



# BITS: TECH NOTE

## Chasing Exhaust Odors in 105 & 115 Cars

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March, 2006

I recently put my '69 GTV back on the road. The restoration was limited, but the car was disassembled for repainting. I removed all the trim, the glass, etc. Since the trunk was to be repainted, I pulled out the fuel tank too.

Upon driving the car again, I noticed a slight smell of exhaust. I knew it was related to the windows being open, but I was only driving the car to work, so 30 minutes drive time each way was enough time to notice, but then become desensitized to the odor. Occasionally, I got a slight headache on the way home, but work has been busy lately, so I chalked the headaches to that.

Thinking the tail pipe might be the issue, I had the mufflers replaced and a downward pointing tail pipe tip installed. Alfa had released a factory bulletin in the early 1970s that this type of exhaust tip will reduce the interior exhaust odor in Spiders.



This change seemed to make it better, but my wife still did not like to ride in the car. Hmm, what else? Everyone talks about the trunk seal and the seals around the taillights. While I know these seals were not perfect, I just could not believe that a

exhaust odor so noticeable (to my wife anyway!) could be from such small leak paths.

My brother joined me for Tom McGirr's wonderful 2005 Fall Tour. We took the GTV. In the morning it was cool and we were running with the windows up and having a great time with the car. However, as the afternoon warmed up (and we opened the windows), we both felt a little sluggish and kinda crabby. Something was going on. At first we thought it was the cars in front of us. But with time, we figured out we were slowly poisoning ourselves. The short term solution was to roll the windows up and turn on the fresh air fan. This pressurized the interior of the GTV and within 15 minutes we were both feeling much better.

Carbon Monoxide poisoning is very serious. Exposure is cumulative. A small concentration can still significantly impact your mental activity. Your blood system will preferentially carry CO instead of oxygen! Thus many hours in a low concentration environment (where you cannot smell "anything") can leave you with slow reflexes and poor judgment. See this website for more information. <http://www.cpsc.gov/cpsc/pub/pubs/466.html>

During a tour rest stop, I was talking with Stu Moss about the problem, the tail pipe tip and potential solutions. Stu mentioned that his folks bought a GTV, new from Rambo Motors in the 1970s. He was very sure that they never had any issues with exhaust smell and that the car came with a typical, rear facing exhaust tip. He suggested I check the gas tank seal. Another reason to part of AROO. The tribal knowledge is priceless.

While I had put a gasket between the tank and body flange, it was not very substantial. Only about 3/16" thick and maybe 1/4" wide. My brother had a similar GTV and he remembered the gas tank to body flange being, from the factory, heavily caulked. Removing the tank the first time was a tough task.





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The problem of exhaust smell will occur in coupes and spiders (with the top up) if the various seals are bad.

What I found was that the gas tank flange seal (gasket) was not sealing well at all. I did a seal test by pouring water around the tank perimeter (onto the flange, a quick easy test) and noted the water just ran out to the ground – no seal!



When a window is open, air is drawn out of the interior, creating a slight vacuum. This vacuum pulls air from the heater, vents and the trunk!

Due to the poor tank flange seal, (small gasket) the carbon monoxide level (traveling at 60 mph) was running well over 100 ppm in the trunk and interior with the driver's window cracked (draws trunk air into interior). I pulled the gas tank out and re-installed it with a 3/8" thick, 3/4" wide closed cell foam rubber gasket. The CO measurement dropped to 16 ppm in the trunk, but, I got a "zero" reading in the interior of the car. A huge improvement. If I had the right type of body caulk, I would "glue" the tank in, but the thick gasket worked fine. My next step is to improve the trunk lid seal. Exhaust residue on the underside of the lid indicates the leak paths.

If you or your passenger smell exhaust while driving your Alfa (even a little) or feel slightly sick

after a drive, please check the following (before the next trip!):

1. Gas tank flange seal must be water tight.
2. No leaks in the exhaust system.
3. Sealing system around gas tank filler neck is in good shape and properly installed
4. No additional, unplugged holes by the gas tank exist in the trunk floor (fuel line holes, etc)
5. Trunk lid gasket seal is OK (can check by measuring resistance felt when pulling a 2" wide piece of paper pinched between gasket and lid. Should offer some resistance if gasket is compressed)
6. Seal tail light gaskets with a suitable caulk (I like 3M glazing bedding compound for non-glue in windows seals. Comes in a tube for a caulk gun).

I used a home carbon monoxide meter to measure the %CO ppm (parts per million) concentration. I powered it with a 12V DC to 110V AC converter. Your nose acclimates to the odor pretty quickly, so a meter is really best. This is a great tool to help ensure the trunk is totally sealed.

Joe Cantrell wrote on this topic a few years ago, but I think this topic is always worth reviewing!



Ensure this boot is installed, not torn and that the drain feature is properly routed and caulked.

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