

LSZ13 Repair Manual

Lift Mechanism and SuperChamber™



Contents	Page
Introduction	2
Warranty	2
Notes, Cautions, and Warnings	2
Section 1 – Safety Instructions	3
SRK Kits	4

Contents	Page
Section 2 – Lift Mechanism	5
Section 3 – SuperChamber Replacement	6
Section 4 – Torque Specifications	8
Section 5 – Lubrication Specifications	8

Introduction

This manual provides the necessary information for the maintenance, inspection, and safe operation of the NEWAY® LSZ Series Auxiliary Air Suspension.

NOTE: To assist with installation, customer inspection drawing LSZ13_TAB_CI or LSZ20_TAB_CI is required and is included in the literature kit.

Read this manual before using or servicing this product and keep it in a safe location for future reference. Updates to this manual, which are published as necessary, are available on the internet at www.safholland.us.

When replacement parts are required, SAF-HOLLAND® highly recommends the use of only SAF-HOLLAND Original Parts. A list of technical support locations that supply SAF-HOLLAND Original Parts and an Aftermarket Parts Catalog are available on the internet at www.safholland.us or contact Customer Service at 888-396-6501.

Warranty

Refer to the complete warranty for the country in which the product will be used. A copy of the written warranty is included with the product or available on the internet at www.safholland.com.

Notes, Cautions, and Warnings

Before starting any work on the unit, read and understand all the safety procedures presented in this manual. This manual contains the terms “NOTE”, “IMPORTANT”, “CAUTION”, and “WARNING” followed by important product information. These terms are defined as follows:

NOTE: Includes additional information to enable accurate and easy performance of procedures.

IMPORTANT: Includes additional information that if NOT followed could lead to hindered product performance.

CAUTION Used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, could result in property damage.

CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

1. Safety Instructions

General and Servicing Safety Instructions

- Read and observe all Warning and Caution hazard alert messages. The alerts provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING Failure to follow the instructions and safety precautions in this manual could result in improper servicing or operation leading to component failure which if not avoided could result in death or serious injury.

- All installations should be performed by a properly trained technician using proper/special tools, and safe procedures.

NOTE: In the United States, workshop safety requirements are defined by federal and/or state Occupational Safety and Health Act (OSHA). Equivalent laws could exist in other countries. This manual is written based on the assumption that OSHA or other applicable employee safety regulations are followed by the location where work is performed.

- Properly support and secure the vehicle from unexpected movement when servicing the unit.

⚠ WARNING Failure to properly support and secure the vehicle and axles prior to commencing work could create a crush hazard which, if not avoided, could result in death or serious injury.

- Service both roadside and curbside of an axle. Worn parts should be replaced in sets. Key components on each axle's braking system, such as friction material, rotors and drums will normally wear over time.
- Follow all manufacturer's instructions on spring pressure and air pressure controls.

⚠ WARNING Failure to follow manufacturer's instructions regarding spring pressure or air pressure control could allow unexpected release of energy which, if not avoided, could result in death or serious injury.

- The wheel contact surfaces between the wheel and hub/drum MUST NOT be additionally painted.

IMPORTANT: The wheel contact surfaces MUST be clean, smooth and free from grease.

⚠ WARNING Failure to keep wheel and hub contact surfaces clean and clear of foreign material could allow wheel/hub separations which, if not avoided, could result in death or serious injury.

- Only the wheel and tire sizes approved by SAF-HOLLAND can be used.
- Tire clearance between tires and the suspension MUST be regularly monitored and maintained.

⚠ WARNING Failure to maintain tire clearance between tires and the nearest point of contact on the suspension or vehicle could cause fire or loss of vehicle control which, if not avoided, could result in death or serious injury.

Operational and Road Safety Instructions

- Before operating vehicle, ensure that the maximum permissible axle load is NOT exceeded and that the load is distributed equally and uniformly and in accordance with state and federal bridge laws.

- Make sure that the brakes are NOT overheated from continuous operation.

⚠ WARNING Failure to minimize the use of brakes during overheating conditions could result in deterioration of brake efficiency which, if not avoided could result in death or serious injury.

- Observe the operating recommendation of the truck manufacturer for off-road operation of the installed axles.

IMPORTANT: The definition of OFF-ROAD means driving on non-asphalt/non-concrete routes, e.g. gravel roads, agricultural and forestry tracks, on construction sites and in gravel pits.

IMPORTANT: Off-road operation of axles beyond the approved application design could result in damage and impair suspension system performance.

- Follow the recommended routine maintenance and inspections described in this manual. These procedures are designed so that optimum performance and operational safety are achieved.
- The suspension springs should ALWAYS be operated with a static operating pressure between 20 psi (1.38 bar) and 107 psi (7.38 bar).

⚠ WARNING Failure to operate the air springs with a proper static operating pressure could cause premature component failure and loss of vehicle control which, if not avoided, could result in death or serious injury.

- In the event of suspension air pressure loss, quickly reduce speed as safely as possible and remove the vehicle from traffic. If unable to remove vehicle from traffic, follow DOT safety requirements regarding emergency situations.
- Contact a qualified towing and/or service company to assist in repairing the vehicle or to move it to a qualified repair facility. DO NOT operate the vehicle in the absence of suspension air pressure; however in the event of an air system failure while in service, an internal rubber bumper built into the air spring will make it possible to temporarily operate the vehicle at reduced speed determined by road conditions.

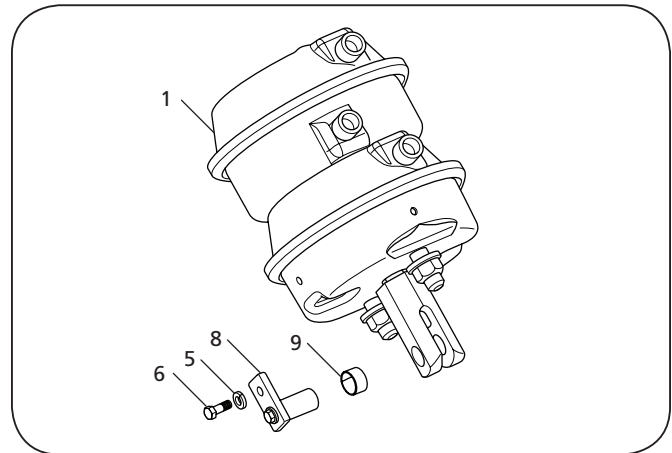
⚠ WARNING Operating the vehicle without proper air pressure can cause tire failure, fire, or loss of vehicle control which, if not avoided could result in death or serious injury.

- The suspension MUST be lifted when the vehicle is moving in reverse.

CAUTION Failure to lift axle when in reverse could result in tire or axle damage.

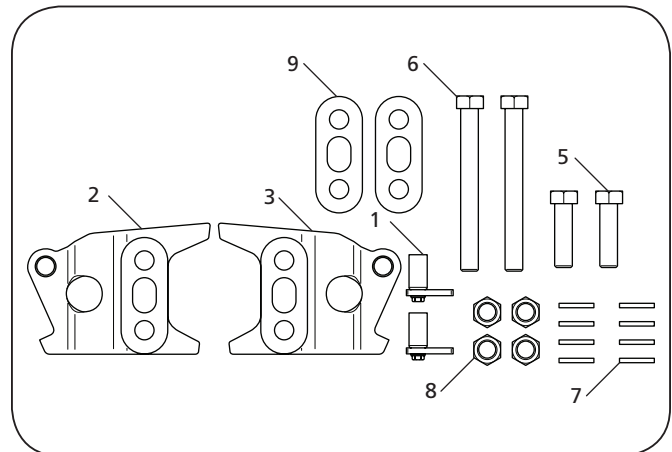
SRK 48100570: SUPERCHAMBER KIT LSZ			
ITEM	DESCRIPTION	PART NUMBER	QTY.
1	SuperChamber Assembly	90550330	1
5	Lock Washer, Extra Duty, Helical Spring	93600043	1
6	Hex Head Cap Screw .31"-18x3/4" GR 8	93002459	1
8	Bearing	90045716	1
9	Clevis Pin Assembly	90501539	1

48100570



SRK 48100609: HARDWARE KIT, LIFT MECHANISM, LSZ13			
ITEM	DESCRIPTION	PART NUMBER	QTY.
1	Clevis Pin Assembly	90501539	2
2	Lower Lift Bracket Assembly - LH	90550326	1
3	Lower Lift Bracket Assembly - RH	90550327	1
4	Repair Manual (Not Shown)	XL-PS20059RM-en-US	1
5	Bolt, 3/4" - 10 x 2 3/4" GR 8	93003581	2
6	Bolt, 3/4" - 10 x 7" GR 8	93003683	2
7	Washer, Flat 3/4"	93600156	8
8	Nut, Hex, Lock 3/4" - 10 GR C	93400494	4
9	Shim, Lower Lift Bracket	90036306	2

48100609



2. Lift Mechanism

Required Tools:

- 1-1/8" Open End Wrench and Socket
- Small Pry Bar
- 1/2" Wrench or Socket
- 250 ft-lb Torque Wrench

1. With the vehicle unloaded and/or trailer disconnected on a level surface, set parking brakes and chock drive tires to prevent the vehicle from rolling forward or backward.

⚠ WARNING Failure to properly secure the vehicle prior to commencing work could create a crush hazard which, if not avoided, could result in death or serious injury.

2. Put suspension in the in-service position with no air pressure in the suspension air springs. Exhaust the air pressure using the air pressure regulator or control valve.

⚠ WARNING Failure to exhaust the suspension air and chock the tires prior to beginning maintenance could allow vehicle movement which, if not avoided, could result in death or serious injury.

3. Using a wrench and socket, remove and discard the upper pivot bolt, locknut and flat washers (**Figure 1**).
4. Using a 1-1/8" wrench and socket, remove and discard the lower 3/4" lift bracket locknut and flat washers (**Figure 2**).
5. Use a small pry bar to pry the clevis downward to overcome the return spring force. This will allow the removal of the lower lift bracket 3/4" bolt and washer. Discard the 3/4" washer and lower lift bracket 3/4" bolt.
6. Using a 1/2" wrench or socket to remove and retain the upper 5/16" bolt and lock washer from the clevis. Remove and discard the clevis pin assembly and lower lift bracket.
7. Install the new upper pivot bolt and flat washer.
8. When installing the new lower lift bracket you first have to determine which generation of frame bracket that is installed (**Figure 3 and 4**). Once determined if the shim is needed, install the new lower lift bracket onto the new upper pivot bolt with or without the shim. Install the flat washer with a new locknut and hand tighten the locknut.

Figure 1

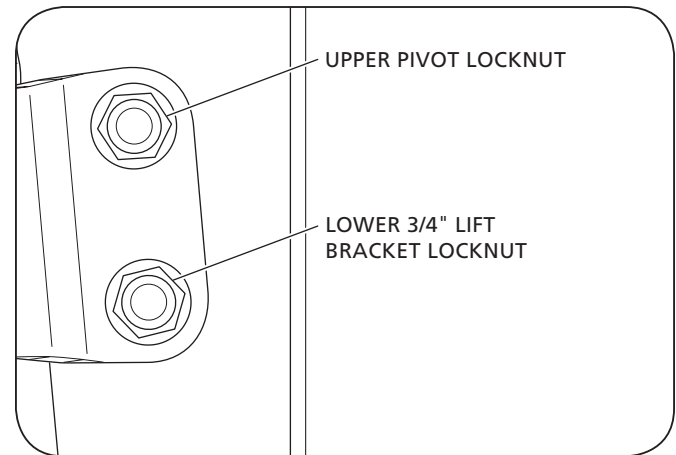


Figure 2

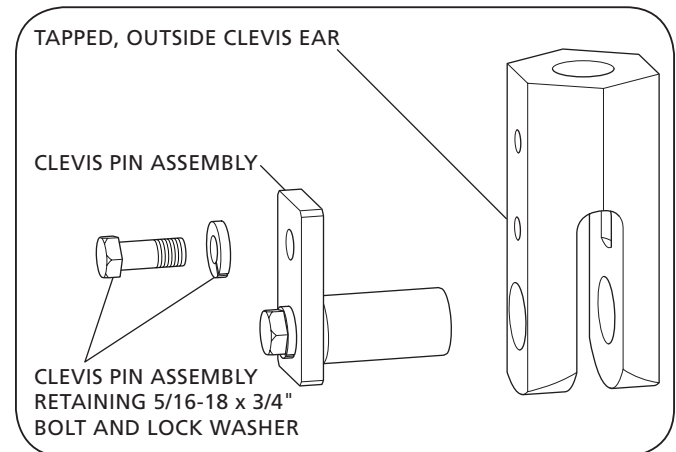


Figure 3

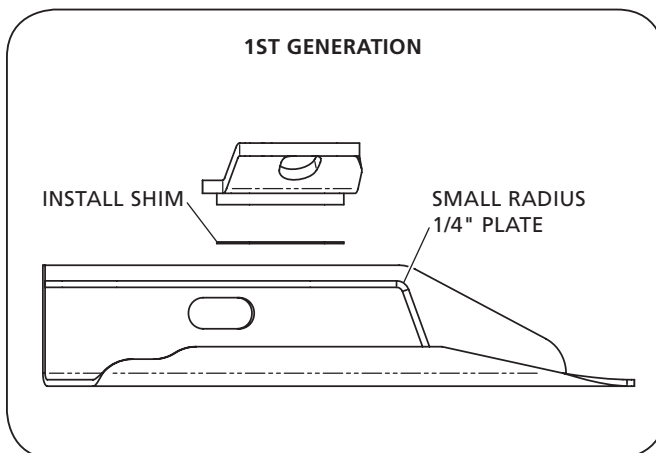
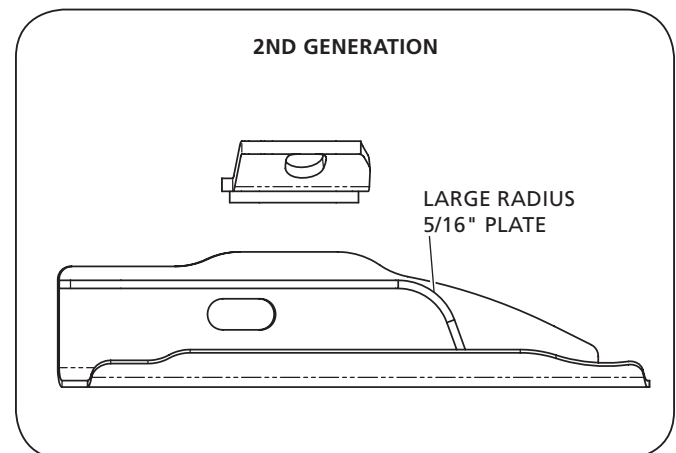


Figure 4



9. Use a small pry bar to pry the clevis downward to overcome the return spring force. Install the new clevis pin assembly, 5/16" bolt and lock washer. Torque according to specifications in **Table 1**.
10. Use a small pry bar to pry the clevis downward to overcome the chamber return spring force. This will allow the installation of the new lower 3/4" bolt, washers and locknut. Make sure the lower lift bracket alignment legs contact the front frame bracket flange (**Figure 5**). Torque all fasteners according to specifications in **Table 1**.
11. Repeat steps 3 through 10 on the opposite side.
12. Remove the wheel chocks from the drive tires.

3. SuperChamber Replacement

Required Tools:

- 1-1/8" Open End Wrench
- 1-1/8" Socket
- 3/4" Open End Wrench
- 15/16" Wrench
- Torque Wrench Capable of 250 ft.-lbs.
- Small Pry Bar
- 1/2" Socket or Wrench
- 3/8" Open End Wrench

NOTE: It is recommended that the lift mechanism is replaced at the same time as the SuperChamber.

1. With the vehicle unloaded and/or trailer disconnected on a level surface, set parking brakes and chock drive tires to prevent the vehicle from rolling forward or backward.

⚠ WARNING Failure to properly secure the vehicle prior to commencing work could create a crush hazard which, if not avoided, could result in death or serious injury.

2. Put suspension in the in-service position. Exhaust air pressure in the suspension air springs. Remove the air pressure using the air pressure regulator or control valve.

⚠ WARNING Failure to exhaust the suspension air and chock the tires prior to beginning maintenance could allow vehicle movement which, if not avoided, could result in death or serious injury.

3. Using a 3/8" wrench, depress the release button on the SuperChamber push to connect fittings to allow the removal of the 6" jumper tube. Retain the jumper tube.
4. Using a 3/8" wrench, depress the release button on the SuperChamber push to connect fitting to allow the removal of the 3/8" SuperChamber air supply tubing (**Figure 6**).
5. Using a 3/4" open end wrench, remove and retain both fittings from the installed SuperChamber.
6. Using a 1/2" wrench or socket remove the upper 5/16" bolt and lock washer from the SuperChamber clevis. Use a small pry bar to pry the clevis downward to overcome the return spring force. This will allow the removal of the clevis pin assembly (**Figure 7**).
7. Using a 15/16" wrench, remove and discard both 5/8" nuts and lock washers retaining the SuperChamber to the chamber bracket.

Figure 5

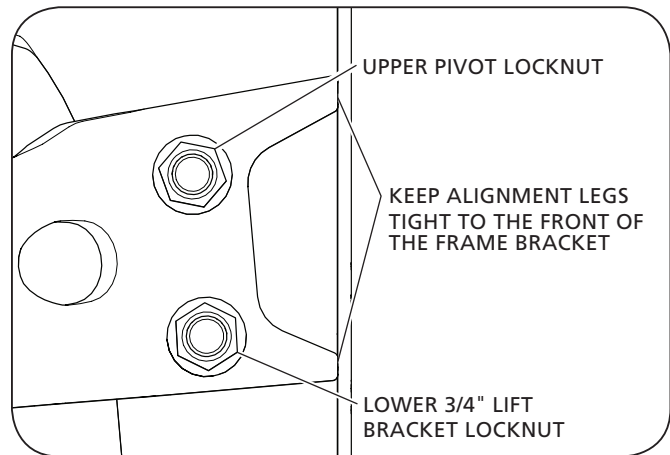


Figure 6

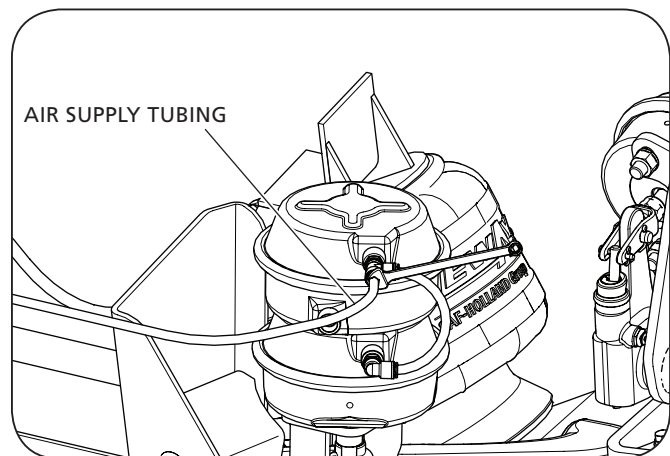
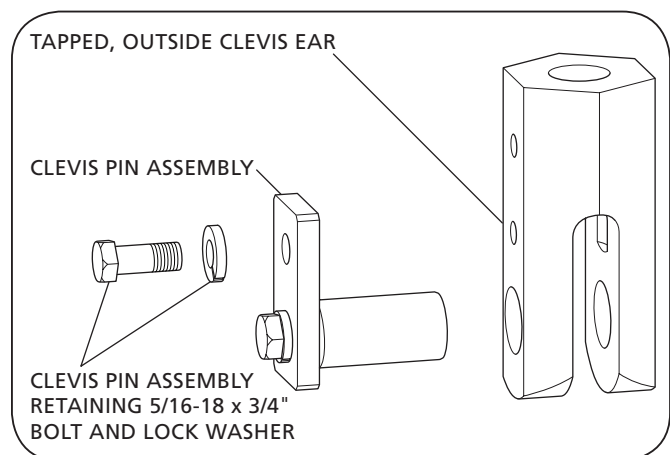
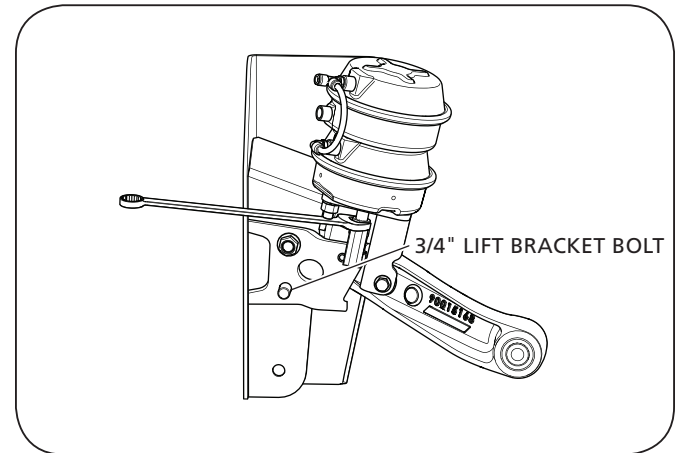
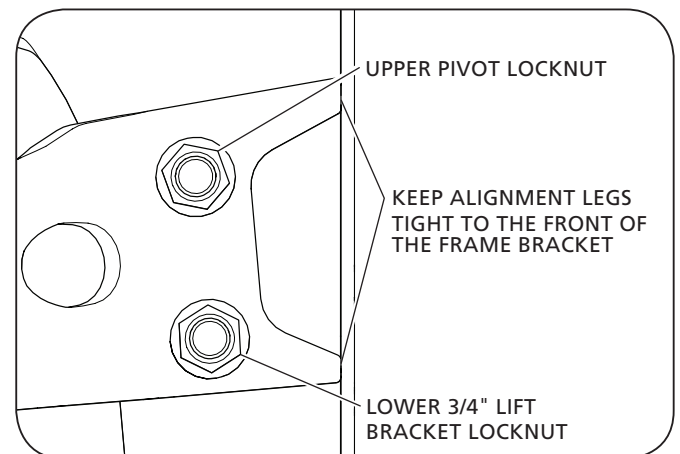


Figure 7



8. Remove the SuperChamber.
9. Install the new SuperChamber using two (2) new 5/8" nuts and lock washers onto the studs of the new SuperChamber. Torque both nuts according to specifications in **Table 1**.
10. Use a small pry bar or open end wrench to pry the clevis downward to overcome the return spring (**Figure 8**). This will allow the installation of the clevis pin assembly.
11. Install the 5/16" bolt and lock washer, into the upper position of the clevis (**Figure 7**). Torque the bolt according to specifications in **Table 1**.
12. Using a 3/4" open end wrench, re-install the install both fittings into the top and bottom port on the SuperChamber. Install the air supply tubing into the Tee and jumper from the Tee to elbow.
13. Install the upper pivot bolt and flat washer.
14. Install the lower lift bracket onto the upper pivot bolt. Install the 3/4" flat washer and locknut and hand tighten the locknut.
15. Rotate the lift bracket to allow the installation of the new clevis pin assembly. Install the new 5/16" bolt and lock washer. Torque According to specifications in Section 4.
16. Use a small pry bar or open end wrench to pry the clevis downward to overcome the return spring (**Figure 8**). This will allow the installation of the lower 3/4" bolt and 3/4" flat washer into the lower hole of the lower lift bracket. Install the nut and washer on the lower bolt on the lower lift bracket. Position the lower lift bracket so the alignment legs contact the frame bracket edge (**Figure 9**). Torque both the upper pivot and lower lift bracket locknuts to specifications in **Table 1**.
17. Build air pressure on the truck to a minimum of 100 psi. Lift the axle and check the fittings for leaks using soapy suds. Tighten fittings if leaks found at the threaded joints.
18. Remove the wheel chocks from the drive tires.

Figure 8

Figure 9


4. Torque Specifications

NOTE: Torque specifications listed in this section are with clean lubricated/coated threads, supplied by SAF-HOLLAND.

IMPORTANT: The use of special lubricants with friction modifiers, such as Anti-Seize or Never-Seez®, without written approval from SAF-HOLLAND Engineering, will void warranty and could lead to over torquing of fasteners or other component issues.

General Information

- The torque specifications listed throughout the manual are applied to the lock nut and NOT the bolt.

IMPORTANT: Most of the fasteners used in this suspension are Grade 8 bolts and Grade C lock nuts. These fasteners have the strength and hardness properties required for their particular function. They MUST be replaced with fasteners of the same grade, size and form as the original in order to prevent failure (**Figure 10**).

⚠ WARNING Failure to use the proper fasteners when servicing the suspension could cause component failure which, if NOT avoided, could result in death or serious injury.

⚠ WARNING Failure to properly torque all fasteners will result in component failure which, if NOT avoided, could result in death or serious injury.

- All fasteners MUST be re-torqued after the first 100 hours of service or 5,000 miles (8,000 km).
- Refer to vehicle OEM for torque specifications for vehicle frame fastener hardware.

5. Lubrication Specifications

Lubricate the suspension in accordance with the approved lubricants (**Table 2**).

IMPORTANT: Replacement of SAF-HOLLAND supplied fasteners with non-SAF-HOLLAND could result in unpredictable performance.

⚠ WARNING Failure to maintain the LSZ suspension with SAF-HOLLAND original parts can result in unpredictable performance which, if NOT avoided, could result in death or serious injury.

Table 1

COMPONENT	TORQUE RANGE	SIZE
Clevis Pin Assembly	18-24 ft.-lbs. 24-33 N•m	5/16"-18
SuperChamber Bracket	47-63 ft.-lbs. 64-85 N•m	1/2"-13
SuperChamber and Service Brake Chamber	133-155 ft.-lbs. 180-210 N•m	5/8"-11
Lift Bracket, King Pin Bolt, Crossmember, and Tie Rod	200-250 ft.-lbs. 271-339 N•m	3/4"-10
LSZ13 Pivot Connections	200-250 ft.-lbs. 271-339 N•m	3/4"-10

Figure 10

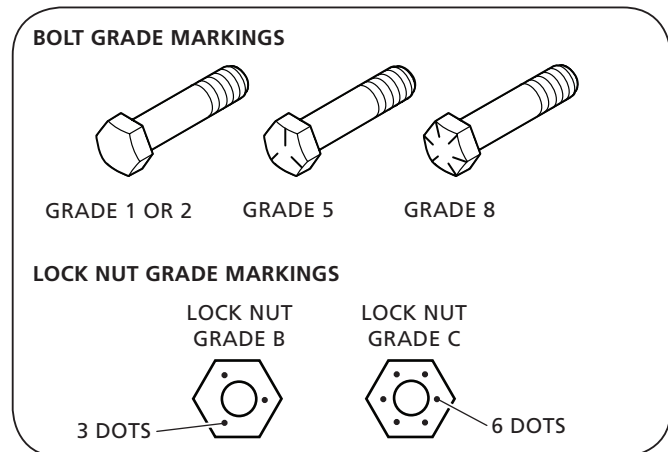


Table 2

GREASE	HUB OIL
SAF® Premium Synthetic Grease 50844001	Exxon Mobil Mobilube HD Plus 80W-90
CITGO SynDurance Premium Synthetic 460	Shell Spirax S 75W-90
Mystik JT-6 Hi Temp with Moly	Shell Spirax ASX 75W-90
Valvoline Palladium Grease	Exxon Mobil Mobilube 1 SHC 75W-90
Chevron Delo Heavy Duty Moly 5% EP	Exxon Mobil Delvac 75W-90



From fifth wheel rebuild kits to suspension bushing repair kits, SAF-HOLLAND Original Parts are the same quality components used in the original component assembly.

SAF-HOLLAND Original Parts are tested and designed to provide maximum performance and durability. Will-fits, look-alikes or, worse yet, counterfeit parts will only limit the performance potential and could possibly void SAF-HOLLAND's warranty. Always be sure to spec SAF-HOLLAND Original Parts when servicing your SAF-HOLLAND product.

SAF-HOLLAND USA • 888.396.6501 • Fax 800.356.3929
www.safholland.us

SAF-HOLLAND CANADA • 519.537.3494 • Fax 800.565.7753
WESTERN CANADA • 604.574.7491 • Fax 604.574.0244
www.safholland.ca

SAF-HOLLAND MEXICO • 55.55.5362.8743 • Fax 52.55.5362.8743
www.safholland.com.mx

info@safholland.com