

SwayLOC Installation Air controlled Version

INSPECT PACKAGES

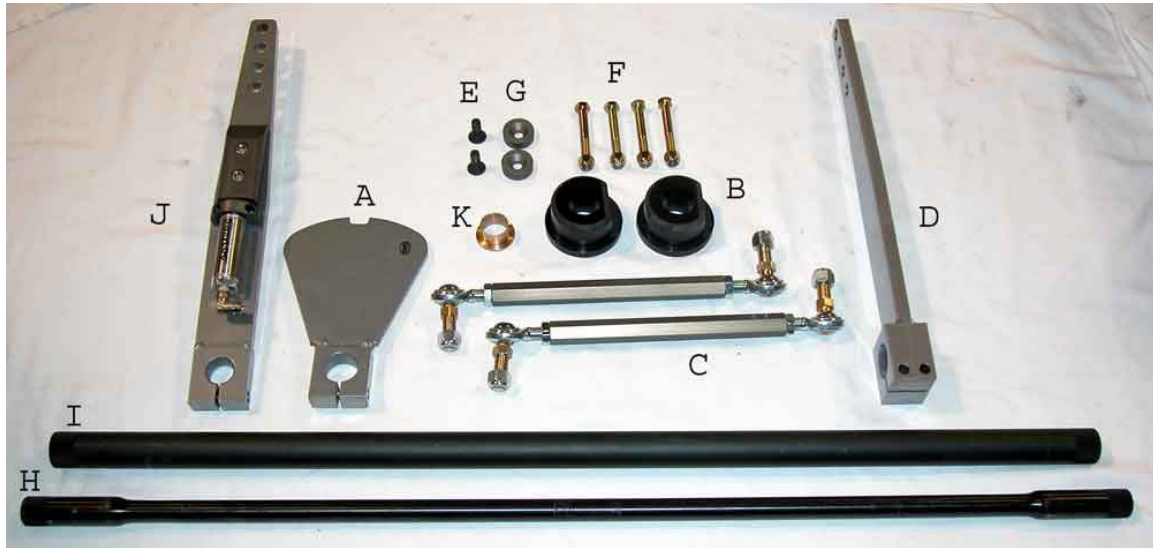


Figure 1 SwayLOC kit components

- A. Inner Passenger Arm
- B. Frame Bushings
- C. Link assemblies, come disassembled
- D. Driver side arm
- E. Flat head Cap Screw
- F. 3/8" Grade 8 bolts
- G. Aluminum washers
- H. Solid torsion bar
- I. Tubular torsion bar
- J. Outer passenger arm
- K. Brass Torsion bar bushing

The small, long triangle shaped box contains the pair of torsion bars, Item H and Item I.

The second larger box will contain the two outer arms (Items D and J, the passenger arm, Item J, has the air cylinder/latch assembly installed), the inner passenger arm, (Item D), air solenoid assembly (shown in Figure 8 below), an intermediate harness to plug into the AiROCK system (shown in Figure 9 below), one bushing for the inner to outer passenger arm connection (Item K), two urethane frame bushings (Items B), four 3/8 x 2 1/2" bolts and Nyloc nuts (Items F), two flat head cap screws (Items E) and two aluminum washers (Items G), one 1/4" push-in tee fitting (shown in Figure 8 below), a pair of link assemblies (Items C), tie wraps, and a length of air line.

DESIGN OVERVIEW

SwayLOC is a dual rate Anti-Sway bar system that allows the operator an easy method of changing from on road rate to off road rate. The on road rate is softer than the OEM Anti-sway bar, this will allow a more compliant ride on highway, as the SwayLOC will absorb some of the jarring that may be transmitted to the vehicle thru the OEM Anti-sway bar. The off road rate is unique in that the SwayLOC will allow full range of articulation on most vehicles, but during this range of movement will continue to provide resistance and will usually deliver a more balanced feel of the vehicle.

The transition from off road to on road is done either by manual engagement of a lever mounted on the passenger side control arm, or on a vehicle equipped with an on board air supply, the actuation may be done pneumatically. The pneumatic actuation can be operated either by an electrical switch inside the Jeep, or if the Jeep also has an AiROCK™ air suspension system installed, then the software in the AiROCK™ will automatically control the actuation based on the preference of the operator.

The SwayLOC utilizes the front cross member on the Jeep TJ and YJ frames for mounting. If your Jeep is equipped with a bumper that covers or obstructs with that area, some clearancing may need to be done to achieve the room necessary to install SwayLOC.

MECHANICAL INSTALLATION

1. Inspect the front frame area, where the tubular cross member crosses just ahead of the steering box. The SwayLOC is housed inside of this cross member, and adequate clearance is required for the SwayLOC arms to be assembled and operate just outside of the cross member opening.

See Figure 2.



Figure 2 Side view

NOTE: To determine if there is enough clearance on your bumper, figure a 3" diameter cylinder, extending 2" outward from the cross member edge. If a cylinder of this size fits, then there should be enough room to install SwayLOC, provided there are no aftermarket items mounted to the side of the frame from the cross member to the front spring mounts on the frame.

2. Insert one of the frame bushings into the D shaped tube in the frame. Drive the bushing fully into place using a wooden block and mallet if necessary.
3. Wipe down the torsion tube with Silicone lube and insert tube in bushing. Once tube is thru the frame rail, install opposite frame bushing and drive into place with large socket to fit over tube if necessary.

NOTE: It may be easiest to place one bushing on the tube in the approximate mounting position, with approximately $\frac{3}{4}$ " of splines showing, and then insert the torsion bar in the frame and seat the bushing to the frame. See Figure 3. Then place the opposite side bushing on the tube and drive into place with a socket or block of wood if necessary.



Figure 3 Torsion tube and bushings

4. Center the Torsion tube in the frame side to side, with approximately $\frac{3}{4}$ " of the tube extending thru the bushing when it is fully seated up to the frame cross member.
5. Install the short passenger inner arm on the tube, place arm so that the latching point is horizontal to the ground and ensure that the $\frac{1}{4}$ " wide web is offset to the outside of the vehicle. See Figure 4 The inner arm web and splined hub should be flat on the side that mates the outer arm. Install one $\frac{3}{8}$ x $2 \frac{1}{2}$ " bolt thru the cross-hole, install $\frac{3}{8}$ lock nut and only snug the nut and bolt at this time.



Figure 4 Displaying Passenger Arm Mounting

6. Install the Driver side arm (this arm has two splined hubs welded to it and does not have the fancy latch assembly) the arm should be positioned horizontal, or at best equal in angle to the latching notch on the passenger inner arm. The torsion bar should insert fully to make contact with the smaller diameter hub, if it does not insert this far, ensure that both of the frame bushings are fully seated, and that the arms are snug against the bushings. This should result in the torsion bar being fully engaged in both of the broached hubs on both arms. Install one 3/8 x 2 1/2" bolt thru the cross-hole on the inner hub, install 3/8 lock nut and only snug the nut and bolt at this time.
7. Insert the 1" splined torsion shaft inside the torsion tube from the passenger side. Rotate and engage the splines on the drivers arm, insert fully. Install one 3/8 x 2 1/2" bolt thru the cross-hole on the outer hub, install 3/8 lock nut and only snug the nut and bolt at this time. Assemble the aluminum washer and mating flathead cap screw and attach to the center torsion bar on the drivers side, snug but do not tighten yet.

8. Insert the brass bushing on passenger side between the inner and outer torsion bars; the shoulder on the bushing should rest against the inner and outer arm with the sleeve of the bushing inserted inside the tubular torsion bar. **See Figure 5**



Figure 5 Brass Bushing Install Direction

9. Locate the arm with the air cylinder and latch and one of the ½" Nylock nuts, slide the latch and latch cover assembly away from the air cylinder, insert the Nylock nut as shown **See Figure 6**. This will aid in installation of the passenger outer arm.

NOTE: It may be necessary to use a screwdriver to open the latch assembly, gentle leverage between the actuator mount and the sliding latch will allow the latch to slide towards the small end of the arm and move away from the inner arm. Use caution to not damage the finish or corrosion may occur.



Figure 6 Nut inserted to disengage latch for assembly

10. Once the bushing is installed install the outer passenger arm. Position arm in horizontal, or equal angle to the inner and driver arms. Once the arm is fully seated, assemble the aluminum washer and mating flathead cap screw and attach to the center torsion bar on the passenger side, snug but do not tighten yet. Install one 3/8 x 2 1/2" bolt thru the cross-hole on the outer hub, install 3/8 lock nut and only snug the nut and bolt at this time.
11. Remove both of the aluminum washer and mating flathead cap screws, the inner torsion bar should be almost flush with the arms on both sides, if the torsion bar appears to be too short, then the bushings are not fully seated in the frame, or the inner arms not fully seated against the bushings. Reinstalling the aluminum washer and flat head cap screw, loosening the 3/8" cross bolts and then tightening the flat head screws may help to snug the arms together, but if the bushings need to go in farther, it may be necessary to remove the arms and drive the bushings into the frame with a block of wood and a mallet. Reassemble and check for full insertion of inner torsion bar. If adequate, the bar should be flush on one side and less than the thickness of a dime short on the opposite. **See Figure 7.** Reassemble the aluminum washers and flat head cap screws one last time, place a single drop of locktite on each bolt.



Figure 7 Proper Shaft Engagement

12. The arm assemblies should be complete at this time. Now go thru and **TIGHTEN** each of the 3/8" bolts that hold the arms to the torsion bars. Torque each of the 3/8" bolts to 40ft-lbs.

13. Assemble the Linkage assemblies, be sure to insert one jam nut on each rod end before engaging the rod end in the hex aluminum housing. Install links between the SwayLOC and the axle. The links should be adjusted so that the arms do not limit the extension of the front suspension. It is imperative that the suspension reaches full extension before the links limit the droop, otherwise damage to the SwayLOC may occur as the arms will rotate under and forward. Verify at full compression the links do not make contact with the Jeep inner fender area. Measure the distance between bump stop and the contact point and figure that as the approximate up travel on the arms. Do not forget to add for the squish of the bump stop.

ELECTRICAL INSTALLATION, AiROCK controlled

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1. Install the solenoid assembly in any convenient location under the hood. The solenoid may be placed anywhere, in any position, only limited by the length of the solenoid harness, and the position of the mating connection to the AiROCK auxiliary junctions. **See Figure 8**



Figure 8 Air Solenoid Assembly

2. Locate the small intermediate harness that contains the photo/optic relay (hidden in the heatshrink) This harness has a male 2 prong connection that will plug between one of the two, 2 prong harnesses in the original AiROCK harness and the solenoid assembly connector. This harness also has two ring terminals on two leads, this is the 12V positive (red) and 12V negative (black)

3. Locate the auxiliary 2 prong connectors in your AiROCK harness, these should have plugs on them with the wires all tied together, remove the plugs on the two, 2 prong connectors. There are differences in the color-coding of the harnesses depending on their manufacturing date. If you have a later harness, the connector you are looking for has Grey and Black wires. Regardless, there are two, 2 prong connectors, and plugging in the incorrect one will simply result in no action when the menu option for the SwayLOC is toggled.
4. Locate the black and red wires on the intermediate harness. Connect the black lug to ground, and the red lug to a source of +12V on the fused side of any connection in the under hood circuit box. This provides the 12V to turn the solenoid on/off, and will draw at worst 500 milliamps. It is recommended to piggyback into the fused side of a key on circuit fuse in the under hood circuit fuse box, this will provide fuse protection and automatic release when the key is off. The 2 prong female socket on this harness accepts the plug from the air solenoid. **See Figure 9.**



Figure 9 AiROCK to SwayLOC Intermediate Harness

PNEUMATIC INSTALLATION

1. Install the ¼ inch push-in tee before your On Board Air (OBA) air filter/regulator. This will allow full tank pressure on the air cylinder rather than limit it to the regulated air pressure for the AiROCK system.

NOTE: Do not exceed 250 PSI maximum to the SwayLOC!

2. Connect the tee to the IN port on the solenoid. Connect the solenoid OUT port to the air cylinder. Tie wrap the air lines in place. Leave a service loop at the SwayLOC to allow for movement of the line.

The SwayLOC installation is now complete.

Software Setup, AiROCK Controlled

Note: AiROCK Firmware Version 2.0G or later is required for proper control of SwayLOC with the AiROCK system.

1. In the AiROCK setup menu, select "Installation Menu", press the > button, select "Installed AiROCK options" press the > button again, now displayed should be "SwayLOC" on the top line, and "No Toggle>" on the lower line.
2. When the option for "SwayLOC" is displayed, press the ">" button to toggle the setting to "Yes". X out of the "Installed AiROCK options" menu, X out of the "Installation Menu" and X until back to "Manual Mode"
3. Enter the Menu once again, the first option in the menu will now be "SwayLOC engaged" and the second line will be "Yes" or "No" with a ">" option to toggle. Pressing the ">" button should toggle the setting and also should result in the air cylinder engaging and disengaging. If no engagement is heard (same air escaping sound as an ARB or Air actuated Ox Locker engage/disengagement) the harness probably needs to be switched to the other 2 prong harness in the AiROCK main harness. Swap the connection and test again by toggling the SwayLOC engaged/disengaged to check for reaction.

Once the testing confirms proper operation, you're ready for a test drive.

Operating the SwayLOC with the AiROCK controller

1. Set the SwayLOC to the engaged setting in the menu. Drive. The SwayLOC, if not already engaged, will automatically engage the latch upon moving past the latching position. The SwayLOC should remain engaged, and can be determined by the second line on the display stating "SwayLOC engaged."
2. Verify that the SwayLOC remains engaged during the transition from Manual Mode to Active mode and then back to manual mode as you come to a stop. This is the operation expected when the menu option selected is "SwayLOC engaged"
3. To disengage the SwayLOC to allow for more articulation, tap either the left or right tilt buttons. If in 1m or 2m modes, a quick tap will result in the Jeep not moving but the SwayLOC will take this as a command to disengage. If the Jeep is not parked on flat level ground, it may take just a few feet of moving for the axle to move enough to allow air pressure to overcome the force of the latch on the inner arm and disengage the SwayLOC latch. The display will now be blank on the second row, meaning the SwayLOC is no longer engaged. The SwayLOC will remain disengaged until the speed exceeds the Active speed threshold and the AiROCK goes to Active Mode. At this point the air pressure will be released and the SwayLOC will engage on the next pass past the latch position. However, because the SwayLOC engaged due to speed, it will again disengage when the AiROCK returns to Manual Mode, automatically allowing the operator to continue offroading with enhanced articulation.
4. To set the SwayLOC engaged during Manual Mode, the operator must again go into the menu and select "SwayLOC engaged, Yes" to keep the SwayLOC engaged until the next time either of the Tilt left or Tilt Right buttons are pressed. This allows you to force the SwayLOC to be engaged at all times, but will automatically disengage the SwayLOC if you find yourself hitting a tilt button to either enhance the vehicles center of gravity or demonstrating the system.
5. After completing the test drive, check the tightness of all mechanical and electrical connections on the SwayLOC. After a month of driving, and then at each vehicle service interval, check all fasteners to ensure that they remain tight, especially the 3/8 bolts that tighten the arms to the torsion bars.

ELECTRICAL INSTALLATION, Switch controlled

1. Install the solenoid assembly in any convenient location under the hood. The solenoid may be placed anywhere, in any position, only limited by the length of the harness to the red rocker switch. **See Figure 8**



Figure 8 Air Solenoid Assembly

2. There are two harness assemblies that come with the switch controlled version. A 2 prong connector with a white and black wire. This plugs into the air solenoid under the hood and the black wire goes to the nearest grounding point. The white wire will run thru the firewall and up to the dash area to the open (Center) terminal on the switch.
3. The second harness is attached to the switch. The black wire with the lug should be attached to a chassis ground connection under the dash, this illuminates the light in the switch when it is turned on. The red wire should be run to the fuse box and using the fuse tap provided, piggy back the fused side of a 10 amp fuse. The solenoid draws less than 300ma.

4. Once wired, flipping the switch one should result in the rocker switch being lit up, and the air solenoid should pass the air pressure and disengage the latch mechanism and allow the SwayLOC to operate in the flexible off road mode.
5. Returning the switch to the Off or Non-lighted position should result in the air pressure being released and the air cylinder returning with spring pressure to lock the latch in the highway mode once the latch and the inner arm positions match up.

PNEUMATIC INSTALLATION

1. Install the 1/4npt to 1/4 inch push-in fitting into your On Board Air (OBA) system. We recommend making this connection at a manifold or at a point where the air does not contain oil contaminants or is prone to excessive heat.

NOTE: Do not exceed 250 PSI maximum to the SwayLOC!

2. Connect the fitting to the IN port on the solenoid with the 1/4" nylon air line. Connect the solenoid OUT port to the air cylinder. Tie wrap the air lines in place. Leave a service loop at the SwayLOC to allow for movement of the line.

NOTE: Route the airline away from heat sources. On 2003 and newer Jeeps watch particularly the heat area near the upstream catalytic convertors under the intake manifold.

The SwayLOC installation is now complete.

Operating the SwayLOC with the Red Switch

1. The air cylinder can open the latch with as little as 20 psi air pressure if the axle is not loading the latch. The recommended procedure to disconnect SwayLOC is to flip the switch as you are coming to a stop, and then as the movement from the axle loads and unloads the latch, it will unlatch as soon as the load is light enough. 100 to 150psi should allow immediate unlatching if sitting on level ground and provided the links were adjusted properly during install.
2. When you start driving on the road, simply turning the switch off will result in the air cylinder pulling the latch back into place once the arms pass over the keyed opening. This may take just a bit of driving on flat ground so please use caution on quick maneuvering until you are sure that the latch has engaged.
3. After completing a test drive, check the torque of all mechanical and electrical connections on the SwayLOC. After a month of driving, and then at each vehicle service interval, check all fasteners to ensure that they remain tight, especially the 3/8 bolts that tighten the arms to the torsion bars.

Maintenance of the moving parts.

Periodic disengagement/re-engagement is recommended to keep all parts moving, and an occasional shot of wd40 or other spray lubricant on the air cylinder shaft may prevent sticking of the latch assembly.