



**TopHydraulics**  
Making the best better

**Top Hydraulics Inc.**  
3235 Pacific View Drive  
Florence, OR 97439  
Phone: 541-902-3212

[www.tophydraulics.com](http://www.tophydraulics.com)

## **Cylinder & Line Replacement Procedure**

**MODEL: SAAB 9-3**  
**YEARS: 1998-2003**



### **Using Hydraulic Cylinder Rebuilds and New Hydraulic Hoses Supplied by Top Hydraulics – Superior to OEM Specifications**

- **Convertible Top Cylinders rebuilt to better-than new condition**
- **High-Pressure Hoses are more flexible and durable than the originals**
- **Pump Rebuilds available if needed**

**DISCLAIMER:**

There is no warrantee or guarantee to this guide and is provided in all good faith and best effort.  
Use as a guideline only – apply common sense, be careful and wear protective gear!  
Top Hydraulics, Inc. is not responsible or liable for personal injury or material damage.

## **READ THROUGH THIS MANUAL BEFORE YOU START!!**

This manual covers:

1. Rear Seating & Interior Removal
2. Replacing all 5 hydraulic cylinders
3. Replacing all 10 hydraulic lines

I am a happy Top Hydraulics customer. I created this manual through researching the WIS, fragmented info from forums, and ultimately disassembling the interior and hydraulic system. It took me a weekend, but that was because I was extremely careful and slow to avoid damaging the system. With this manual, it should take 6 hours, and you will feel great about your accomplishment

Read through the manual completely to familiarize yourself with the procedure before starting. The replacement procedure isn't terribly difficult, but it can be time consuming and there are some nuances, so care must be taken at certain points. You will release the hydraulic system pressure, remove the rear interior of the car, and remove the trunk panels. This will give you access to the entire convertible hydraulic system.

If you take your time, have a positive attitude and methodically follow along, you'll be cruising around with a fully operational top in no time.

Obviously, if you're replacing your entire system, a seal or line has blown, and hydraulic fluid is leaking, has pooled in some areas, and lines are wet. Be prepared for a lot of cleanup and take care not to get the fluid all over yourself or your vehicle interior.

Organizing your workspace and following some simple tips will make for a smooth, enjoyable procedure where you can further bond with your car! This system has been well designed, and a little TLC will go a long way.

Please refer to the diagram on the next page below for cylinder and hose part numbers and locations.

### **Tools:**

- Torx Drive Set
- Metric Socket Set
- Metric Wrench Set
- Wire Cutters
- Box Cutter
- Old steel fork
- Small pry tools
- Flat screwdriver
- Needle nose pliers
- Pick

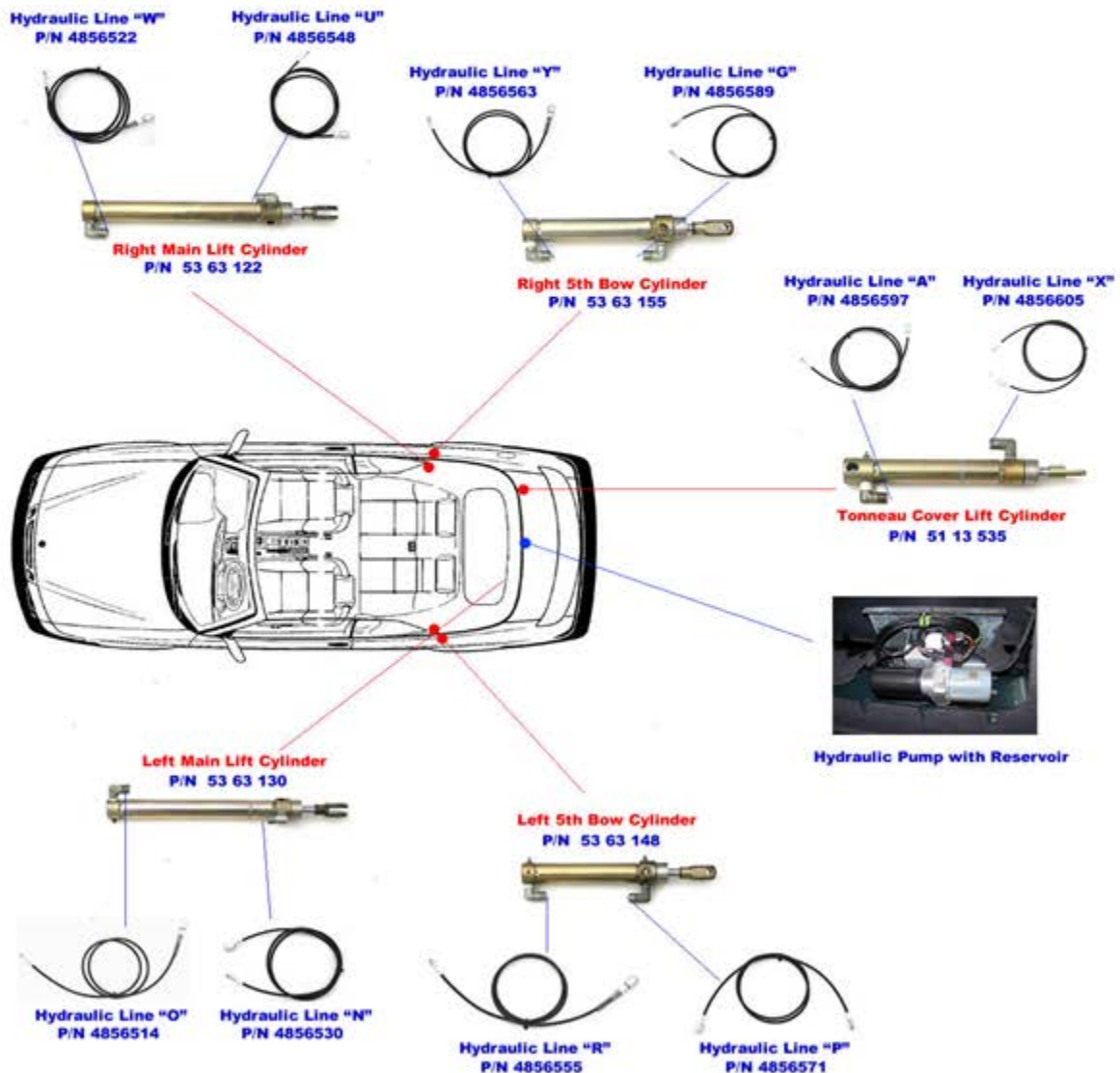
### **Supplies:**

- Gloves
- 2 Rolls of Paper Towels
- Degreaser Cleaner – 409/Fantastic or similar
- A large garbage bucket (mostly for bad hoses)
- Bungee Cords with hooks
- Zip Ties
- Friction Tape (or electrical tape)

# READ THROUGH THIS MANUAL BEFORE YOU START THE PROCEDURE!!

Go to [www.saabcyinders.com](http://www.saabcyinders.com) to order parts

## 1998-2002 Saab 9-3 Hydraulic Cylinder and Hose Locations



## Preparing the vehicle:

In order to do this procedure, the battery must be disconnected, the release valve at the pump needs to be turned, 5<sup>th</sup> bow needs to be unlatched, and the soft top cover unlocked, as you will be manually moving the sections numerous times. The rear interior including seats as well as trunk liners will need to be removed.

**Tip:** Get 2 or 3 shoe boxes & put all separate hardware pulled from pass, driver, & trunk to help minimize losing track of them. Threading hardware back into original holes also helps keep it all straight.

### Starting Position:



Start with top down & top cover up. You can get there without use of hydraulics.



Try to get the swivel covers into the open position with the switch. If you cannot, don't worry about it.

### If your top is not functioning:

- Get 5<sup>th</sup> Bow & Soft Top Cover unlocked electrically with conv. top switch
- Turn car off – pump will depressurize & sections can be moved manually BUT
- Release hydraulics before moving parts to minimize risk of damage
- Read on to learn how to release the hydraulics



Slide the front seats all the way forward on their tracks.



Disconnect neg. battery terminal.

### Releasing Hydraulic Pressure:



Flip down the rear seat & remove the U-Shaped trim piece covering the pump. If you've filled your pump fluid before, then you know this procedure.



Lightly unscrew the plastic screws & use a fork to remove the plastic rivets.



**Tip:** Use an old fork and bend the 2 inner prongs out. This will save the expense of a trim removal tool.



It makes a great tool to pry out plastic rivets.

## Releasing Hydraulics cont'd:



The plastic trim removed.



Go ahead & remove the 6 bolts holding the hydraulic pump plate down. Note the orientation of the buckle.



Lift the carpet back & turn the valve counter clockwise to release the hydraulic system

## Removing the Rear Seat:



Locate both rear seat belt brackets.



Pop the bolt cap off with a flat head screwdriver.



Remove bolts with 16mm socket.



Note the bottom of the plate has a locator pin.



Lay the rear seat back down & locate the 18mm bolts at either end of the seatback base.



Access to the bolt head is a bit tight, use a ratcheting wrench if available.



Note the location of the washer. Careful not to drop the hardware.



Remove the rear seat back.

### Removing Rear Seat cont'd:



Remove the rear seat by lifting from the back of the cushion. You will probably see hydraulic fluid, clean as necessary

### Removing Interior Panels:



Open door & locate plastic inner door sill panels. Locate plastic fastener at rear corner by the rear seat bench & remove with flat head screwdriver. This is a quarter turn fastener.



Note the locations of the plastic clips & corresponding holes in the floor. Take a small pry bar or flat head screwdriver & pry upwards gently. Try to position the tool as close to each fastener by feeling your way across with it.



Remove the seat belt bracket from the door sill area. Pop the cap off and use a 16mm socket to remove.



Locate the upper corner seal at top rear of the door jamb - remove the 2 plastic push in rivets



You can push the pin in through the fastener but the pin will be lost. Use a pick to pry out the pin enough to grab hold of it with some pliers & pull it out. Once the pin is out, you can pry the outer part of the rivet out.

Removing Interior Panels cont'd:



Remove the upper corner seal by lifting straight upwards.



Note there is a hook stamped into the plate backing of the corner seal - you must lift straight up to remove.



Pop the small plastic half circular plate on the inside of the door seal.



Pull the gasket off - it simply pulls off. All the way down and off...



Use a torx driver & pull the screw in the upper forward rear side panel.



There are 2 plastic quarter turn fasteners along the bottom of the side panel, 1 more at the bottom rear & a torx at the upper rear.

### Removing Interior Panels Cont'd:



Locate the light in the seat belt hump.



Gently pry it out with a small flat head screwdriver or a scraper.



Remove the cover from the light.

### IMPORTANT! PLEASE READ THROUGH THIS PAGE BEFORE ATTEMPTING TO REMOVE SIDE PANELS!



The interior side panel is about ready to be removed. There is one more clip located underneath the top rear portion of the side panel that is tricky to break loose.



Separate the window seals & look just under the edge of the rear top side panels. There is a plastic block.



The block is glued to the underside of the top of the side panel. There is a yellow anchor at the bottom of the block that holds the panel down to the metal body work (not shown).



Grab under the rear of the side panel with one hand & try to hold the base plate of the block securely.

Grab under the lower recess with the other hand.

Lift straight up to pop the fastener loose.

There is a good chance the block will tear away from the underside of the side panel where it is glued so be careful.



Once you've broken the side panel loose, push the seat belt buckle & lower bracket through the slot in the hump.

If it separates, glue it back during reinstall. Its support is under the side panel.



### Removing Interior Panels Cont'd:



The rear interior is pulled. Now you can see the black enclosures where the Main Lift & 5<sup>th</sup> Bow Cylinders are housed. You can't really see the 5<sup>th</sup> Bow Cylinders until the Main Lift Cylinders are removed.



Note the flex tube at the bottom of the housing which is the gutter for the fluid that leaks from the cylinders & lines & drips into the housing. This is the source of the puddles by the rear wheels...

### Removing Rear Deck Seal:



Find the seams where the rear deck seal meets the window molding & gently pry out where it interlocks with the molding. Once the seal is separate from the joint, pull it off.



**Raising the Top Manually to Access the Trunk:**

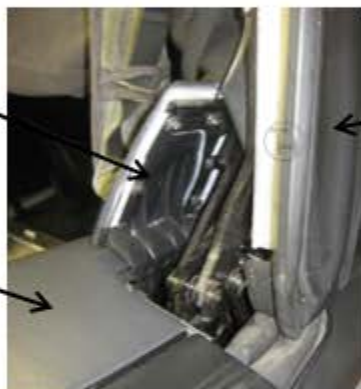


Step onto rear seat base - avoid black cap. Grab top handle & lift top all the way. Lift the 5<sup>th</sup> bow. **BE CAREFUL** as it will want to fall forward.



Swivel Cover in open position to avoid 5<sup>th</sup> bow

Soft Top Cover in down position



5<sup>th</sup> Bow

There are 2 Swivel Covers in the front corners of the Soft Top Cover.

**IMPORTANT!** You will open/close the Soft Top Cover & 5<sup>th</sup> bow many times & these swivel covers can be easily damaged. They need to stay in the open position.



Hook bungee cords on the swivels strapping across to secure them in the open position. If you want to try to avoid this, reconnect your battery and try the switch to see if they will open.



Carefully lower soft top cover paying attention to swivel covers clearance

Remove the floor carpet, spare tire & tools. You may see fluid from a blown line & pieces of hydraulic line jacket - Wipe it up.

### Detaching the Soft Top Storage Bag in the Trunk:



Pull the two 10mm screws above the soft strap loops.



Remove 3 plastic anchors in upper part of Soft Top Storage Bag just under the trunk seal.



Pull the Storage Bag out from the seam along the upper and side edges. It will fall and hang down. You do not pull it out of the trunk, just let it hang as it stays attached towards the front. Note the Soft Top Cover Mechanism exposed.

### Removing Pass Side Trunk Panel:



Locate 4 hex head plastic bolts behind pass side tail light. Remove with 10mm socket.

Don't remove panel yet.



Close the trunk and raise the soft top cover



Close the trunk and raise the soft top cover to expose the inner soft top storage compartment.

Pull the edge of the inner soft top compartment off the rail



**Detaching the Soft Top Storage Bag in the Trunk cont'd:**



Once the inner cover is separated from the rear & side perimeter, it will fall into the trunk.

Remove the 3 plastic fasteners along the back of the seat back support holding the forward part of the soft top bag. Use the fork to remove these.



Remove the small brass clip holding the edge of the soft top bag by the seat belt mounting hole. It just pulls off. Repeat on other side.

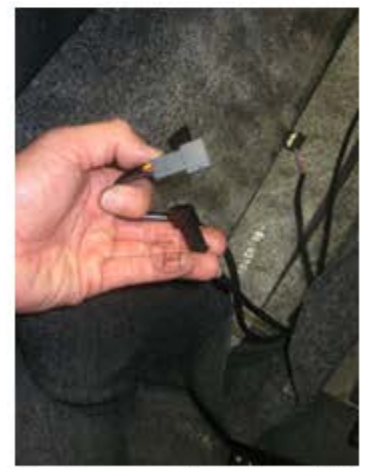
Remove the small plastic fastener on the underside as well. Repeat on other side.



Note the micro switch that senses the soft top cover closing. The small metal plate lever is very delicate so be careful not to damage it.



Lift up the vinyl section of the bag in the trunk area and to expose the inner rear section of the bag. Note the micro switches that sense when the top is in the bag.



Find the connects for the switch by the driver rear fender area in the trunk & disconnect.

### Moving the Soft Top Storage Bag in the Trunk cont'd:

The Soft Top Storage Bag does not need to be completely removed. The forward section is secured in a way that is not worth the effort. The seat bag is fitted around the metal seat back structure. The bag needs to be pulled off of this structure and flipped forwards. You will be flipping the back forwards, then back and refitting over the seat back structure several times as you work through the lines and cylinders. It's a bit unwieldy, but not problematic - just take your time and gently work the bag on and off the seat back structure and flip the trunk liner part of the bag over into the back seat area or back into the trunk area.



Bag on seat back structure



Note plastic plates on either side with 2 fasteners. You don't have to remove them but be careful when moving bag as it can tear here.



Pull bag up off the structure & bunch the mtrl. forward. Watch the sides of bag still attached to vehicle towards the front as you can tear it.



Pull it out from the trunk. You'll have to maneuver the trunk section a bit as it has a harder liner in it.



Pull it out from trunk. It has a hard liner in it so it's a bit unwieldy.



Flip the trunk liner portion of the bag into the rear seat area



There is an additional liner surrounding the pump area.



Flip it forward as well.



**Remember to be careful not to damage the micro switches!**

## Pass Side Trunk Liner

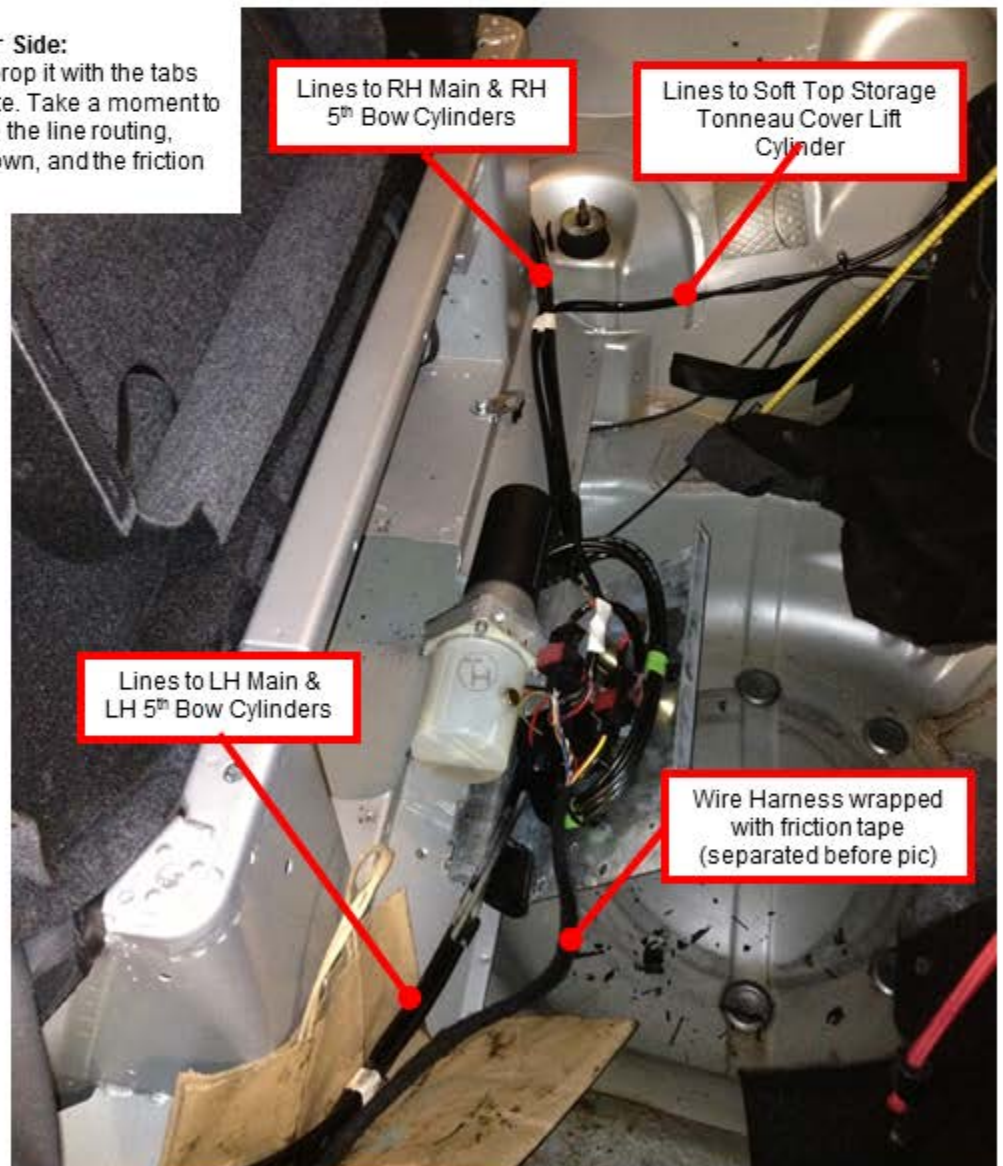


Go back to the pass side trunk liner and remove the 3 plastic fasteners located in the front section of the panel.

### System Overview:

#### Pump & Lines – Driver Side:

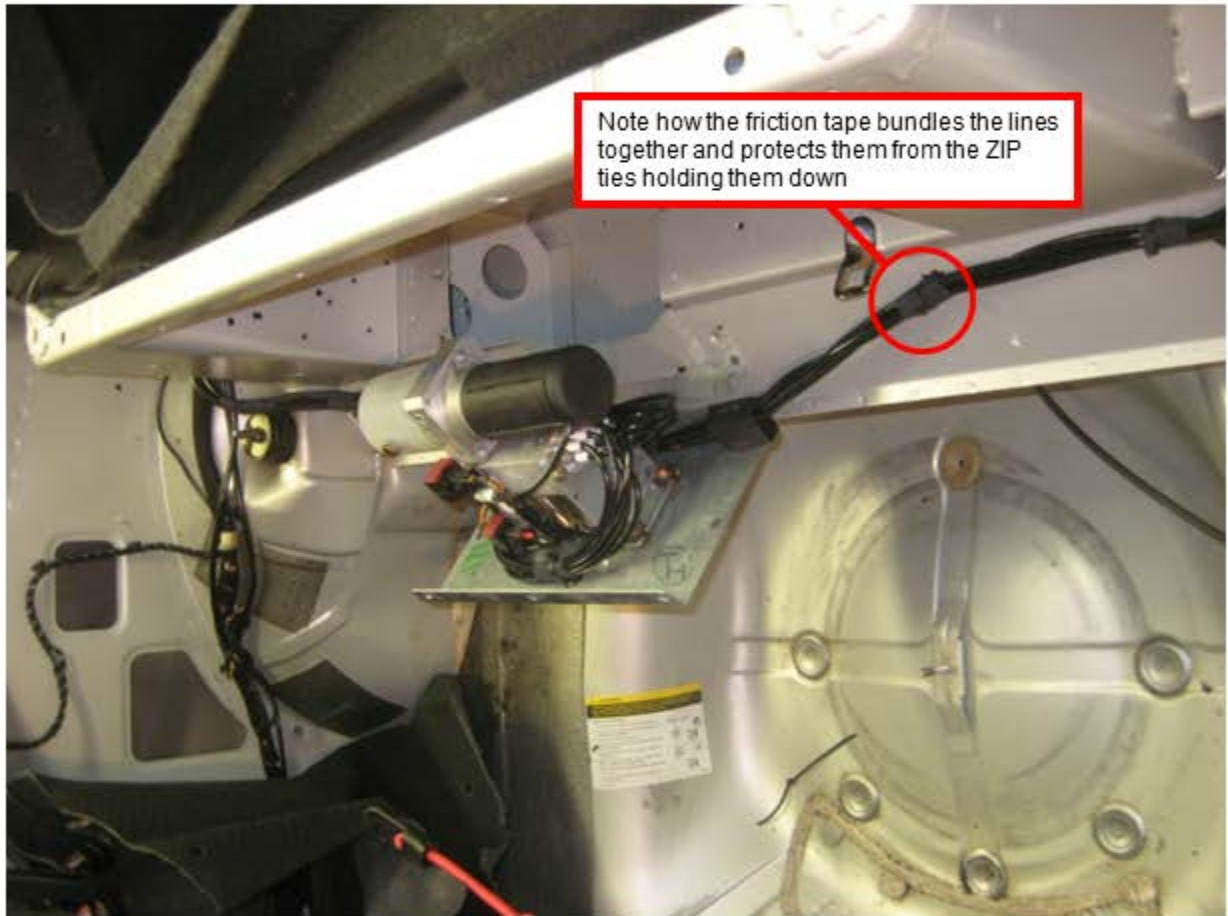
Flip the pump out and prop it with the tabs in the bottom of the plate. Take a moment to study the system. Note the line routing, how they are zip tied down, and the friction tape locations.



**System Overview:**

**Pump & Lines – Pass Side:**

Also study the routing of the lines and how they are secured down around the pump.



### System Overview

**Driver Side Main Lift & 5<sup>th</sup> Bow Cylinders:**  
 These 3 images are the same location.



This image shows the cylinders with the soft top bag in the normal position.



These images show the soft top bag pulled forward exposing the lines running from the pump to the cylinders under the soft top bag.



Lines to Left Main  
& Left 5<sup>th</sup> Bow Cylinders

Left Main & Left 5<sup>th</sup> Bow Cylinders



The passenger side is setup the same way.



**System Overview:**  
**Tonneau Cover Lift Cylinder:**



Access to this cylinder is simple. Let's start with this first.



Cut just the zip strip off the fastener. You can reuse these by lacing in new zip ties.



Replacing Cylinders & Lines  
Tonneau Cover Lift Cylinder:



Setting a box to have a stable resting place for the pump might be helpful.



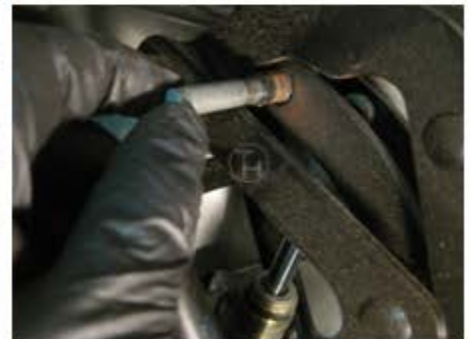
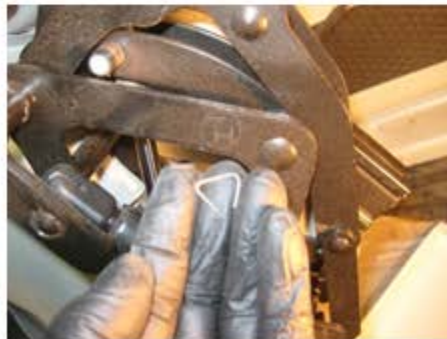
Unplug the wire leading to the cylinder.



Pull the pin the clip was holding in.

**WARNING!**

**WEAR EYE PROTECTION WHEN REMOVING LINES TO AVOID FLUID GETTING IN YOUR EYES**



Remove the upper clip and remove pin.

Replacing Cylinders & Lines  
Tonneau Cover Lift Cylinder cont'd



Remove the cylinder & note orientation.



Compare new lift cylinder to old one & note routing of lines, wire, & how its taped down.



Remove bottom wire with T8 & side with 4mm socket.



Install line A, X, and the wire.  
**Note:** Refer to diagram on pg. 3 for lines & corresponding cylinders. Tape line down the same way as the old one was.



Use a 12mm wrench to hold the lower line mount.



Use a 14mm wrench to tighten the line.



Reinstall the cylinder.

## Replacing Cylinders & Lines Tonneau Cover Lift Cylinder: Cont'd



Thread a new zip tie into the slot of the plastic fastener anchored into the metal body work. Don't tighten it down completely until later, just create a loop to hold the line in place.

## Replacing Cylinders & Lines Pull Pump



Cut the line bundles on either side of the pump. Unplug the harness from the pump and remove.

### **WARNING:**

**WEAR EYE PROTECTION WHEN CUTTING LINES AND HANDLING PUMP ASSEMBLY TO AVOID FLUID GETTING IN YOUR EYES. LINES CAN SPRING AND FLICK FLUID!!!**

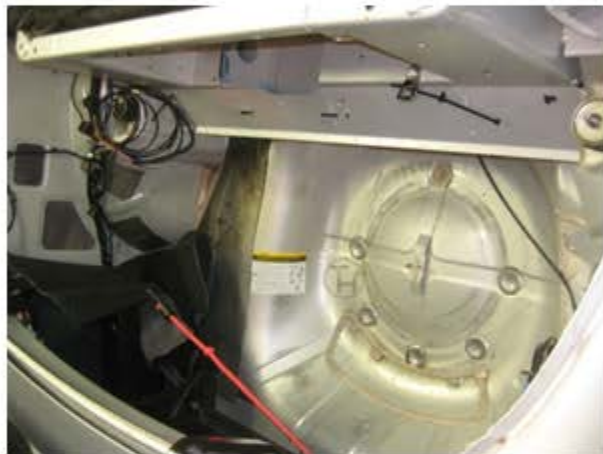
## Replacing Cylinders & Lines Cleaning Trunk Compartment



Set pump aside with cut lines still attached.



Clean area as much as possible.



Nice & clean. You will need to clean more after getting all the old lines out as well as they will leak more fluid. Cleaning now will minimize fluid getting all over the place.



The friction tape wrapping the wire harness coming from the pump may be saturated with hydraulic fluid.



Carefully cut back the friction tape wrapping & clean the wires as much as possible.



Re-Wrap with new friction tape.

Replacing Cylinders & Lines  
Right Main Lift Cylinder:



Pass Side, inner cylinder. Grab clip at base of piston end & pivot it out – pull the pin.



Pull small clip holding lower. Its in a slot in the black metal tabs that hold cylinders.



Use a paint scraper to slide the lower pin out. Be careful not to drop it as it is short.

Replacing Cylinders & Lines  
Right Main Lift Cylinder Cont'd:



Grab the piston & twist it slightly to dislodge it from the lower mount.  
Push the entire cylinder assembly down into the hole

Go to the interior & pull the cylinder out of the black housing.



Unhook the nylon strap holding vinyl to cylinder.



Release lines from zip ties & taping & slide them through housing access hole under soft top bag.



**Line/Harness Fasteners Reuse Tip:** Cut zip tie loops & keep fastener bases intact. Pass a clean zip tie through the slot so you can re-secure the lines.



Clean the inside of the cylinder enclosures.



Pop the upper and lower clips and pull the pins as per the Right Main Lift Cylinder.



Pull this cylinder up out of the cavity.



Guide the lines through the housing & under the soft top bag.



Clean the inside of the soft top bag.

**Tip: Remove & Replace Pass Side Lines & Cylinders first, then move onto Driver Side so you have one fully installed side to refer to during reinstallation.**



## Replacing Cylinders & Lines Installing Lines on Cylinders:



Use a 12mm wrench to hold the lower line mount.



Use a 14mm wrench to tighten the line.



### Setting up the Cylinders:

Keep all the old lines & wires on the old cylinders so you can see the bend patterns of the lines & how they are taped to the cylinders.

Install the new lines on the new cylinders & route / bend the new lines to match the old ones. Then move any applicable wires and tape down as required.

Refer to the diagram on pg. 3 for cylinders, corresponding lines and locations.

**WARNING:**  
**WEAR EYE PROTECTION**



Reinstall the cylinders & lead the lines to the pump area. Loosely loop the zip ties to run & hold the lines but do not tighten them down completely yet.

**Repeat on Driver Side**

Replacing Cylinders & Lines  
Installing Pump:



Look at the pump again with the old lines & note the routing of the lines.



Remove the lines with a T25 driver. The holes are labeled for corresponding lines.

**NOTE:** There is one additional line hole located just below the pump cylinder shown circled above.

**IMPORTANT:** Make sure to use the correct size drive as you do not want to risk stripping these.

## Replacing Cylinders & Lines Installing Pump: Cont'd



Clean the pump and plate, and insert new Zip Ties. The pump assembly is ready for reinstall.



Set the pump in place by inserting the tabs in the plate and flip it out so it rests pump up. Confirm the line routing.

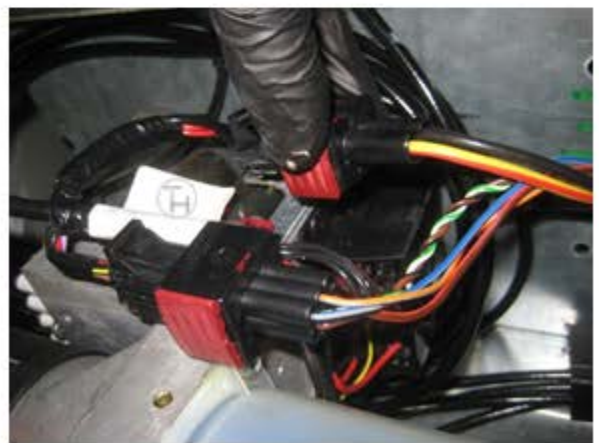


Install the lines.

This is an awkward point because reach is difficult. If you cannot manage to see the line holes in this position, try placing the pump on a box in the trunk so you can position it for better access. You may need to clip the zip ties holding the lines running from the cylinders to gain more mobility.

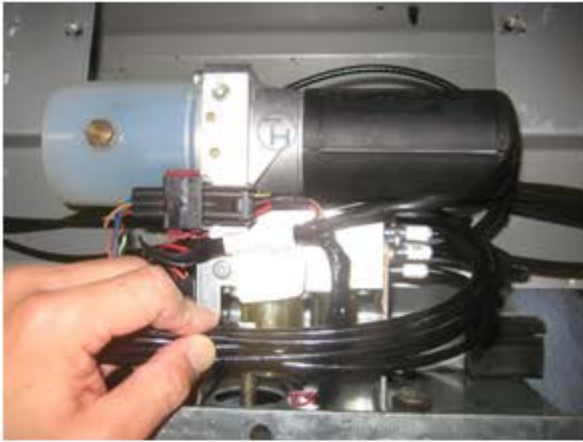


Lines installed to pump, still not zip tied down securely...



Reconnect the pump harness.

## Replacing Cylinders & Lines Securing Lines



Bundle the lines & bend them around pump along the plate. Bundle tightly around the base of the pump.



**IMPORANT:** Do not let loop extend beyond foot print of mounting plate or it will cause interference closing pump into its final position.



Verify points where zip ties will contact the lines & wrap the lines with friction tape to protect them.



**NOTE:** Begin the bundling & taping process at the pump working back to the cylinders. This will reduce unnecessary stress on the lines.





Fill the pump just above the full line indicator.



Flip it down into the closed position.

**Convertible Fluid Choices:**



OEM SAAB/GM Type

or



Specialized synthetic fluid, such as FeBi 02615, which Mercedes, Porsche and BMW use in most of their systems. It is thinner than the mineral oil originally used by Saab, and your top will move a little faster. Generally cheaper than Saab fluid, and available online, or at Mercedes dealers as p/n 0009899103.



Flip the soft top bag back into the trunk.



Connect the soft top bag sensors

Replacing Cylinders & Lines  
Testing the System



Set the soft top bag and carpeted seat back section into plate.



Pull the bungee cords holding the swivel covers.



Drop the top into the full down position



Close the hydraulic release.



Reconnect the battery.



Turn on your vehicle and hit the switch. Cycle the top open and closed 5-10 times.

**The System is self bleeding. After cycling, fill fluid back to full line. Almost all air from cylinders and lines will be out after a few cycles.**

**The top will fall faster towards the windshield during the first few cycles, while there is still air in the lines. Dampen that fall manually the first few times until most air is out of the system.**

**Re-Install rear seats and interior panels.**

**Enjoy your newly restored better than new convertible system!**

**Congratulations - It feels great knowing that the system will work flawlessly when you push the button, and that you don't have to worry about leaks any more!**