

# The Definitive Guide to Replacing Your 997.1 Coolant Expansion Tank

## References

997.1 Workshop Manual "Removing Reservoir for Coolant" (pg 564)

Pelican Technical Article - [996/997 Coolant Tank Replacement](#)

## The Problem

A typical maintenance item with the 997.1 and 997.2 is the coolant expansion tank. It tends to get brittle and crack with age. This can cause a slow coolant leak, or total loss of coolant if not caught in time. Its imperative to inspect the tank regularly, or replace it as a preventive maintenance item.

The cracks typically form vertically along the front or back of the tank. To look for these you need to remove the airbox and shine a flashlight on the surface of the tank. When they first form they can be hard to spot so look carefully. It will start as a thin white line and get bigger with time.

The crack can also be on the side facing the chassis so inspect for any dried (pink) coolant below the tank and below the car.

*In the photos below you can see a vertical crack along the face of the tank with dried coolant seeping out. You can also see dried coolant that leaked down the engine and pooled on top of the water pump. In my case I spotted this first before I found the crack in the tank.*



## Parts & Tools

1. Expansion Tank #996-106-157-04 - \$117
2. One Gallon Porsche Coolant - \$30
3. One Gallon Distilled Water - \$2
4. Gear oil hand pump or turkey baster
5. 18mm deep socket as well as 13mm and 10mm sockets
6. Cable-style hose clamp pliers and/or needle nose locking pliers
7. Floor jack to drop the engine, two preferred

## Time/Complexity

Estimate 3-4hrs. Its not a particularly hard project as long as you follow the steps. The biggest difficulty I had was figuring out the best way to remove the hose clamps. Cable-style hose clamp pliers and locking needle nose pliers will help greatly.

Prep: 30 mins

Remove coolant hoses and fuel pressure lines: 15-30 mins

Remove fuel rail: 15-30 mins

Remove engine mounts and lowering engine: 15-30 mins

Removing the tank: 5-10 mins

Installing the tank: 5 mins

Raising engine and torquing mounts to spec: 30 mins

Reconnecting everything: 30 mins

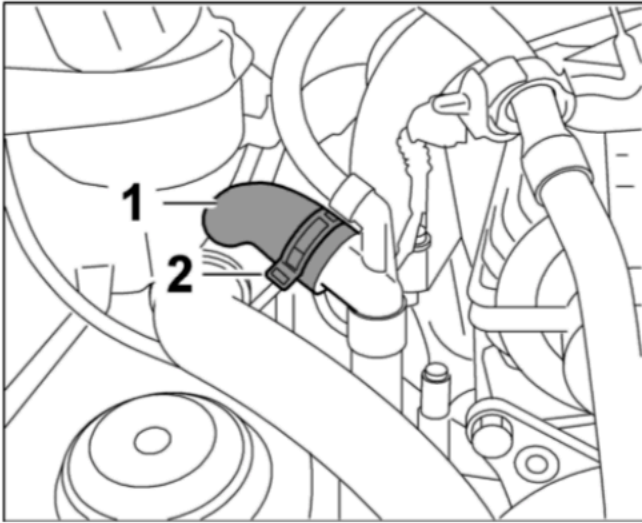
Refilling coolant and bleeding system: 20-30 mins

## Prep

1. Remove airbox
2. Open cap on coolant reservoir once the car is cooled down. Coolant is hot...use caution.
3. Get a \$5 gear oil pump from Harbor Freight to siphon out the coolant inside the old tank. You don't have to get it perfectly dry, but just enough to where the level is at the bottom of the tank. When you lift the tank up and out of the engine compartment, the remaining coolant will drain back down through the lower hose.
4. Get familiar with how to remove the spring clamps on the hoses. They are tricky to remove until you get the hang of it. The two large clamps on the coolant hose have a locking mechanism so once you press the two arms together it will lock open (the smaller clamps dont). To unlock you need to press down on the metal tab and they will snap back together. Picking up a set of cable-style hose clamp pliers will help.

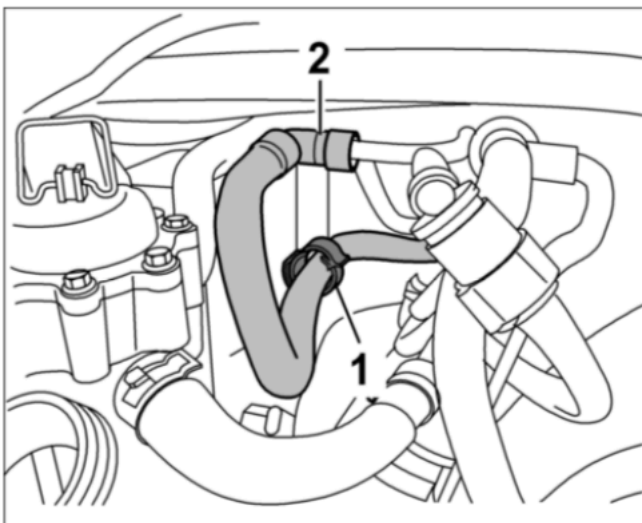


## Remove coolant hose



5. Pull off coolant hose -1- on plastic pipe. To do this, open spring band clamp -2- . Collect emerging coolant with a cloth.
6. Remove overflow hose and supply hose from radiator on coolant reservoir. Unclip supply hose from support.

## Remove fuel pressure line





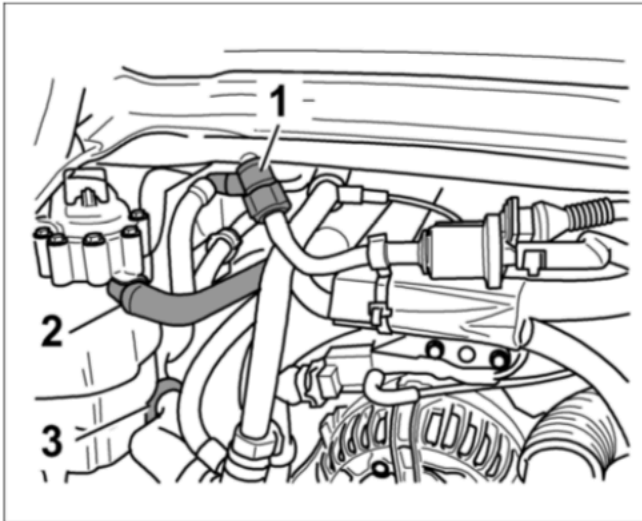
7. Unclip fuel line on plastic holder -1- and disconnect at the rapid-action coupling -2-. Absorb emerging fuel with a cloth. To remove just press the white button on the front and/or back of the coupler and gently pull off.



8. Remove plastic holder on coolant reservoir. To do this just pull the tab on the front of the clip and slide it out.

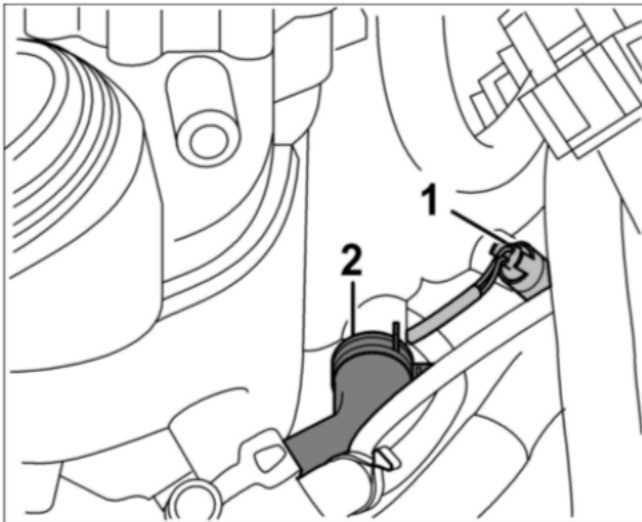


## Remove vacuum line and coolant hoses



9. Disconnect line to carbon-canister line -1- . Remove coolant ventilation -2- on container.

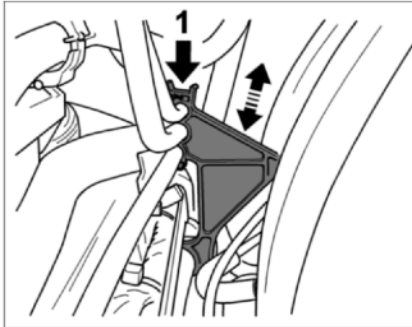
## Remove coolant hose and sensor



10. Remove coolant pump feeder hose on container -2- . Collect emerging coolant with a cloth, block flange. Disconnect cable plug for coolant-level indicator sensor -1-, remove sensor carefully from container (bayonet lock).

## Remove holder

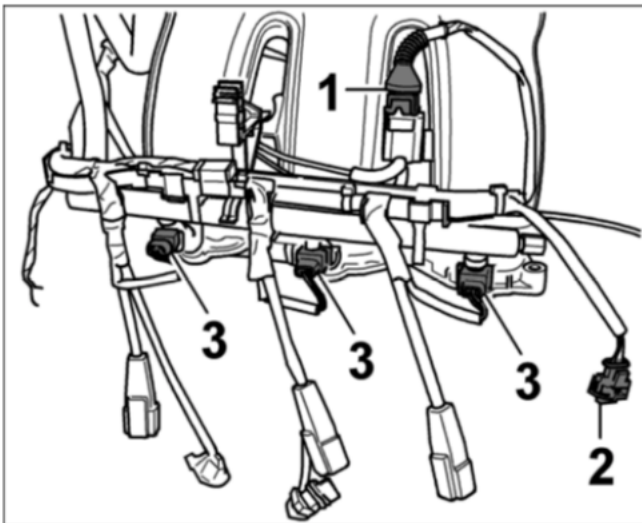
*Note: the Workshop manual calls for removing this part but I did not have it on my car.*



11. Unclip lines on plastic holder -1- , remove holder on fuel collection pipe and intake distributor in an upward direction.

## Remove cable plug for fuel injectors and cable duct from fuel collection pipe

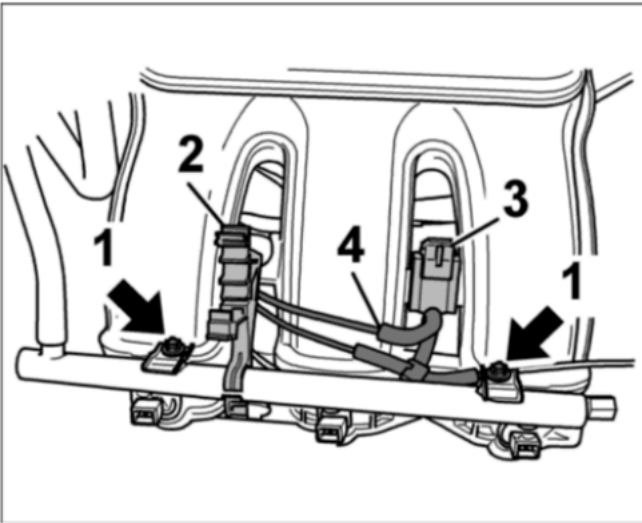
*Note: I did not do this step but should have. It will simplify removal. The spout at the bottom of the tank gets caught under the fuel rail and can snag on the fuel injector connectors - so be careful.*



12. Unplug cable plug for cycle valve -1- on intake distributor 1-3, hall sender connector -2- and fuel injector connector -3- . Remove cable duct from fuel collection pipe and lay it down.



## Remove fuel distributor pipe



13. Unscrew both M6 fastening screws -1- on fuel collection pipe and position collection pipe diagonally as close as possible on the intake distributor, securing it with tie-wraps if necessary.

## Lower Engine



14. Lower engine by approx. 40 mm; to do this, support the engine using the jack point in front of the oil pan. I would recommend using two jacks for safety as the engine has a tendency to tilt if you only support it at the center jack point. Another option

is to put a board across the jack point and both sides of the oil pan to give more stability.

15. Undo and unscrew collar nuts on engine mounts. Lower engine carefully with the jack; if necessary, have a second person assist with this task. You will be able to see the nuts by looking through the gap above the exhaust tips. I initially tried to keep the nuts on the end of the thread for safety but that doesn't give you enough clearance. You need to completely remove both nuts.

## Remove tank



16. Unscrew 10mm collar nut for coolant container fastening to body. Its located to the left of the cap.
17. To pull the tank out of holder and guide until it can be released in a downward direction. The large mount on top of the tank has 3 grooved teeth. Hardest part of the job is "aligning" the teeth such that the tank will release downward. If you didn't know this common sense would dictate pulling the tank towards the engine until it's clear of the mount which doesn't work. Only necessary to pull roughly 1/2" out then down. When you get the alignment correct it releases easily. Going back in is the same in reverse.
18. There is also a guide at the top rear of the tank which it slides easily out of.
19. Once you drop the tank out of the holders tilt it up slightly to get the nozzle at the bottom of the tank over the fuel rail and around the fuel injector cable tray (if you



have not removed). Then pull the tank toward you and tilt it upward. The top of the tank will bind between the holder and the chassis (where it angles in), but you can squeeze it past with a little force. If you are really having to tug on it you haven't dropped the engine far enough.

20. Absorb any emerging coolant with a cloth and use this opportunity to clean up the area around the tank.



## **Inspect your engine mounts**

21. This is a good opportunity to inspect and/or swap your engine mounts. To remove just unbolt the two 13mm retaining bolts on top of the mount.

## **Installing the new tank**

22. Insert container into engine compartment the same way you slide it out. Its easier to install than it is to remove. Secure it in holder and guide, position and tighten 10mm collar nut. Tightening torque: 10 (7.5 ftlb.) Nm
23. Raise engine in installation position with jack, position and tighten collar nuts on pins. Make sure to slowly torque each side a bit at a time to ensure the mounts are going back in straight. Tightening torque: 85 (63 ftlb.) Nm
24. Insert sensor for coolant-level indicator in container and engage cable plug.
25. (If required) Fit fuel collection pipe, position and tighten two fastening screws. Tightening torque: 10 (7.5 ftlb.) Nm
26. (If required) Reconnect cable plug for fuel injectors, hall sender and cycle valve. Position wiring harness on fuel collection pipe.
27. Clip holder into intake distributor and fuel collection pipe, secure lines.
28. Connect fuel line rapid-action coupling and clip line into holder on coolant container.
29. Connect rapid-action coupling for carbon-canister line.
30. Fit coolant hoses and overflow hose.
31. Make a quick check to ensure all hoses and cables are clipped in to their holders.

## **Subsequent Work**

32. Fill coolant. You will need roughly half a gallon of coolant and half a gallon of distilled water to top off.
33. Install air cleaner housing



34. To bleed the systems keep the coolant cap off and open the bleed valve and run the car at a high idle (2k rpm) for 3-5mins. Check for the coolant to drop and refill as required (note minimum/maximum marking). I only need to add a splash more. The car will smoke briefly as you likely spilled some coolant on the exhaust during removal.
35. Wash any coolant off the driveway or garage floor. Its toxic to pets.
36. Perform a 10 min test drive, adjusting the coolant level if necessary. I needed another splash after this.
37. Go for a rip!

