Relocation of Soft Top Pump Assembly from the Drain Funnel to the Trunk
2006 Z4 3.0si Roadster

This DIY was performed on my 2006 3.0si (May 2006 Build Date), but this same procedure should work on any Z4 E85 Roadster.

History of the Top Motor on this Car:

The original pump motor failed in 2010 and was replaced at a BMW dealer service department using the factory procedure. It failed again (failed to run) due to the expected corrosion issue in March of 2014 and I replaced it myself and sealed the housing using an RTV compound. In December 2015 the unit failed again however this time the pump motor was running but not building any pressure. I initially suspected a failed hydraulic lift cylinder, but after removal of the top and disassembly of the pump motor the root cause turned out to be a fractured relief valve body. It broke at the center point and left the pump permanently in the bypass mode. (Side Note: The interior of the motor housing was clean and dry proving that Shipkiller's sealing procedure works.)

Now having removed the top assembly twice in my two years of ownership, I was determined that it would not get removed again due to a pump motor failure and decided to relocate it to the trunk area. Following is the method I used for relocation.

Obligatory Disclaimer: The information herein is provided for reference only and I make no guarantees that this will fit or work on your car. Should you decide to make this same modification to your car you do so at your own risk.

Preface: There's a website (https://www.pixelrichter.de/) maintained by a fellow in Germany who claims to have done a number of these relocations, and he has developed his own method where he does the process without removing the top assembly from the car. The challenge in doing this modification is in making a routing for the hydraulic lines and release cable to pass through the inside wall of the plastic piece that lines the inner body, and the hinge piece that supports the driver side of the top compartment tray. These two parts have an overlap and you'll need to cut a slot in both pieces to make a pathway. Unfortunately none of his photos show how he accomplished this.

Following is my Relocation Process:

1. Put the top in the down position and remove the driver seat head rest. Move the seat as far forward as it will go, then tilt the seat back as far back as it will go. You'll need as much room as possible to reach under the head liner into the top motor area.

2. Put the top in the up position.

3. Remove top compartment tray. Disengage the soft top flap that is attached to the floor. It is a push fit onto the back end of the compartment floor and just pulls off if you start at one side and work across.

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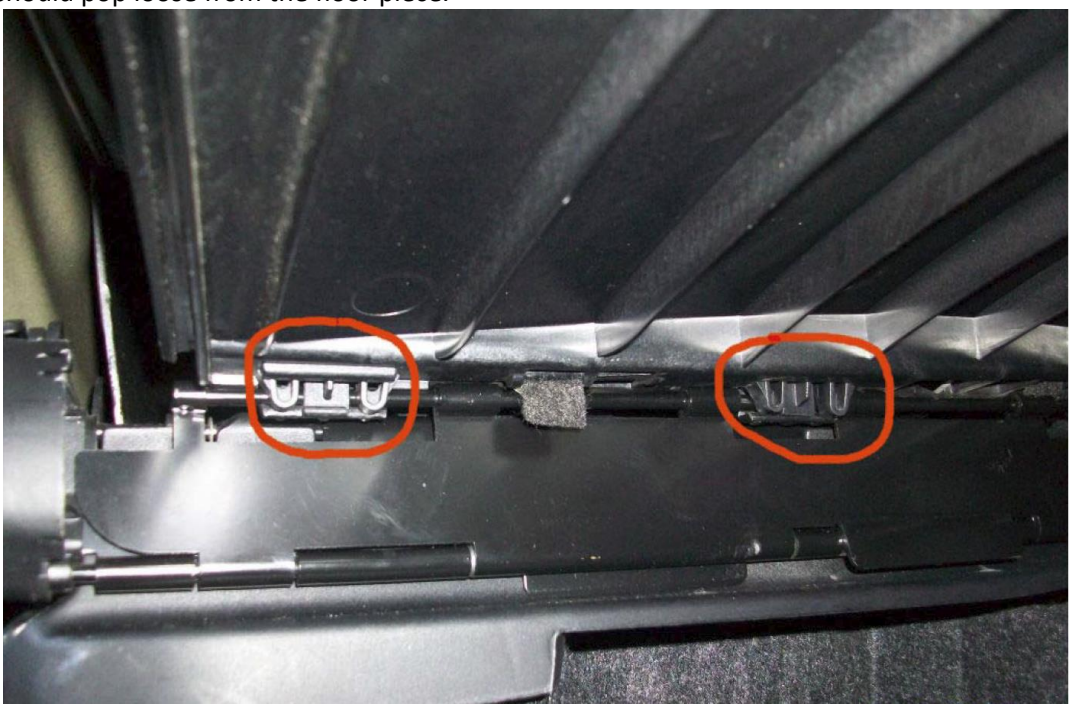
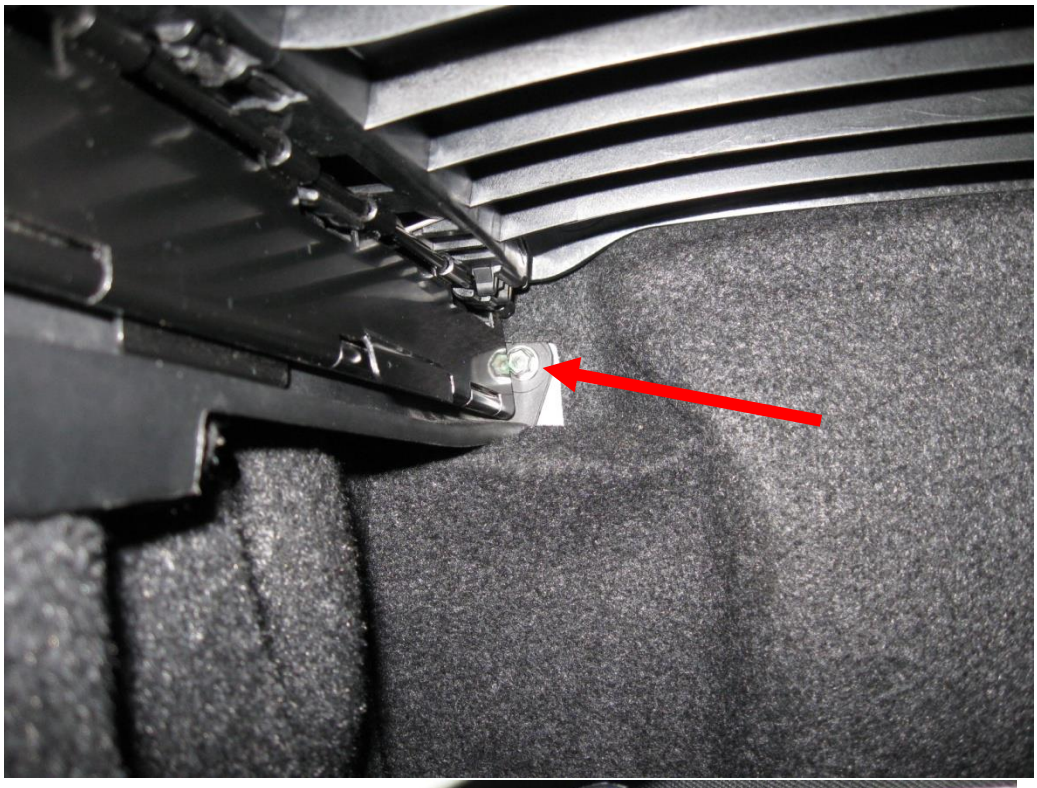
Then pinch and release the clips that are on each end of the floor. Note that there are locations for 3 each side but you'll likely only have two per side. They will pop up and lay on the side. Then unsnap the hinges by holding the floor with one hand and turning the floor lowering knob with the other. The hinges should pop loose from the floor piece.



4. Remove the driver side tray holder. There's a bolt up underneath the front of it and one on the driver side shock tower. There's also one of the dreaded plastic push rivets on top. Grab the

center pin with a pair of needle nose pliers and pull it out, then work the rivet out. See photos below.



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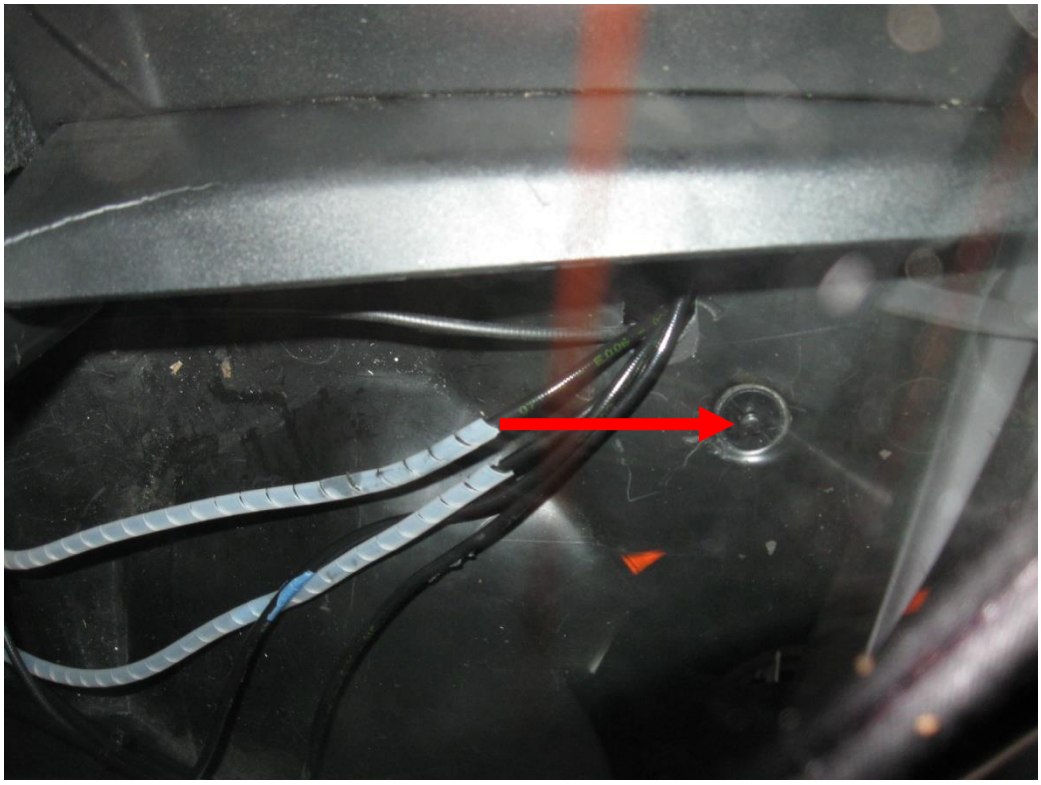

Slide the tray holder out and set it aside.

5. Tilt the driver seat back to the fully forward position. Pry off the speaker grille and remove the 5 screws shown in the photo below.

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6. Pull the drive door weather strip out from underneath the seal at the top of the door pillar and pull it loose from the car body down far enough to free the edge of the rear plastic panel. Grasp the panel at the bottom outside corner and unsnap it from the car body.
7. Disconnect the power cable from the top control module. If you can reach any tie wraps holding it in place, cut those and pull the cable up through the cavity and out through the trunk. Optionally disconnect it, leave it in place, and purchase a new cable P/N 54347122951.

Note: I didn't perform these next steps (shown in Italics) since I had taken my top off the car, but this is how I would have gone about this if I was going to do it with the top on the car. Since I wasn't able to verify these steps, take them as suggestions that will aid you in your efforts.

8. *From inside the car, reach into the area at the base of the top on the driver side and wrench the motor housing loose from its mounting. The place on the housing that forms the mounting location is the weakest part of the housing and is typically already broken (see photo) and the housing may already be loose.*

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9. *Lift the motor housing up, pass it rearward, and rest it on the horizontal area directly behind it.*
10. *Go to the trunk and place some towels to catch any water that runs out of the housing when you gently pull the motor housing rearward and down into the trunk. You may have to cut some tie wraps off the housing to free sufficient slack in the hydraulic lines, and/or you may have to pull the top off the motor housing and remove the motor from it.*
11. Remove the motor from the housing.
12. (Steps 12 & 13 assume you're doing this because you're replacing a defective motor.) Detach the hydraulic lines from the pump body and note the markings on the pump body and the lines so that you can replace them properly on the new pump. Remove the release cable from the old pump and attach it to the new pump. Disconnect the power cable from the motor. **Note: A new motor should come with a short blue and a short green wire already attached to the motor terminals to indicate which wire gets connected to the cable. If you're just relocating and original motor and it doesn't have these two wires, make certain you mark the motor to indicate which terminal the black/green and black/blue wires go to. If you get them swapped the motor will run the opposite way from lowering or raising the top and you'll have to swap the wires on the motor to get correct operation.**
13. Reattach the hydraulic lines to the pump. Attach them with the lines routed in the direction of the fluid reservoir as shown in the photo below. This will provide the maximum available length of line to work with.

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14. In the forward driver side corner of the trunk, remove the plastic rivet on the shock tower, unscrew the plastic button fasteners at the seam of the side and forward carpets, and pull the carpet back.
15. Route the power cable through the opening in the body panel and into the compartment where the top controller resides. Connect it to the top controller.
16. You can position the motor with the reservoir toward the front or the rear. Test fit the motor and determine your choice. You want to ensure when you mount the motor that there's sufficient slack in the hydraulic lines for them to lay flat in the side area when the top is lowered. I chose to position facing it rearward because it was easier to access the area on the side plastic where the slot needs to be cut to route the lines.
17. Make a slot in the side plastic similar to shown in the photo below:

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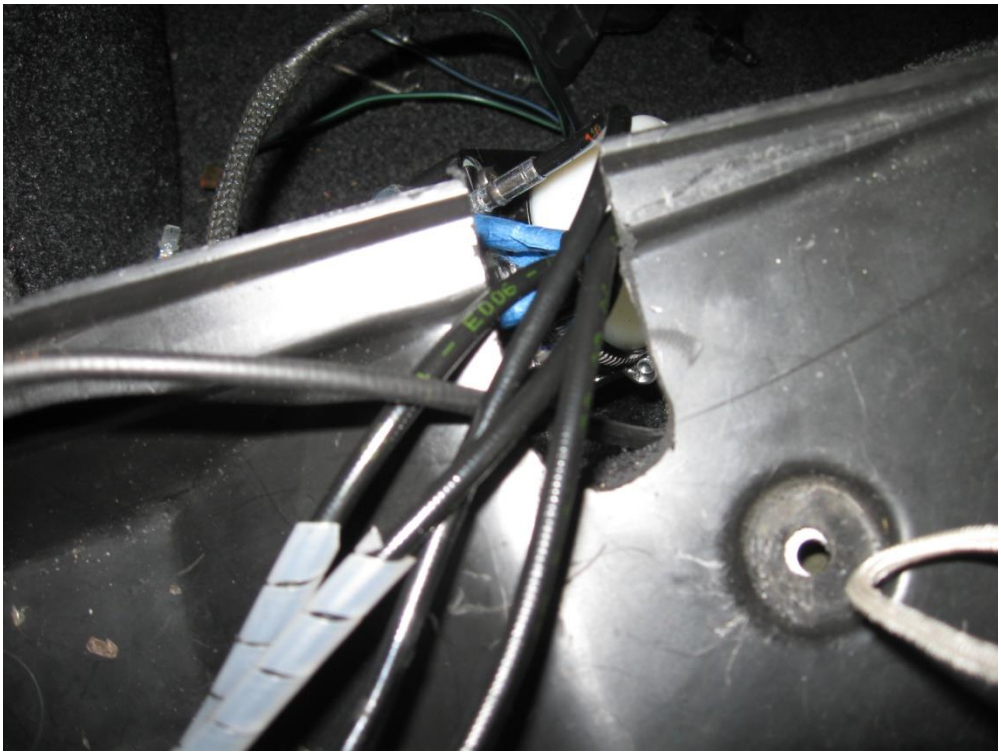

18. Cut a matching slot in the tray support piece as shown below in the tray support piece you removed earlier.

19. Route the hydraulic lines and the release cable through the slot in the side piece, then slide the tray support piece into position and fasten it place with the forward and rear bolts. ***Don't put the plastic rivet back yet.***
20. Connect the power leads to the motor. The black wire with the green stripe connects to the green wire, and the black wire with the blue stripe connects to the blue wire.

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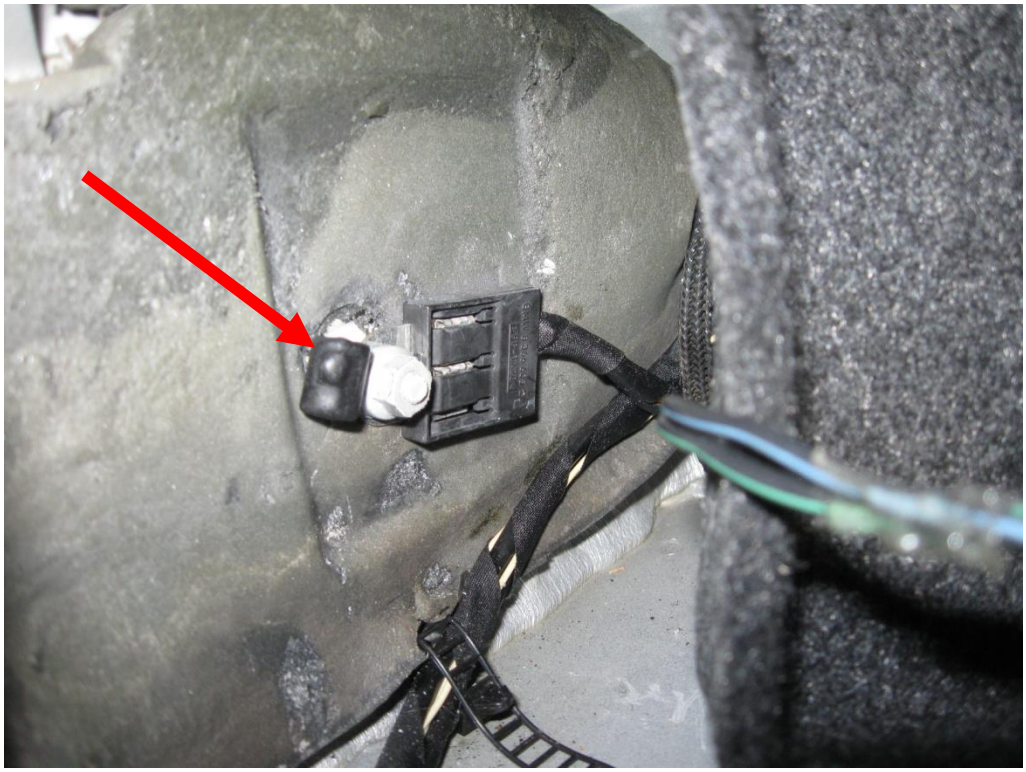
21. Insert a piece of folded paper into the micro switch slot for the top compartment tray to close the micro switch and indicate to the top controller the tray is in the down position.
22. Position the motor in the position where it will be located when it's fully mounted.
23. Pull the emergency release cable, and then carefully lower the top. Check the position of the hydraulic lines and release cable in the area under the top mechanism to ensure they aren't pinched or pulled taught.
24. Close the release and use the top motor to raise the top into the up position. Note that the motor may need to run for a bit to prime the system since there will be some air in the lines.
25. Use the top motor to fully open the top, and again check the hydraulic lines and release cable. Adjust as needed. If no operational issues you're now ready to start cleaning up the motor mounting and finish up.
26. Use some electrical tape to wrap the motor connections and secure and insulate them, then use a tie wrap the secure them to the body of the motor.

27. I also used some duct tape on the bottom of the motor to hold the connectors onto the motor terminals.
28. You'll need to get creative here and find something that you can use for a housing for the motor to protect it and the other electronics from damage or shorting. I found a hydrogen peroxide bottle that was the perfect size, but any plastic bottle that's the right size will do.

29. I installed a small cable clamp on the stud for the ground point on the side wall of the trunk to use as an anchor point for the motor.



30. Use some tie wraps to secure the motor in place. I used one through the cable clamp installed earlier, and a heavy duty one around the metal strap on the shock tower. Trim the tag ends off the tie wraps.

31. Push the carpet back into position, and test the top again.

32. Reinstall the storage compartment tray, press the flap back onto it, and you're complete.