

BITS AND PIECES

Submissions

Bits and Pieces is an owner's forum and includes modifications made by individual owners to their Superformance cars to improve the performance, reliability, individuality, and/or drivability of their cars. Maybe it's just puttering. The decision to use any idea and the proper installation and operation of any idea is entirely the responsibility of the owner who uses the idea.

Weatherproofing

If Sherlock Holmes used the weather systems and heating systems of 1960's vintage English roadsters to determine the location of the country that they were produced in, he would have concluded that it was somewhere in the Sahara Desert. The Superformance roadster is a very accurate reproduction of a 1960's English roadster, right down to the leaks.

I originally planned to never drive my car in the rain. However, my desire to drive my car frequently has made that an impossible objective. My car lost its virginity, so to speak, on the way to the Beach Mountain Hill Climb in the spring of 1998. The water was deep by the time I got the top erected. However, it got deeper as I drove. By the time the rain stopped, it was deep enough in the floorboard to breed guppies.

My primary objective is to be able to drive in a heavy rainstorm at 70+ mph without my passenger or me or my gear getting wet. The fixes need to be invisible when installed. So far so good. I have logged thousands of miles in driving rain, including the deluge on the way back from SSR reported elsewhere in this issue. Passengers and trunk contents stay dry. The carpet gets damp, requiring some air-drying time, but no sump pump, to get the water out.

A number of key areas have been identified for work. I will classify these as "soakers", "dribblers" and "spitters". Soakers will soak you and the car. Dribblers leak enough to wet the rug. Spitters spit water at you and things in the car while driving at speed, but won't require a wet-dry vac to clean up. Each of these is addressed in the balance of this article.

Soakers

1. Windshield end posts
2. Top of doors at front
3. Gap between top and body

Dribblers

4. Top of windshield
5. Gas cap into trunk

Spitters

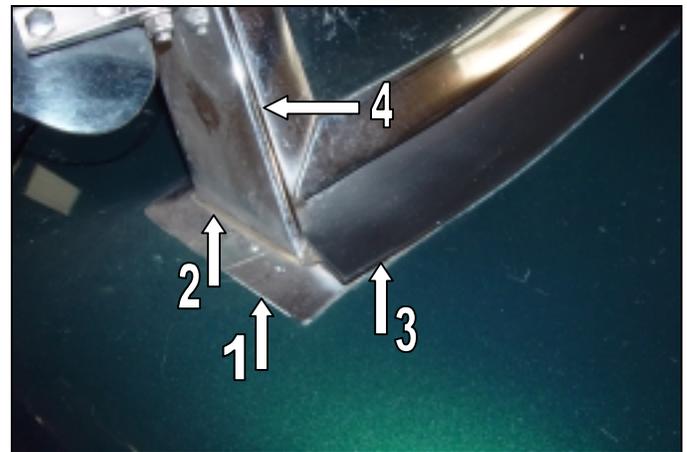
6. Windshield cowl flap
7. Center gap, top of windshield
8. Top of doors at rear
9. Seams in the top

For most of the tasks I used Action Weatherstrip from Auto Zone. It is dark grey, flat, self adhesive, and comes in a 10' roll. The size is noted in the text. It isn't as classy as the custom molded weather stripping, but it is flexible and adaptable. And it is soft so that it doesn't mar the finish.

Remember that I am an engineer, not an artist. I did install all the weather stripping so that it is invisible with the doors closed and with the top up.

The other primary tool is a good clear silicone sealer.

1. Windshield End Posts



Sources of windshield post leaks:

- (1) Between the windshield post flashing and the body
- (2) Between the windshield post and the flashing
- (3) Under the cowl flap where it sits on top of the flashing
- (4) Between the windshield post and the windshield frame

While in motion, water flows down the valley between the fender and the hood and passes over the flashing at the bottom of the windshield post. If the flashing is not sealed, water passes under the flashing, down the windshield post, and onto the floor.

This problem typically exists only on earlier cars and has been corrected at the factory on later cars. Since most cars do not have this problem, check it out first. Pour water on the area where the windshield post enters the body and then look under the dash at the windshield post mounting for water. If none, skip this one.

Some folks have gone so far as to remove the windshield to add silicone sealant to correct this problem. This is not a solution recommended for the owner. The windshield has to be properly aligned for the top to fit correctly and removing the windshield disrupts this alignment.

Use clear silicon sealer. Use a small diameter hole in the applicator tip, the smaller the better.

Clean the body, flashing plate at the base of the windshield post, windshield post, windshield frame, and rubber cowl flap before starting. Dirt will muck up the appearance of your work. Waxing the surfaces helps to remove excess sealer, but use a toothbrush to remove any excess wax from the cracks before starting.

The steps apply to both sides of the windshield, of course.

Leak (1): Acquire some flat wooden stirring sticks from your local coffee shop. Shave the end of several to a flat point or wedge. Wedge them ever so slightly between the body and the flashing plate at the base of the windshield post. Into the slight gap you have created, squeeze a small amount of clear silicon sealer. You will probably have to work your way around the flashing plate, doing an inch or so at a time. Remove the wedges and clean up any excess.

Leak (2): Force a bead of sealer into the gap between the windshield post and the flashing plate. The flashing plate is thin, so it will be necessary to leave a tiny bead above the surface. The sealer along the side of the post should be all but invisible. The gap at the front is larger and sealer will be visible, but not obtrusively so if you work the sealer to a flat surface.

Leak (3): Lift the cowl flap at the corner and put sealer on the body and flashing plate under the flap. Lower the flap to form a seal. The cowl flap requires sealing for only an inch or so.

Force a bead of sealer between the end of the cowl flap and the windshield post if there is a gap. Again, the sealer will be visible, but not obtrusively so if it is neat.

It may also be useful to trim a very small amount from the side of the cowl flap to help it lay flat.

Leak (4): Force a thin bead of sealer into the crack between the windshield post and the windshield frame. Start at the bottom and go up about four inches. Wipe off any excess. The sealer should be in the gap and not visible on the frame or the post.

These fixes require patience and a steady hand to keep from leaving a mess or fouling the finish of the car. Take your time. The good news is, they work.

2. Top Of Doors at Front

Source of leak: The same stream of water that passes over the windshield post flashing then passes over the gap between the body and the door. There is no weather stripping under this gap and the water that did not run down the windshield post now enters the car through this gap. The valley between the front fender and the hood is the drain for the entire front of the car when it is in motion. The amount of water is significant. Think of it as a river.

Open the door. Look at the front edge of the door and you will notice that the weather stripping stops before the top of the door. This is why the water flowing over the crack flows into the car. Newer cars carry the weather stripping further up than older cars, but it still may not be enough.



The fender line channels water into the door crack.

For the doors I used Action 8534 (5/16" thick by 3/4" wide). Cut two 7.5" strips for the left door. Attach one strip on top of the other strip to form a piece 10/16" thick.

Cross Section Through Door



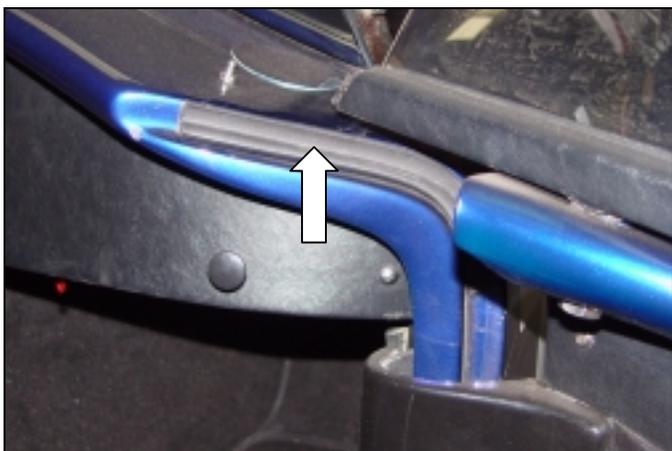
Rather than attaching it to the lip of the door as the factory weather-stripping is, attach it to the body of the door as shown above.



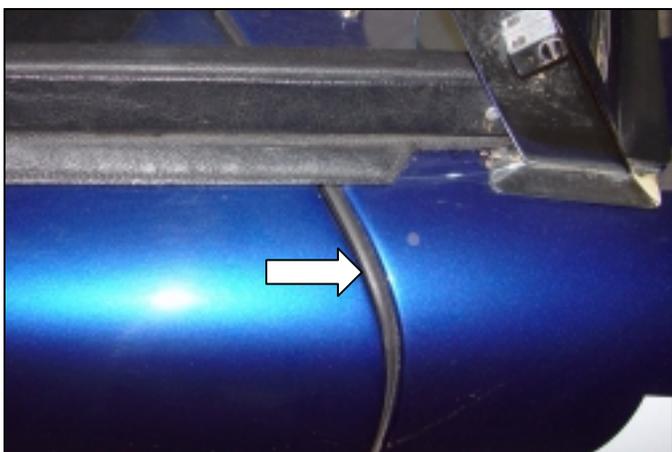
Top of door showing weather stripping in place.

Trim the end at the top of the door as required to hide the weather-stripping. Repeat on the right door. When the door closes, the new strip is in compression rather than shear, and is less likely to pull off or scuff the paint. With this technique, the weather stripping cannot be seen when the door is closed.

There are other techniques that can be use here. The Olthoffs used a different (and more attractive) type of weather stripping and mount it at the top of the gap.



The weather stripping is mounted on the body rather than the door.



The weather stripping is visible when the door is closed, but it provides a good seal even with the side curtain. It works best on darker cars.

3. Gap Between Top and Body

Starting from the door and counting around, there is a large gap between the top and body between the #1 and #2 snaps and another one between #4 and #5 and #6.

The 1-2 gap is a spitter. It will soak your sleeve after awhile.

The 4-5-6 gap spans the valley between the rear fender and rear deck. When the car is parked level or nose down, water runs down this valley, through the 4-5-6 gap, and down behind

the seat. The wind blows significant water in the 4-5-6 gap when traveling at highway speeds in rain.

The 4-5-6 gap is a problem with the tonneau cover as well. For this reason, I try to park my car on a slight incline with the nose uphill if I am expecting rain.

To close these gaps, I used Action 8534 (5/16" thick by 3/4" wide).

Place the top upside down on a clean soft surface that will not scratch the top or window.

The weather stripping is installed around the perimeter of the top where it snaps to the rear deck. The weather stripping has to be inboard of the dot snaps because water runs through the dot snaps. Install the weather stripping on the underside of the top as close to the holes in the dot clips as you can.

The curvature of the body lifts the top in the 2-3, 4-5, and 5-6 gaps. To improve the seal, use additional weather stripping between the dot snaps in these gaps as shown in the photo.



Hal Copple has another solution. He filled two skinny rubber tubes (like bicycle tubes) about a foot long with sand and sealed the ends. When he puts the top up, he lays the tube up against the top in the 4-6 gap area. He drives his car every day to work, rain or shine, so it must work pretty good. I wonder if he has ever "blackjacked" himself slamming on the brakes?

4. Top of Windshield

The force of the wind causes some of the water accumulating on the windshield to climb to the top of the windshield. From there, it finds its way through the channel that fits on top of the windshield and dribbles in your lap.

For this I used Action 8534 (5/16" thick by 3/4" wide).

Place the top upside down on a clean soft surface that will not scratch the top or window.

Install the weather stripping in the bottom of the channel with the adhesive side down. (The “bottom” and down” references are with the channel upside down.)

Begin about 2” to 2 1/4” from the end of the channel and put in a continuous strip up to the top locating pin in the middle of the channel as shown in the photo below. Put a strip on each side, of course.

We will get to the gap in the middle in a minute.



Top channels showing installation of weather stripping. Also note flap in center gap.

5. Gas Cap Into Trunk

The Le Mans or Monza style gas cap sits in a well in the right rear fender. Water (and gas if you spill it) collects in the well when it rains. Water will sometimes leak around the mounting plate into the trunk.



This situation can be easily tested by pouring water into the well, then opening the trunk and looking and feeling for leaks around the filler neck. If you have a leak, first try simply tightening the screws so that the mounting plate is snug against the body. Do not over tighten and strip the threads. If that does not work, remove the screws and put a small dab of silicone sealer under each screw head to prevent water leaking around the screw heads.

If that does not work, you will have to remove the gas cap assembly to reseal the mounting plate against the body. Remember that you will be exposing the fuel in the fuel tank when you do this, so it is no job for amateurs. If you have never done gas tank work before, turn this over to a pro.

Remove the screws attaching the gas cap assembly to the car body. Remove the gas cap assembly. Rub a thin film of clear silicone sealant on the gasket surface on the underside of the fixture. Place the gasket on the fixture. Rub a thin film of sealant on the gasket. Reinstall the fixture and replace the screws. The screws screw into a receptor ring under the body recess. Make sure that this ring is in place before screwing the screws in.

6. Windshield Cowl Flap

I was unaware of this relatively small leak until I had completed items 1 and 2. Water runs under the cowl flap and then down through (guess where) the windshield post hole.

Dirt had accumulated under the flap, which impaired the seal. I lifted the flap and cleaned the underside of the flap and body with a damp rag. This seems to have taken care of it.

7. Center Gap, Top Of Windshield

Water spits through the center gap between the channels.

I had my upholsterer reinforce the fabric in the gap. See photo to the right. At the same time, he inserted a foam flap to seal the gap. I then ran a 5” strip of Action 8334 (3/16” by 3/4”) between the front of the channel and the top fabric to secure the flap. In case of little spits, I keep a 2” by 4” piece of terry toweling in the passengers compartment. If necessary, I roll it up and stuff it into the gap in the middle - from the inside, of course.

8. Top Of Doors At Rear

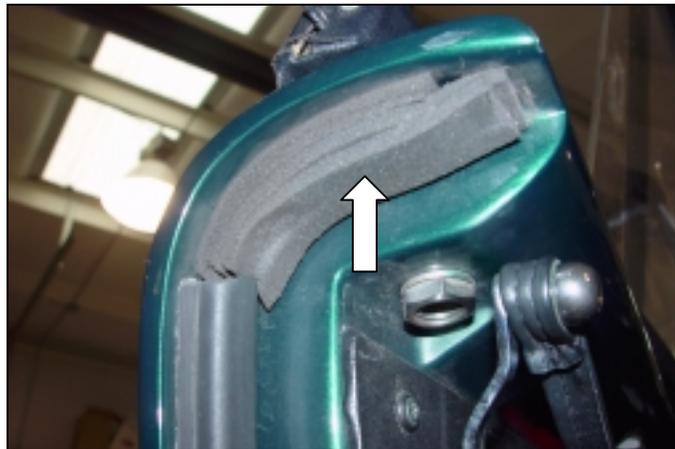


Gap at rear of door. Note also the gap between the side curtain and top.

The top of the doors at the rear are not weather striped at the factory either. But the problem is different.

The junction between the rear of the door, the body, the side curtain, and the top is in a high-pressure area outside the car. Air blows through this hole into the car interior. If it is raining, the air stream carries water with it and spits it on the driver's left shoulder. The same thing happens with the passenger's side.

Once you fix the water falling into the windshield post, it flows on and falls into the front gap in the door. Once you fix that, it flows along the edge of the side curtain and falls into the rear gap on the door. So that spitting action can be quite a bit.



Weather stripping on rear of door to seal gap (partially).

There are two parts to the solutions.

One is to put weather stripping in the gap in the door. That takes care of the stream of water.

That leaves the gap between the side curtain and the top shown in the picture. For this, I think adding a one-inch extension to the side curtain flap would help a lot. In the mean time, I have two other 2" by 4" pieces of terry toweling that I roll up and plug the holes. Not elegant, but it is easy and it works.

9. Seams In The Top

The last and the least of the problems is water coming through the needle holes in the seams. This is not a problem for me, but it has been reported to me.

The solution is the application of tent seam sealer to the leaky joints. It is available at just about any camping store. Apply to the inside for aesthetic reasons.

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