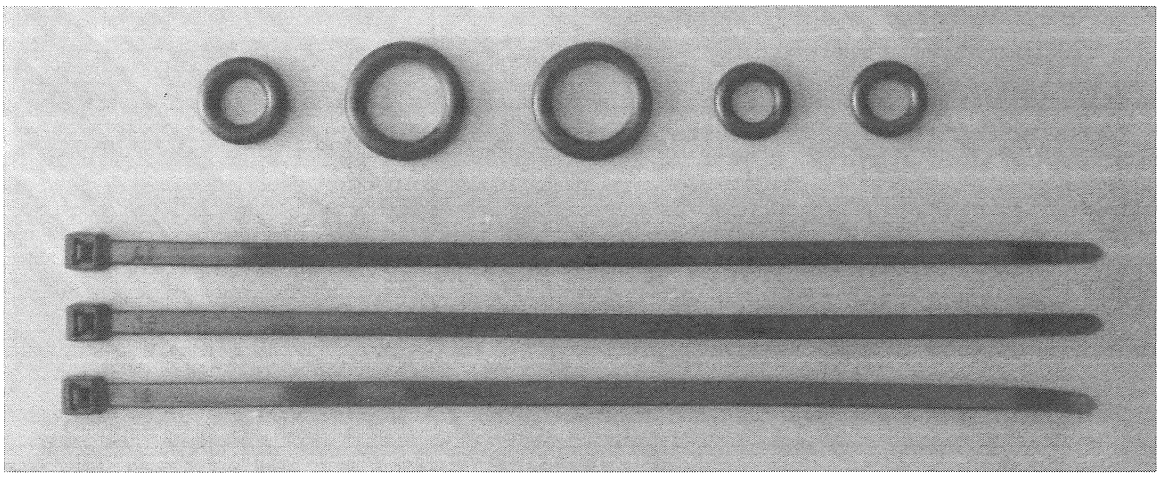
Section 1: Before we get started

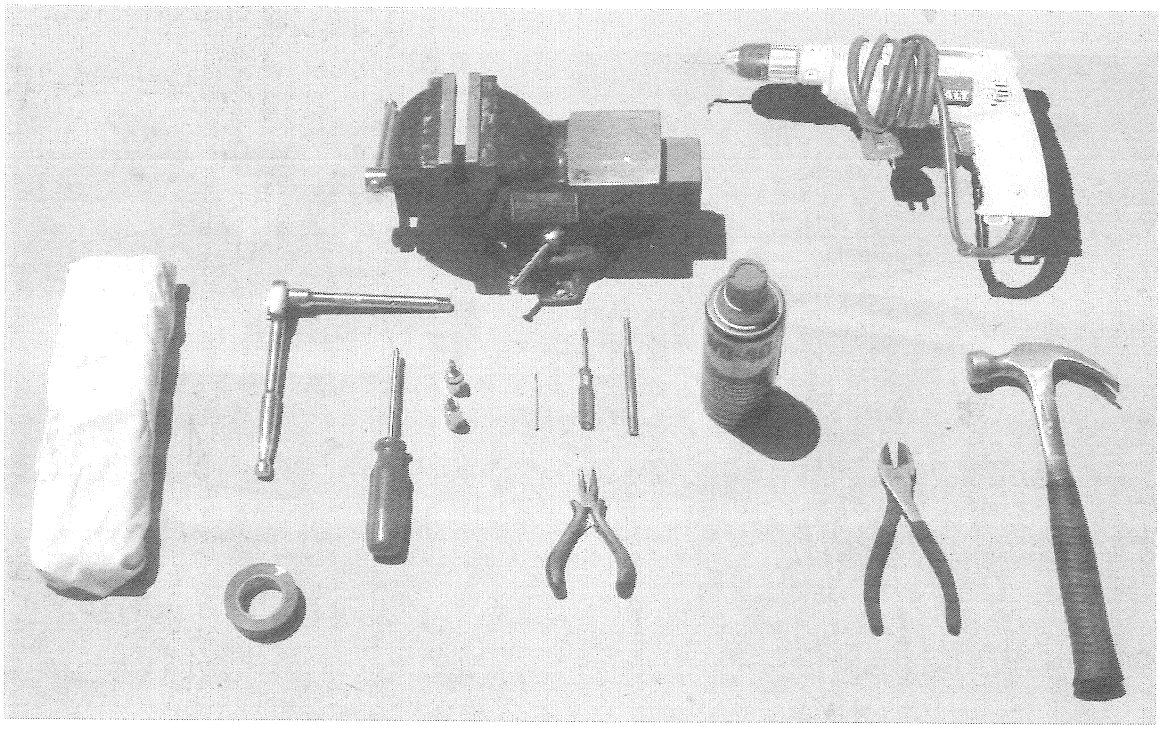
1. Verify you have the correct hydraulic actuator rebuild kit. This kit is for the following vehicles built on the Mercedes R170 chassis:
   - 1997–2004 Mercedes-Benz SLK200
   - 1997–2004 Mercedes-Benz SLK200 Kompressor
   - 1998–2004 Mercedes-Benz SLK230 Kompressor
   - 2001–2004 Mercedes-Benz SLK320
   - 2001–2004 Mercedes-Benz SLK32 AMG

2. Verify the contents of your hydraulic actuator rebuild kit:



   - This 43-page manual
   - One (1) medium Nitrile (BUNA-N) o-ring
   - Two (2) large Nitrile (BUNA-N) o-rings
   - Two (2) small thin Nitrile (BUNA-N) o-rings (rarely, if ever, needed; see Section 13)
   - Three (3) zip ties

3. Gather the tools you'll need (top to bottom, left to right):



- Bench vice removed from your workbench (not needed until Section 9)
- Hand drill with 1/8" drill bit (not always needed)
- 12"-long 2x4 wrapped in a t-shirt (not always needed)
- Socket with extension
- 8mm socket
- T30 Torx socket drive
- 6mm hex-head socket drive
- Phillips screwdriver
- 1/8" drift punch or a blunted nail (an 8d 2" bright finish works well)
- Small jeweler's-type flat-blade screwdriver
- 3/16" drift punch
- One large can of WD40
- Electrician's tape
- Small needlenose pliers
- Sidecutters
- Hammer

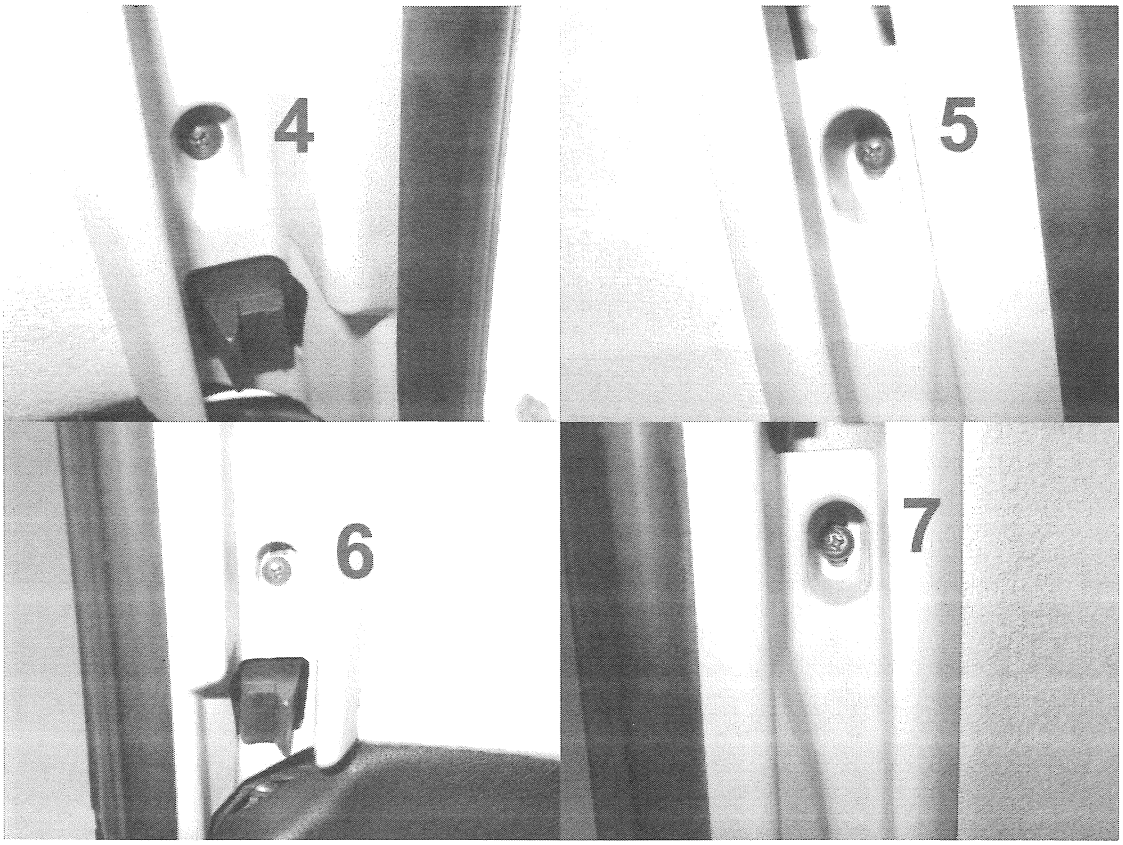
Section 2: Remove the headliner

1. Use the hardtop retraction switch in the center console to raise the top approximately 12 inches.
2. If your hardtop won't stay in the up position, block it with the 2x4 wrapped in the t-shirt. Sometimes the tops won't stay up by themselves if they're really low on hydraulic fluid.

WARNING: With the hardtop up and blocked, the only thing holding it in place is the 2x4. You may want to also strap the hardtop in this up position with some strong nylon straps, motorcycle tie-downs, or the like. If it comes down with any part of your body in the way, you could be seriously injured or killed.

Note: If your system is really low on hydraulic fluid, you may need to manually release the top and raise it by hand. (The Mercedes manual has a good section on manually releasing the top.) Lifting the top with the manual release pulled takes very little effort—less than 20 lbs. of force needed on each side.

3. Remove the three phillips screws and conical washers (1, 2, and 3) in the front edge of the headliner.

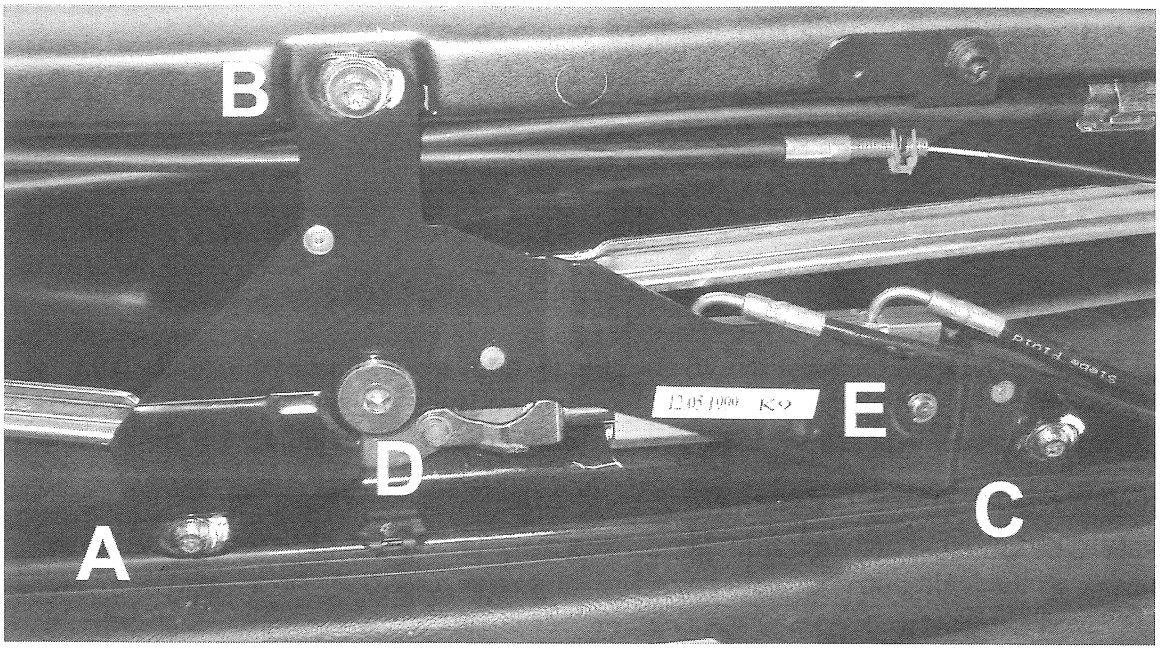


4. Remove the two forward-most phillips screws in each of the two plastic headliner trim pieces (4, 5, 6, and 7).

5. With those 7 screws removed, pull the headliner toward the front of the car and free. A bit of wiggling from side to side might help free a stuck headliner.
6. Lower the top back into the closed position with the hardtop retraction switch in the center console.

Note: Throughout the repair of the top-locking actuator, you will want your car's top raised and locked in the closed position.

Section 3: Remove the top-locking hydraulic actuator



1. Loosen the three Torx screws (A, B, and C) that hold the hydraulic actuator mounting plate in place. Use your T30 Torx socket for this.

Note: The Torx screws are captive in the mounting plate. They won't fall free.

The mounting plate will drop a couple of inches to give you room to maneuver things.

2. Remove the two visible e-clips (D and E) that hold the actuator to the locking arms and the mounting plate. Use your small screwdriver for this.
3. Push the two studs (D and E) that the e-clips were attached to up and out. Use your small screwdriver or 3/16" drift punch for this.

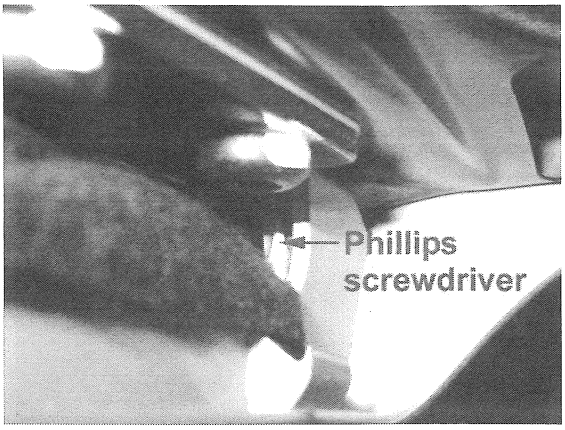
Note: E can be a bit stubborn to get out. But it will come out with a little patience. Just work at it.

Note: The small storage bin behind the hardtop retracting switch makes a good place to store all these little parts for later reassembly.

4. Remove the hydraulic actuator from the mounting plate.

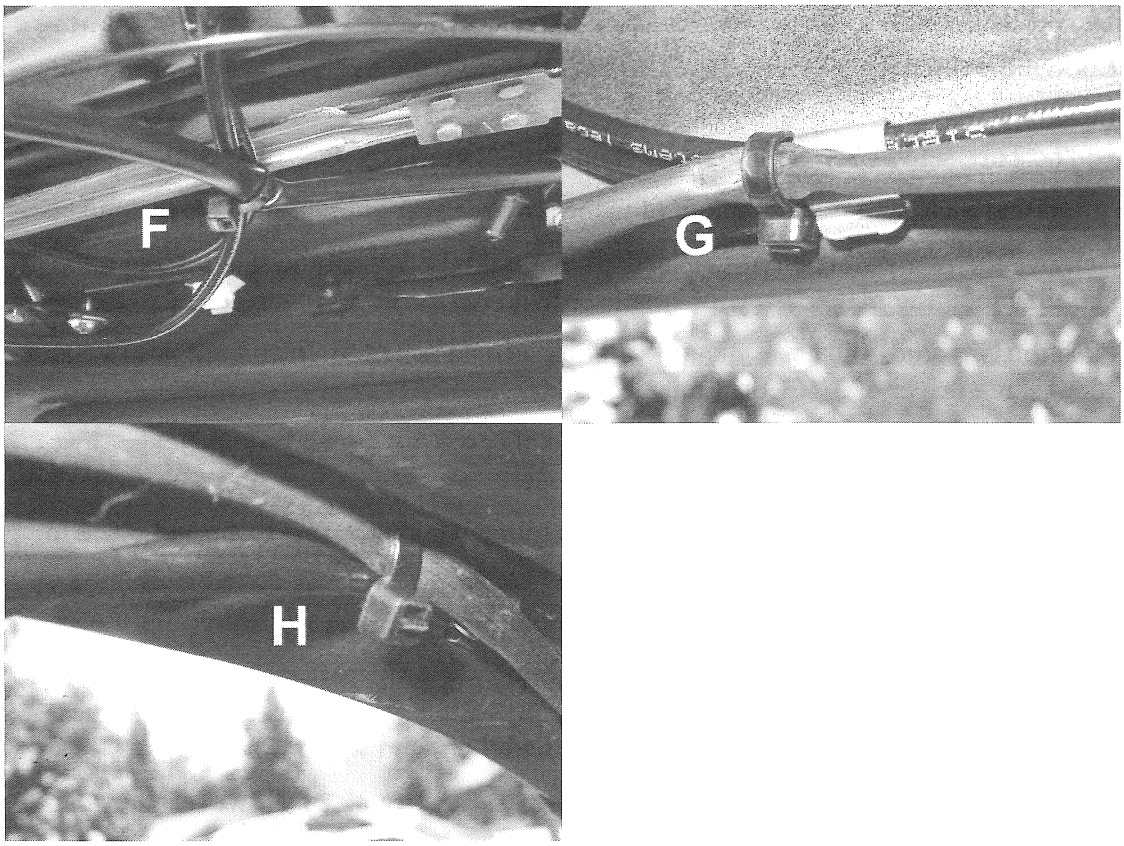
Note: If your car has a small dimple in the mounting plate, the actuator will still pull free. Just give it a bit of a wiggle. Sometimes, adding pressure behind the actuator with the fingers of one hand while wiggling it free with the other hand works well.

Note: The fittings that enter the actuator body are "staked" in place. However, they can turn a bit. That's normal. Still, try not to let them rotate too much, as you wouldn't want to inadvertently cause a leak there.

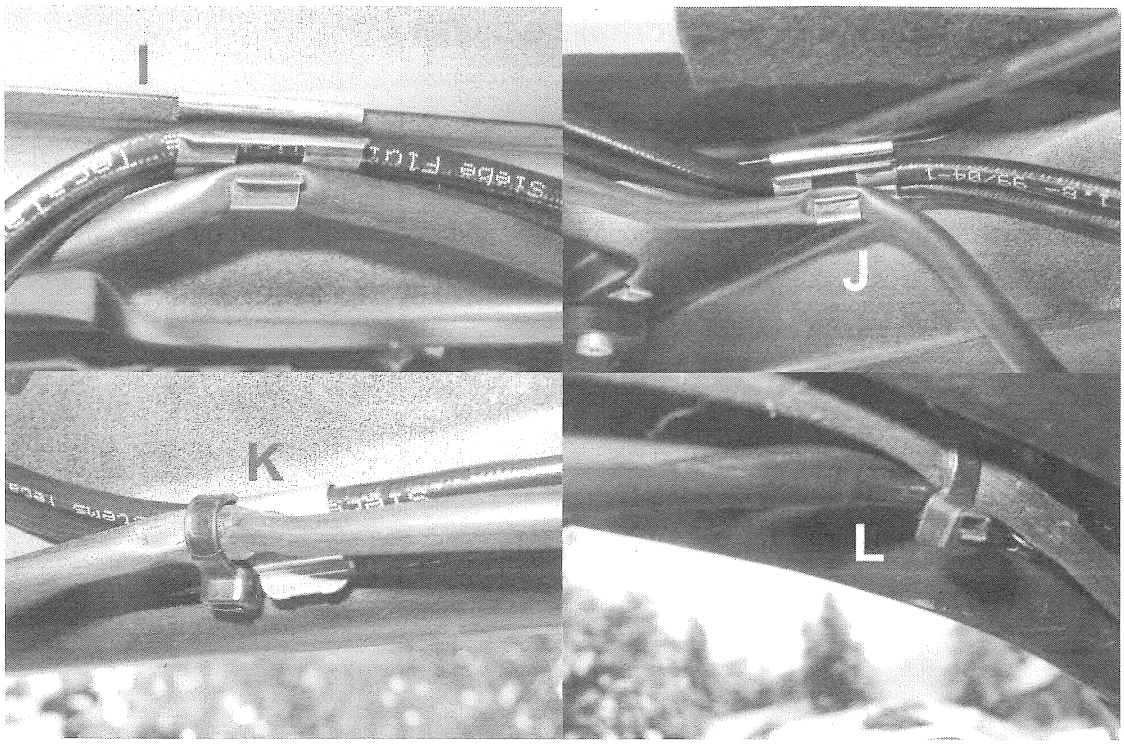


5. Remove the third (and last screw) holding the right-hand trim piece in place. This screw can be a little hard to get to. Basically, you want to approach it from "behind" the trim piece. You can see the tip of my screwdriver just behind the tab above.
6. Remove the plastic trim piece and set it aside somewhere safe.

Note: The left-hand (driver's side) plastic trim piece does not need to be removed from the car, as the hydraulic lines only run along the passenger's side.



7. With the actuator free of the mounting plate and the right-hand trim piece removed, cut the three zip ties (F, G, and H) that hold the hydraulic lines in place. Use your sidecutters for this.



8. Unclip the hydraulic hoses from the four clips (I, J, K, and L) that hold the hydraulic lines in place. A small flat-blade screwdriver works well for this.

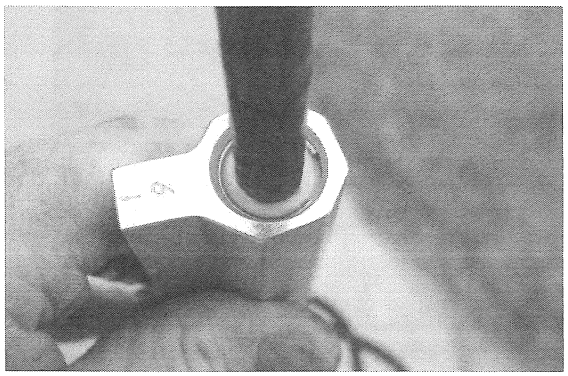
9. Pull the actuator free.

Note: You may want to wrap it in an old t-shirt to keep it from leaking hydraulic fluid in the interior of your car, depending on how badly it's leaking.

Note: With the actuator free, you have more than 3 feet of play in the lines. Remember, however, that the "anchored" end of the lines (the end that goes into the rear window pillars) is at roof height.

Section 4: Disassemble the hydraulic actuator

Note: Throughout all steps outlined here in this document, the actuator shaft must be kept absolutely pristine. Any nicks, scratches, scrapes, etc. could lead to a leak down the road. If you do get a small nick or scratch, you can use 2000 grit sandpaper to try to remove it, and then polish with automotive rubbing compound and a soft cloth until the shaft shines like chrome again.



1. Notice the retaining ring in the body of the actuator. Getting this out is THE MOST DIFFICULT part of the whole project. You might think about taking a short break here and grabbing something cold to drink.
2. Wrap the actuator shaft in electrical tape—to protect it just in case.
3. There are two ways to get the retaining ring out:
   - Option A: Drive the white nylon bushing down into the cylinder cavity and pry the ring out from underneath. Try this first.
   - Option B: Drill a small access hole in the aluminum cylinder body and push the ring out from behind.

Note: Regardless of which option you choose, you don't want to gouge up the retaining ring, white nylon bushing, or the inside of the aluminum actuator body. So be careful here.

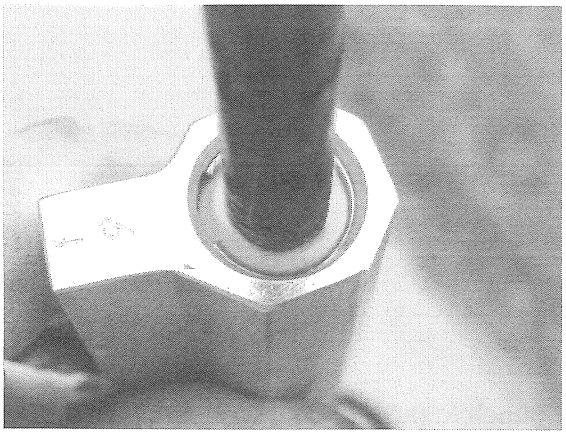
Option A

i. Use your drift punch and hammer to tap the white nylon bushing down into the cylinder approximately 1/4". Tap lightly and evenly all the way around the bushing. Avoid deforming the bushing.

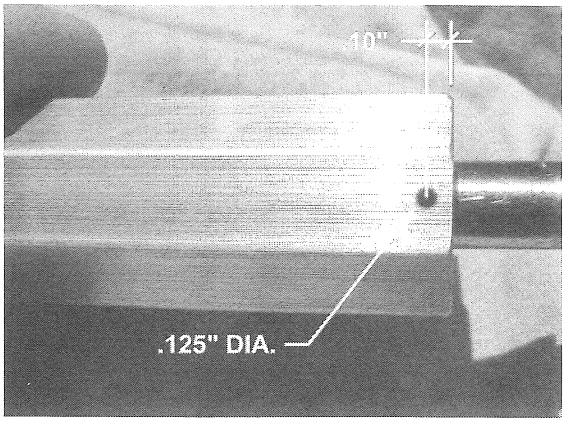
ii. With the bushing pushed down, use your small flat-blade screwdriver and small needlenose pliers to pry the retaining ring free. You could also use two small flat-blade screwdrivers to accomplish this. Sometimes, dental picks work.

iii. If you find removing this retaining ring difficult this way—and it can be—proceed to Option B below.

Option B



i. Use your small screwdriver to rotate the retaining ring, so that the gap in the ring is facing toward the surface where the hydraulic hoses attach.



ii. On the surface **OPPOSITE** of where the hydraulic hoses attach, measure down 0.10" from the top of the lip, and make a mark across this surface.

iii. In the middle of this mark, drill a 1/8" diameter hole until you get to the retaining ring. You'll know you've hit the retaining ring, as the drilling will slow considerably.

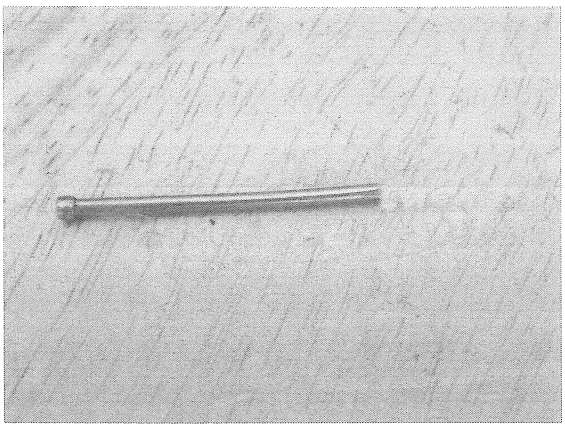
CAUTION: You only want to drill through the outermost "web" of aluminum to gain access to the backside of the retaining ring.

iv. Rotate the retaining ring, so that the gap is now straddling the hole you drilled.

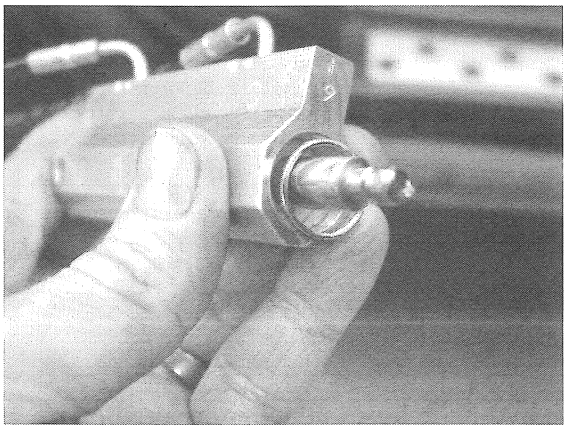
v. Clean out the hole you just drilled with your 1/8" drill bit. Be extremely careful that you do not get anywhere near the actuator shaft.

CAUTION: Be extremely careful that you don't nick the actuator shaft. If you do happen to get a small nick or scratch, use 2000 grit sandpaper to try to remove it, and then polish with automotive rubbing compound and a soft cloth until the shaft shines like chrome again.

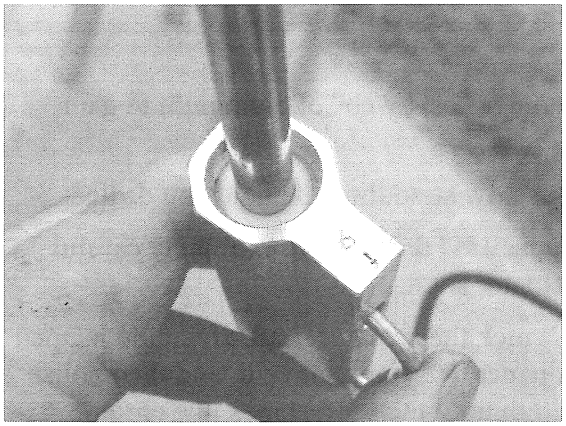
vi. Rotate the retaining ring, so that one of the ends of the ring is covering the 1/8" hole.



vii. Use a flattened/blunted nail or 1/8" drift punch to push in on the retaining ring through the hole you drilled while you pry the retaining ring out with a small screwdriver.



4. Remove the electrical tape and retaining ring. (Actuator yoke removed in this photo for clarity. DO NOT REMOVE your own actuator yoke.)

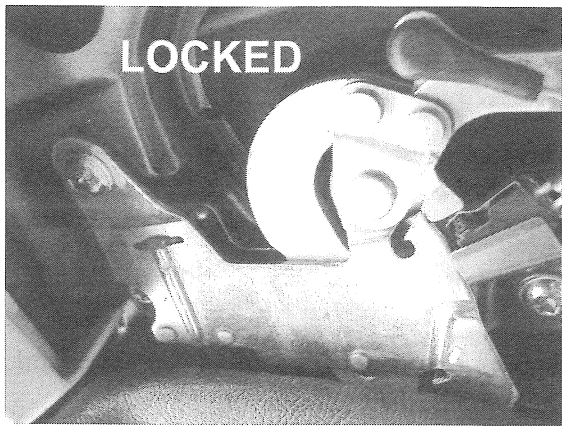


5. Use an extremely liberal amount of WD40 to rinse off all metal shavings. Think "Clean. Clean. Clean."

6. There are two ways to get the internals of the hydraulic actuator out
   - Option A. Just pull on the shaft until it pops out. Not as hard as it sounds. Try this first.
   - Option B. Use the car's hydraulic system to push the internals out.

WARNING: If you choose to use the car's hydraulic system (Option B), you could be injured if you don't take appropriate precautions as explained.

Option B is explained below:



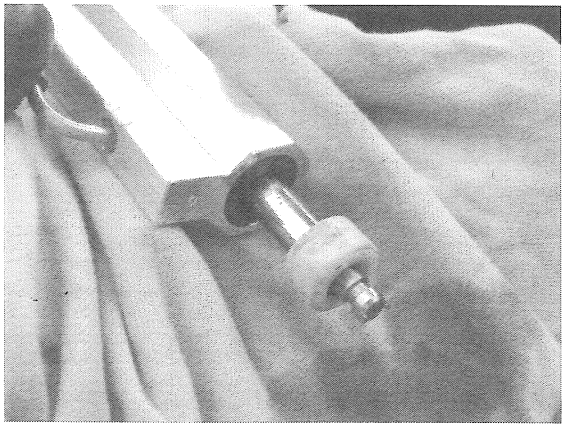
i. Ensure the roof locks are engaged on both sides.

ii. Wrap the actuator in a thick rag, ensuring all sides are covered by a double thickness of the cloth.

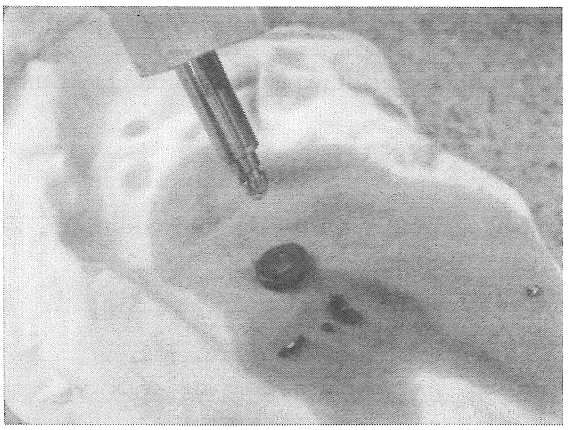
iii. Make sure you have hold of **only** the actuator body through the cloth.

iv. Hold the actuator outside the car and pointed in a safe direction.

v. Insert your car key and turn it to the second position. Pull back on the hardtop's retraction switch momentarily to pop out the internals. You'll feel the pop. Let go of the hardtop retraction switch at that point.



vi. This is what you'll see when you unwrap the rag. (Again, actuator yoke removed in these photos for clarity. DO NOT remove your own actuator yoke.)

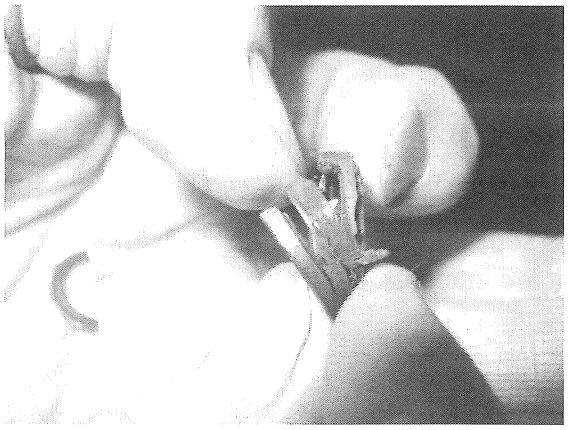


vii. Gently pull on the actuator shaft to remove the old internals.

Note: There will likely be little to no flow of hydraulic fluid. However, you can always remove all pressure from the system with the pressure-release screw on the front of the pump. For more information, see the end of Section 8.

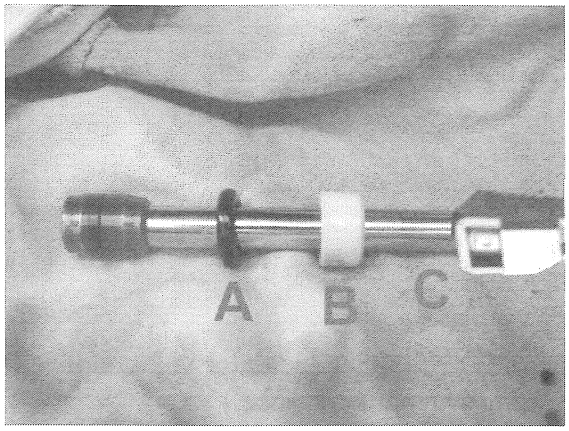
7. Use your sidecutters to cut the old hydraulic seal (should be a bluish color) off of your actuator shaft.

Warning: DO NOT mistakenly cut the small black rubber seal off of the brass piston end of the actuator shaft. This does not break down and should last you the life of your vehicle.



This is what my factory polyurethane seal looked like. I'm surprised it didn't leak worse than it did. Polyurethanes are simply not up to this task.

Section 5: Reassemble the hydraulic actuator

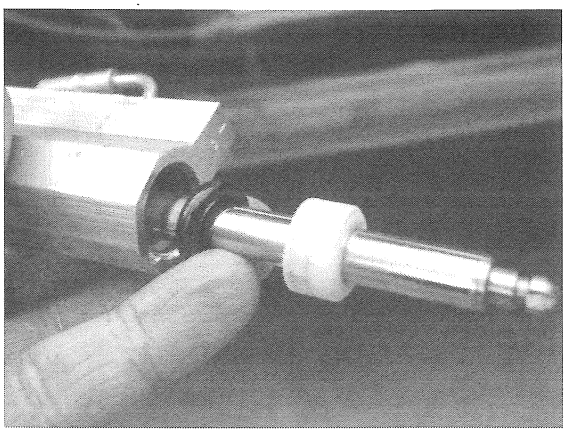


1. Clean out the cavity of the actuator body with a liberal dosing of WD40. Be sure to get all the little disintegrated bits of your Mercedes seal out of the body. Clean. Clean. Clean. When it comes to hydraulic systems, you can't be too clean.
2. Clean the actuator shaft (C) and white nylon bushing (B). Also inspect and clean the rubber seal that surrounds the brass portion (the piston) of the actuator shaft. (On the left in the picture above.) Be sure to get all the little disintegrated bits of your Mercedes seal off these pieces.
3. Hold the actuator body upside down outside the car and near the ground. Some hydraulic fluid should start dripping after a minute or so. Or, crack open that bottle of ZH-M hydraulic fluid you bought at the Mercedes dealership to refill your pump. (See section 12.)
4. Take some hydraulic fluid with your finger and apply it liberally to the medium Nitrile o-ring supplied in your rebuild kit. (The one without a matching mate.)

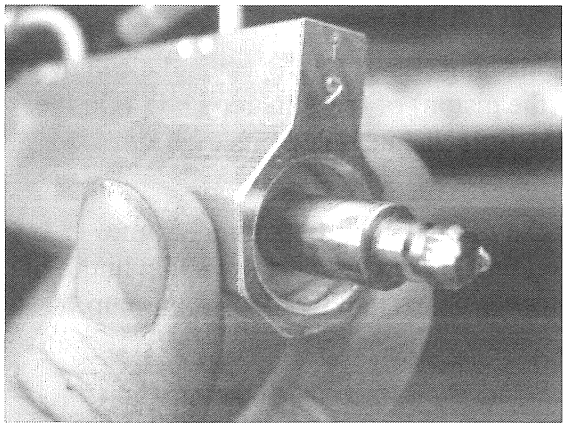
Note: The above step is very important, as it helps create a leakproof seal. Same concept as when you change your oil filter.

5. Stretch the medium o-ring in your kit (A) over the brass portion of the actuator shaft (shown on the left in the picture above) and onto the actuator shaft (C). Your assembly should look like the picture above.

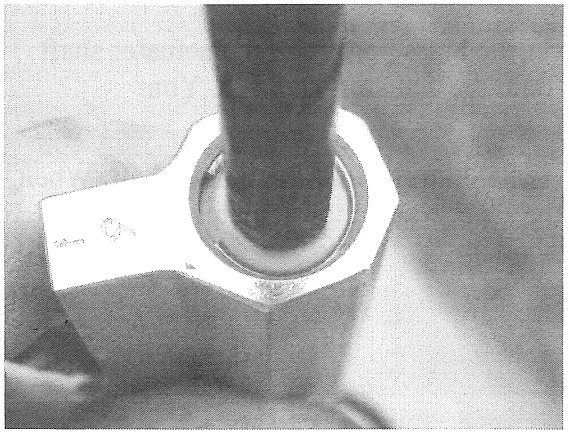
Note: It is quite normal for the o-ring to fit somewhat loosely on the actuator shaft. When you insert the assembly into the actuator body, the inner wall of the actuator body will compress the o-ring tightly against the actuator shaft.



6. Insert the assembly from above into the actuator body. (Again, actuator yoke removed in these photos for clarity. DO NOT remove your own actuator yoke.)
7. Carefully guide the new o-ring (A) inside the actuator body, avoiding snagging it on any rough edges if you drilled in the previous section.



8. Seat the white nylon bushing (B) deep enough in the actuator body to clear the retaining ring groove.

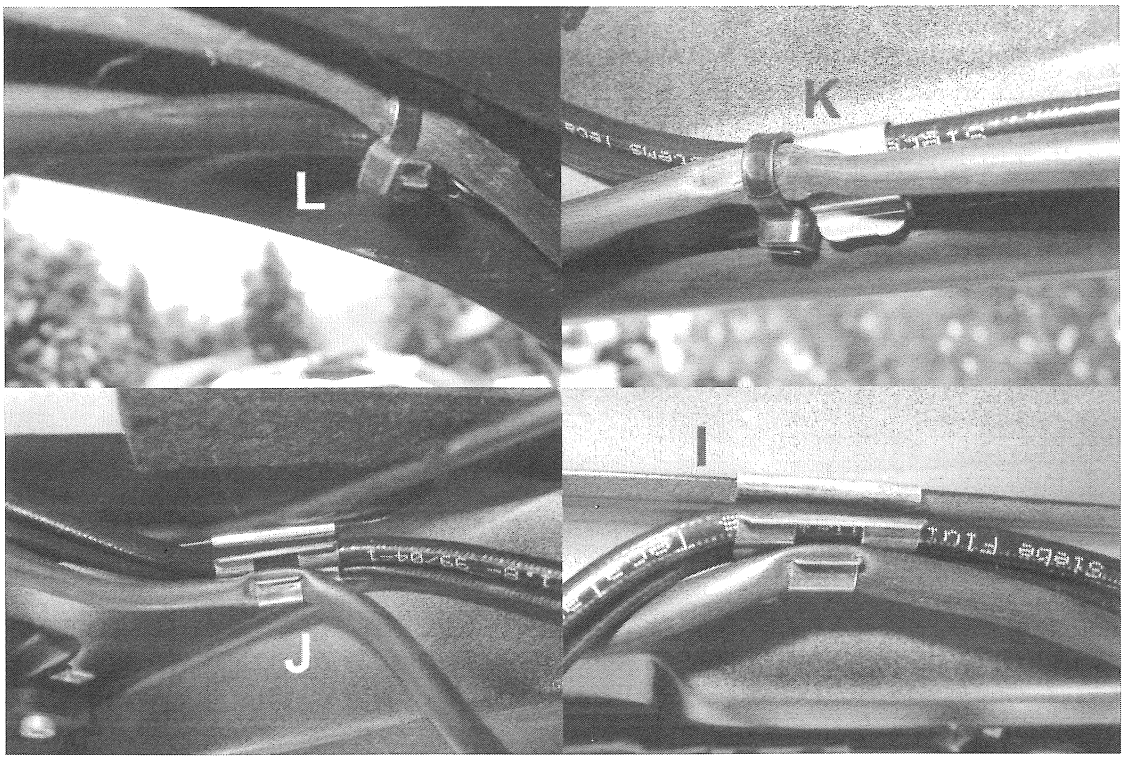


9. Reinstall the retaining ring removed in the previous section.
10. Push the actuator shaft in and out a few times by hand to "seat" the new o-ring.

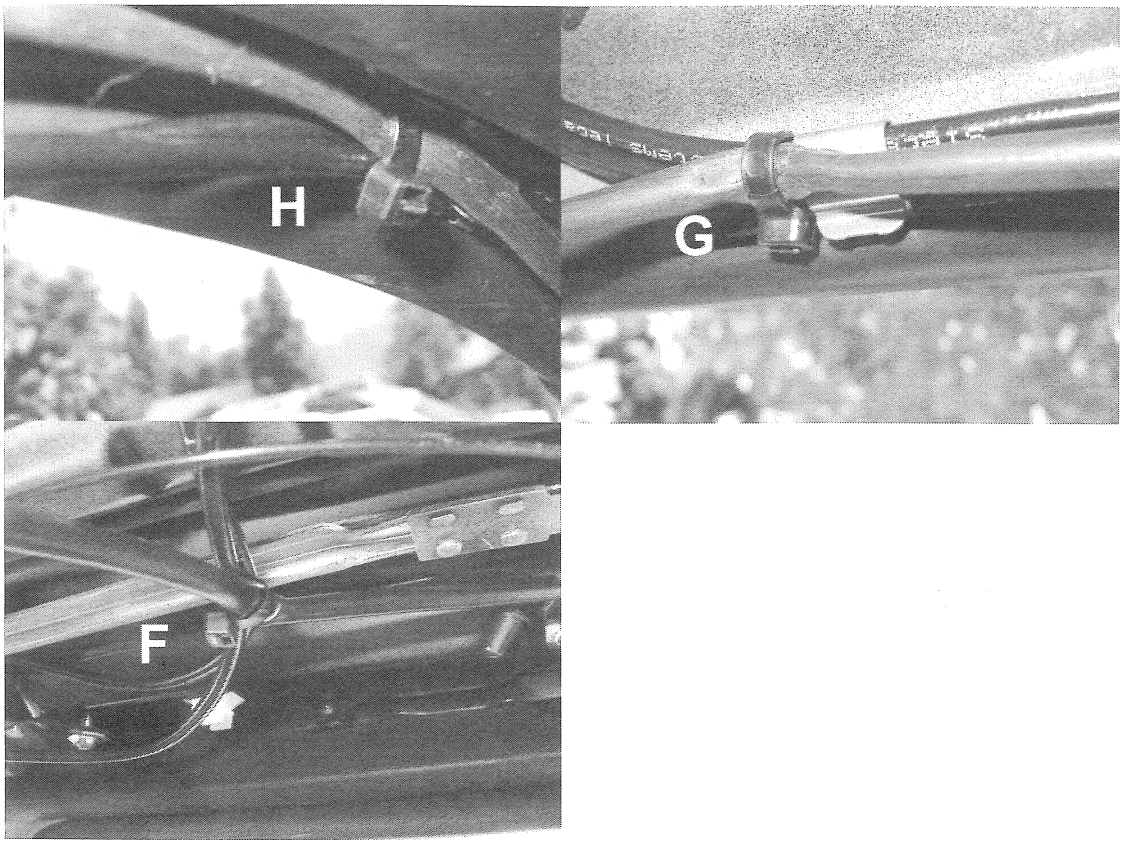
Note: You might notice that there is a bit more stiction with the o-ring in place versus your old deteriorated seal. This is quite normal—and is a good indicator that you will enjoy a lifetime free of further leaks from this actuator.

Note: The hydraulic system is self-bleeding. You'll note that there are two lines that go to each cylinder. As such, any air that enters the system is pushed through one line, into the cylinder, out the other line, and into the hydraulic reservoir, which has an expandable air space.

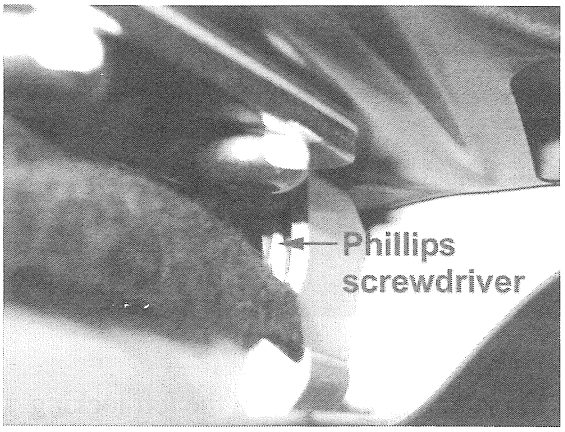
Section 6: Reinstall the hydraulic actuator



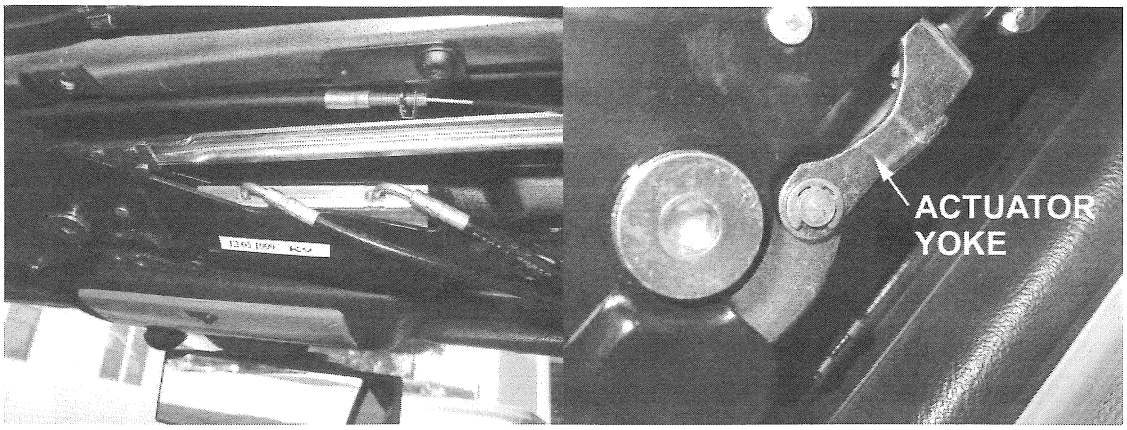
1. In reverse order from removal, clip the hydraulic hoses into the four clips (L, K, J, and I) to hold the hydraulic lines in place. A small flat-blade screwdriver helps with this.



2. In reverse order from removal, install three new zip ties included in your rebuild kit (H, G, and F) to hold the hydraulic lines in place. Cut off the excess with your sidecutters.

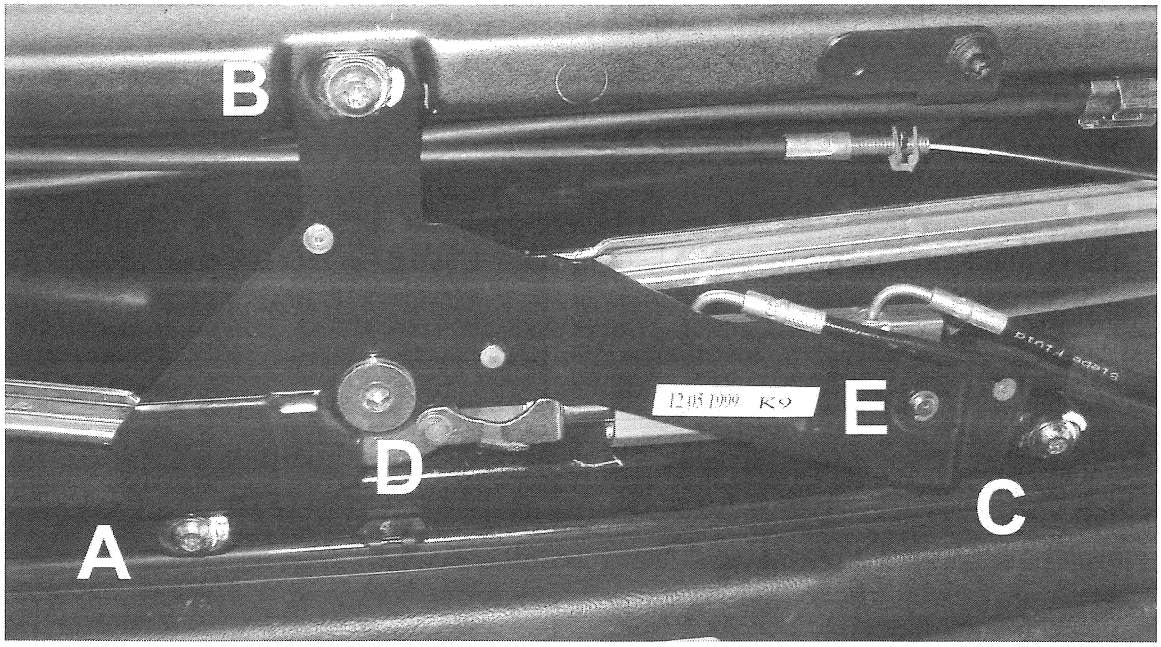


3. Reinstall the right-hand trim piece. Secure it in place with just the rearmost screw. Remember, this screw can be a little hard to get to. Basically, you want to approach it from "behind" the trim piece. You can see the tip of my screwdriver behind the tab above.



4. Install the hydraulic actuator into position. This can be a bit difficult if your car has the dimpled mounting plate. Just take your time. With a little patience, you can get it in there. Then again, it could be time for another cold beverage.

Note: Note the orientation of the actuator yoke before you snap/slide the actuator into place.



5. With the hydraulic actuator in place, assemble the pivots at point D.

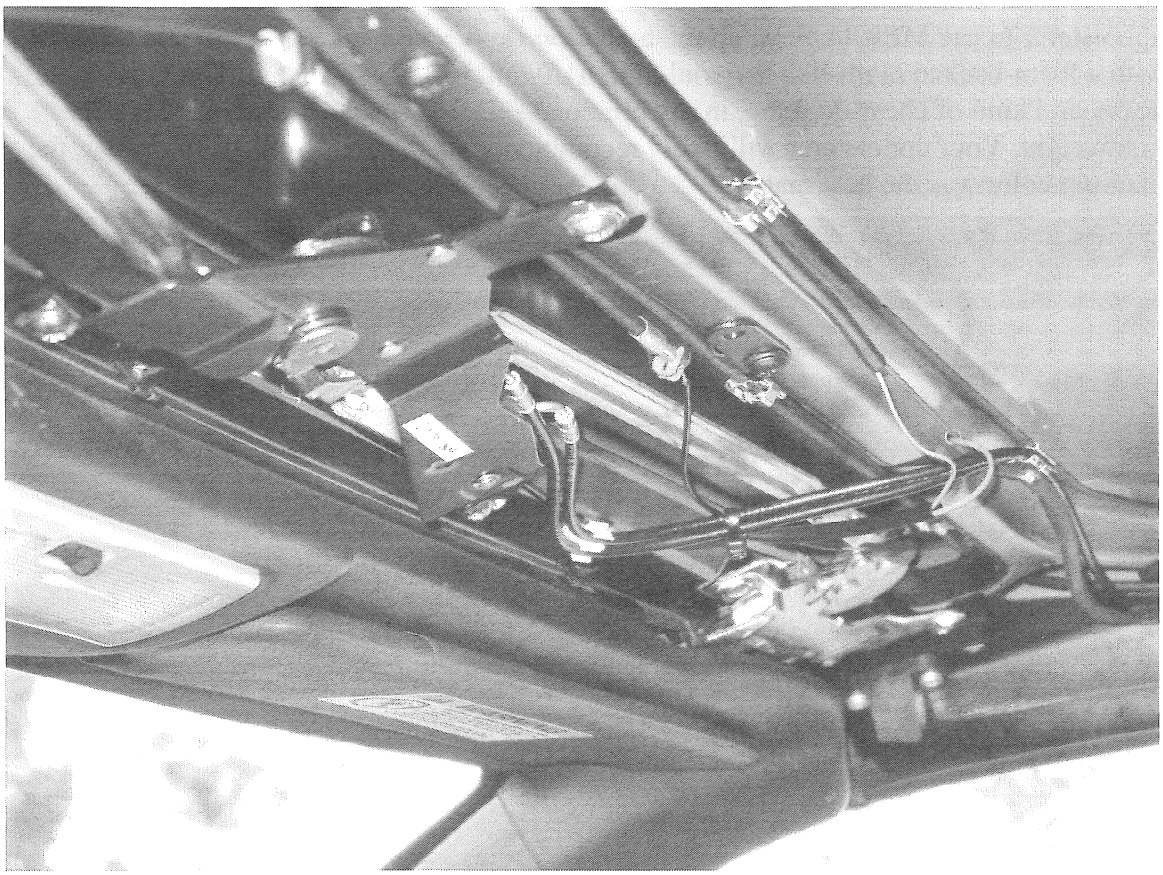
Note: The pivot arm from the right locking arm fits inside the yoke from the left locking arm, all of which then fits inside the yoke of the actuator.

6. Push the short stud (D) into the assembled pivot points from above at point D. This too can be a bit difficult. A small screwdriver can help line all the holes up.

7. Secure this stud from below with one of the e-clips that you removed during disassembly.

8. Push the longer stud (E) through the mounting plate and actuator body from above. Again, a small screwdriver can help align things.
9. Secure this stud from below with the other e-clip you removed during disassembly.
10. Tighten the three Torx screws (A, B, and C) to hold the hydraulic actuator mounting plate in place. Again, use your T30 Torx socket for this.

Note: Be sure to tighten the Torx screws until the white paint marks line up again.



This is what you should have at this point. ☺

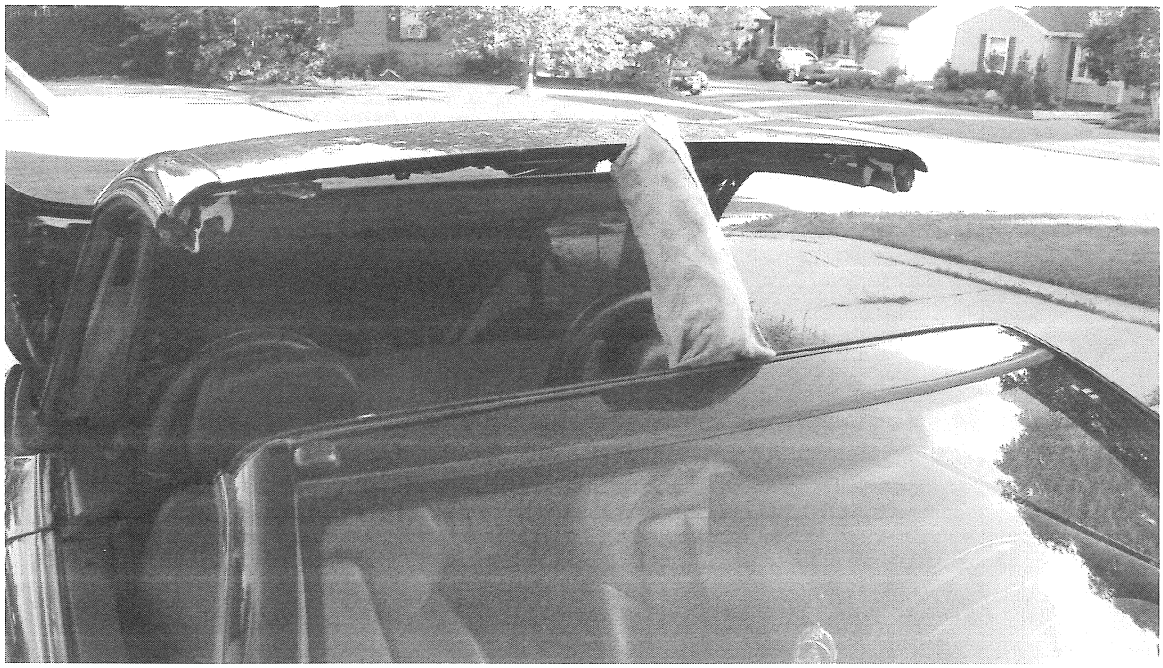
11. Make sure the elbows in the hydraulic lines are up above the lower surface of the mounting plate. Rotate them up, if they are not.

Note: The cable release on the right should be the highest cable. If it's not, it's easy enough to disconnect it from the knuckle on the far right and reposition it. It just pulls off.

Section 7: Reinstall the headliner

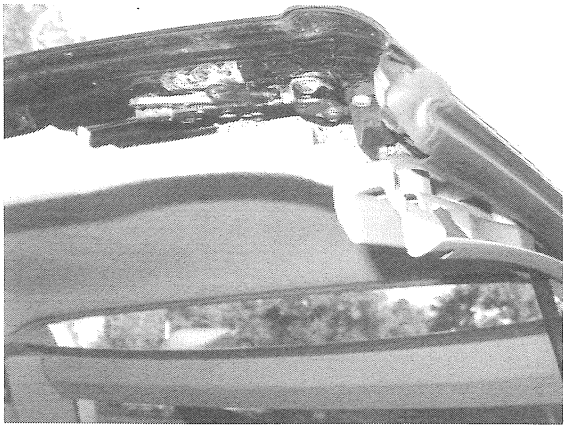
Note: You may want to wait a week or so between finishing up the steps above and reinstalling your headliner—just to make sure you are 100% oil tight. It's pretty amazing how well this fix works. But it's always better to be safe than sorry, you know?

Note: Your headliner will probably be ruined anyway from having hydraulic fluid leak all over it for months. Be sure to get it repaired before you reinstall it. Ask your upholsterer to use MEK to clean up the hydraulic fluid, so the adhesive will stick. I went with a foam-backed cloth-like material in lieu of going with vinyl again. The vinyl is heavy and kind of cheap-looking, in my opinion. This foam-backed cloth stuff is very lightweight. Your upholsterer will likely recommend this material as well. In my car, the titanium color was the best match.

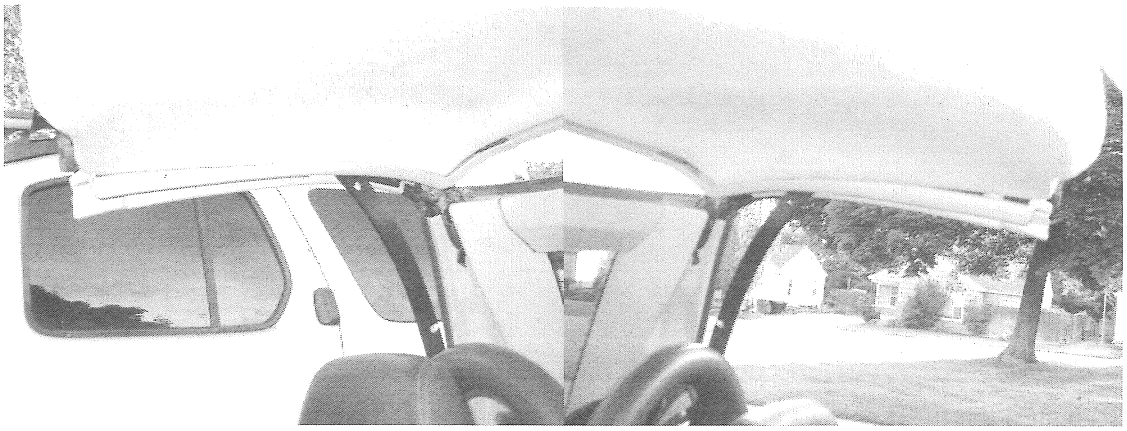


1. Use the hardtop retraction switch in the center console to raise the top approximately 12 inches.
2. If your hardtop won't stay in the up position, block it with the 2x4 wrapped in the t-shirt. Sometimes the tops won't stay up by themselves if they're really low on hydraulic fluid.

WARNING: With the hardtop up and blocked, the only thing holding it in place is the 2x4. You may want to also strap the hardtop in this up position with some strong nylon straps, motorcycle tie-downs, or the like. If it comes down with any part of your body in the way, you could be seriously injured or killed.



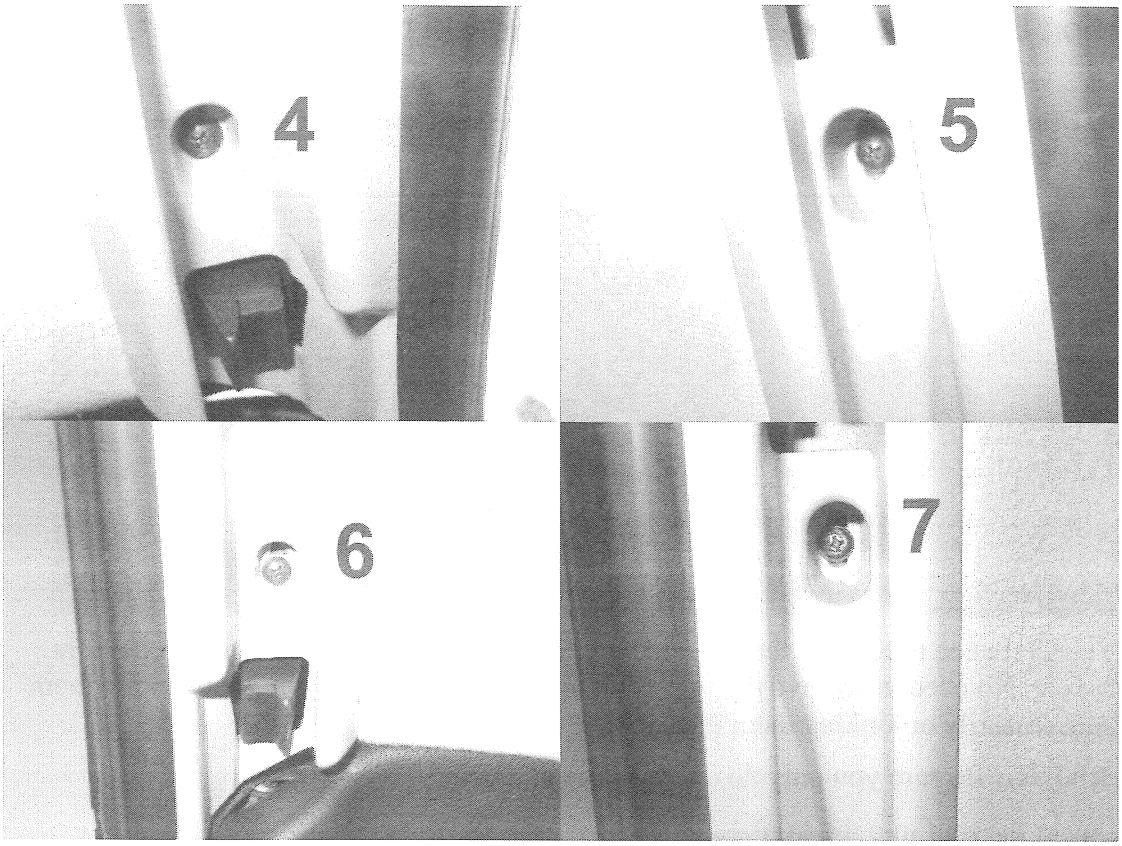
3. Install your headliner.



4. Be sure you get your headliner properly aligned in the left and right trim pieces.

5. Tuck the headliner into the rear trim piece, too. If you've had your headliner reupholstered in the foam-backed cloth material, it might be a little thicker than it was originally. Take your time to tuck the headliner in place all around before you secure it with the 7 screws.

6. Reinstall the three screws and conical washers (1, 2, and 3) in the front edge of the headliner.



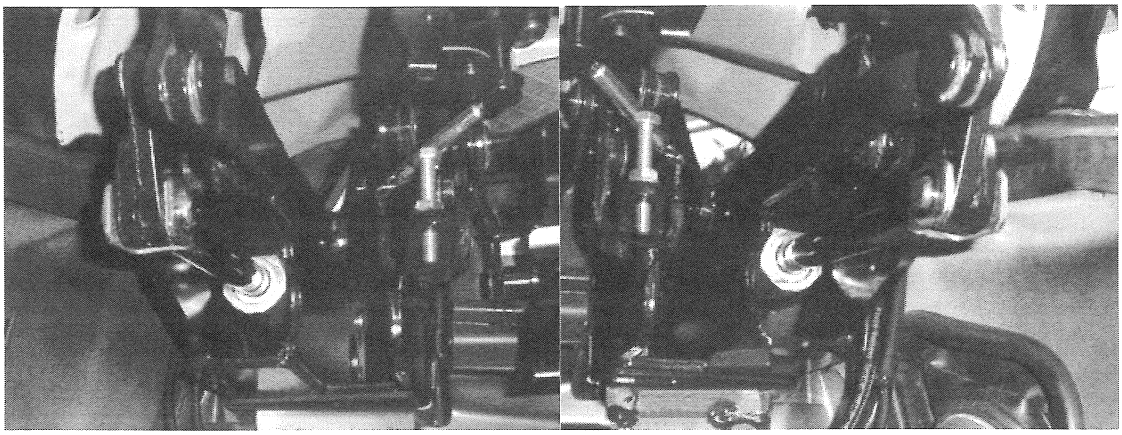
7. Reinstall the two front screws in each of the two plastic headliner trim pieces (4, 5, 6, and 7).

You're finished. Congratulations! Time for another cold beverage. This time, use a chilled glass. You deserve it! ☺

If your hydraulic pump in the trunk is low on fluid, proceed to Section 12 to learn how to refill it.

Section 8: Remove the two top-lifting hydraulic actuators

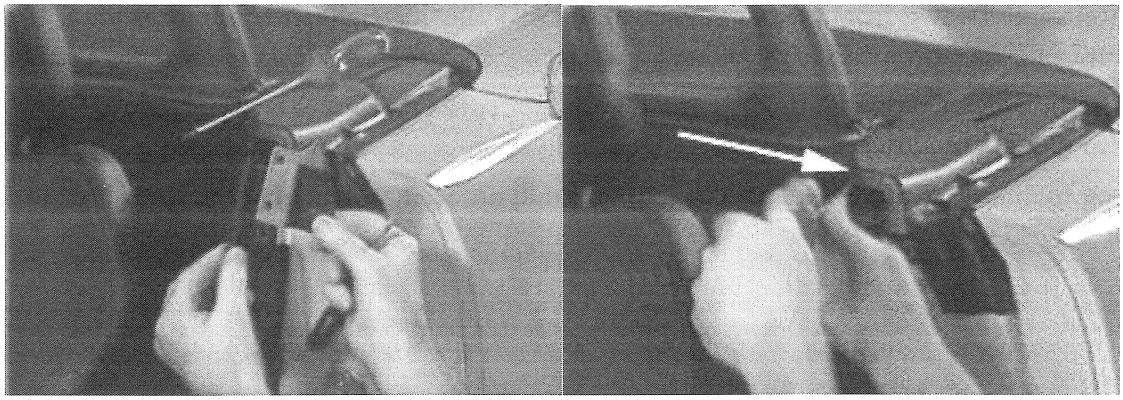
Using what you learned from the previous seven sections, you should now be able to rebuild the two top cylinders in the trunk "fairly easily."



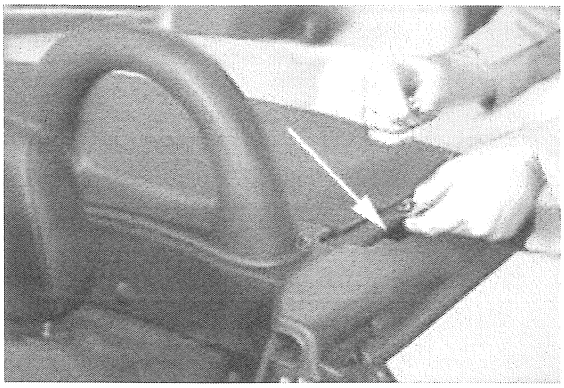
1. You first need to remove the hydraulic cylinders from the brackets holding them in the car. No need to remove the hydraulic lines. Just be careful to avoid twisting them unnecessarily or kinking them in any way.

WARNING: Be sure you only do one actuator at a time.

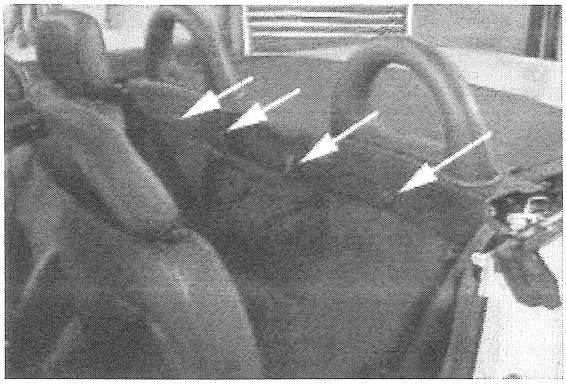
2. Lower the roof into the trunk.



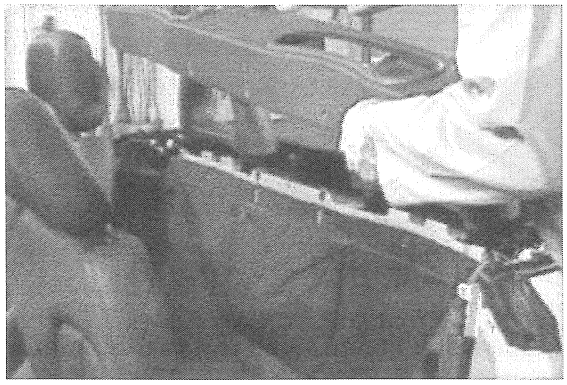
3. Remove the trim plates on both the left-hand (driver's) and right-hand (passenger's) sides of the car.



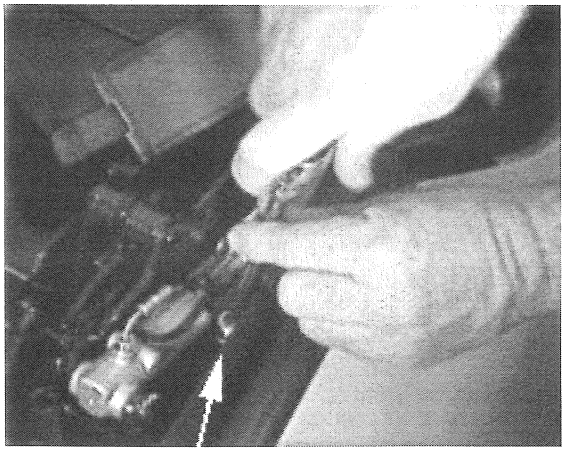
4. Remove the two 8mm bolts that hold each hinge cover in place. There's a hinge cover on the left-hand side and one on the right-hand side of the car.
5. Move both seats as far forward as possible.



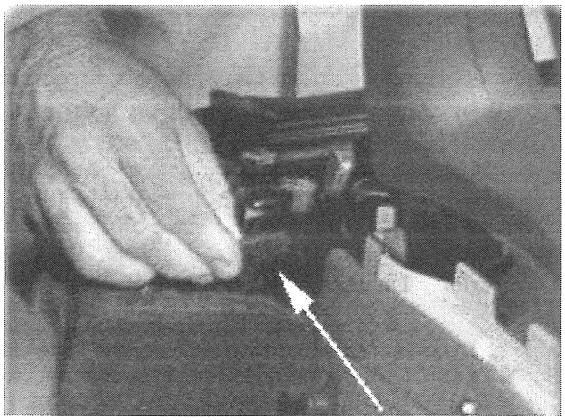
6. Remove the four fasteners that hold the rear deck in place. You will see them on the vertical surface right under the roll bars.



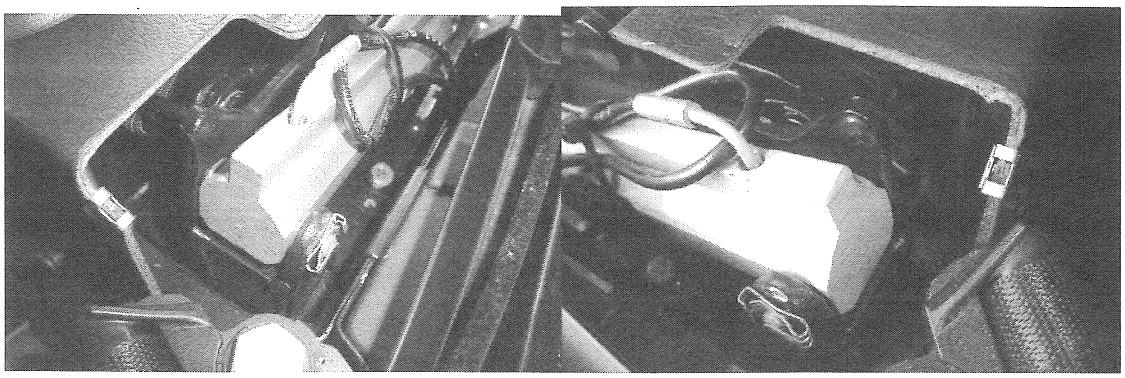
7. Remove the rear deck by sliding it up and over the roll bars.



8. Remove the front two machine screws that are holding the actuator bracket to the car. These screws run vertically through the bracket and into the car. (NOTE: On some models and years, you can forgo removing the brackets—and simply remove the clip and pin on each end of the actuator—and pull the actuators free. See if you have the clearance to do this. It will save you time and hassle.)
9. Raise your car's roof.
10. Remove the other two machine screws that are holding the actuator bracket to the car. (NOTE: Again, you may be able to forgo this step if you have the clearance to simply remove the clip and pin on each end of the actuator.)



11. Disconnect the roof close-limit switch from the roof hinge on the right-hand (passenger's) side of the car. This is easier said than done. The limit switch has a split barb on its underside. You need to get under the switch with a small shim or thin flat screwdriver to compress the barb enough to pull the switch free.
12. You should now have enough wiggle room to get to the clips holding the actuators to the bracket. Remove these clips (one on each end).

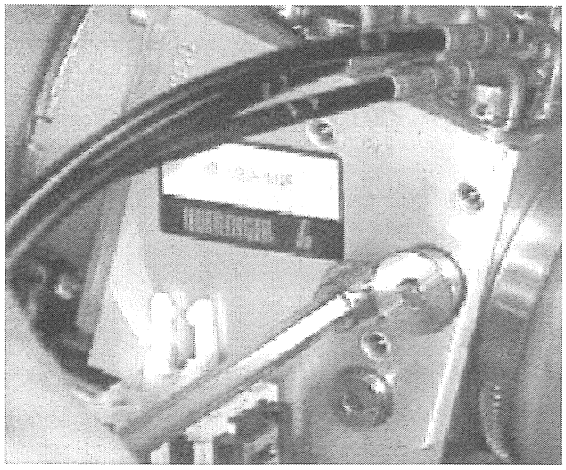


13. Remove the pins that hold the cylinders in place. The actuators should come free of the car.

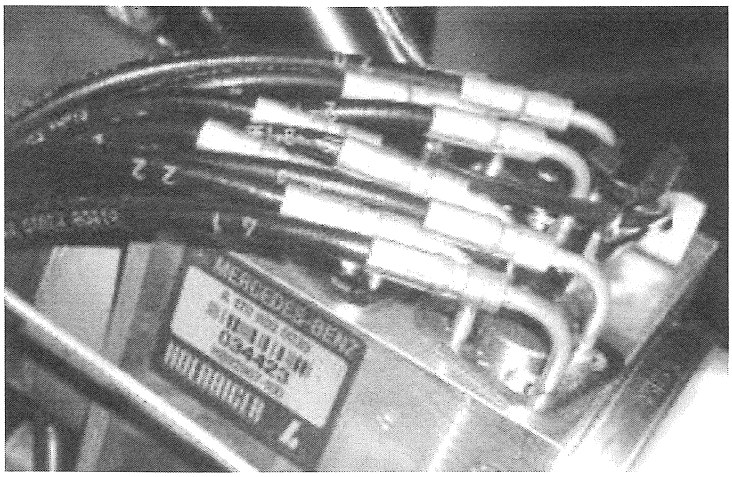
With the cylinders free of their mounting brackets, you will have about 12 inches of hydraulic line to play with. Not much, but it should be enough to accomplish the rebuild.

Optional

If you want to remove the hydraulic lines from the pump, follow these steps:



i. Back out (in a counterclockwise direction) the pressure-release screw until it stops.



ii. Unlock the retaining plate that holds the hydraulic lines to the top of the pump.

iii. The hydraulic lines are numbered and correspond to numbers stamped in the top of the retaining plate. Take note of this.

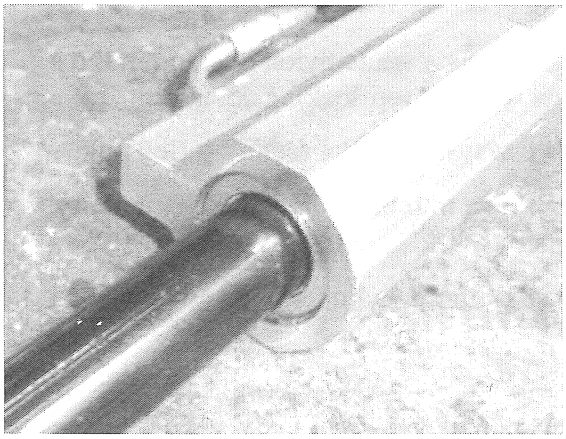
iv. Remove the hydraulic lines from the pump.

Section 9: Disassemble the two top-lifting hydraulic actuators

1. With the hydraulic cylinder free of the mounting bracket, fully extend the cylinder's actuator shaft.
2. Wrap the actuator shaft in a layer of electrical tape.
3. Find two short lengths of wood that you can sacrifice. Two short lengths of 1 x 4 work great.
4. Clamp the actuator rod in between these two pieces of wood in your vice. Do not clamp the U-shaped yoke found on the end of the actuator shaft in the vice; we will be removing this from the actuator shaft.

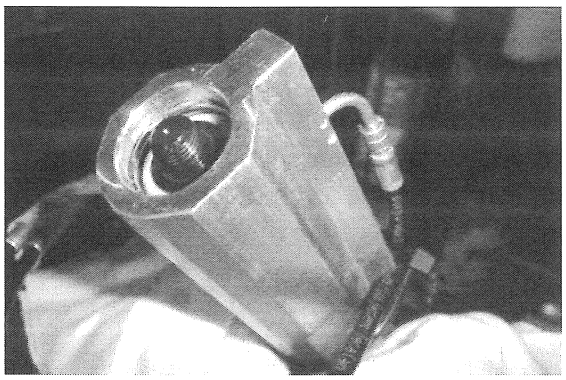
Note: The actuator shaft must be kept absolutely pristine. Any nicks, scratches, scrapes, etc. could lead to a leak down the road. If you do get a small nick or scratch, you can use 2000 grit sandpaper to try to remove it, and then polish with automotive rubbing compound and a soft cloth until the shaft shines like chrome again.

5. With the actuator shaft held firmly in the vice, insert your phillips screwdriver through the two holes in the end of the U-shaped yoke on the end of the actuator rod.
6. Remove the U-shaped yoke from the end of the actuator shaft. It is threaded onto the rod with a standard right-hand thread. So turn your screwdriver counterclockwise to unthread. You may need to apply a bit of heat from a butane torch to liquefy any thread-locking compound that may be present (about 50% of the time).
7. With the yoke removed, push the actuator shaft down into the hydraulic cylinder as far as it will go. You may need to use your drift punch here.



8. Inside the hydraulic cylinder bore, you will see two rings: an aluminum ring with a flexible, fibrous ring (aka felt rod wiper) behind it.
9. Use a small hook to hook and pull out the fibrous ring, which is tucked in behind the pressed-in aluminum washer. Note that the fibrous ring is not a continuous donut shape. To improvise a small hook, find a safety pin and bend the sharp end into a hook. A fishing hook works here, too.

10. With the fibrous ring removed, find a small flat washer that has an outside diameter slightly larger than the hole in the aluminum washer and an inside diameter just big enough to fit over the threads on the actuator rod.
11. Bend the washer into a slight U shape, so it will fit into the hole in the aluminum washer. Insert this improvised tool behind the aluminum ring and around the threads on the actuator shaft. The object here is to get something behind the pressed-in aluminum washer, so that when you pull on the rod and bracket, it will pop off the aluminum washer. It should pop off rather easily and be reusable.
12. Thread the yoke back onto the actuator shaft a short way. Do not tighten.
13. Insert your phillips screwdriver through the two holes in the actuator yoke again.
14. Use your hammer to tap the screwdriver away from the body of the hydraulic cylinder to "press out" the aluminum ring.
15. With the two rings removed, push the actuator shaft down into the cylinder once again.



16. You will see a large C-shaped retaining ring holding a white nylon bushing in the cylinder bore. This is similar to what you saw with the top-locking actuator.
17. As with the top-locking actuator, there are two ways to get the retaining ring out:
    - Option A: Drive the white nylon bushing down into the cylinder cavity and pry the ring out from underneath. Try this first.
    - Option B: Drill a small access hole in the aluminum cylinder body and push the ring out from behind.

Option A

i. Use your drift punch and hammer to tap this bushing down into the cylinder approximately 1/4". Tap lightly and evenly all the way around the bushing. Avoid deforming the bushing.

ii. With the bushing pushed down, use your small flat-blade screwdriver and small pliers to remove the retaining ring. You could also use two small flat-blade screwdrivers to accomplish this.

iii. If you find this retaining ring difficult to remove—and it can be—proceed to Option B on the next page.

Option B

i. You can always measure and drill the cylinder body, similar to what you did in Section 4, Option B. **The measurements will be different, however.** Be sure to measure twice and drill once.

18. With the retaining ring removed, withdraw the actuator shaft from the cylinder body. (The whole actuator, bushing, rod seal and piston will slide out.) If it's in there too tight, use the car's hydraulic system to push the internals out. You will need a helper for this.

WARNING: If you choose to use the car's hydraulic system, you could be injured if you don't take appropriate precautions as explained.

19. Wrap the actuator in a thick rag, ensuring all sides are covered by a double thickness of the cloth.
20. Make sure you have hold of **only** the actuator body through the cloth.
21. Hold the actuator outside the car and pointed in a safe direction.
22. Have your assistant insert your car key and turn it to the second position. Have them then pull back on the hardtop's retraction switch momentarily to pop out the actuator's internals. You'll feel the pop. Tell your assistant to let go of the hardtop retraction switch at that point.
23. Gently pull on the actuator shaft to remove the old internals.

Section 10: Reassemble the two top-lifting hydraulic actuators

1. Clean out the cavity of the actuator body with a liberal dosing of WD40. Be sure to get all the little disintegrated bits of your Mercedes seal out of the body. Clean. Clean. Clean. When it comes to hydraulic systems, you can't be too clean.
2. Clean the actuator shaft and white nylon bushing. Be sure to get all the little disintegrated bits of your Mercedes seal off these pieces.
3. Hold the actuator body upside down outside the car and near the ground. Some hydraulic fluid should start dripping after a minute or so. Or, crack open that bottle of ZH-M hydraulic fluid you bought at the Mercedes dealership to refill your pump. (See section 8.)
4. Take some hydraulic fluid with your finger and apply it liberally to the new Nitrile o-ring supplied in your rebuild kit. It is one of the two larger o-rings supplied in the parts kit.

Note: The above step is very important, as it helps create a leakproof seal. Same concept as when you change your oil filter.

5. Assemble the actuator shaft, new o-ring, and white nylon bushing as in Section 5, Step 5. Again, it is normal for the o-ring to be slightly loose on the actuator shaft. When you insert the assembly into the actuator body, the inner wall of the actuator body will compress the o-ring tightly against the actuator shaft.

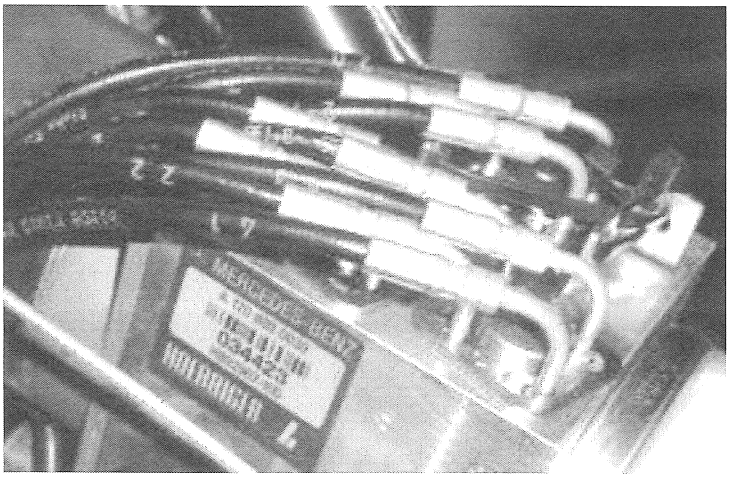
Note: Make sure you assemble the white nylon bushing in the right direction. The rounded edge butts up against the retaining ring. If you install the bushing the wrong way, you may end up with a leak.

6. Insert the assembly into the actuator body.
7. Carefully guide the new o-ring inside the actuator body, avoiding snagging it on any rough edges from your drilling in the previous section (if you decided to drill).
8. Seat the white nylon bushing deep enough in the actuator body to clear the retaining ring groove.
9. Reuse the retaining ring to secure the nylon bushing in place. A small screwdriver and small set of pliers help position the retaining ring properly.
10. Reinsert the fibrous ring.
11. Tap in the aluminum ring with your drift punch and hammer.
12. Reinstall the yoke onto the actuator shaft, reversing the steps in Section 9, Steps 2 through 7.
13. Work the actuator shaft in and out a few times to "seat" the new o-ring.

Section 11: Reinstall the two top-lifting hydraulic actuators

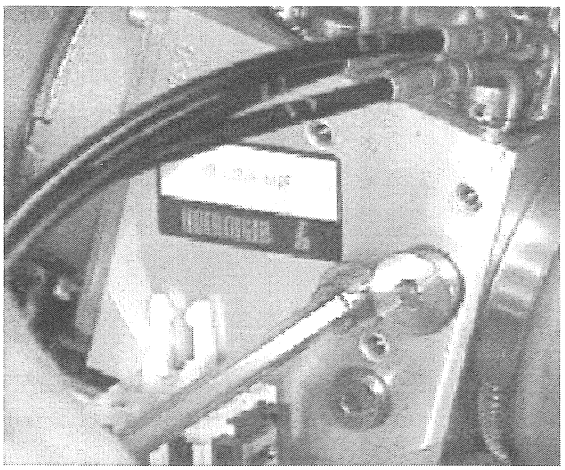
Optional

If you removed the hydraulic lines from the pump in Section 8, follow these steps to reconnect them:

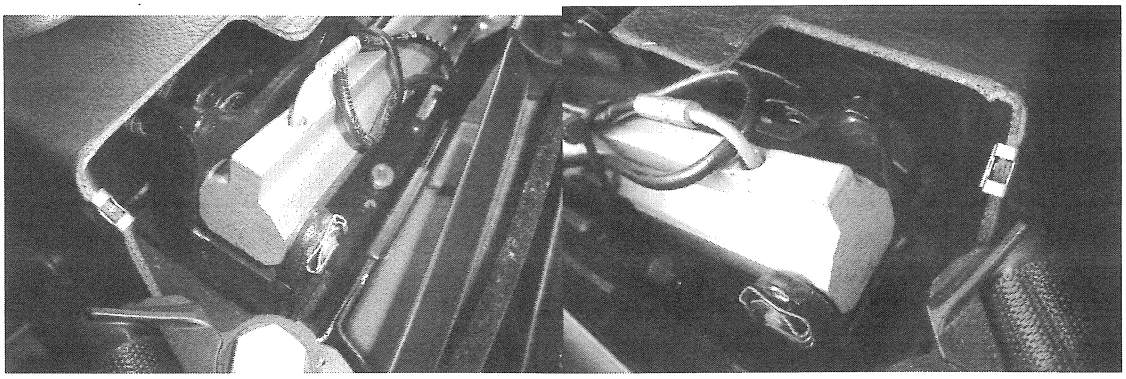


i. Insert the numbered lines into their corresponding holes in the top of the pump. Note the matching numbers stamped into the retaining plates.

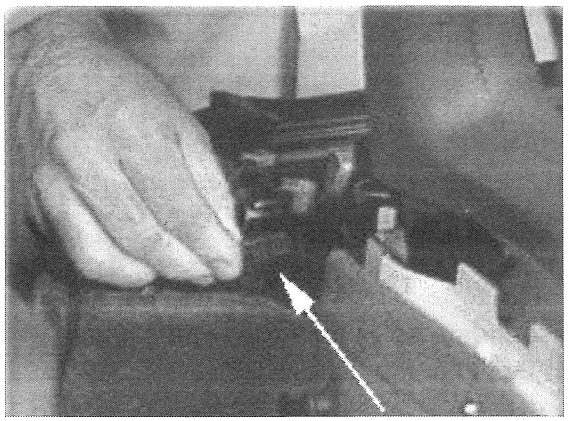
ii. Slide the retaining plate to lock the hydraulic lines in place.



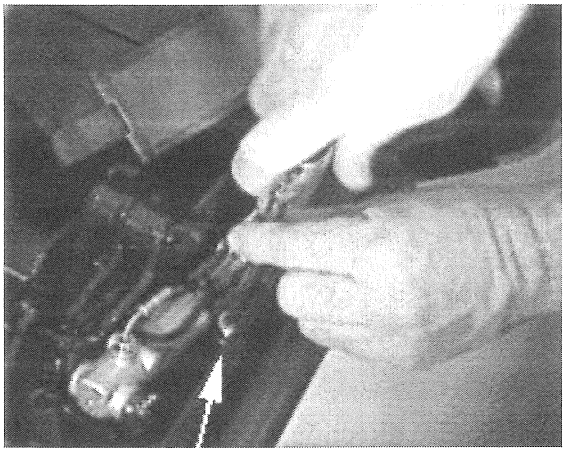
iii. Screw in the pressure-release screw (in a clockwise direction) until it stops.



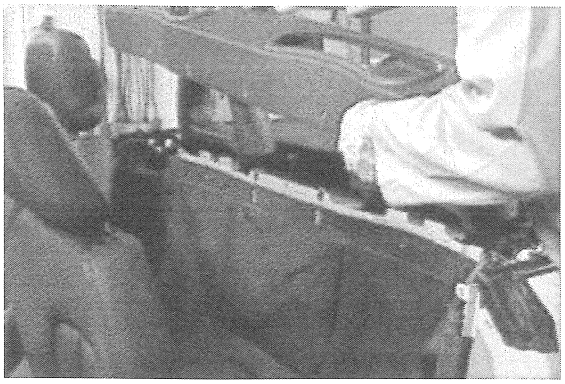
1. Insert the pins that hold the cylinders in place and secure them with the clips.



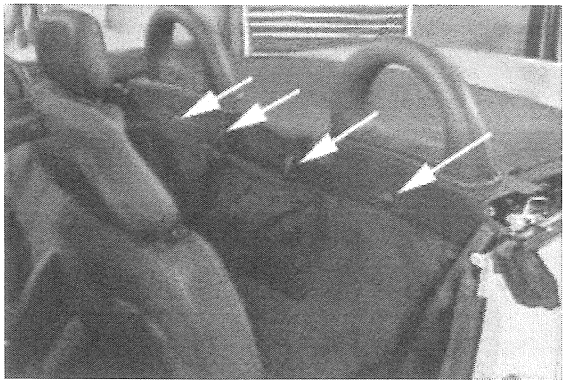
2. Reconnect the roof close-limit switch to the roof hinge on the right-hand (passenger's) side of the car.



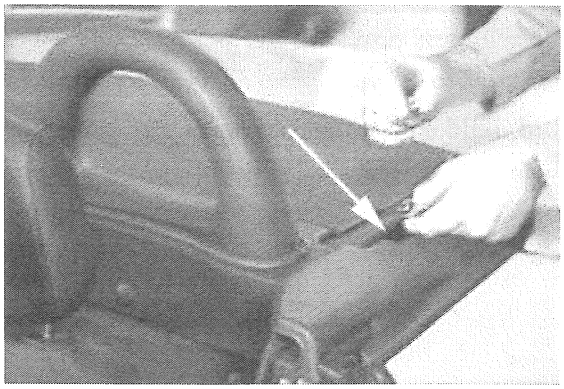
3. Secure the hinge mounts with the four bolts. One set of two can be installed with the top down. The other set must be installed with the top up.



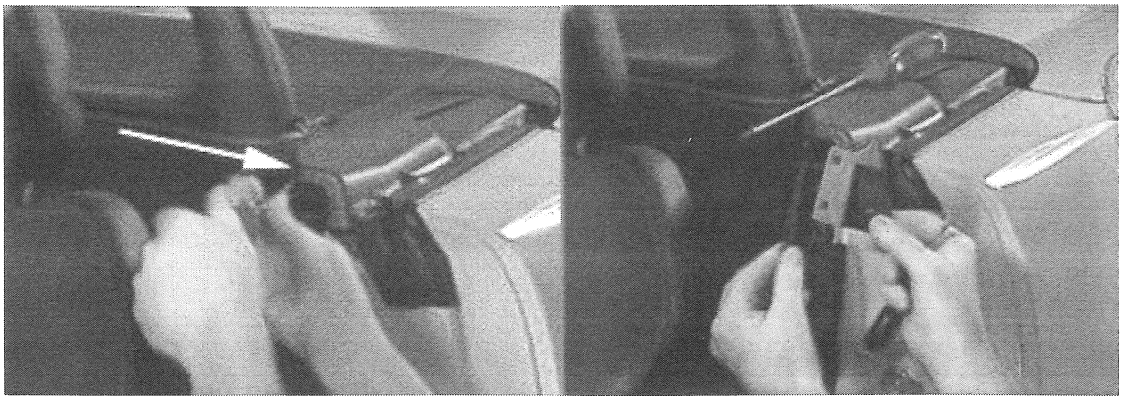
4. Reinstall the rear deck by sliding it down over the roll bars.



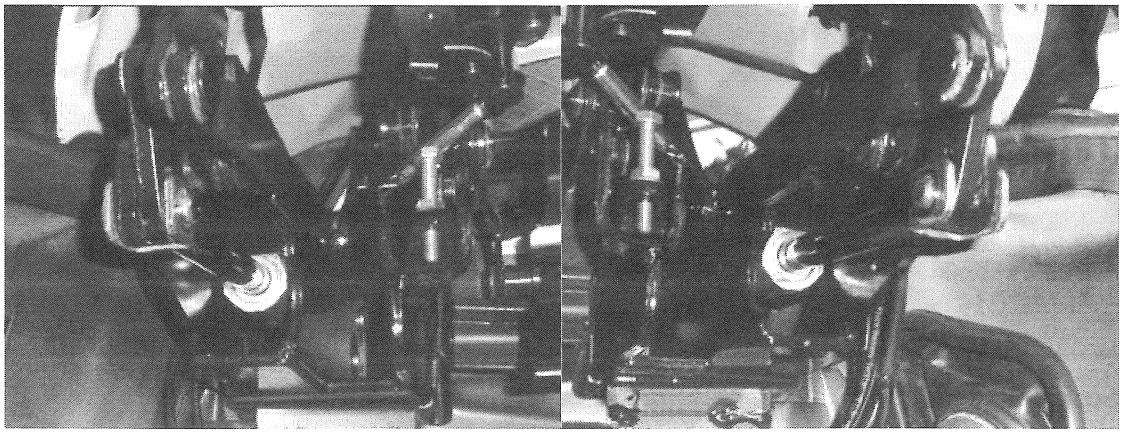
5. Secure the rear deck in place with four fasteners.



6. Secure each hinge cover with two 8mm bolts.



7. Reinstall the trim plates on both sides of the car.



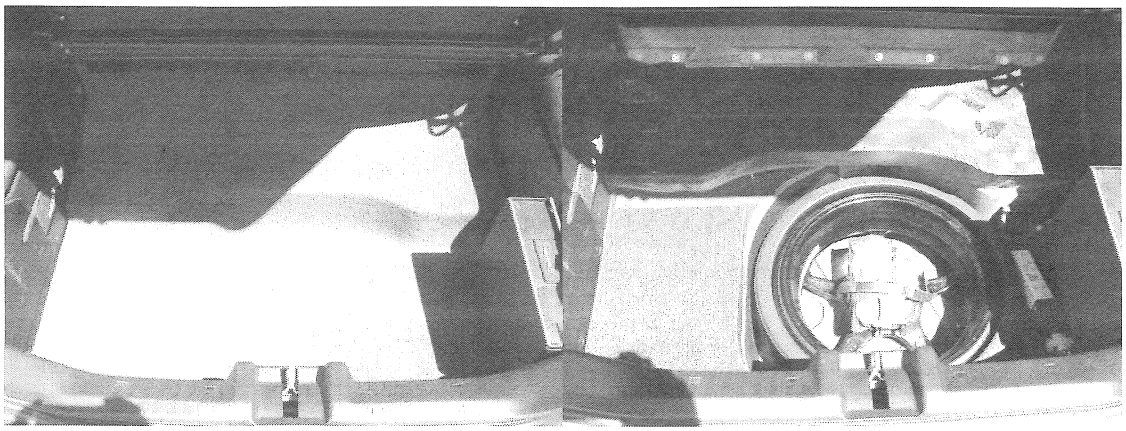
8. You're done with all three of the problematic cylinders now! Go get yourself one final cold beverage. If you've ever deserved one, it's now.

If your hydraulic pump in the trunk is low on fluid, hold off on that beverage and proceed to Section 12 to learn how to refill your pump. It will only take 10 minutes.

Section 12: Refill your hydraulic pump (if needed)

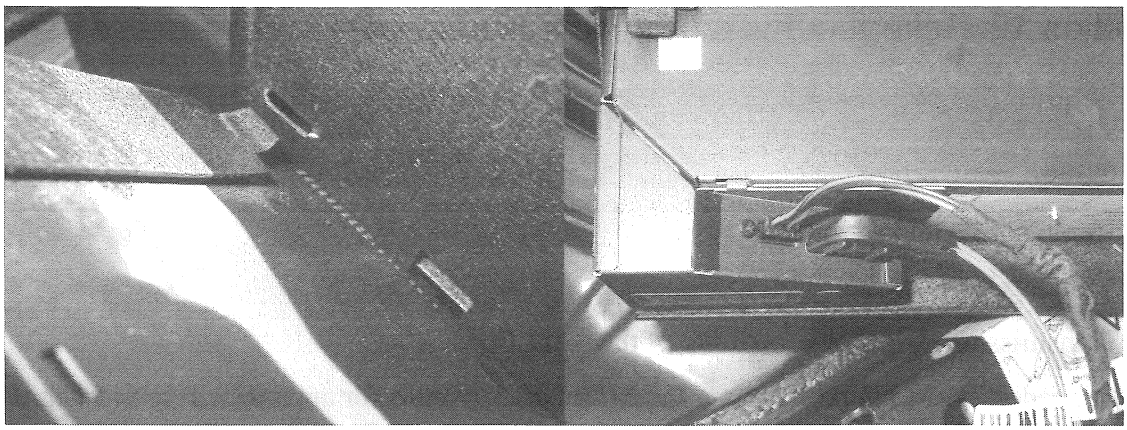
You will need:

- Phillips screwdriver
- 10mm socket and wrench
- 5mm hex drive socket
- Transmission funnel or something of the sort
- Mercedes ZH-M hydraulic pump fluid (Dealers have this for approximately $15 per liter. 1 liter will last you a lifetime.)

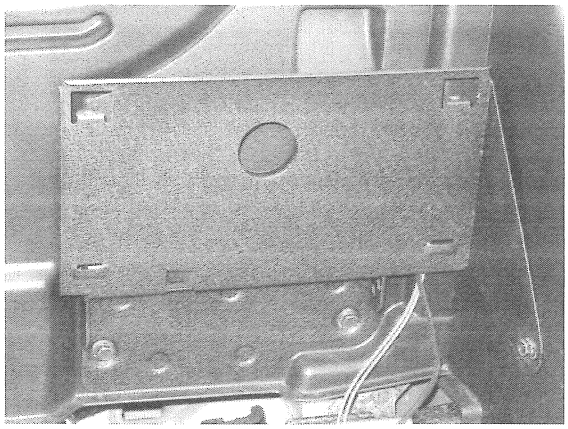


1. Open your trunk and remove the carpet and spare.

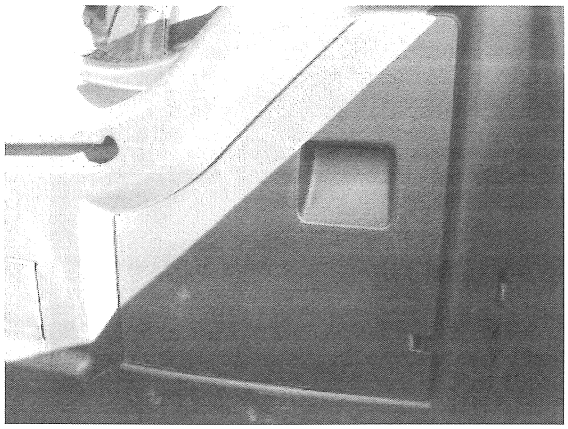
2. If you have the in-trunk CD changer, remove the two black caps and two screws. This requires a phillips screwdriver.



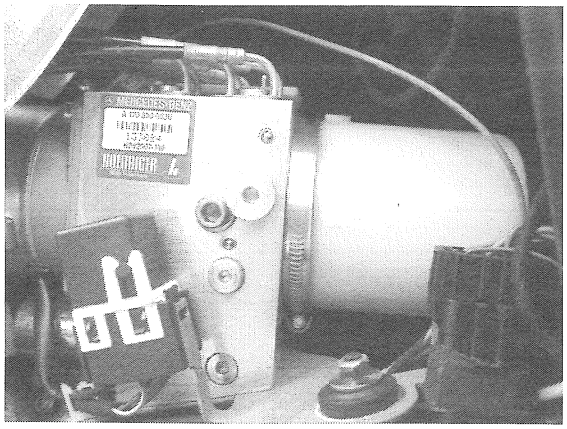
3. Remove the CD changer from the mounting plate, and disconnect the two connectors.



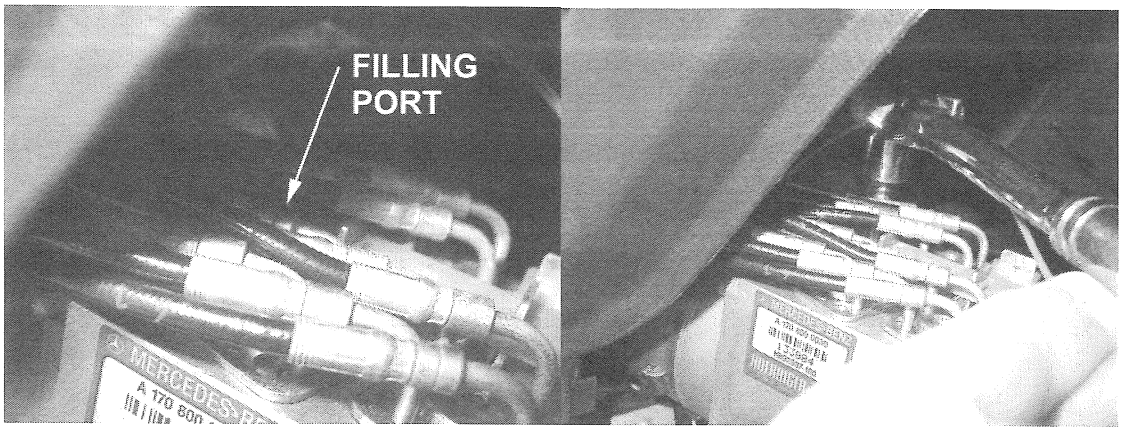
4. Remove the three bolts holding the mounting plate in place. This requires a 10mm socket and wrench.



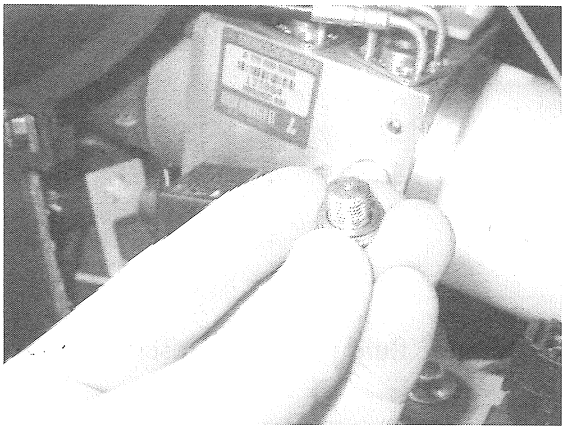
5. Remove the access panel. It just lifts out.



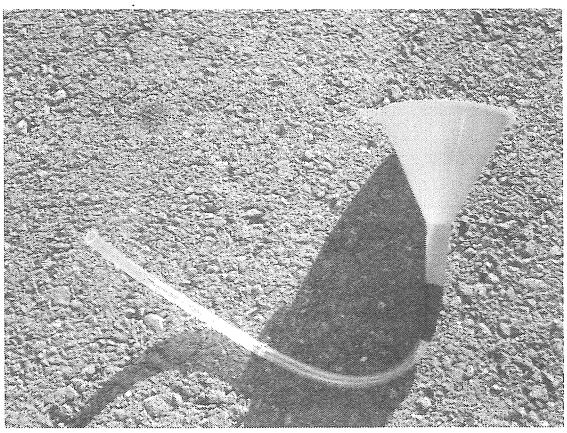
6. Check your fluid level. It should be between the two horizontal marks on the reservoir. If it is, you're golden. If it's low, continue to step 7.



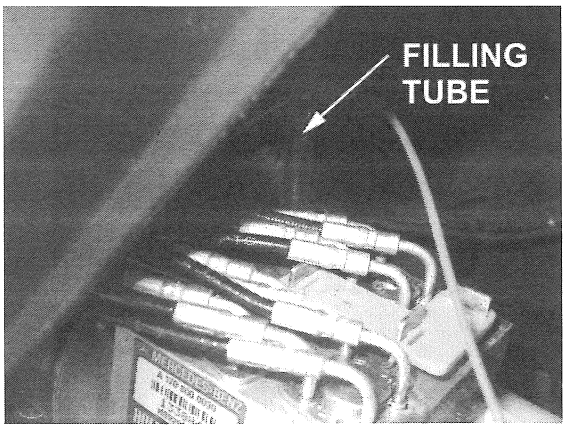
7. Find the filling port on the top of pump. Don't be distracted by those three screws on the side of the pump. The filling port is almost hidden on the top front right of the pump. It requires a 5mm hex drive socket to remove. Mine was on there pretty tight. It took some torque to break it free.



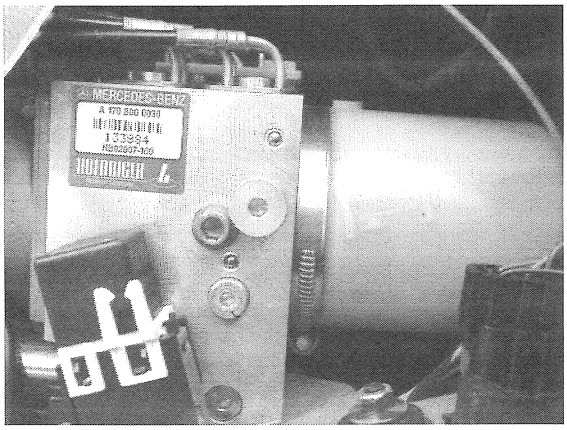
8. **Carefully** remove the filling port plug and copper crush washer. **DO NOT** let these parts fall. If you've ever been careful to hang onto a loose part, now is the time.



9. Use a transmission-filling funnel or fashion yourself one like above. You need about 10 inches or so of reach with this.



10. Note the filling funnel tubing in place.



11. Fill little by little. Just a small amount of the hydraulic fluid fills up the reservoir a good ways.

Once you're between the marks, you're good. Reassemble your trunk in the reverse order. Feel free to reuse the copper crush washer. It doesn't ever have any active hydraulic pressure on it.

Section 13: Repairing the trunk lid actuators

Thankfully, the two small actuators that lift the trunk lid rarely leak. Out of 3,000 customers in the past four years, I have only heard from approximately a dozen that they had issues with these cylinders. That's less than 1 percent.

Unfortunately, if yours are leaking, they are extremely—in fact, almost impossible—to rebuild. If yours are leaking, I would advise simply replacing them if you have the funds. They run about $300 each through various Mercedes Benz wholesalers. Barring that, call me at (801) 993-4000. I have the name, address, and phone number of a gentleman who has perfected the process of rebuilding these two cylinders. As of this writing, he was charging approximately $50 to rebuild each cylinder.

However, if you are feeling particularly crafty—and lucky—you can attempt it. I've included the parts to rebuild them. They are the two small o-rings in the kit. Hopefully, if you are one of the unlucky ones with leaking trunk lid actuators, using what you've learned through the rest of this manual will help you repair these two incredibly difficult-to-rebuild actuators.

The main idea is to drill out the spot welds holding the actuator together. The problem is that you should only drill through the first layer of metal. This will require special drill bits. If you drill into the next layer, you're going to have a leak when you're finished.