MOTOR AGE GARAGE

TRUE STORIES FROM THE SERVICE BAY | BY RICHARD MCCUISTIAN

A Soggy Crown Vic

Chasing an elusive body water leak.

It was the late 1980s. I don't remember her name, but she was a waitress at the steak house in the mall where I was having lunch in those days. But she had a soggy car situation.

"My car always has a lot of water in the floorboard whenever it rains," she told me.

"What kind of car is it?"

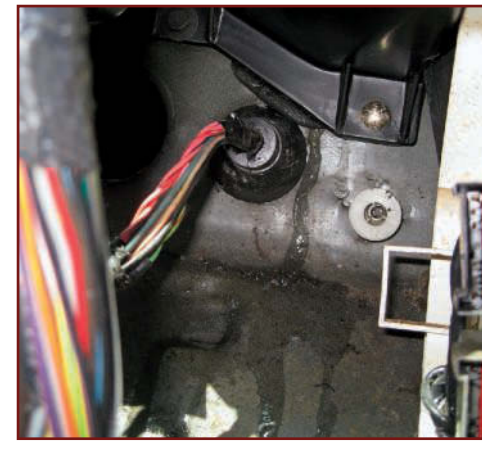
"It's a 1977 VW Rabbit."

"Well," I told her, "I have a 1978 Rabbit that does the same thing. On my car, I just knocked a couple of holes in the floor pan on the driver side to let the water out when it rains." (I wasn't joking).

"But you might be able to put some silicone sealer along the base of the windshield and slow it down."

I wasn't sure it would work on her car, because I had tried sealing mine that way and it still leaked like a sieve. But the pretty young waitress used some aquarium sealer and told me her car had totally stopped leaking. She was really happy — and lucky. The '78 Rabbit I was driving leaked until the day it died. It was a junky car anyway, a temporary ride.

My mother-in-law drove a 1987 Chrysler New Yorker that always puddled water on the driver side floorboard, and the dealership had never been able to repair that problem even though she had repeatedly visited there complaining about it since the vehicle was brand new. So she stopped complaining and kept a towel on the floorboard to soak up the water when it rained. She asked me one day if I'd have a look, and not wanting to pass up a chance to impress my in-laws, I lay on the floorboard



It didn't take much of this nonsense to flood the passenger side rear floorboard. That was the lowest part of the pan, so the water naturally collected back there. It happened every time there was a big rain.

A Wet Ride

VEHICLE
2002 Crown Victoria

MILEAGE
224,654 miles

ENGINE
4.6L Engine
4R70W Transaxle

COMPLAINT
Water floods rear passenger side of vehicle during heavy rains.

Photos: Richard McCuistian

with a flashlight and watched under the dash while she hosed the driver side of the car down. I saw water trickling in above the left kick panel, and after removing the park brake assembly for access, I found that the breach was an improperly sealed body seam. I took care of her problem with a strip of sealing putty I had in my truck. She was so ecstatic that she more or less gave me credit for inventing the wheel.

And then what Ford guy is there who doesn't know about the windshield leaks that ruined so many electrical junction boxes (fuse panels) on Expeditions and F-Series pick-ups in the late 1990s?

Water management is a wonderful thing that we take for granted until such a time as it doesn't work right.

Harness grommets can become unseated and give water a path. A wire harness with a tape breach in the upper side can carry water to a place inside the car where the harness droops and drip water on the carpet. Then there are the convertible tops and the roof opening panels that can leak if everything isn't just right. In the late 1980s, Ford had an entire VHS tape presentation that dealt with fixing water leaks on Mustang convertibles.


Here's Bert with the dash removed and the work under way.

Flooded Ford

Vehicle inspections have to be done on all of our state cars once a month. When the black 2002 Crown Victoria was dropped off one month, the guy who drove it over from our other campus told me it had water standing three inches deep in the right rear floorboard, but that they hadn't been able to determine where the water was making its entry.

This is a high mileage car that was purchased by our auxiliary services office from another state agency, so we haven't had the vehicle very long. Most of the 200,000-plus miles on the odometer were racked up in northern Alabama. This was the first I had heard of the water leak, and it was going to ruin this otherwise great vehicle if we didn't get something done about it.

The first thing that has to be done when a vehicle's floorboard is saturated is to remove the seats then the soggy carpet, which can quite literally take days to dry out. In the daytime, we laid the carpet in the sunshine and dragged it inside at night.

With a student lying in the freshly dried-out passenger side floorboard with a bright flashlight and another student operating a water hose out behind the shop, we found a steady stream of water trickling in over on the right hand side. But it wasn't happening in the rear. The water was coming in at the bulkhead area in a stream the size of a pencil lead, then trickling its way back to the rear floorboard, which was the lowest point, thus creating the illusion that there was some kind of leak around the passenger side rear door. Wetting the windshield reproduced the leak that was happening every time it rained.

It appeared to be coming in between the A/C plenum and the bulkhead (the evaporator is on the engine compartment side on this unit), but since we didn't know how long the leak had been there, it was possible that the factory caulk (which is done by a robot) hadn't been evenly applied around the

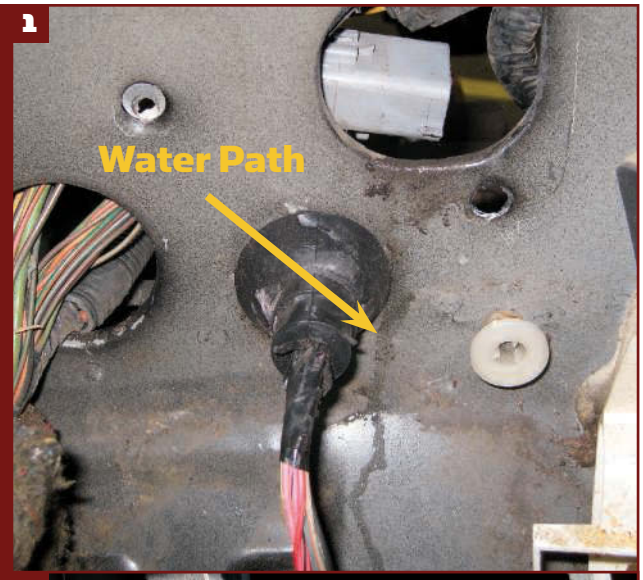
OOPS!

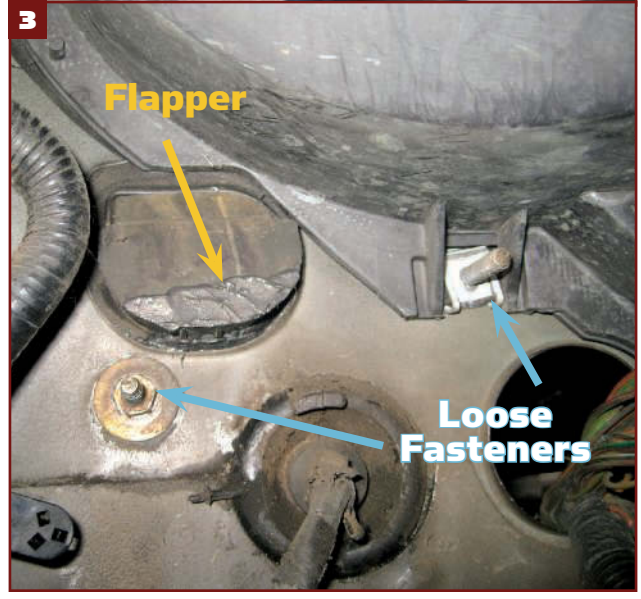
A Lonely Hour

ROBERT WAS an auto body technician I worked with who was looking for a water leak in an older vehicle that was always gathering water in the trunk after it rained. He climbed into the trunk with his MAG light and watched while Joe, a fellow body man, hosed down the trunk from the outside.

Right after the hosing began, Joe was called to the phone. When his 10-minute conversation finally ended, Joe forgot about Robert and went to lunch, leaving out-of-sight and out-of-mind Robert locked in the trunk in an empty body shop with nobody to let him out. It was a lonely hour.

Photo: Richard McCuistian





1 This view is from inside the bulkhead right in front of where the front seat passenger sits. The right front wheel well is on the other side of this portion of the bulkhead.

2 With water exiting this flapper and then re-entering the car past this poorly compressed foam seal, a channel developed in the seal that made an already egregious water leak even worse.

3 This is what the flapper looks like from the passenger side of the bulkhead. The fender splash shield has been removed for access.

windshield. If that turned out to be the case, this would not be a lot of fun, but we went at it like it was coming in around the A/C plenum.

Surgery

With the dash removed and the A/C plenum out of the way (no small feat), we poured some more water and found that it was making its way through the fresh air vent inlet under the cowl panel and into the car through the recirculation duct (the housing that contains the recirc door). It didn't matter; the instrument panel and the A/C plenum had to be removed to facilitate the removal of the air recirculating duct anyway. So how does water that comes in the fresh air vent usually find its way back outside?

Well, when water enters the fresh air inlet (as it inevitably will) it actually makes its way to the passenger side of the bulkhead, runs down inside the recirc duct (which is bolted to the inside of the bulkhead right next to the A/C plenum), then back out a special spout with a top-hinged rubber flapper that allows the water to find its way to the ground. The spout and flapper aren't easily visible without the fender splash shield removed, but you can raise the vehicle, bend the bottom of the fender splash shield slightly forward and see this water exit point with a flashlight if you want to.

So what was defeating this ingeniously designed water management system? Upon investigation, we found that the flapper was as free as a bird – nothing had that water path clogged. As a matter of fact, we could see water exiting the vehicle by that path when we poured it in the fresh air inlet. With the tight little screen covering the air inlet, it would be very unusual for anything to be clogging the path from inside.

As we were removing the two fasteners that hold the bottom of the recirc duct to the bulkhead, we noticed that both bolts were loose enough to remove with your fingers. That was a crucial piece of information that didn't need to be overlooked. Removing the wiper arms and the cowl vent panel, we accessed the two nuts holding the recirc vent up against the horizontal part of the bulkhead at the base of the windshield. Within a minute or two we had the recirc duct in our hands and we knew what the problem was.

Those two loose nuts had been that way (apparently) since the assembly line, and as the water made its way out the

Photos: Richard McCuistian

(FOR INFORMATION, GO TO WWW.MOTORAGE.COM/READERSERVICE)

flapper-equipped drain, it was trickling back along the bottom of that spout to re-enter the car, sort of like coffee does when you pour it too fast from a drip decanter. The water had been taking this path for the last half-dozen years and had actually cut itself a channel in the foam that should have been compressed had the fasteners been tight. Although we had taken the long way around, this could have been an easy fix – a simple bead of silicone around that water management spout would have solved the problem, but we had no way of knowing that at the time.

We applied some putty and some silicone to the guilty area, then reassembled the Crown Vickie with a new heater core just for grins. (That one had a lot of miles on it and a replacement wasn't all that expensive, so why not?)

We ran into a vaguely similar concern on a 2002 Dodge Dakota a couple of years back. It seems that the carpet was getting wet on the passenger side whenever the A/C was operated for an extended period of time. That water was making its way out the evaporator drain (which is hidden behind a removable body heat shield), and then running back into the vehicle where the evap drain pipe exited the bulkhead. The fix for that one was to put a nice tight bead of silicone around the evaporator drain pipe – that dried the carpet on the Dodge very nicely.

Concluding Thoughts

Water management is a part of what a full service repair shop does, even if that shop doesn't do regular body work, and it's a good idea to attack a problem like the one we had with the idea that you're going to fix it or else.

> **"As with any troubleshooting exercise, analysis and duplication of the concern are all-important."**

As with any other troubleshooting exercise, it goes without saying that analysis of the concern is all-important, and duplicating it (by whatever reasonable means possible) is part of that analysis. In the case of the Dodge Dakota, knowing that the leak only happened with the A/C engaged was an important piece of data. And knowing that there was no coolant in the water that flooded the floorboard was another important piece of information. If the evap housing wasn't cracked, it had to be coming from the drain itself.

The Crown Vickie is dry once again, and that is a very good thing.

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