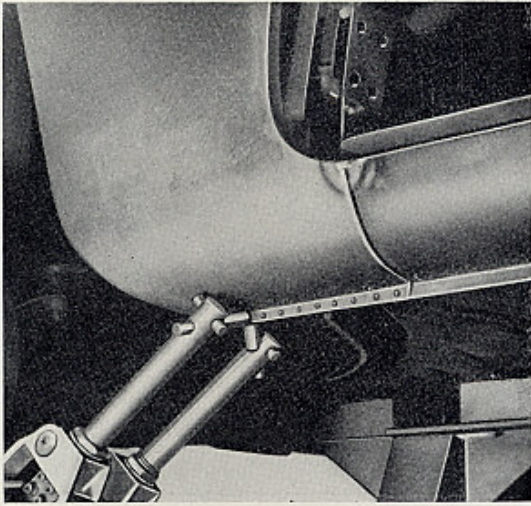


17 - Finally remove the door again, fold the outer edge of the side panel over and weld it



to the gusset plate with a push type spot welder.

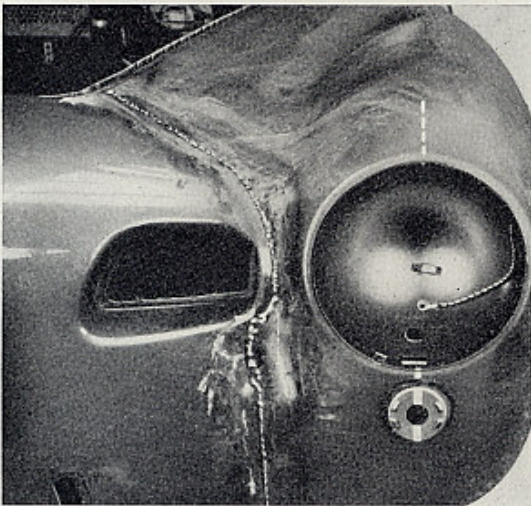




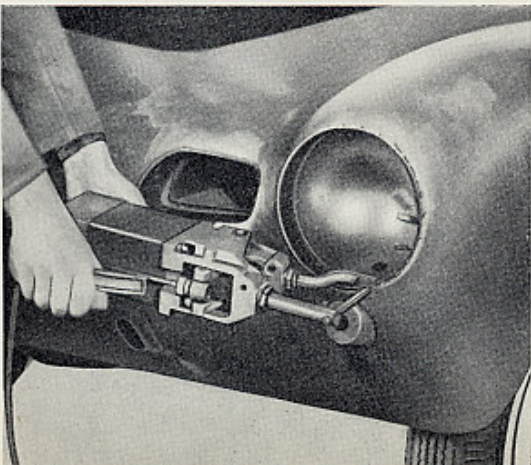
18 - Weld the lower edge of the side panel to the hinge pillar.



19 - Smooth all spot welds and gas welded joints as far as possible and coat with solder.



20 - When this work is completed the head lamp housing is inserted. It is essential to ensure that the housing is located exactly in the center before spot welding.

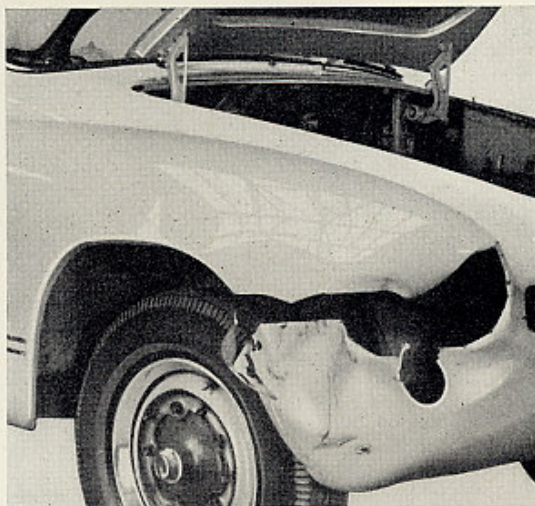


21 - Grind all reworked areas smooth and prepare vehicle for painting.

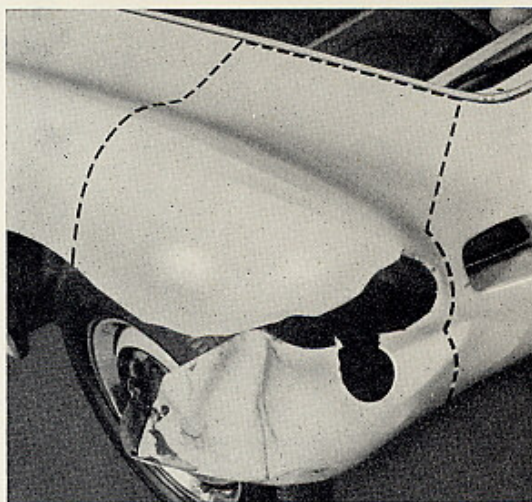
Partial Replacement of Front Side Panel

Body Repair Work

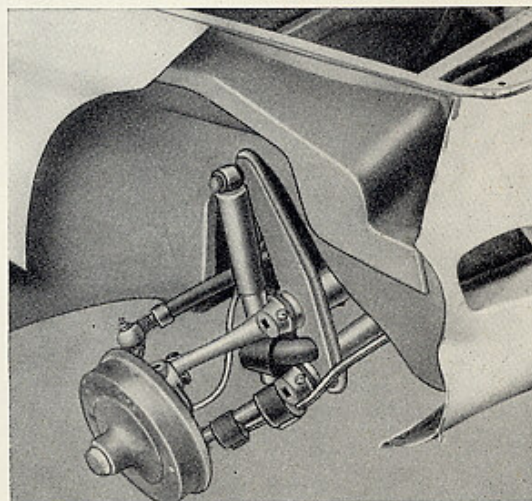
The following repair operation was carried out on a Karmann Ghia Coupé where the damage to the right front side panel was such that a partial replacement was possible.



- 1 - Cut out the damaged section with a sheet metal chisel (Local Manufacture Drawing VW 732) at the places shown.

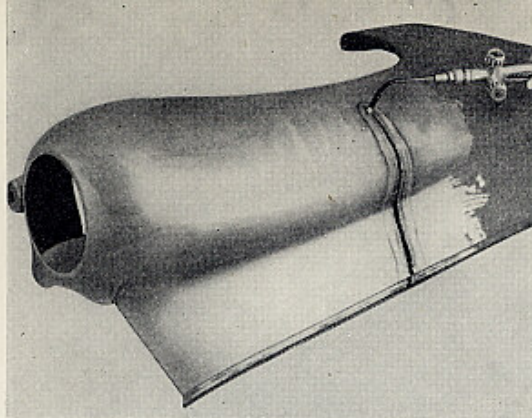


- 2 - Remove damaged section.



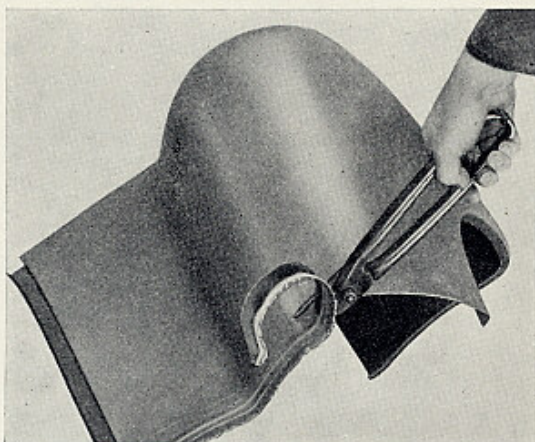
Attention

Protective gloves should be worn when removing and later when installing the section.

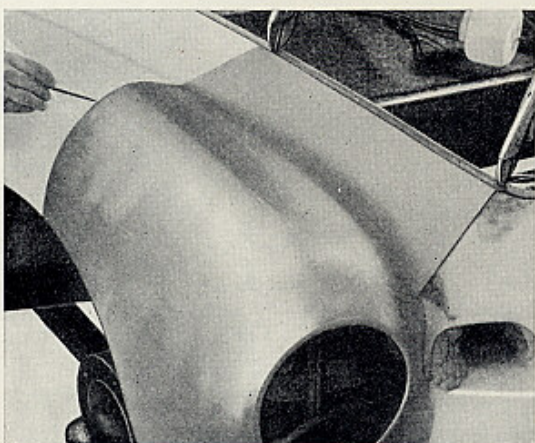


3 - Cut a section from a new side panel slightly larger than opening in the old panel.

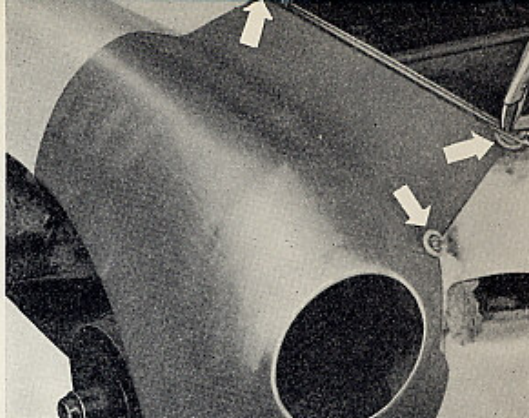
Straighten the edges of the new section with tin snips.



4 - Clamp the new section in position and mark off on the body.

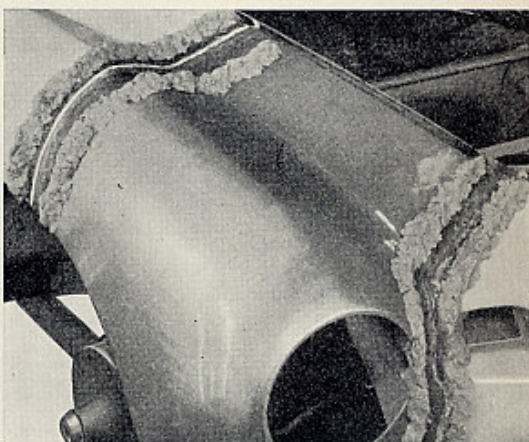


Remove new section and cut the overhanging edge on the body back to the line marked. Install section again, position and prepare for welding.

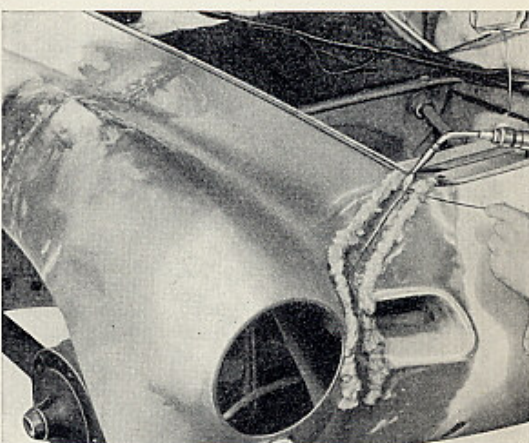


5 - Tack weld the section to the body (see arrows).

6 - Pack the side and front panels with asbestos along the joints to be welded.



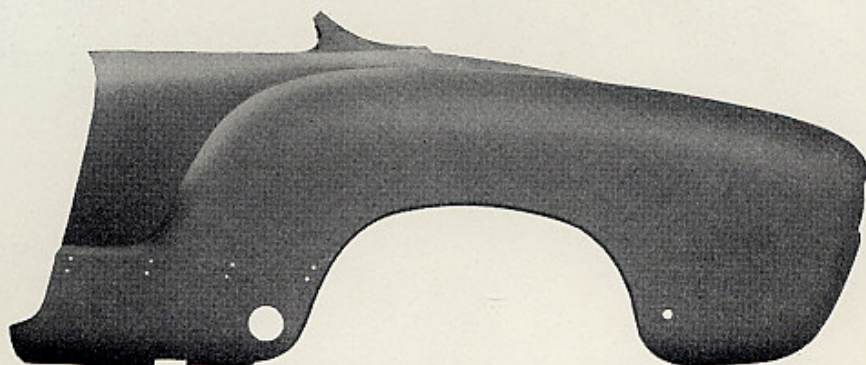
7 - Butt-weld the new section to the body.



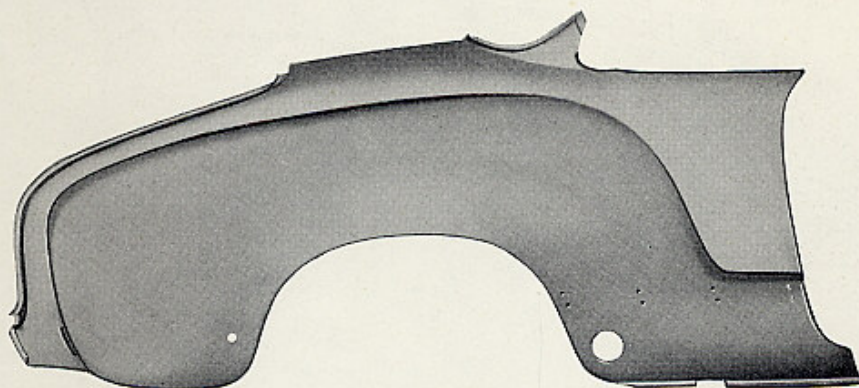
8 - Smooth all weld seams as far as possible and coat with solder. Spot weld the headlamp housing and grind smooth. Prepare vehicle for painting.



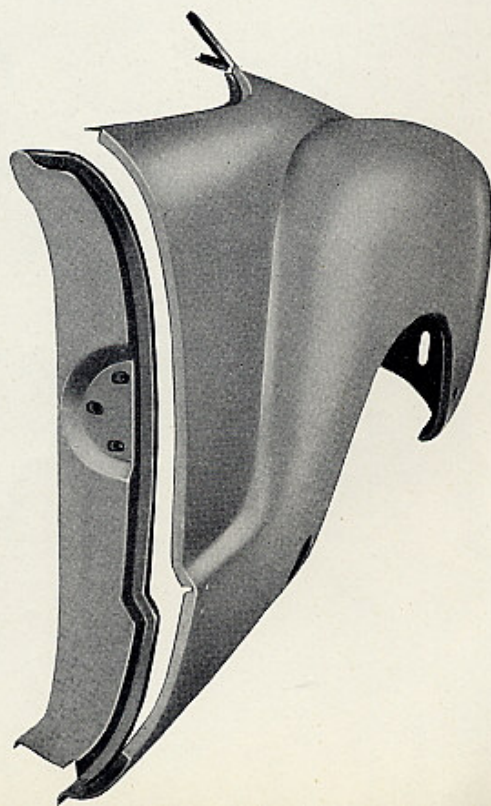
Quarter Panel



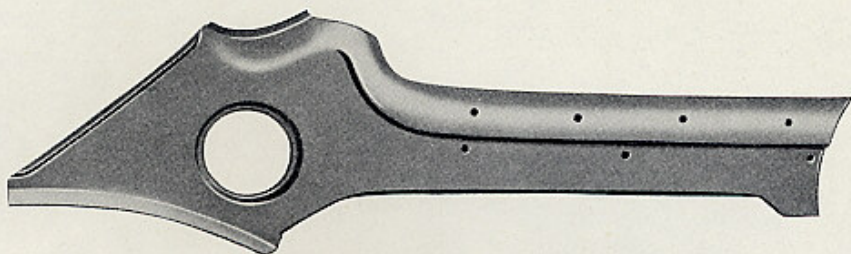
The quarter panel is pressed out of a single sheet and is supplied as a spare part in this form.



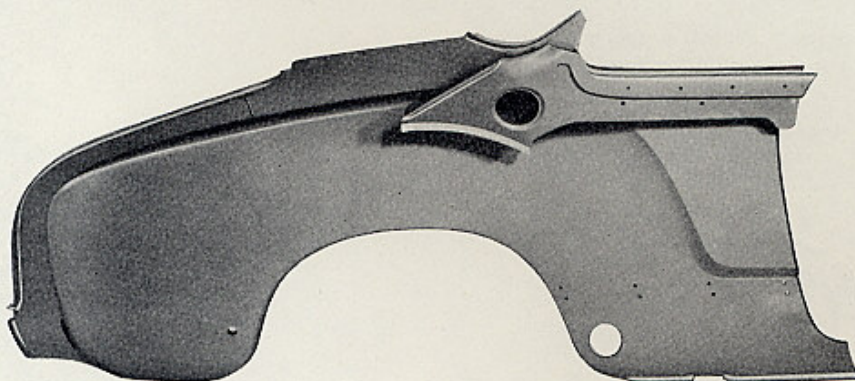
When installing the quarter panel in the Karmann Ghia Coupé it should be spot welded to the lock pillar which is available as a separate part.



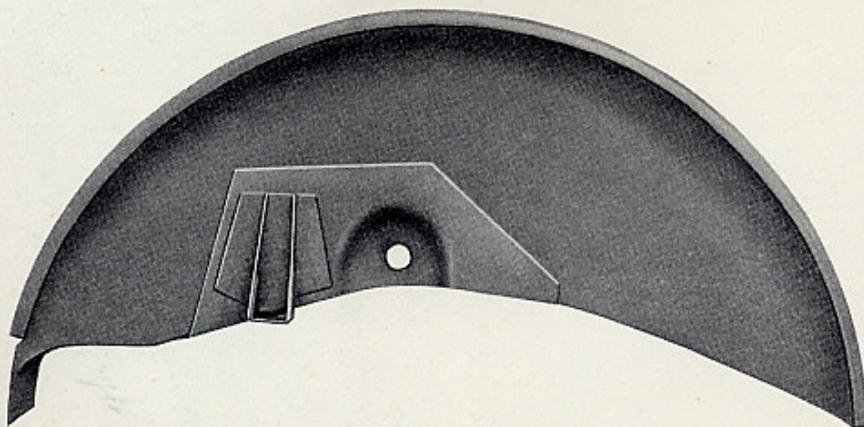
The inner quarter panel is also supplied separately and is attached in the quarter window area.



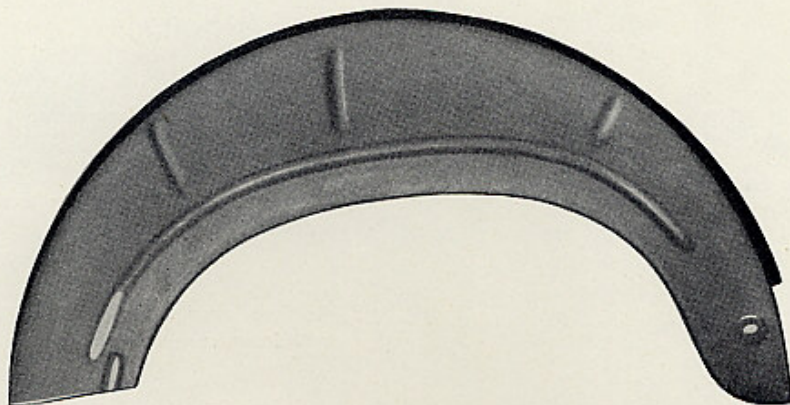
It is welded to the inner wheel housing, the quarter panel, the lock pillar and the roof pillar.



In the lower area the quarter panel is spot welded to the side member, the outer wheel housing and the rear panel. Outer and inner wheel housings are supplied separately and can be renewed when the quarter panel is being replaced.



Inner wheel housing

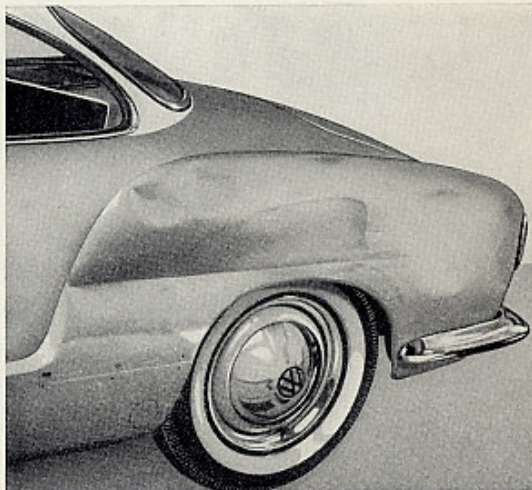


Outer wheel housing

The quarter panel is welded to the body and to the parts mentioned above by means of the so-called joining flanges. Butt welding is only necessary at the rear top panel.

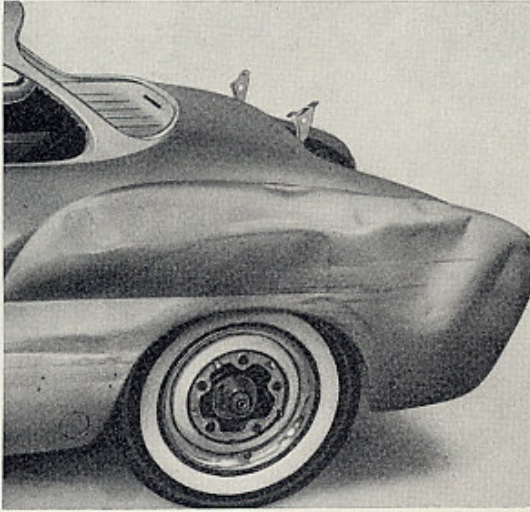
The quarter panel can also be partially replaced if its condition is considered suitable. The damaged section should be cut out and replaced by a section cut to correspond and butt welded in position.

The following repair operation was carried out on a Karmann Ghia Coupé where the left quarter panel and left hand door were so badly damaged that a partial replacement or straightening was not possible. The outer wheel housing was also badly dented and distorted. This operation, therefore, covers the replacement of the quarter panel, the outer wheel housing and the door.



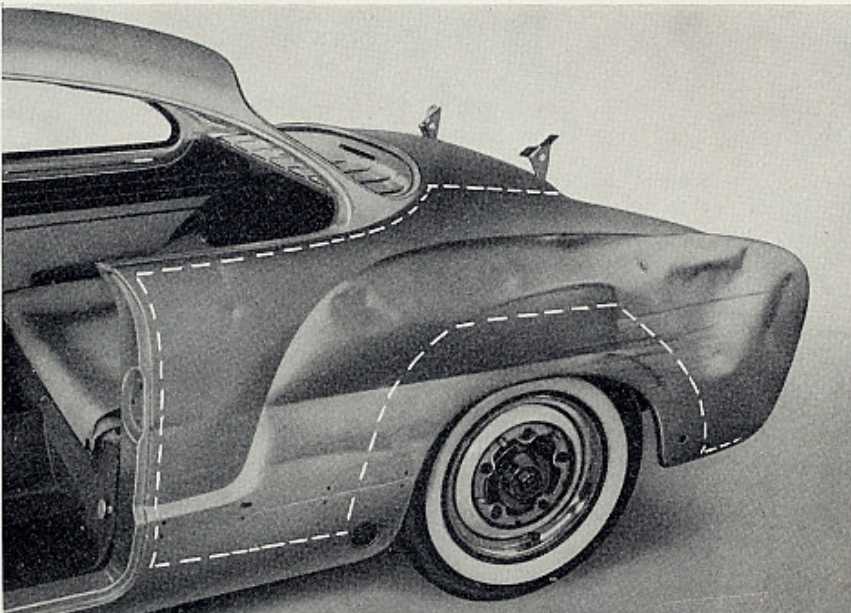
Preparation

- 1 - Disconnect the battery.
- 2 - Remove door and rear hood.
- 3 - Remove striker plate.
- 4 - Remove rear and quarter windows.
- 5 - Remove seats and floor mats.
- 6 - Remove interior trim where necessary or cover adequately.
- 7 - Remove rear hood weatherstrip or partly withdraw from channel.
- 8 - Remove rear lamp and place the cable in the engine compartment so that it will not be damaged.
- 9 - Remove quarter window weatherstrip channel.
- 10 - Remove rear bumper.
- 11 - Remove sealing compound from weld seams where necessary.
- 12 - Remove sound insulating lining and packing from the engine compartment on the appropriate side.

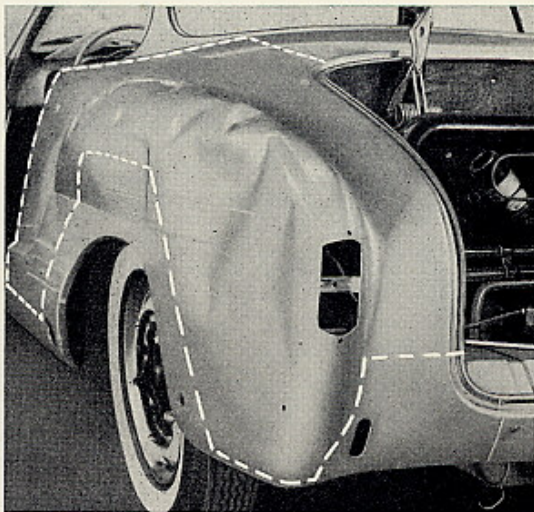


Body Repair Work

- 1 - Cut the quarter panel out with a sheet metal chisel (Local Manufacture drawing VW 732) at the places shown.

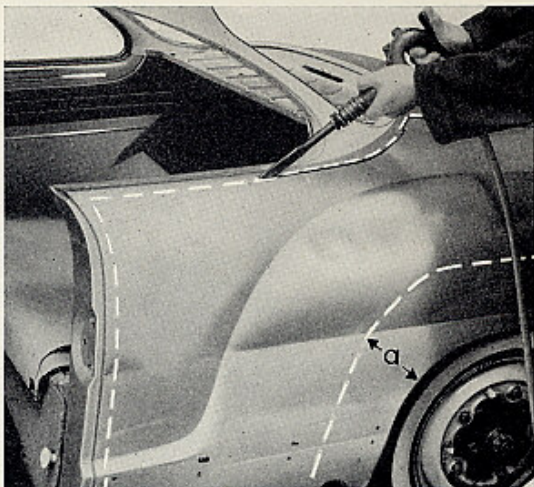


The use of a chisel for this operation is recommended in preference to a welding torch owing to the risk of the cut edges not being straight and the interior body parts being damaged.



- 2 - The cut line must run roughly 20 mm from the weld seam to avoid damage to the joining flanges or the inner body panels. At the top half of the wheel opening the spacing should be 250 mm to prevent the outer wheel housing being damaged.

To enable the cutting line between quarter panel and rear top panel to be marked the position of the weld seam must be located. The weld seam is visible on the rear window frame and in the channel for the rear hood weather-strip.



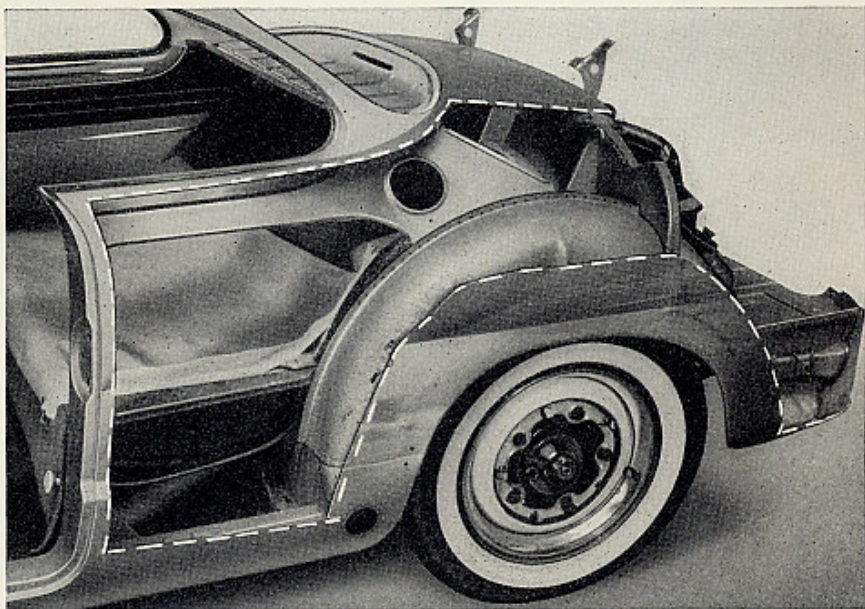
$a = 250 \text{ mm (9.8")}$

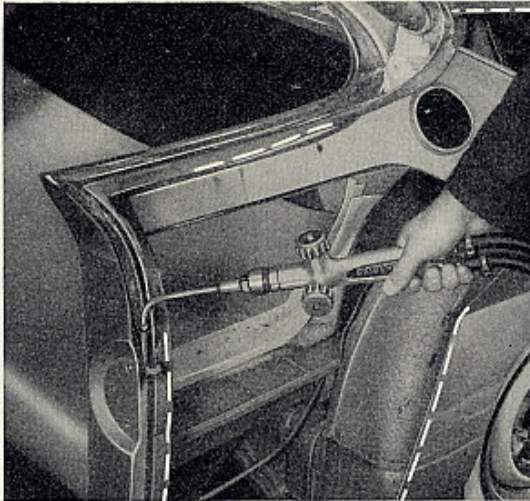
- 3 - Remove the section which has been cut out.



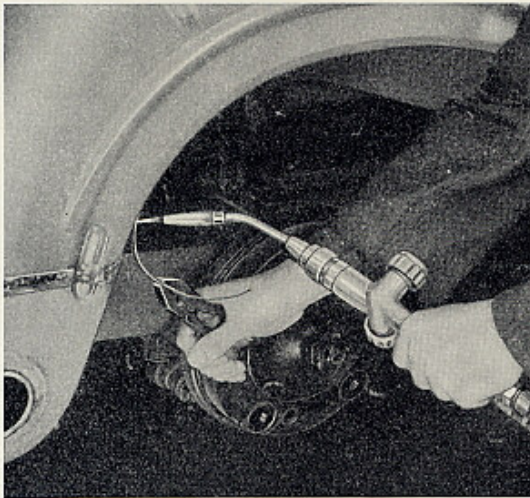
Attention

Protective gloves should be worn when removing and later when installing the quarter panel.

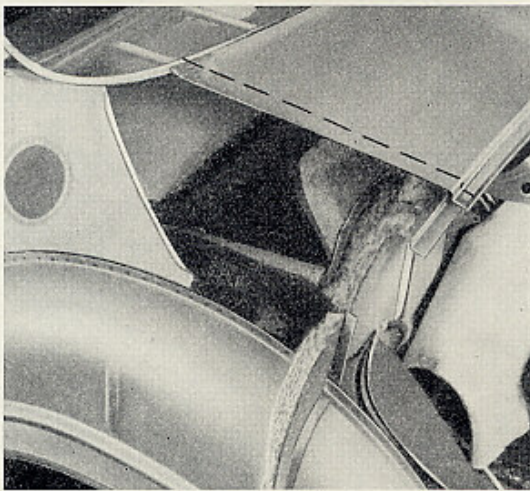




4 - The weld seams and joints between quarter panel and window frame (quarter window) are coated with solder to give a smooth finish. Before removing the sheet metal edges it is necessary to heat this solder with a welding torch and scrape it off with a suitable scraper or wire brush. The seams are then easier to see and the metal edges can be removed better.



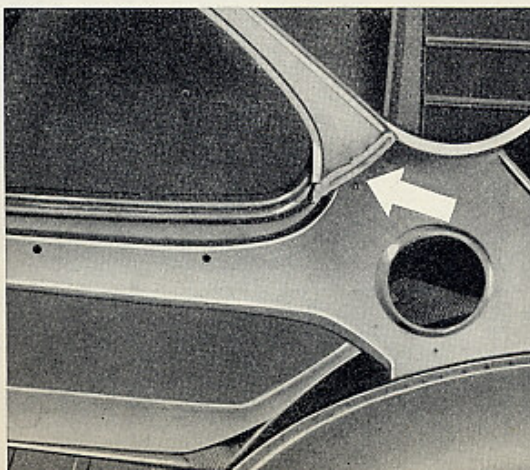
5 - The operation is facilitated if the vehicle is placed on blocks and the rear wheel taken off, after the large sections of the side panel have been removed.



6 - Remove the remaining edges of the quarter panel and grind spot welds clean. Straighten joining faces where required, grind smooth and prepare for installation.

Note:

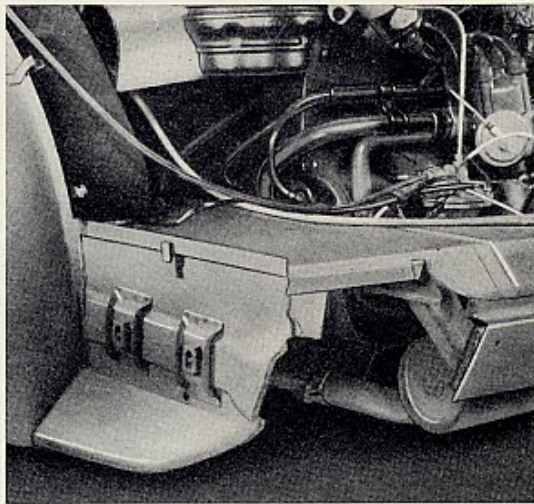
Remove the metal edges by twisting with a pair of pliers and not by pulling as otherwise the spot welds will be pulled out and leave holes. In some instances it may be advisable to heat the spot welds with the welding torch and then pull the metal strips off with the pliers.



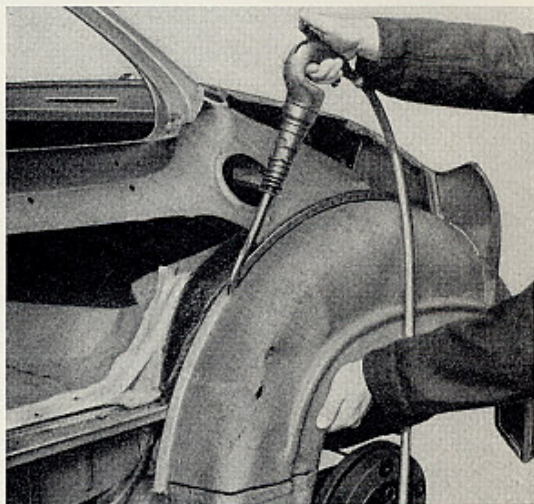
7 - At the top rear panel cut the metal off cleanly about 10 mm from the weld seam (see dotted line).

8 - The roof pillar should be cut off about 5 mm under the rain channel (see arrow) and not at the weld seam.

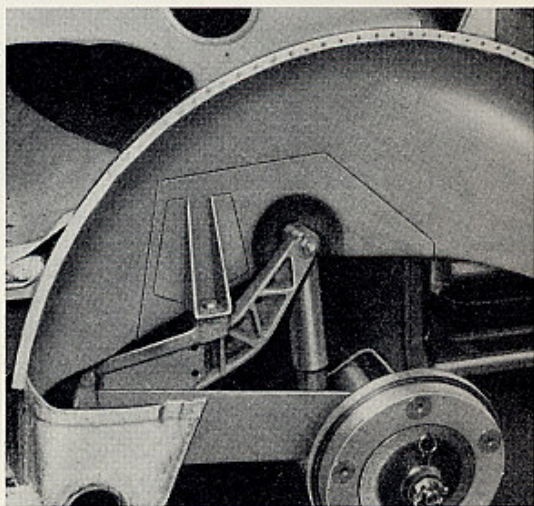
- 9 - Remove the metal edges from the joining flanges at the back in the same manner as above and straighten the flange if required.



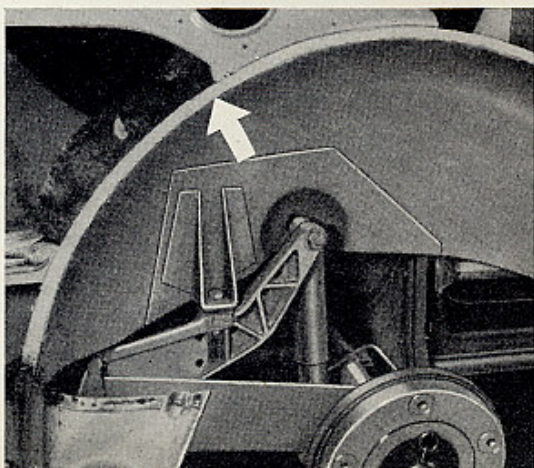
- 10 - Cut the outer wheel housing off near the joining flange with a sheet metal chisel.



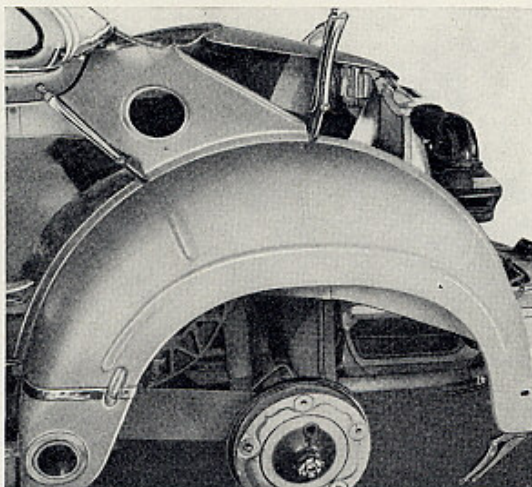
- 11 - Remove metal edges from the spot welded seam of the inner wheel housing. Grind spot welds smooth and prepare for assembly.



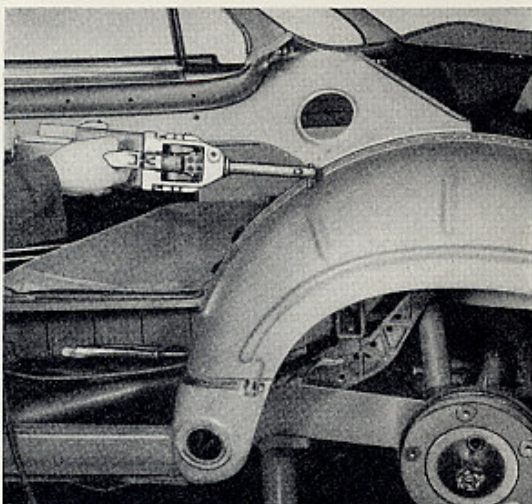
- 12 - Check new outer wheel housing for fit and rectify if necessary.



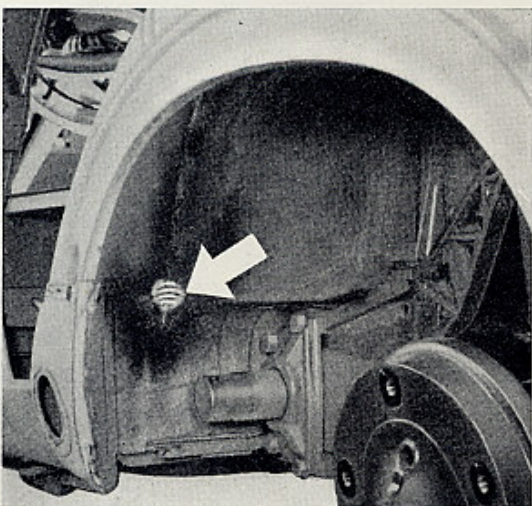
- 13 - Seal the area to be spot welded with a coating of spot welding paste. Details of the manufacturer's and usage of spot welding paint and paste are given under "Special Instructions" on page A 76/1.



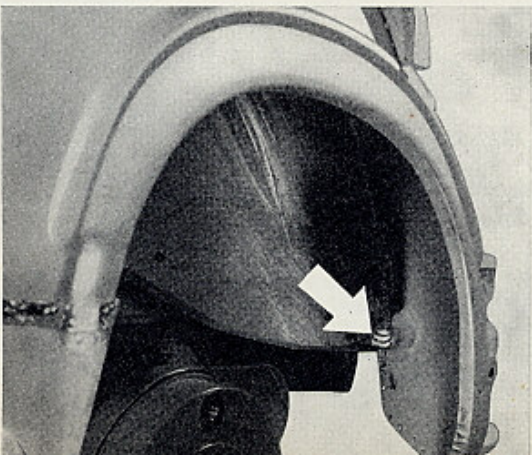
14 - Place outer wheel housing in position and clamp to body.



15 - Spot weld outer housing to inner housing.

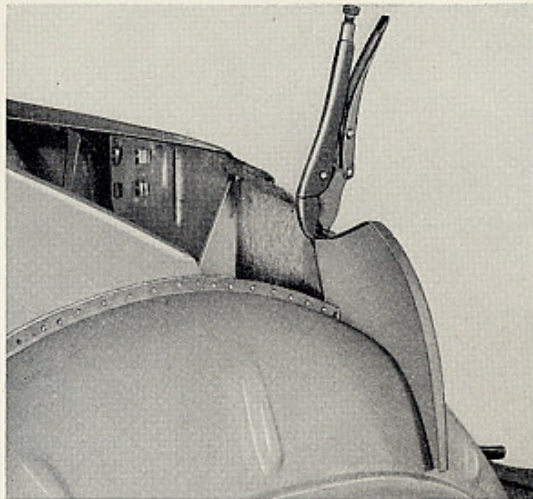


16 - The lower corners between outer and inner wheel housing should be gas welded at front

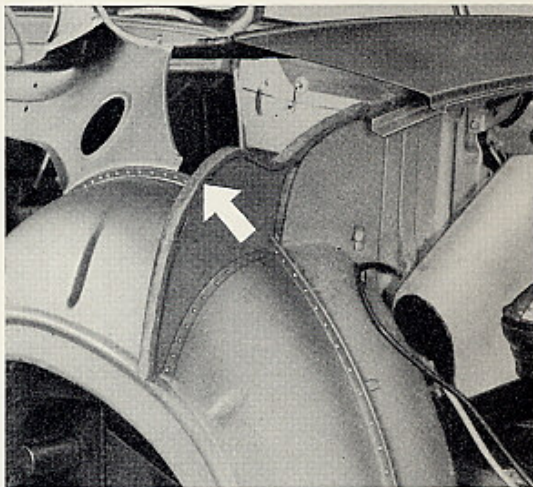


and rear

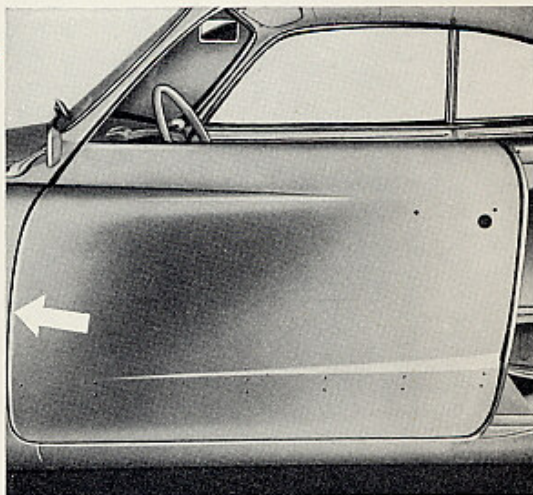
- 17 - Clamp the extension to the welded part of the luggage compartment rear panel onto the body.



- Spot weld the extension to the wheel housing and cement a felt strip of suitable width to the top edge for sealing.



- 18 - Install door and check fit. Verify that the door gap at the hinge pillar is the same width over the whole length. At the same time the top edge of the door at the lock pillar must be correctly aligned with the quarter panel (Window frame top edge). The door gap at the lock pillar is aligned by the application of solder at a later stage when the quarter panel has been installed.



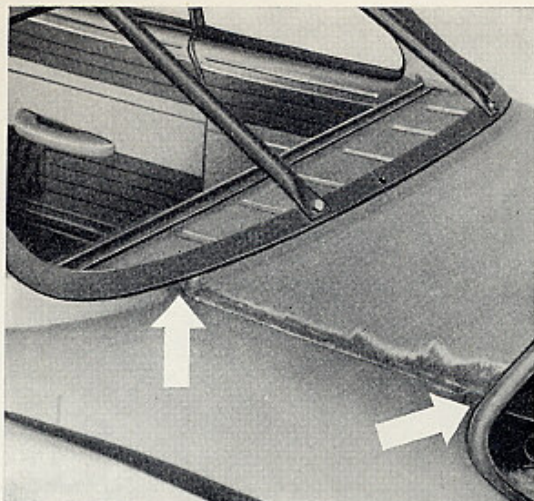
- 19 - Prepare quarter panel for installation. Grind spot welds smooth.

- 20 - Gas weld the quarter panel to the top rear panel.

The gas welding calls for sound knowledge and experience in butt welding. Unskilled welding can cause the formation of waves and distortion which will prove very difficult or even impossible to eliminate. It must be emphasized,

however, that good gas welding is equivalent to the original condition.

To ensure good welding the joining edges of the quarter panel and the top rear panel must be perfectly straight and parallel over the whole length when the panels are installed.



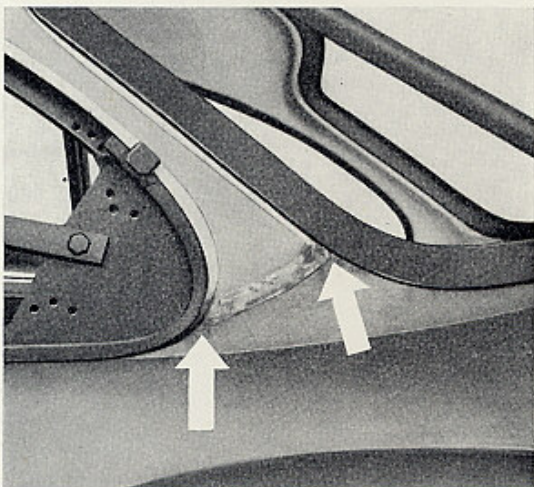
21 - All spot welds on the wheel housing which have been ground smooth should be coated with spot welding paste to prevent corrosion (see Special Instructions — page A 76/1).

22 - Install side panel, position correctly and clamp.

23 - Insert window gauge. Further details of the window gauge can be found in "Body General" section under the heading "Workshop Equipment".

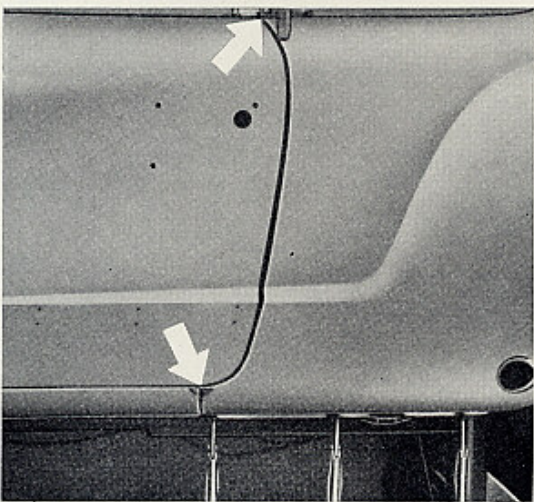


24 - Tack the quarter panel to the top rear panel at front and rear with the welding torch.

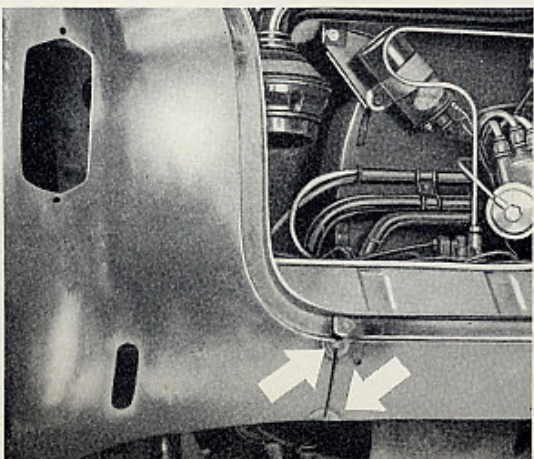


25 - Tack the quarter panel to the roof pillar at the left and right with the welding torch.

The space between the quarter window gauge and the quarter panel is filled with solder later on.

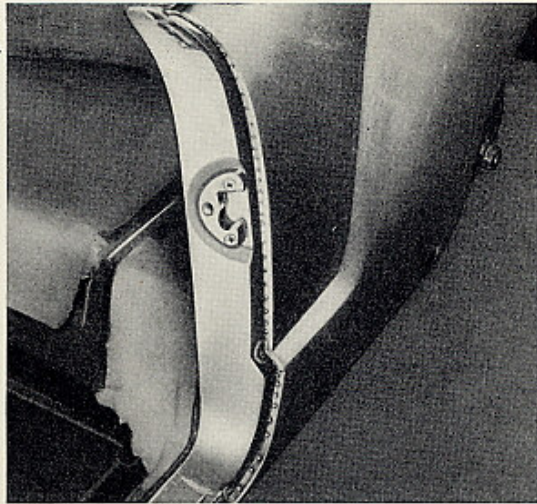


26 - Tack the quarter panel to the lock pillar at the top and to the lock pillar and sill panel at the bottom with the welding torch.

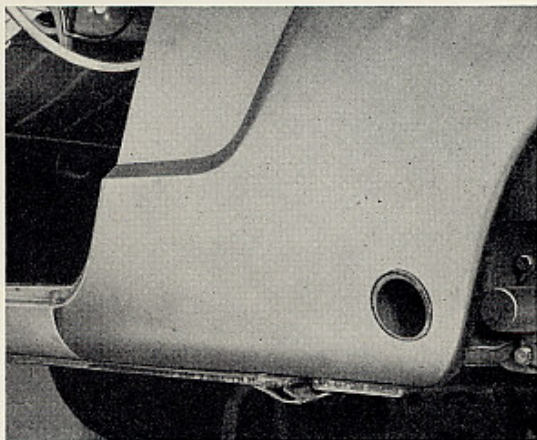


27 - Tack the quarter panel to the rear panel at top and bottom with the welding torch.

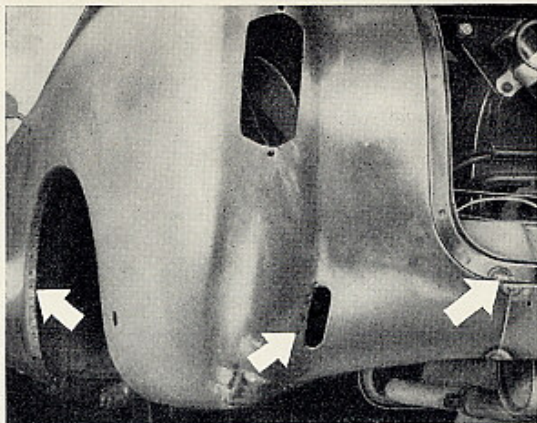
- 28 - Remove the window gauge and spot weld the quarter window to the lock pillar and to the quarter window frame.



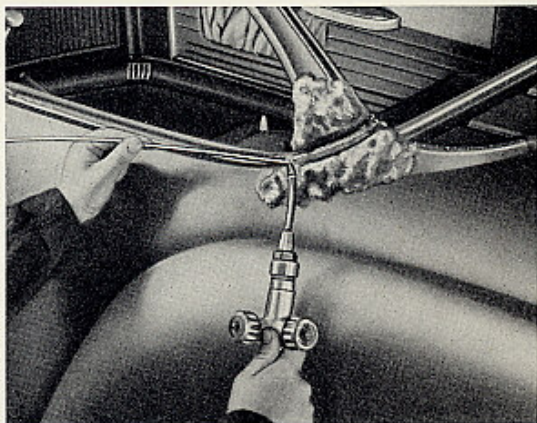
- 29 - Spot weld quarter panel to the side member.

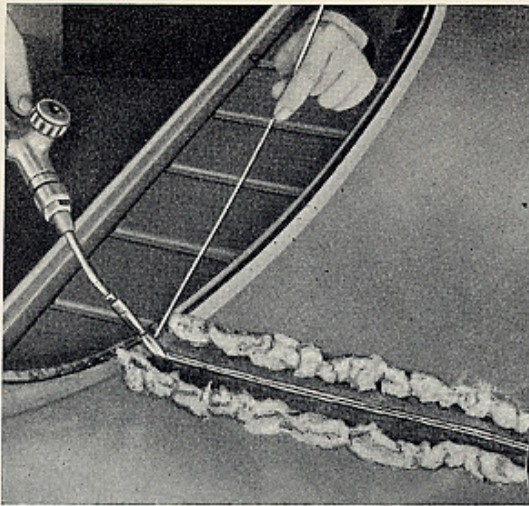


- 30 - Spot weld the quarter panel near and below the opening for the bumper bar bracket and also to the outer wheel housing. Gas weld the quarter panel to the rear panel in the channel for the rear hood weatherstrip.



- 31 - Pack roof pillar and quarter panel adequately with asbestos along the area to be welded and gas weld.



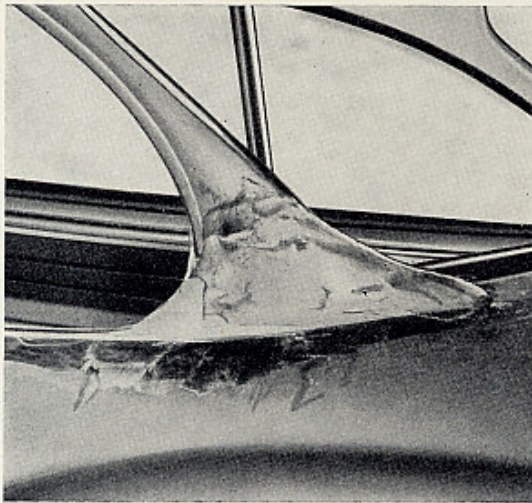


- 32 - Gas weld the quarter panel and top rear panel in the same manner with special attention to the following: Weld the panels first with short welds of 10 mm length spaced at intervals of 20 mm to avoid distortion of the sheet metal. When this operation is completed the joint can be finish welded over the entire length.

Note:

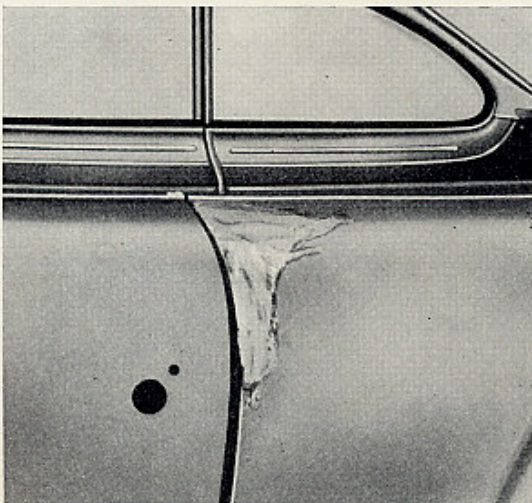
When tacking the panels together take constant care to ensure that no waviness or distortion appears. If this should happen it must be removed immediately, before the weld seams have cooled. This is the only way to ensure a perfect gas welded joint between the panels.

- 33 - Grind all spot and gas welded seams smooth.



- 34 - The unevenness caused by the welding on top rear panel, roof pillar, quarter window frame and the lock pillar is levelled out with solder. The sheet metal in the appropriate areas must be smooth and free from all traces of welding metal. The tinning compound, consisting of soldering powder and soldering solution is then applied. The compound must be warmed after application and the layer rubbed with a clean cloth. This wipes all the deposits off and leaves a thin layer of tin which forms a foundation for the soldering which follows.

- 35 - Apply the solder, and with a steady even heat spread it as required.



Take care that the door gap at the lock pillar is of uniform width over the full length. The picture shows the upper part of the door gap reduced by solder and below it, the original width.

- 36 - Grind all reworked places smooth and prepare the vehicle for painting.



Spot Welding Pastes and Paint

A - Spot welding paste

In order to obtain water-tight joints, the parts of metal sheets which are to be welded are given a coating of sealing paste which is not affected by welding.

This standard manufacturing procedure should also be adopted for bodywork repairs.

The paste can be obtained direct from the manufacturers:

| Manufacturer | Designation |
|---|-----------------------------------|
| Bonaval-Werk, Bonn, Germany Brühler Straße 2—20 | Spot welding paste 59852 or 60506 |
| Teroson-Werke G.m.b.H., Heidelberg, Hans-Bunte-Straße 4, Germany | Spot welding paste 2257 |

The paste is applied before welding commences. Before and after welding the paste should not run. At the joints it should form a film which adheres firmly, prevents corrosion and renders the joint water-tight. It must also remain unaffected by degreasing agents and subsequent painting.

Paste which burns during spot welding should cease to do so as soon as the heat is removed.

The paste should only be employed where water-tight seams are stipulated and where it is impossible or difficult to apply sealing compound after welding.

B - Spot welding paint

Spot welding paint is used to prevent corrosion in hollow parts which cannot be painted after welding due to inaccessibility.

| Manufacturer | Designation |
|---|-------------------------|
| Teroson-Werke G.m.b.H., Heidelberg, Hans-Bunte-Straße 4, Germany | Spot welding paint 2273 |

Before welding, spray or paint all components with spot welding paint.

General

The use of the above products does not simplify the welding process. It may be necessary to step up the welding current, depending on the thickness of the coat applied.

Superfluous material must, however, be removed before the part is given a coat of paint which must stand up to the conditions stipulated for the outside finish. Neither welding paste nor paint can be considered as a substitute for primer to which a top coat can be applied.