

## 2003-2014 Volvo P2 XC90 AWD – Brake Fluid Bleed

**My Car:** 2008 Volvo XC90 V8 AWD w/ 68,875 miles. *This is the first time a brake bleed is being done on this car.*

### Parts Needed:

1 x IPD Volvo Brake Fluid Flush Kit (*you can purchase these individual items from a different seller, I prefer IPD since it's a 15 min drive from here, so it's fast free shipping*) **NOTE: do NOT buy the 2 catch bottles, they are not needed, you can just use buckets or empty plastic water bottles instead.** These are the catch bottles that I'm referring to [https://www.amazon.com/gp/product/B00942XQ06/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o06\\_s01?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00942XQ06/ref=ppx_yo_dt_b_asin_title_o06_s01?ie=UTF8&psc=1) they are just bottles with pipes on their caps that prevent the slight chance of fluid not going into the bottle. The only way this can happen is if you can't put a pipe into a plastic water bottle, so it's not worth buying these. Plus, there is no guarantee that the tubes they come with will fit the bleeder screws.

- Link:  
[https://www.ipdusa.com/products/21748/volvo-k21748-ipd-brake-fluid-flush-kit?cru\\_mbs=PO,P4679](https://www.ipdusa.com/products/21748/volvo-k21748-ipd-brake-fluid-flush-kit?cru_mbs=PO,P4679)
- **Manufacturer** part numbers **NEEDED** (excluding two catch bottles):
  - o Bosch - Bosch ESI6 Extended Service Brake Fluid (ESI632N) *or you can use Volvo's OE fluid, the part number for that is this: 9437433 and you'll need four of these.*
    - <https://www.ipdusa.com/products/20911/139668-bosch-esi6-extended-service-brake-fluid-esi632n>
  - o Motive Power Brake Pressure Bleeder (0100)
    - <https://www.ipdusa.com/products/4678/109285-volvo-motive-power-brake-pressure-bleeder-0100>

1 x 3/16" I.D (Inner Diameter) Clear Tubing

- You can go as long as you want, I purchased this one:  
[https://www.amazon.com/gp/product/B017EA5ST6/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o09\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B017EA5ST6/ref=ppx_yo_dt_b_asin_title_o09_s00?ie=UTF8&psc=1)

### Tools/Equipment Needed:

- 1 x 11 mm 6-Point Metric Box Wrench
  - o Here's what I purchased, since I didn't have any of them I invested in a small set:  
[https://www.amazon.com/gp/product/B004IQHLEA/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o03\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B004IQHLEA/ref=ppx_yo_dt_b_asin_title_o03_s00?ie=UTF8&psc=1)
- Car jack lift
- Empty plastic water bottle
- Jack stands (at least two)
- Turkey baste/Syringe
- Shop rags

- Medium-sized bucket/small see-through container
- Liquid Wrench (or your favorite *penetrating oil*, here's what I used: [https://www.amazon.com/gp/product/B000ZZWNYG/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o02\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B000ZZWNYG/ref=ppx_yo_dt_b_asin_title_o02_s00?ie=UTF8&psc=1))
- Impact Wrench (or a ratchet) with appropriate wheel lug nut socket
- Torque Wrench (capable of 140 nm, or 103 ft/lbs, of torque)

### Pre-job Preparation:

- Time Required: 2-3 hours (depending on skill and efficiency; after you do the first wheel the process is very easy and repetitive).
- Have some shop rags ready, and a few pairs of nitrile gloves.
- Read through the whole guide before attempting this job.
- Have some patience! It's a little bit of a tedious process since all four wheels cannot be done simultaneously, and the wheels must be removed and replaced before moving onto the next one.
- **Note that you should only re-tighten the brake bleeder screw and stop the brake fluid from coming out when two of the following criteria are met: 1. NO air bubbles coming out AT ALL.** In order to double-check this, when you think there are no bubbles left, tighten the screw, but then wait a few seconds and re-loosen/re-open the screw and ensure there are no bubbles. Then, you can tighten the screw till snug and move on. **2. The color of the brake fluid coming out of the caliper you're working on is similar to that of the new Bosch (or OE) fluid.** You can store a LITTLE BIT of the new brake fluid from the can in a clear plastic water bottle, as well as store a LITTLE BIT of the old brake fluid from the first wheel (front driver's side) in another clear plastic water bottle. This will allow you to compare the colors easily and determine if the fluid coming out of the wheel you're working on is good enough or not. I got a total of about 18 fl. oz. out from the whole system (about 500 mL).
- **Throughout the process, I took lots of photos, viewable collectively here:** <https://photos.app.goo.gl/gRBXVKnpsB4vxvEa6> **I also put the photos in-line with the steps of the process.**

### Job Process:

1. Volvo's VADIS/VIDA software tool (Vehicle Information and Diagnostics for Aftermarket Sales) recommends that the brakes are done in the following order: Driver's side front, Passenger side front, Driver's side rear, and passenger-side rear.
2. Jack up the driver's side front wheel using the jack lift, carefully positioning the lift puck under the XC90's designated jacking spots (see image linked, there is one of these next to each wheel in the car: <https://photos.app.goo.gl/NhzkqHwhXdUWd19i6>). Then, for safety, put one jack stand on the front cross member, and one jack stand on the rear cross member (in the following linked image, it's the piece of metal in the front and rear that stretches across both wheels, where the black hockey puck on the yellow car jack meets the wheel. see image here: <https://photos.app.goo.gl/Sg77EgoSRyYXs51r7>)

3. Remove the driver's side front wheel, stow it away safely.
4. Put the key in ignition position II to unlock the steering, and turn the steering wheel all the way to the left. Then take the key out to prevent the battery from draining out.
5. Locate the brake bleeder screw behind the caliper (caliper is the crescent moon-shaped metal body on the circular brake rotor that houses the two brake pads in it). See image for reference, it's circled with red pen:

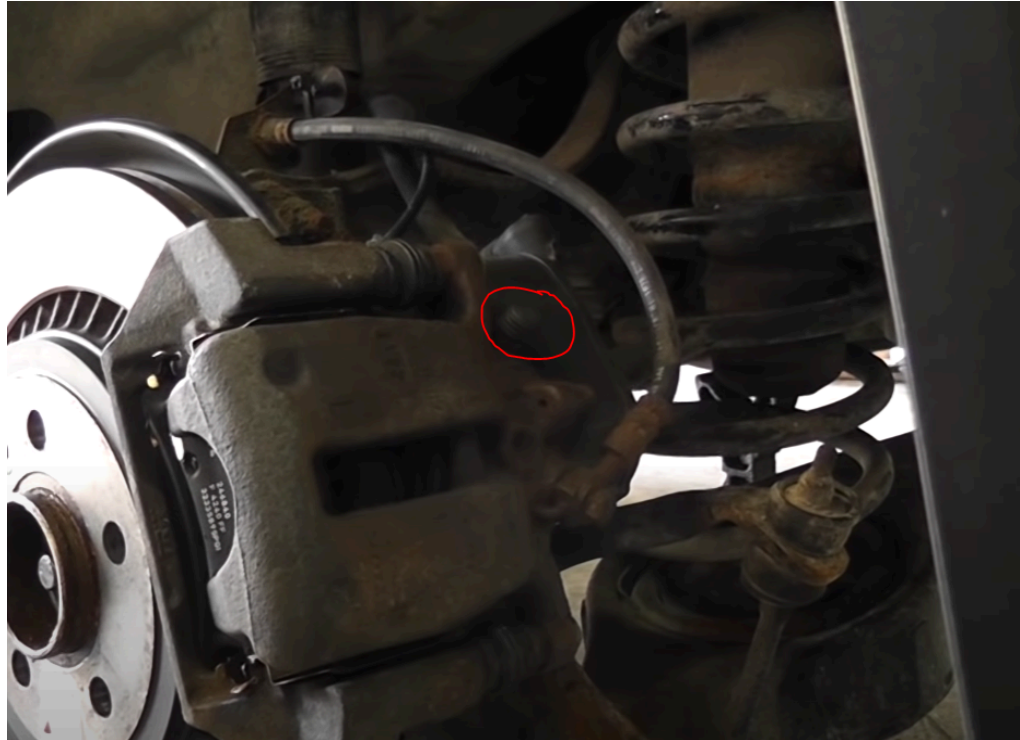


6. Gently remove the rubber cap covering said bleeder screw. Lightly clean it with a small stiff-bristle brush or shop rag once the cap is off. **DO NOT USE WATER.**
7. Use the "open" side of the box wrench (not closed off in a hexagonal shape; the end that looks like a traditional wrench) to loosen the hexagonal portion of the bleeder screw (visible in the image above) just below the bleeder nipple portion of the screw. **This may require a little bit of force, but don't overdo it. Remember, righty-tighty, lefty-loosey!**
8. Slide one end of the 3/16" ID tubing over this nipple, making sure the pipe is on as much as possible until it hits the box wrench (basically sliding the tube over the screw as much as possible to ensure no air can come in from the environment). Leave the box wrench on the hexagonal nut; this will allow you to tighten and loosen the bleeder screw while the tube is attached. Cut any excess tubing. I personally cut the tube to 2-3 feet long so I can have some tubing slack to work with. Place the other end of the tube into the bucket.

9. Using a turkey baster or syringe, extract as much fluid as possible from the brake fluid reservoir in the engine bay of the car. This reservoir is white and has a black cap. Extract into an empty plastic water bottle or any other small liquid-holding item. The more you extract in this step, the better.
10. Carefully pour brake fluid into the reservoir until it reaches the "MAX" level. Be careful to not allow any fluid to drip onto the plastic in the engine or on the car's paint, as it'll destroy it. Using a funnel may help.
11. Pour the rest of the brake fluid into the Motive Power Bleeder (the big tank with the black handle on top). Read the instructions that came with the Power Bleeder itself on how to use it.
12. Tighten the big black top cap back up that you removed to open the Power Bleeder and fill it up with brake fluid. Before tightening it snug, ensure the black handle on the top is pulled up all the way. Now, tighten the black cap. Attach the other end of the Power Bleeder with the black cap on the hose onto the open brake fluid reservoir we just filled a few steps ago. Do not overtighten this cap, just tighten with your hand until snug.
13. Connect the hose from the Power Bleeder to the other part of the hose that came in the box which has the black screw on it and a brass threaded connector on the other end onto the brass threaded connector on the hose coming out of the Power Bleeder. Pump the black handle on the top of the Power Bleeder until the pressure gauge reads 15 psi.
14. Head back over to the driver's side front rotor that we were initially working on, and **gently** loosen the brake bleeder screw by rotating the box wrench we attached to it in a counter-clockwise fashion (towards the back of the car). **Do not use excessive force, breaker bars, etc.** *Some penetrating oil may be helpful if the screw is not turning but do so in moderation. The older your car is, and the more salty+wet your roads are, the higher the probability you'll need to use penetrating oil.* Ensure the brake fluid is coming out once the screw is loosened. **Only loosen the screw until the fluid starts coming out.** Throughout this process, make sure the pressure gauge on the Power Bleeder is reading a value between 10 and 15 psi.
15. **Wait for ALL air bubbles to disappear** before re-tightening the brake bleeder screw with the box wrench and sealing the brake system. *Another way to bleed the brakes correctly is to wait for approximately 200 mL to come out of the tube and into the bucket, use a measuring cup for this.* This will ensure there is no air in the brake system before we seal it off. Tighten the bleeder screw with the box wrench until the fluid stops coming out, then use a ratchet with an 11mm socket. **DO NOT OVERTIGHTEN.**
16. Detach the clear hose, and put the protective rubber bleeder screw cap back on the bleeder screw. Ensure no fluid is leaking from said screw.
17. Turn the steering wheel back to the center, and put the wheel back on. Remove the car lift, and then the safety jacks.
18. **Repeat steps 2-8** and then **steps 13-17** for the passenger-side front wheel.

19. Repeat steps 2-8 then steps 13-17 for the driver's side rear wheel. See note in red at the beginning of the document regarding brake fluid. **Note the following three changes in the procedure for the rear two wheels:**

- a. **The location of the bleeder screw has changed**, see the image below (bleeder is circled in red). The procedure for the bleed is the exact same, however:



- b. **It may be helpful to use the “closed” side of the box wrench** for the two rear wheels. This is because, as you can see in the image, the screw is in a little bit of a lesser-accessible area.
20. Repeat steps 2-8 then steps 13-17 for the passenger-side rear wheel. See note in red at the beginning of the document regarding brake fluid. Be sure to check the pressure and fluid in the Motive Power Bleeder (10-15 psi). **Note: it may be helpful for you to use an 11mm socket INSTEAD of a box wrench to INITIALLY** break loose the bleeder screw on this side. Then, instantly re-tighten once it's broken loose to prevent spillage and slide the box wrench back over, and repeat the process as you did for the driver's side rear wheel.
21. Congratulations, the hardest part is done! Now, once all wheels are re-installed, **gently release** the car off of the jacks, and **remember to re-torque the wheels down to 140 nm (103 ft. lbs.)**. Release the pressure in the Motive Power Bleeder by **SLOWLY** unscrewing the top black cap while leaving the pipe with the smaller black cap attached to the brake reservoir in the engine bay. It will sound like steam being released, wait for that sound to stop before completely unscrewing the top cap. It's imperative you unscrew this slowly!

22. If you stowed away some of the old fluid and some of the new fluid, you can now sit back and admire the change in color of the brake fluid. Once again, congratulations!