

Cavity rust protection Mercedes-Benz 220SE -59, Ponton

By Christoph Voigts, April 2019

Since the construction elements of the Ponton series are all very similar, one can certainly use these instructions for the other Mercedes Ponton types as well. On the other hand, most of these vehicles have been welded/repaired, so individual modifications should be expected, particularly with regards to the presence and location of holes to access the cavities. So, if you use this instruction, you will have to interpret the information and adapt it as necessary.

The choice of corrosion protection product(s) - like different types of waxes, oils and greases - is not the topic of this instruction. Different approaches can be useful depending on the condition and application of the vehicle and its planned maintenance. The author decided to start with a thin oil, such as "*FLUID FILM® Liquid A*" for its good flow, penetrating and creeping properties. This is suitable for a car in the state as his 220SE, unprotected, but fully restored vehicle, certainly with rust inside the cavities. After that a thicker fluid, such as "*MIKE SANDERs Rust Prevention Grease*" ("*Korrosionsschutzfett*"), "*KSD Kaltfett*" (<https://www.korrosionsschutz-depot.de/rostschutz-und-lacke/hohlraumschutz/>) or "*TimeMAX*", is applied. The thicker fluid has better long-term effects.

Sometimes you read the advice, that the access holes should better not be closed, so that any moisture can drain. Well, there is no water in the cavities of my car, and I do not want the cavity preservation to drip out right now, so I closed the holes with cavity plugs.

There are already access holes or other suitable opening in some places, in others new holes need to be drilled. The approximate hole positions I suggest are non-binding suggestions only. In any case, one should check whether the cavity in question can be accessed by other, already existing holes/openings (maybe made by previous owners...), or screw holes etc. Drilling holes is basically a violation of the integrity of the vehicle. You should always think twice if you need a new hole; may it affect the strength of the part in a negative way or damage the value or condition of the vehicle. The size of the holes depends on the spray probe and nozzle used. I have worked with 6- and 8-mm holes.

For spraying the cavities, spray cans and various pressure spray systems can be used. They usually work with a ~4 mm probe with an all-direction spray nozzle. I also found out that a tool with an angled nozzle made wonders (see e.g. <https://www.korrosionsschutz-depot.de/werkzeuge/druckluftwerkzeuge/druckbecherpistolen/abgewinkelte-spruehlanze-hakensonde>). For some very small holes, e.g. screw holes, which you don't want to enlarge, aerosol spray cans with a thin 3-mm probe/nozzle can be used as a supplement.

Preparation

1. Clean, or let clean, the underbody of the car. Jack up the vehicle safely if you do not have a car lift. The vehicle should be at least so high that you can work under it, comfortable and safely while being underneath it.
2. Remove the wheels and search the underbody and the wheel arches for rust spots. If you find any rust, degrease the area, remove the rust and paint it with a good rust protection and underbody paint.
3. Unscrew and remove the protective plate under the pedals.

4. Remove the carpets and sound dampening in front of the front seats and remove the wooden floor.
5. Lay plenty of paper under the holes of the cavities to protect the garage floor against grease or whatever rust protection fluid you're using.
6. Hold rags, wipe paper etc. readily available, if unexpectedly much is dripping out, or if pot/jar of fluid is tipped over.

Preparatory work

Identify the cavities to be treated in a “dry state” so that the spraying can be carried out more quickly. Find holes and make them accessible, if necessary, enlarge them or drill new ones. After drilling, remove the resulting burr and protect the edges of the drill hole with suitable primer or paint.

Disposal

I collect all oily cloth/paper, containers, waste fluid and such material at a waste collection point. Caution when using oxidizing oils or greases, soaked cloths can lead to rapid oxidation, i.e. high heat and spontaneous combustion = fire hazard! If you use natural sheep wool fats for the preservation, it may be possible to dispose of old cleaning rags and empty containers via the residual waste bin, because it is also suitable for greasy food particles. You can inquire at the responsible disposal point.

Start of work

Test, and train, the right spray method and rate. To ensure that you have the right technique and speed at which you move the spray probe with its nozzle; practice with boxes or tubes of cardboard. In general, the probe/nozzle is pushed through the hole to an end position and you spray while pulling out gently, with the right speed in order to get the correct coverage. You can turn the hose back and forth a bit, to be sure to cover all spray directions.

When you have ensured all preparatory steps are finished, especially anti-rust paint jobs, you can start the actual work with your chosen preservative fluid and tools.

What and how to preserve

The cavities, construction elements, to be preserved are designated with capital letters (compare with attached pictures 1 to 9):

- A. Front cross tube under the radiator
 - At the ends of the cross tube there are threaded holes for mounting the bumper. For the protection of the inside of the tube, unscrew the screws (secure the bumper first!).
- B. Front frame part 'fork element', left and right
 - Front end is welded to A. It goes back to the weld to the central tunnel tube near the front seats and has several access holes.
 - Over the front axis are domes fastening the front axle/engine mount. The openings of the domes should be sprayed from the wheel side and from behind
 - The crossbeam E (with the jack support on outside) crosses B on both sides and in the middle the center tunnel tube. You can move the spray hose inside B from the front over the crossbeam or drill the last rear end of B from the footwell. To do this, remove the wooden floors in front of the front seats (see chapter “*Preparations*” above)

- Crossbeam F, behind and parallel to E, ends at the center tunnel. E, F and the end of B can best be accessed from inside the car.
- C. Angled front beam connecting fork element B and goes over into the outer spar D. C is drilled sideways approximately in the middle of the wheel casing (always look if there are already access holes!). From there, you should spray over the kinked section to reach D.
- D. This outer longitudinal spar is often severely corroded or repaired (or both). Originally it had one or two holes from below. A hole from the rear end may be helpful to reach the whole inner of rail D (easily accessible from the rear wheel casing). The preservation in the range of the front kink to C is most important.
- E. When the jack support is drilled as shown in the picture (with a small hole), the small support tube can be sprayed on both sides and also reach the transition to the crossbeam in the inward direction.
- F. Inner crossbeam under front seat: See B
- G. Rear jack support: Like E, the crossbeam behind it is very short and ends at the rear longitudinal side spar O.
- H. The lower part of the A-column consists of 3 sheets, with 2 vertical cavities in-between. Inside the wheelhouse, in the spray area of the front wheel a 'splash plate' is mounted to protect the A-column. The appearance and the structure of the A-column may be slightly different depending on the type and year of construction (at least judging from the pictures which I've seen), although the structure is basically very similar).
 - The inner vertical cavity can be reached by dismantling the door switch for the interior light. You can spray from there downwards and also upwards and even forward below and to the side of the windscreen in the window frame.
 - The outer cavity of my vehicle is open to the bottom and accessible from outside. It may be that there are design differences here.
 - Likewise, there are obviously design differences in the splash plate. At my vehicle everything was open from below and accessible; if necessary, the splashboard would have to be drilled approximately in the middle in order to be able to spray behind it.
- I. (not used)
- J. These are voluminous diagonal beams under the back seat from the rear end of the central tunnel leading upward to the beam P over the rear axis. Accessible through small holes from below, see picture.
- K. Transversal beam under the front edge of the rear seat. Accessible from below, see picture.
- L. Rear longitudinal spar under in the wheel casing, prolongation of O, from the spring seat to the rear end of the back frame (crossbeam M).
 - In the rear end of L are screw holes for the bumper bracket (right and left), which should be sprayed, but in my car I could not push the probe through, there seemed to be an obstacle inside, so that I had to come from both sides.
 - Therefore, a hole in the middle of the cavity L is necessary. From there spray for- and backwards, you should be able to lead the spray nozzle around the dome-like spring seat.
 - The other side of the spring dome is sprayed from O.
- M. The rear crossbeam needs 2 holes for spraying. A cable tunnel would obstruct the accessibility of the entire beam from only one hole.

- N. Further rear cross beam at the very back of the luggage boot. Accessible from above after unscrewing the lock plate.
- O. Longitudinal spar section (see G) to the rear axle spring dome. Should be drilled as in the picture. Spraying forwards, and backwards to the spring dome or better around it (connection to L)
- P. Crossbeam above the central axle bracket and the spring domes. Accessible via the trunk, holes are available.
- Q. Very important and very corrosion-prone cavity. Very good access after removal of the back-door strike plate. For orientation, introduce a flare probe to find various spray directions:
 - Down, how far you can compare from the outside.
 - Horizontal backwards along the joint to the fender
 - Diagonally down-behind in the oblique rectangular bead, which is visible in the trunk at the front in the standing plate; if the side walls in the trunk are not covered, you can also spray from there.
 - Backwards under the rear window
 - Upwards, be careful not to smear too much and spoil the lining inside, which may be visible.
- R. B-column: access of the upper part via dismantled door strike plate of the front door down to the lower hinge of the back door. The hinge cannot be passed from the top; therefore, the lower corrosion-prone part must be accessed from a hole drilled from below (see picture).
- S. Spar in the engine bay leading obliquely upwards from the front axis towards the dashboard. Drilling easiest from the wheel casing. The position of the spar should be recognizable in the wheel casing by the two marking rows of spot welds. Position for drilling could be a few cm above the hole for the brake pipe.

Other areas

Other areas that should be preserved in the same way as the cavities:

- Doors: Some instructions recommend drilling and spraying the doors. I think it's better to remove the inner door panels, and if necessary, to clean the doors inside, remove rust, preserve the inner with primer and paint and preserve the lower parts by application of preserving oil/ fat with a brush. Spraying would be more difficult to reach the critical points and its possible to spoil the window glass or their sliding felts with smear. On the same occasion you can also clean the locks and the window mechanisms and re-lubricate. Take care, that the drain holes in the bottom are clean, not corroded and open.
- Hood: conserve cavities at front and rear
- Trunk lid: The reinforcing 'spider', may be preserved with anti-rust paint as far as one can look beyond, and in the slits and doublings with a creeping but drying oil like "Owatrol". Then you can preserve the non-directly accessible areas in the upper front part with your spray tool.
- Spring domes, axle mounts, thrust strut bearings: Those things have cavities that can be easily recognized in the sectional pictures of the workshop manuals. I recommend an occasional preservation with grease at a disassembly for maintenance or repair, when replacing suspension rubbers etc.

- The front axle support, as rumored namesake of the “Ponton”, can be preserved through the large openings
- The screwed edges of the fenders: accessible from the wheel casings. I recommend using a flat brush to apply preservative oil or fat in the doubling or to let it creep.
- Front lights: Casings can be preserved from the inside with a brush when replacing the bulbs.
- Hubcaps: can be well preserved with grease on inside.
- Central tunnel tube: open at the front and back, can be preserved from the inside with grease.

Related pictures, found in the file „*hohlraumschutz-beispiel-eines-mb220se-ponton-nur-bilder.pdf*“

Pic 1: Underbody, engine bay area; A, B, C, D, E, F

- Area with existing access hole, drill a new or find a suitable hole close by
- Spray direction, i.e. insertion direction of extension probe
- Note: detail to take into consideration

Pic. 2: Engine bay; B, C, S

Pic. 3: Underbody, front area; B, C, D, E, F, G, H, J, K, S

Pic. 4: Underbody rear area; D, F, G, J, K, L, M, O,

Pic. 5: Underbody trunk; L, M, N

Pic. 6: Interior, looking forward; B, E, F, H, R

Pic. 7: Interior, looking rearwards; G, J, K, O, Q, R,

Pic. 8: Detail door lock/C-pillar; G, O, Q

Pic. 9: Trunk; G, L, N, O, P, Q