

2008 BMW E93 Hydraulic Line Replacement



Symptom:

When opening top, the trunk/boot would open properly, but would not close smoothly (very jerky motion and loud pump noise). After a couple tries, I was able to close the top and trunk lid. Time to have a look.

Resources:

E93 Top Diagram - <https://tophydraulicsinc.com/photos/e93diagram.pdf>

E93 Hardtop Reference doc - <https://tophydraulicsinc.com/photos/e93hardtop.pdf>

Use as a guideline only – apply common sense, be careful, and wear protective gear!

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1. Diagnose

- a. After researching the resources above and the excellent forums dedicated to BMWs, I was able to focus on hydraulics and rule out the common electrical faults (the two large 'salmon relays' next to the pump or one of the many sensors). My top was trying to move, with one direction of one component failing - So, time to find the oil.
- b. There are four pairs of hydraulic cylinders (one per side). The trunk is raised by the 'Rear Module Cylinders'. These are located immediately behind the trunk opening on each side. Lifting up the trunk floor panel, I could see some fluid in the far left rear corner. Removing the plastic trim revealed a burst hydraulic line.



- c. As seen from the pictures, the lines on the left twisted as they looped up near the hinges, forcing a much tighter bend than the right. More importantly, the twist pushed the lines further away from the mounting points, causing them to rub as the hinges moved. Apparently, the guy assembling the left side of my car was not a stickler for quality.

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- d. I contacted Klaus from [Top Hydraulics](http://www.tophydraulicsinc.com), who was extremely helpful throughout this process. He confirmed that the pump was likely fine and that his company could build new lines tougher than OEM.

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2. Disassembly

- a. Everything was surprisingly easy to access. I removed the 5 trim pieces marked in the picture. The 'plugs' were interesting, but did have enough of a lip to turn with a crescent wrench. The pump is below the trunk floor, under a plastic cover. The pump is not bolted or secured to the car, it just rests in a cavity supported by foam.



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- b. The cylinder and line connections are accessible with the trunk open normally, making the process easier and allowing the car to be usable while disassembled.



- c. I disconnected the hoses from the cylinder first, securing the free ends high as to not drain fluid all over.
- d. The lines connect to the pump/valve assembly in a common block, with the ends secured by a plate. There are 5 small bolts holding the plate in place. It is a bit tight, but all the bolts are accessible. Once removed, the plate can slide to permit the lines to be removed. Each port is marked with the appropriate line number. Have some paper towels ready as you will have some fluid to deal with.



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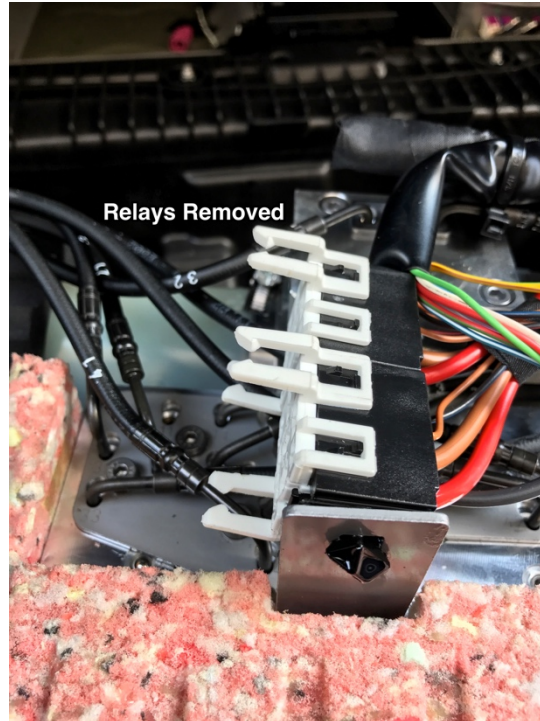
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3. Hold

- a. With the lines removed and ready to send off to [Top Hydraulics](http://TopHydraulics), I dried everything off and set the pump into its cavity.
- b. Slide and secure the retaining plate back into place
- c. Just to be safe, I also removed both salmon relays, preventing any accidental top movement.



- d. The trunk will operate normally with the relays and lines removed.

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4. Reassembly

- a. You will likely need more hydraulic fluid to refill the reservoir. The BMW fluid (pn: 54340394395) was hard to find in my area and \$36/liter. It is based on the same Febi / Aral Vitamol ZHM fluid Mercedes uses (pn: 000989910310), available at my local dealer for under \$12.
- b. I worked in the opposite direction (pump to cylinder). Insert the new lines (conveniently marked), slide and secure the retaining plate with the five screws.



- c. Refill fluid reservoir – The reservoir is secured with one hose clamp. Make sure you hold the pump at a 90-degree angle (vertical) when removing and especially when replacing the reservoir. I do not have pictures of reinstalling as I could have used three hands to replace the full reservoir and not spill fluid everywhere, but it is straightforward.

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- d. Run the lines back along the original route. Zip ties slide through several of the anchor points. I loosely closed the zip ties to hold everything in position. Once the lines are roughly in place (including the loop behind the cylinder), the other ends can be attached to the cylinder. The ties securing the lines to the cylinder were snugged up to allow shaping the loop behind the hinge. After everything was tightened a bit, I added a couple extra zip ties around potential rub points (back of the loop and under the hinge) for extra protection. This step doesn't take that long, but patience helps.

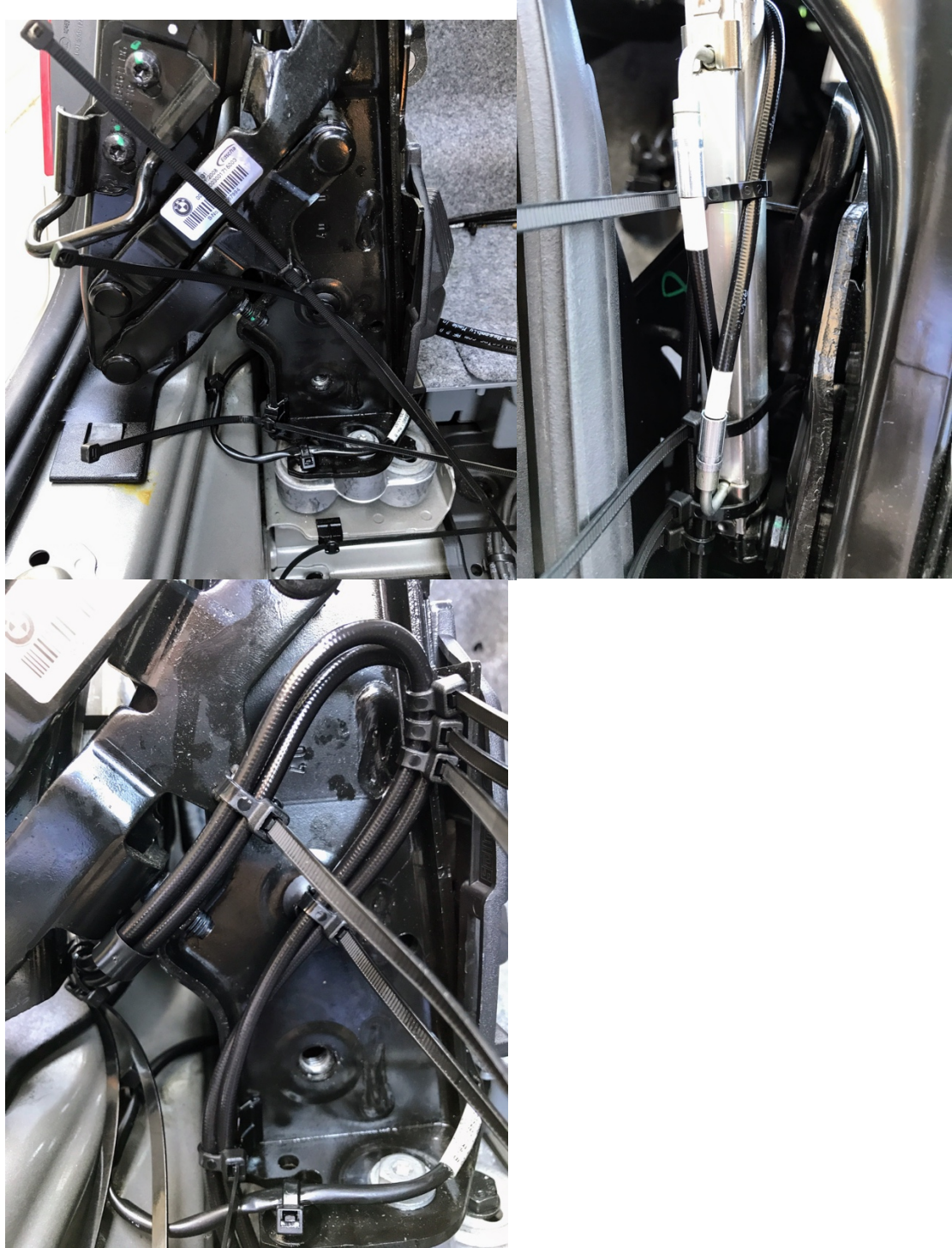
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- e. Tighten everything up, replace relays, double check everything
- f. Time to test. The system is self-bleeding. If possible, have a helper operate the top while you observe. Recheck the connections and check for any fluid leaking from the reservoir, pump retention plate, and cylinder connections. I ran the top up and down a few times just to make sure.
- g. Replace the foam and cover around the pump and other trim.



5. Enjoy

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