This guide is meant as an addendum to 2 exiting documents.

"How to remove your soft top from the BMW Z4"

"How to remove and replace your soft top motor"

The soft top mechanisms are a known weakness on the BMW Z4s and dealer repairs are quite expensive. The truth is that DIY'ers can do this work themselves, and save a couple of thousand dollars.

GENERALLY SPEAKING it is the motor that fails. The motor is located in a plastic container that unfortunately mounts in a draining area in the body panel behind the driver's door. If the drain plugs get blocked, water fills up, and can eventually seep into the supposedly watertight housing, thereby corroding and destroying the motor.

Indicators it might be *more* than the motor...

When attempting to activate the top, you hear the motor activate, but nothing happens. Ensure the bypass is not engaged, and try again.

There may be drops, or a small puddle of oil in front of your rear tires. Oil leaking from the cylinders is draining down the rain drain and onto your floor).

When checking drain weep holes (inside rear tire well), you smell or feel an oily residue.

When activating the top, it takes a very long time to cycle, you may even hear gurgling noises. This is the hydraulic motor using insufficient oil to pressurize the hydraulic cylinders. Just before the end it would take my top nearly 90 seconds, and several re-tries to cycle one direction.

When you remove the top for motor replacement, and one or both of your hydraulic hinge cylinders are oily (leaking).

When I set out to do the repair on my own motor, I realized that while the motor was probably good, the hydraulic cylinder seals had failed. This prompted me to replace both hydraulic hinge assemblies as well. Removing and reinstalling the top is the biggest part of this process, so why not replace the motor *and* hydraulic cylinders at the same time. A little preventative maintenance might allow you to do this process only once.

I purchased re-built hydraulic hinge assemblies from Top Hydraulics. With a core exchange they were about $450 for the pair including all the shipping back and forth. New units cost $450 each, so that's a substantial savings. Top Hydraulics claims that the components used in the rebuilt cylinders exceed the quality of OEM parts, and I liked the savings.

Tools needed.

Torx head bits.

Phillips screwdriver.

Small flat screwdriver

Plastic zip ties.

Hammer

Punch

12 volt test leads

12 volt power supply (a small automotive battery charger works)

Needle nose pliers.

Hydraulic fluid

A few rags.

This guide assumes you've already performed the work in "How to remove your soft top from the BMW Z4" and have the convertible top sitting on the floor or table behind your Z4. If it's on the floor, I suggest you find a table, some of the parts are pretty small, and having it closer to eye level will help.

In total there are 8 primary points to be disconnected from the driver's side hinge assembly.

2 pins (these provide the leverage for the top mechanism)

2 large torx bolts (these attach the hinge assembly to the top frame)

2 hydraulic lines (power up and power down)

And 2 electrical connections, one wire each. These probably indicate position to the top controller module.

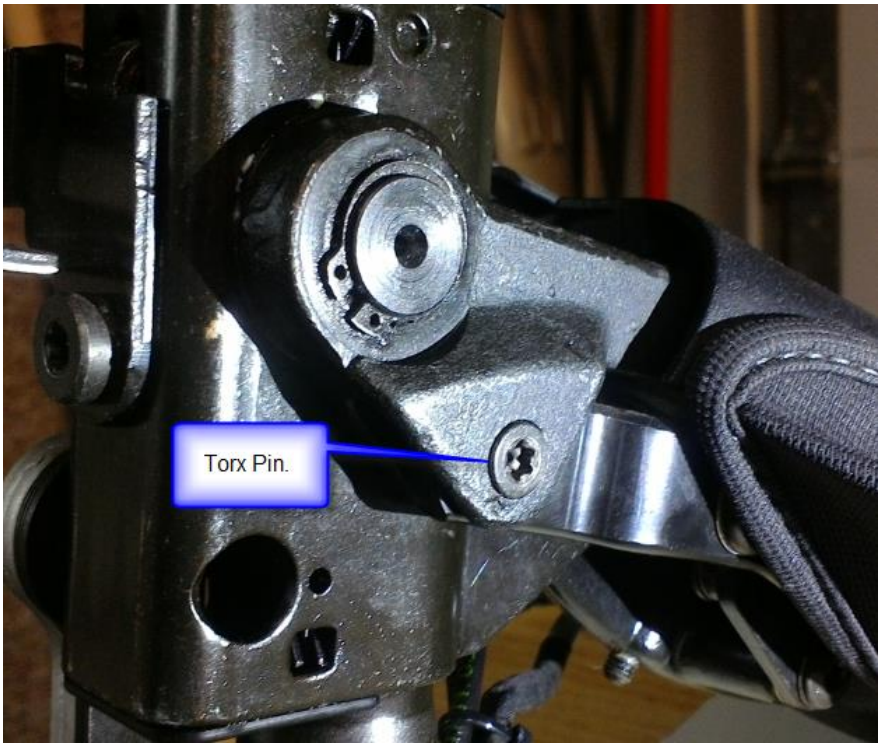
There are also a couple of wire routing clips, but they are very obvious and not covered in this guide.

The passenger side is identical with the exception of the electrical connections, so only 6 total connections.

Note position of wires, and especially plastic zip ties. Take a few photos here, as you really don't want a hydraulic line or electrical wire to be in a pinch position after re-assembly.

There are three wire bundles on the drives side, and the factory did a good job routing them. Remove the wire guides screwed to the hinge assembly to allow better access to the pins.

Pin one is just a torx screw. Remove it and set it aside.



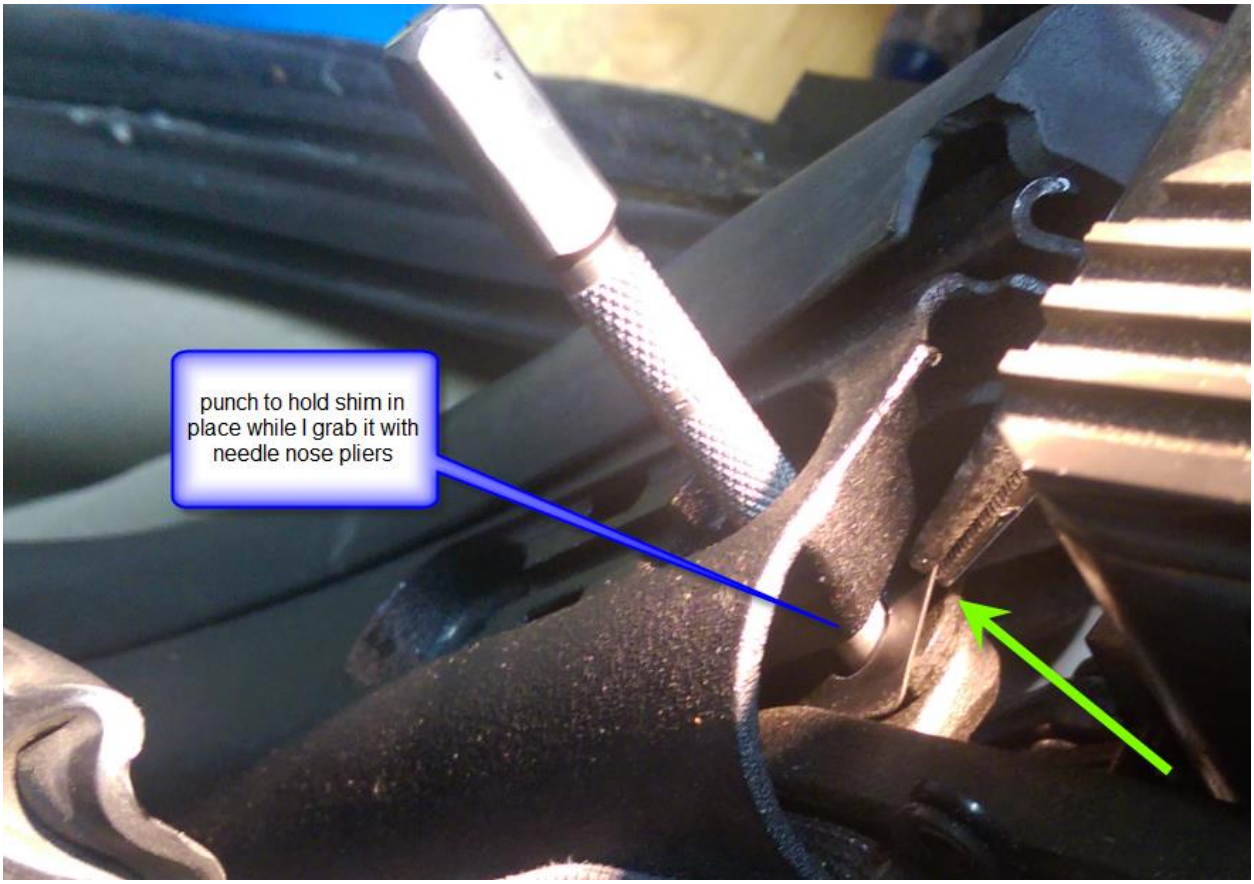
Pin two has a retaining ring on the back (inside) of the assembly. Remove the retaining ring using a small flat screwdriver. There is a slight recess on the opposite side of the ring from the opening. Place a small flat screwdriver into the recess, twist slightly and the ring will pop off the pin in perfect condition. Save, as you will re-use these pieces.

Have your helper hold the top firmly now, as you'll be doing some tapping (light hammering) and you don't want the top to end up on the floor.

Next, using a light hammer and punch, tap the pin out of its home. It might be a little stubborn (mine was) as it's a tight fit, but it'll come.

Time for the big torx bolts. Just up the frame from the hinge assembly is a small plastic cover. Once you pop the cover off you'll see two large torx bolts.

Remove the torx bolt that is further from the hydraulic cylinder first. Once it's out, place a punch or small screwdriver in the hole, and then remove the second bolt. The reason for the punch is that there is a small aluminum shim between the hinge parts and the frame. The punch will hold it in place till the hinge arms pull away from the top frame, and you can reach in and grab it with a pair of needle nose pliers.



If you don't do this, the shim has a tendency to slide down into the frame, and can be a real pain to retrieve.

(Replacement is the opposite, line the parts up and slide the shim into place with pliers, and then set a torx bolt, finger tight. Don't tighten till you have both bolts in place as the shim may need some slight adjustment.)

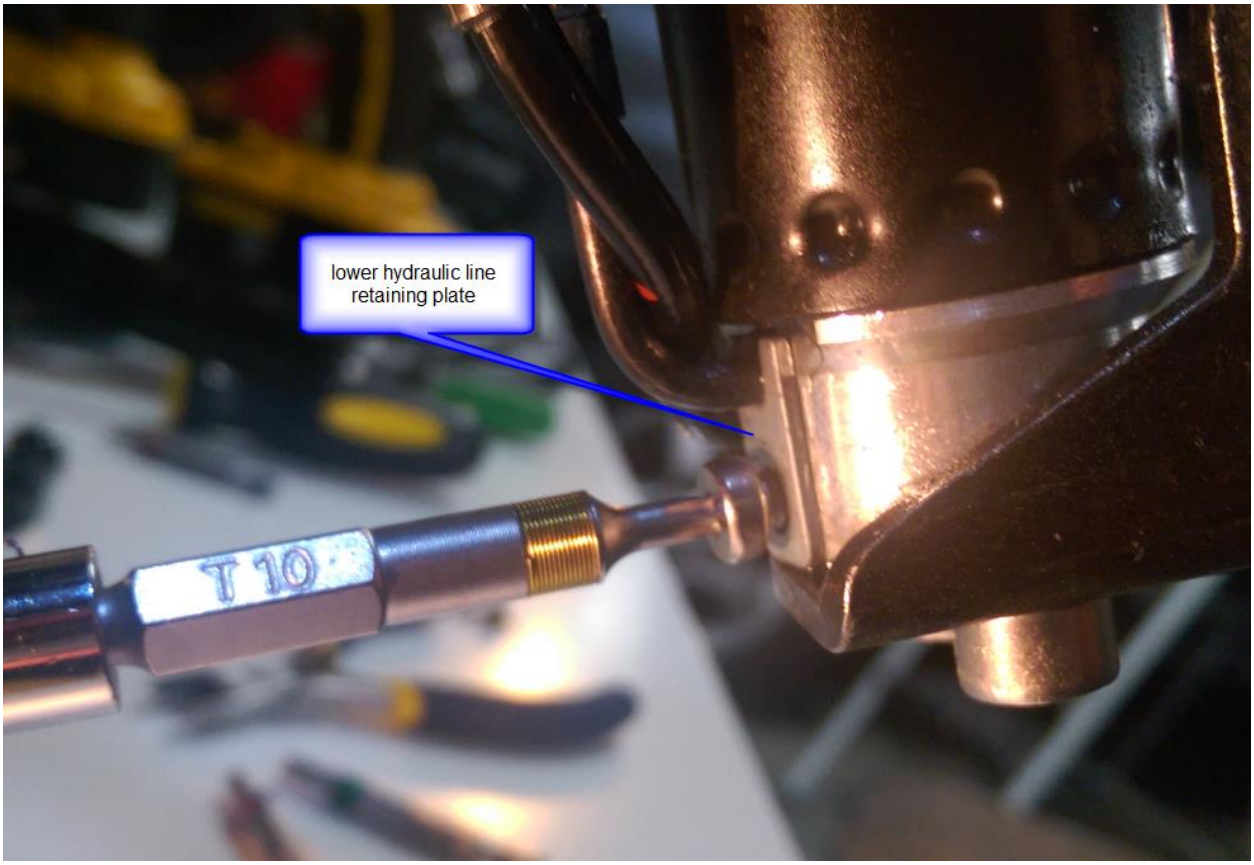
Now the hinge assembly is free from the top frame and you can manipulate it pretty well.

If you haven't already, cut all the plastic ties out of the way and pull out the little pieces with needle nose pliers.

Next I got the correct replacement hinge (L or R) and placed it next to the old one. Each component I took off the old, went directly onto the new, keeping order and position the same

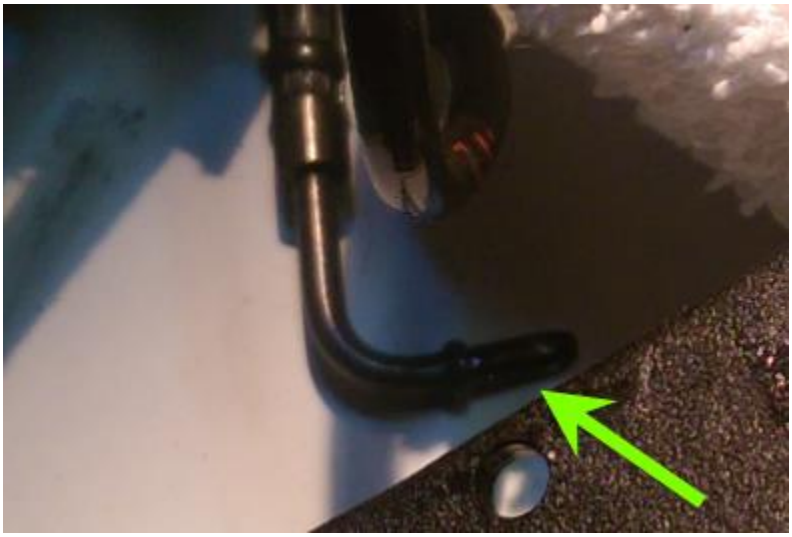
The hydraulic lines are tiny little things, one at the top and one to the bottom of the cylinder.

For the bottom line, there is a small torx screw holding a retaining plate just above the hydraulic line. Remove this screw and the retaining plate will fall away. The hydraulic line may be under pressure, so a rag over the area might prevent a face full of oil. (I learned this the second time.), also a rag under the work will catch any oil leakage.

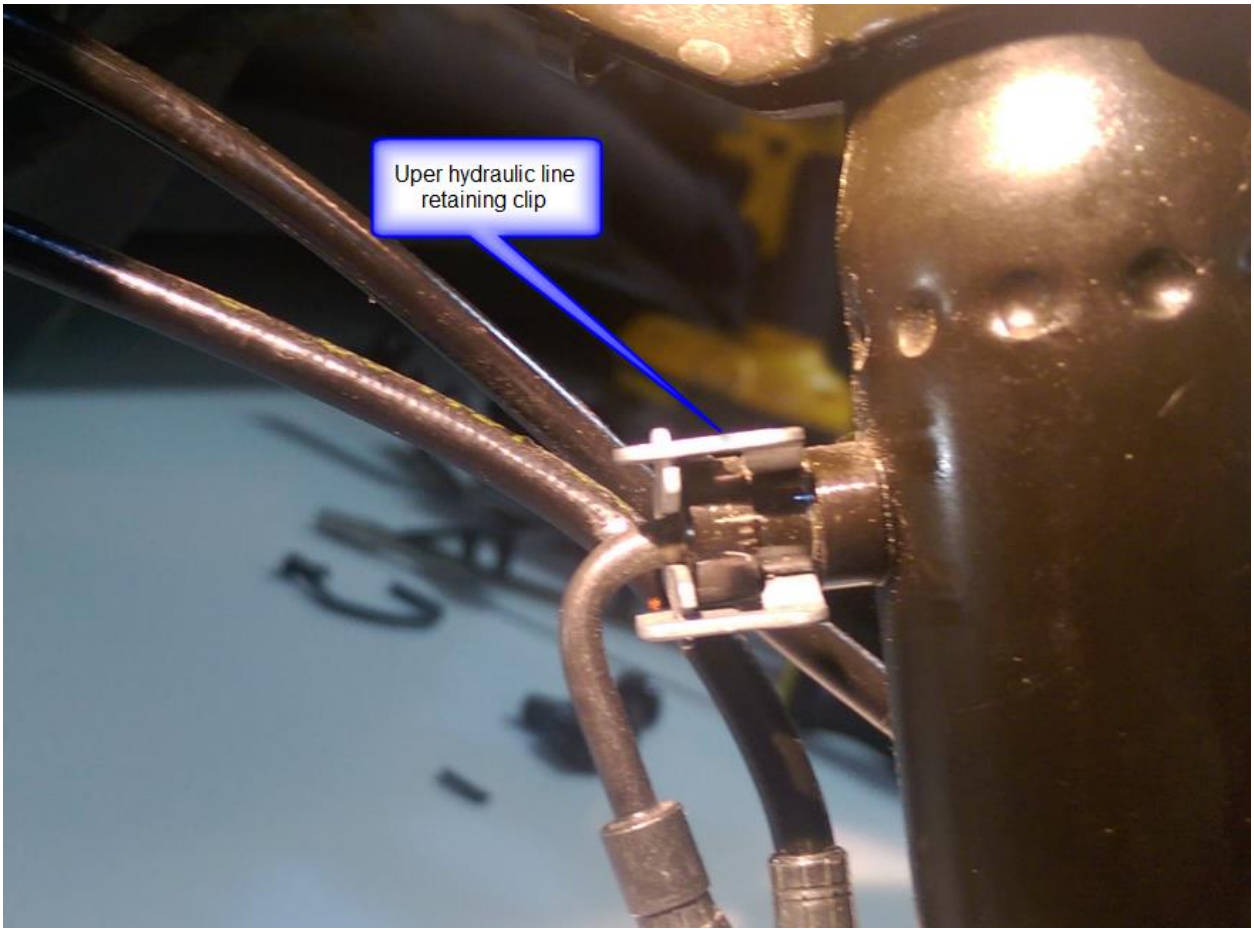


Once the retaining plate is out, pull the hydraulic line straight out. There is a stinger that is simply inserted into the cylinder about 3/8 of an inch. Place it directly into the new cylinder, and install the retaining plate and screw.

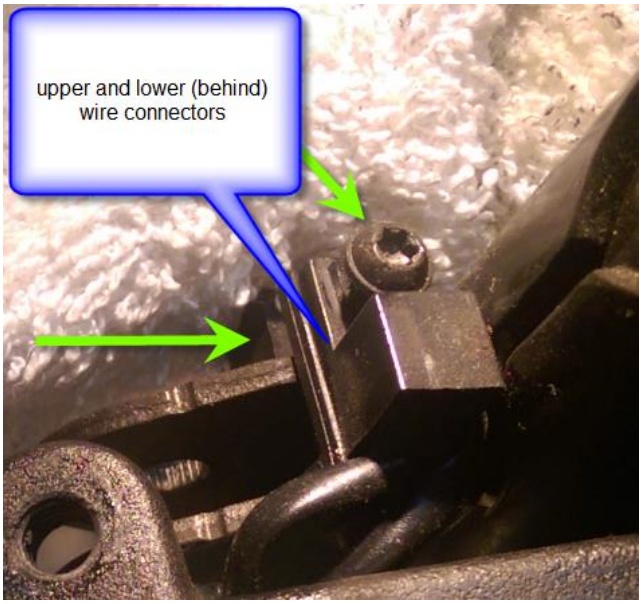
Hydraulic “Stinger” removed from bottom cylinder.



For the top line there is a small metal clip that is holding the stinger into the cylinder. You can simply push this off (away from the open end) with your thumbs. Once removed, the stinger will slide out just like the lower unit. Place it into the new cylinder and push the retaining clip back on.



Last, the two electrical position indicators. I marked my T for top and B for bottom before removing them. The top sensor is held in with small torx screw, the bottom with a Phillips head screw, and they are easy to switch out. Make sure you cram the wiring in tight to the cylinder as you don't want failures or pinching after the whole assembly is back together.



For re-assembly, line hinge pins back up and put the torx drive pin back in first. This helps alignment of the other pin.

Tap (pound) the other pin into place and set retaining ring by pushing it on with a flat screwdriver (from the side, just like it came off). This pin has small splines near the head, it might be possible to rotate the pin, better aligning the splines and get it a little further in by hand. No matter what though, you'll be doing some hammering.

Position the hinge assembly back into the top frame. Grab the shim with a pair of pliers and slide it under the metal hinge assembly, and when the holes line up drop a small screwdriver in there. Set one torx bolt, and then the next.

Clean up the wire routing, use new plastic ties to bind everything together nice and neat.

Repeat process on passenger side. It'll go faster because there are no electrical connections, and you've already done it once.

If you're replacing the hydraulic hinge assemblies on your BMW, you're most likely also replacing the motor. Either way, you've lost some hydraulic fluid in the process. The cylinders come empty, so no matter what, you need fluid.

The reservoir on the motor is very small. Go ahead and remove the small silver plug, fill it up, and replace the plug. Next, connect 12 volt power to the hydraulic motor and activate the cylinders (use some test leads if possible, and I used an automotive battery charger on 12 volt low). Have your partner hold the top to prevent it from falling off the table. It'll mostly go up, but it'll be a bit jerky.

The motor will spin, but if no substantial movement happens make sure the bypass ring is fully retracted, and either reverse the power connections, or check the fluid and top it off again. You'll need to run the top all the way open and closed a couple of times, each time checking and adding fluid when necessary. While the pro shops might have a better way, this is how I filled the hydraulic fluid and

reservoir. In all I cycled the top about 10 times. 4 or 5 for filling, and 4 or 5 more just to be sure. When I was done, the reservoir was about 2/3's full.

So, that's about it for the hydraulic replacement. The bulk of the time required for this repair is in removal and replacement of the top mechanism itself. Performing the cylinder replacement maybe added 1 – 1.5 hours and about $450 to the entire project. Not a major addition, but it's nice to know that what can break has pretty much been replaced. My top should be good to go for many years.