LOOK
LISTEN
DO IT BETTER

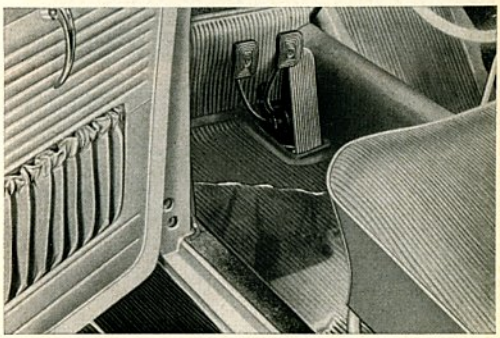
BODY LEAKS • VW SEDAN

Slide Series № 9

BODY LEAKS VW SEDAN

9/1 Does this customer ever reflect how pleasant it is to arrive at his destination dry-foot? Most unlikely. He has long since realized that, even in the worst weather, all cars keep you dry.

9/2 We know, however, that this is not always the case. Water can enter a car when driving in continuous downpours. Here too you can see what can happen when vehicles are left outside in the rain.



It is often tedious and difficult to find out where the water gets in and it is therefore advisable to leave this work to one specialized mechanic. These pictures cannot include all the sources of leaks and are only intended to show the sequence of repairs. There can be various reasons for ingress of water:

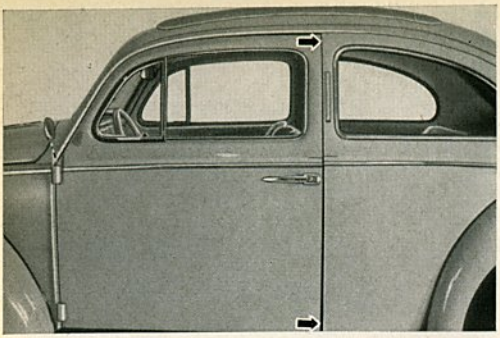
1 - Inefficient servicing

2 - Incorrect door fit

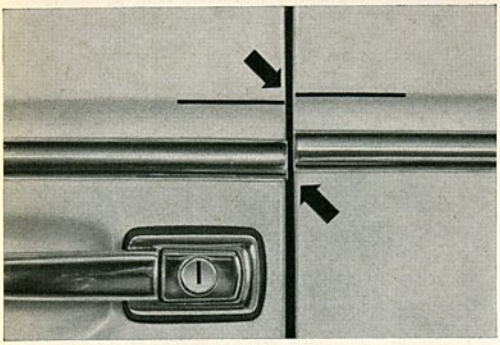
3 - Damage to the door

4 - Inefficiently sealing weatherstrips

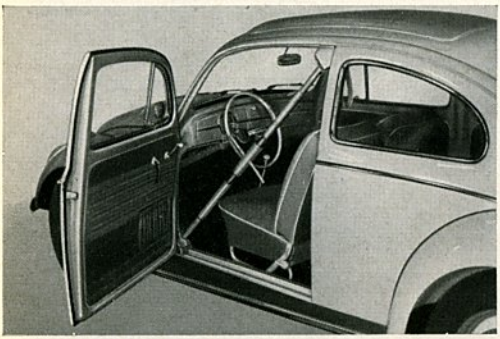
5 - A leak on the body



9/3 Inefficient servicing can often result in leaks and noises and it is often possible to eliminate two complaints of the same time. The first example: The arrow points towards the incorrect door gap. In the upper region the door nearly bears on the lock pillar whereas the gap shown by the lower arrow is too large.

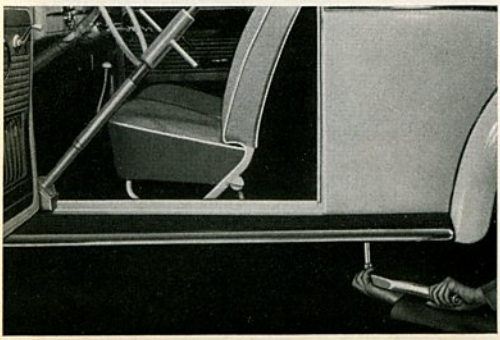


9/4 The striker plate has to be removed when commencing with door adjustments as otherwise the door fit cannot be correctly checked. The waistline shown here is very helpful. The better the door fits with the striker plate removed the less corrections will have to be made later when adjusting the striker plate. This fact also lengthens the life of the lock.



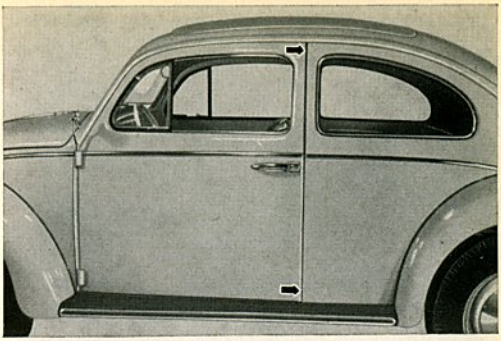
9/5 Here you see expanders being positioned in the door opening. In the case of an incorrectly fitting door, the door opening and not the door itself has altered. This alteration has been caused by the body which has settled.

First of all loosen the chassis mounting bolts under the rear quarter panel. Now stretch the door opening until a heavy resistance is felt. Remove the expander and check the door fit.



9/6 If the door fits correctly, insert the expander again in the door opening and tension it slightly. Now tighten the chassis mounting bolts to prevent the door opening from altering its shape. Use a torque wrench and tighten the bolts to 14 ft. lbs.

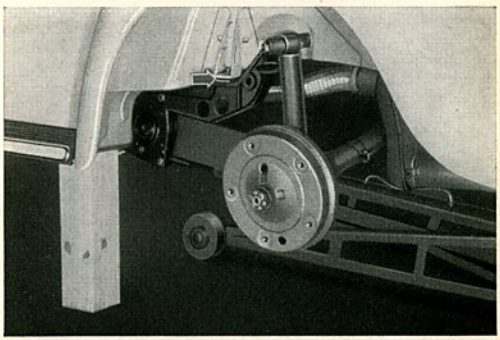
9/7 If the gap between door and lock pillar becomes wider towards the roof, it may be necessary in cases where the expander is of no avail, to raise the body at the rear.



9/8 Two bolts have to be loosened for this purpose: This one under the rear seat.

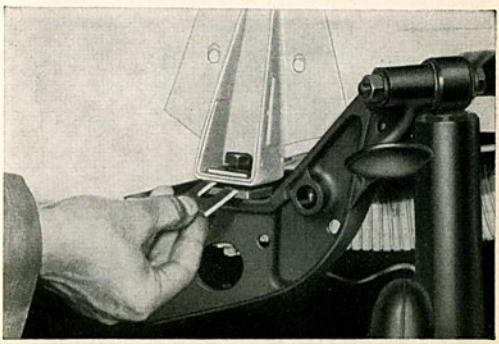
9/9 and this bolt which attaches the rear quarter panel to the chassis. Back off both bolts approximately 5 turns.

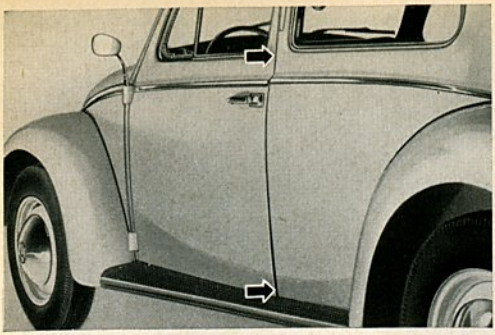
To loosen the bolt for the rear quarter panel support lift the vehicle at the rear and take off the wheel. Now lower the jack slowly and at the same time support the rear quarter panel with a wooden wedge. The arrow shows the location where the body should lift.



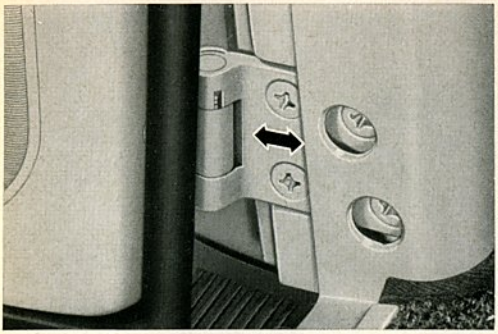
9/10 Insert a synthetic packing .16" thick made from the guide plate of the sliding roof into the gap. A metal plate is not suitable as it could cause squeaks.

Finally tighten the two body bolts. This one to 21 ft. lbs., and the other one under the rear seat to 14 ft. lbs.



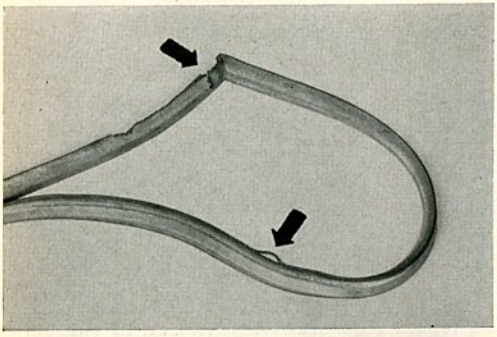


9/11 The ingress of water shown here would have been eliminated in an efficient workshop. It can be seen clearly that the door is protruding at the bottom whereas at the middle it is flush with the rear quarter panel.

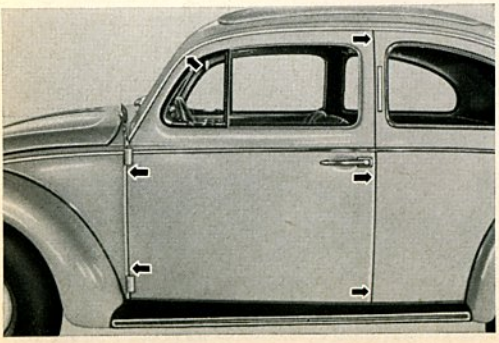


9/12 In most cases it is sufficient to reposition the hinges outwards or inwards. In this case the lower hinge is loosened and moved inwards.

Make sure that the hinge screws are tightened fully.



9/13 Another point. Incorrectly fitting doors usually cause damage to the door weatherstrip. It is generally necessary to replace this weatherstrip when carrying out adjustments of the door.

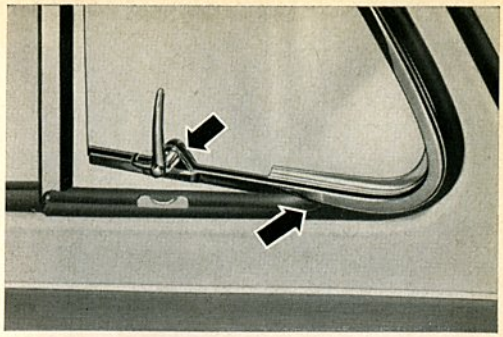


9/14 The examples just given should have the following results: The door fit is correct when the door bears evenly and the gap between door and lock pillar is .16". Only then is the striker plate installed and adjusted.

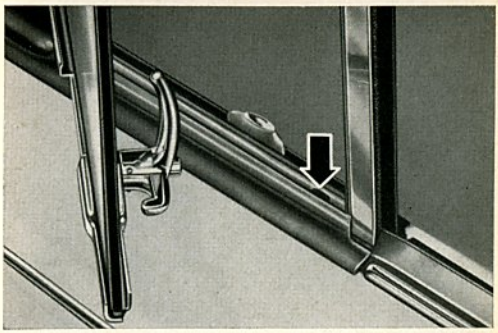
9/15 Even with the striker plate correctly adjusted it is possible for door leaks to occur.

A stiff vent wing regularly causes the frame to bend and results in leaks between glass and weatherstrip as shown by the upper arrow.

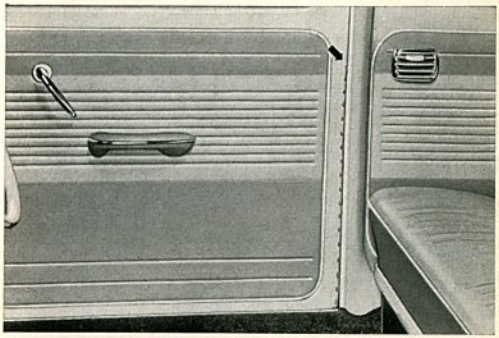
In this case, free the vent wing at the location shown by the lower arrow by adjusting the clamp and straightening the frame so that it bears evenly against the weatherstrip.



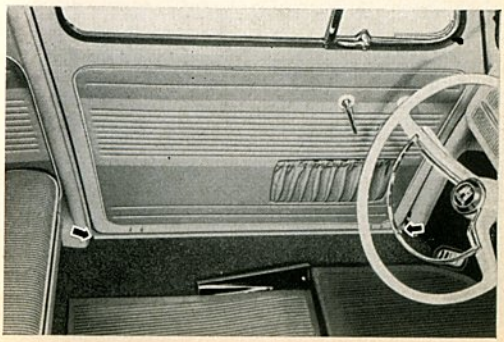
9/16 Make sure that the weatherstrip channel shown here is not blocked since the water which has entered flows along it to the drain holes in the bottom of the door.

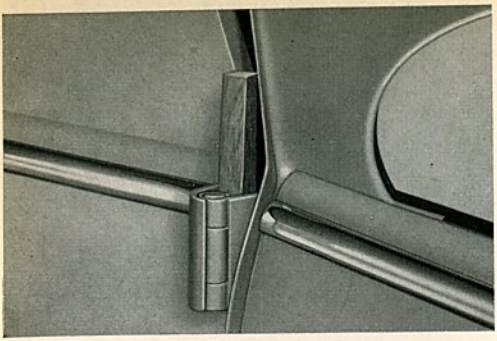


9/17 If the weatherstrip in the region of the lock does not bear evenly against the lock pillar, water can run along the inner door edge to the side member and collect there.



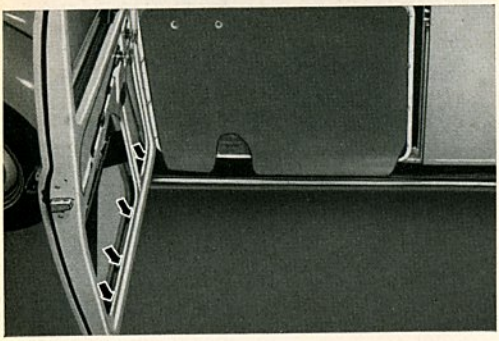
9/18 Once the water has reached the side member the carpeting will act as a wick at the locations shown by the arrows and eventually get under the floor mats.





9/19 This complaint can be eliminated by bending the door hinges. This is done by inserting a hardwood block at the upper hinge and pushing the door firmly.

If the lower hinge is to be bent, it is advisable to remove the front fender. A wooden block is held against the hinge and tapped lightly with a hammer until the hinge moves sufficiently to ensure the correct door gap.

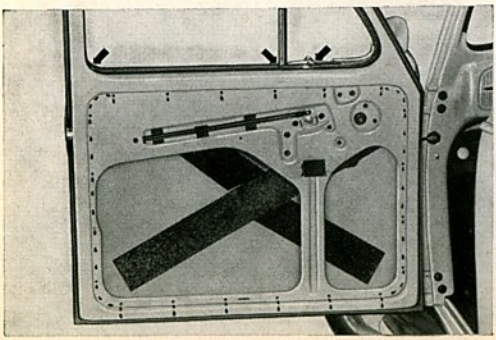


9/20 In this connection too, we stress the importance of the waterproof paper on the door trims and the drain holes in the door.

The window weatherstrip never seals completely.

The waterproof paper is intended to direct the water to the drain holes shown here by the arrows. If these holes become blocked, water will collect in the door.

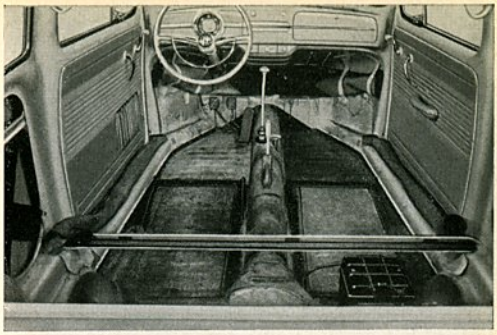
9/21 This has actually happened here. The waterproof paper has become loose and prevented the water from draining off.



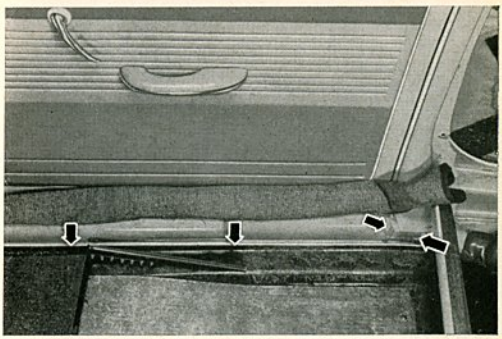
9/22 If the door trim does not absorb the water it will evaporate and settle on the clips, seep through the holes and run down inside the door trim and collect at the side member.

9/23 It is not always possible to eliminate leaks by adjusting the doors.

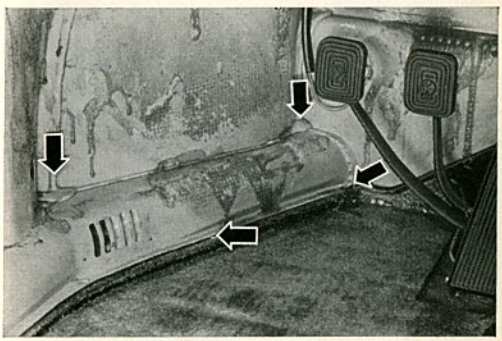
If the location of the leak is not visible from outside, the vehicle should be sprayed similar to the way in which the ingress of water would naturally occur. To facilitate the location of the leaks, the seats and floor mats should be removed and the carpeting turned up. The seam between frame tunnel and flor plates should be observed carefully.



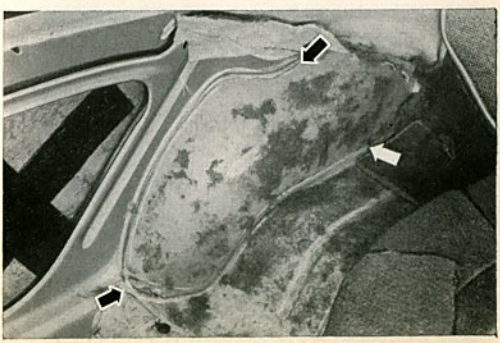
9/24 This also applies to the side member seams. Water which has seeped through the outer body skin often collects in the side member and leaks through at the locations shown here.



9/25 Splash water from the front wheels would be visible at these points. The two upper arrows indicate the danger spots on the front panel and the lower right arrow the joint of the frame seal between floor plate and front cross member.

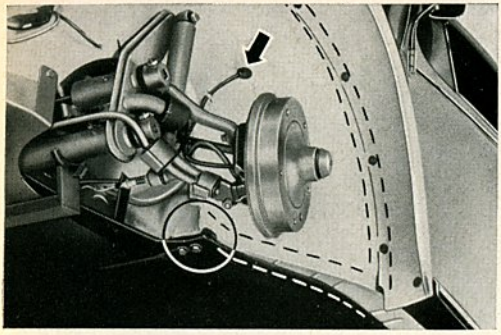


9/26 These are the seams on the rear wheel housing where leaks can also occasionally occur.



9/27 Spray the vehicle from behind the wheels. Another mechanic should use a flashlight to observe the interior.

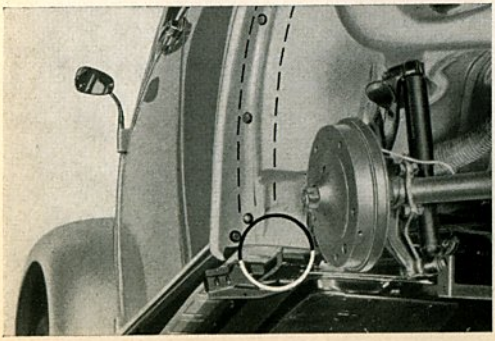
It is important that the vehicle is not raised since there is the possibility that some leaks would seal up whereas others would become apparent which normally do not exist.



9/28 Here is a view from underneath the fender: The lines showing the fender bolts and the body seal in the circle are the areas which are mainly sprayed.

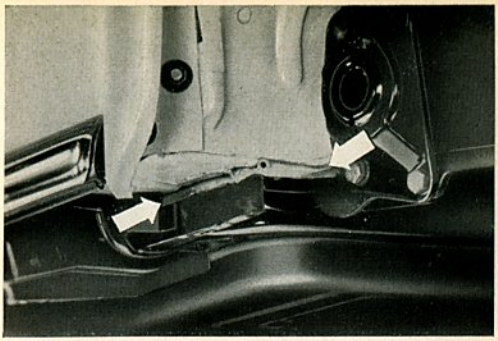
Water entering at the front fender bolts will emerge at the side member since having entered the front luggage compartment it flows along the front heater pipe.

9/29 Each front wheel should be sprayed for about 5 minutes and the operation repeated at the rear wheels. Keep the hose near the ground as most of the splash water comes from this proximity when driving.

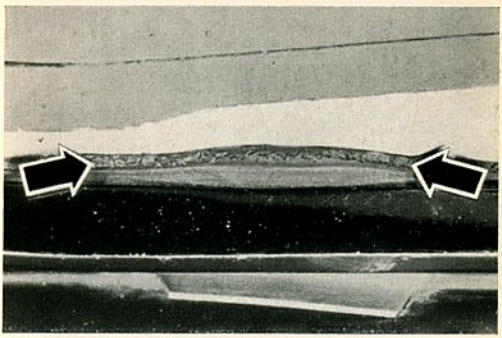


9/30 Here is a view from underneath the rear fender. One can clearly see what locations are sprayed — namely — the fender bolts and the joint of the body seal.

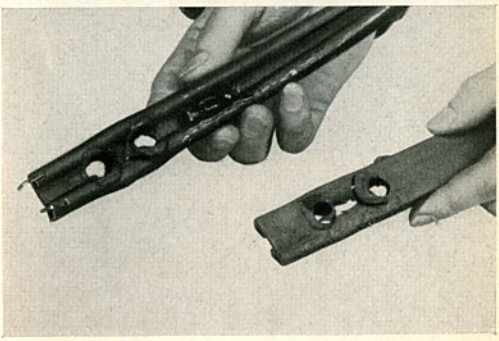
9/31 If water enters the vehicle at the joint of the body seal, Genuine VW Sealing Compound should be applied at the points shown here. The metal edge above the seal occasionally cause leaks.



9/32 A damaged body seal often causes leaks. A seal which has been crushed by overtightening the body mounting bolts cannot fulfill its purpose. The mounting bolts may only be tightened with a torque wrench.



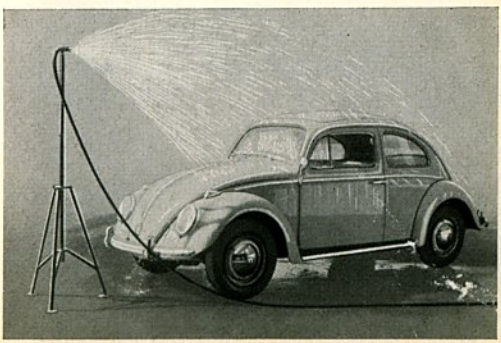
9/33 That is what the seal looked like on removal.

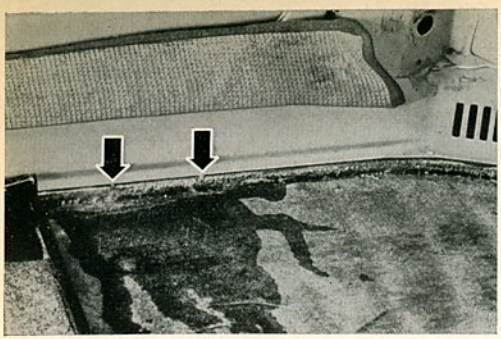


9/34 If the vehicle does not leak lower down it is sprayed from above. It is practicable to attach the hose to a stand approximately 6 ft high.

Spray the vehicle for about one hour so as to give the water sufficient time to enter the car.

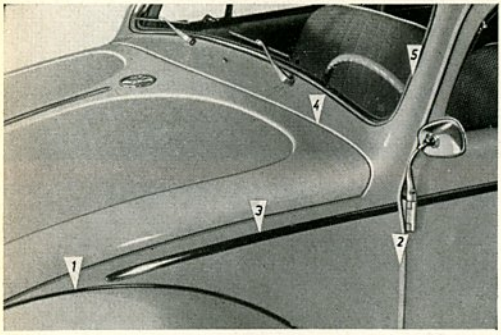
The stand is not expensive and can be manufactured locally.





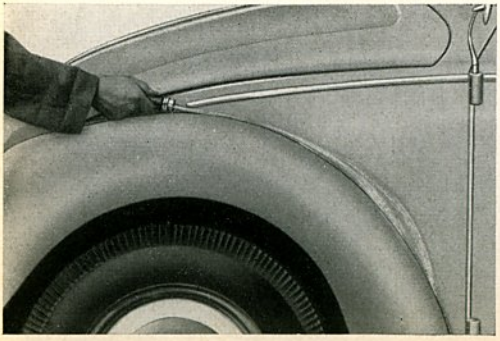
9/35 In this vehicle the water appeared at the side member after approximately half an hour. It would be useless to seal at this point as the water would run on and leak elsewhere.

Now it is necessary to locate the actual point outside where the leak occurs and to seal it.



9/36 Since the leak occurred at the left side member we must try and locate it on the left side of the vehicle.

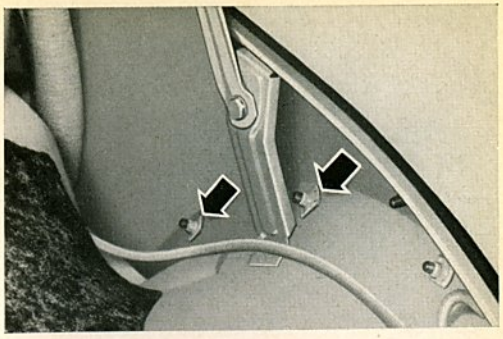
Various points must be sprayed separately to determine the actual location of the leak. Here you see the correct sequence. If one were to begin at the windshield on the moulding it might not be possible to determine whether the leak occurred at a lower point, for example, the fender bolts under the beading.

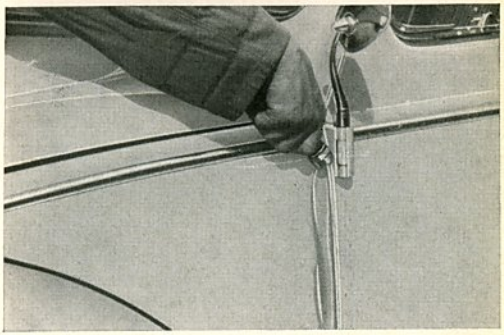


9/37 The water here is coloured to give a better illustration. A weak stream of water flows down along the beading.

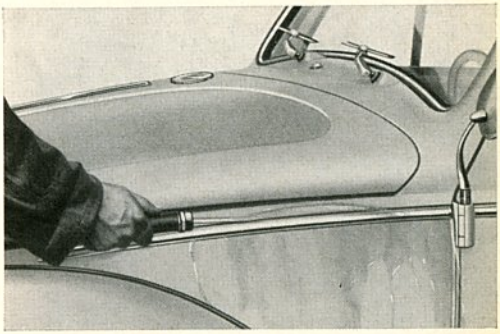
In the event of a leak, it would only take about five minutes for the water to appear at the side member.

9/38 If this happens the leak is caused by one of the fender bolts nuts, and should be sealed with sealing compound. Here we assume that leaks do not occur at the fender nuts and so we continue spraying the car.

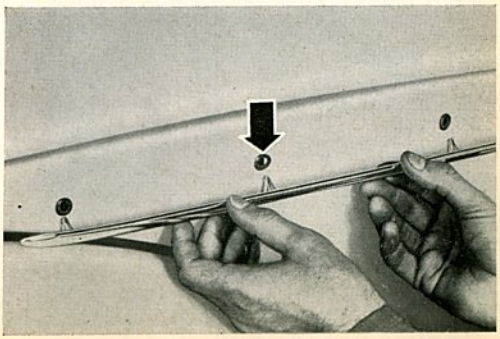




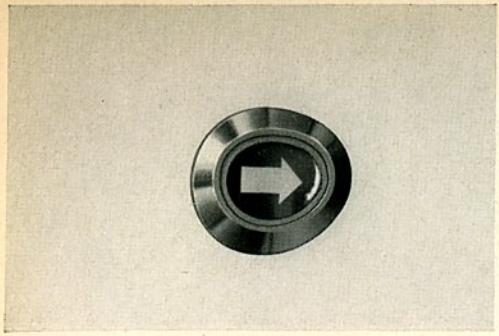
9/39 The hose is positioned at the protruding edge in front of the hinge below the moulding since water could enter the vehicle at the moulding and give a wrong impression. Use sealing compound here too if leaks are located and then touch up with paint.



9/40 The holes for the moulding clips are provided with rubber caps. The shape of these caps was altered in August 1959 to improve their sealing efficiency.

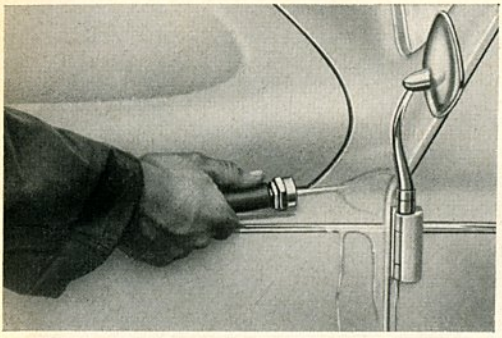


9/41 If leaks occur at the mouldings, the rubber caps are damaged. The arrow indicates a cap which has been cut by the sharp metal and now leaks.



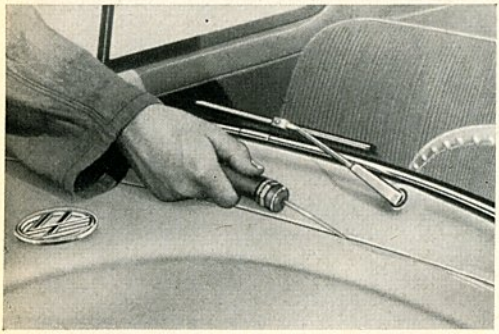
9/42 It is quite obvious that this cap must be replaced. Make sure that it is enserted into the hole prior to the installation of the moulding. Clean up the sharp edge beforehand.

Remember that the rubber caps at the rear quarter panel can also be leaking.



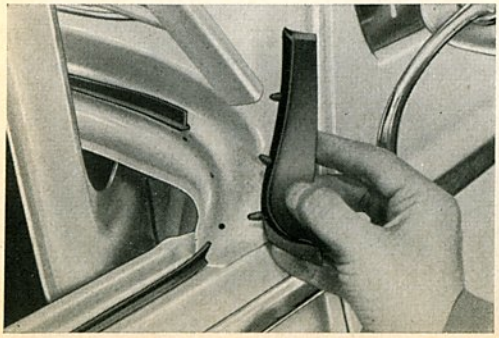
9/43 The seam at the joint between roof and front panel need only be sprayed, and sealed if necessary, on vehicles up to August 1959.

The vehicles are now brazed at this location during production to prevent an ingress of water.



9/44 In the case of the front hood the water should be directed so that it flows along the edge of the hood in front of the windshield.

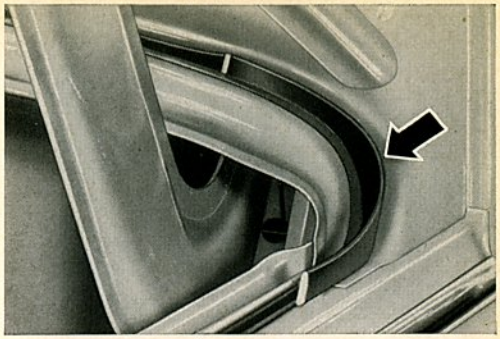
Remember too, that leaks may occasionally occur at the VW sign on the front hood and at the wiper shaft gasket.



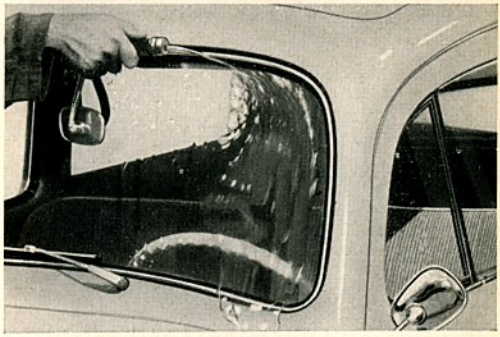
9/45 In the event of the front hood leaking, the water usually gets in at the top corners and consequently into the side members as we have previously described.

The best method of eliminating this is by cementing rubber seals to the corners of the cowl panel.

9/46 The ends of the rubber seals — marked white — should be joined up with the weatherstrip on the cowl panel and side panel. Bostik 675, which is also used for the instrument panel cover on Karmann Ghia models, is most suitable for this purpose.

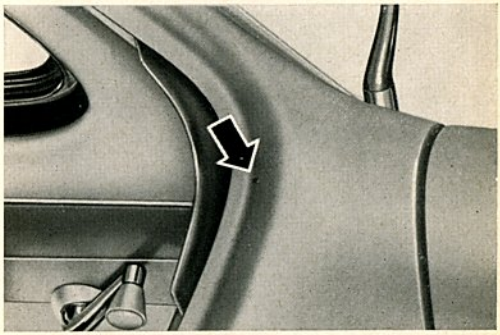


9/47 In this particular case the ingress of water was evident at the windshield. Leaks at the windshield can result in the water running down behind the instrument to the side members and then under the floor mats.



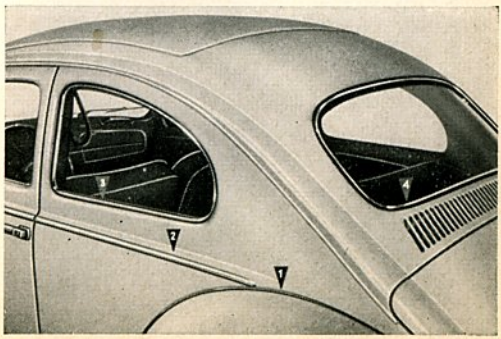
9/48 Due to a damaged and porous weatherstrip the water got in through this hole.

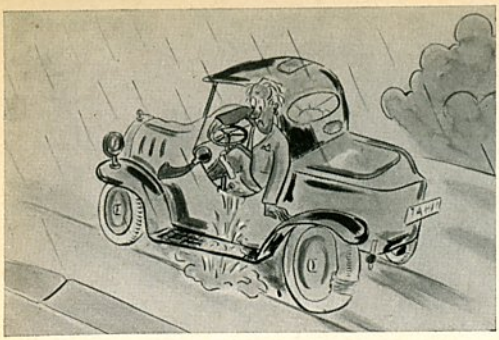
During the prime coating process the paint drains off here.



9/49 As a result of the examples given you will realize that in the event of ingress of water the exact location of the complaint must be determined on the outside of the vehicle. If the matter is gone into systematically, the location is always found.

Of course there are other parts of the vehicle at which leaks may occur — for instance the rear portion. We only showed you some of the causes, but nevertheless, we wished to indicate the course the water can take in the event of a leak on the exterior of the body.





These are the methods which should be employed in all cases of ingress of water.

9/50 A VW owner will definitely never have to experience such a hopeless situation as this. All leaks can be eliminated on a Volkswagen. It all depends on your experience and skill.

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