



# BOXER<sup>RC</sup>

## 2011 Technical Manual



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## GETTING STARTED

This guide provides step-by-step instructions to assist in performing routine maintenance of your BoXXer front suspension fork.

### PARTS

Servicing your fork will require new replacement parts such as dust seals, o-rings, oil, etc. Make sure you have all the parts available before you begin service. Refer to the RockShox Spare Parts Catalog for a complete list of all service kits and corresponding part numbers for the 2011 BoXXer RC.

### TOOLS

The following chart is a list of the tools needed for service of your 2011 BoXXer RC. While this chart is intended to be comprehensive, it is still only a guide. The tools required for each step of service are detailed in the text of each service section.

TOOLS	LOWER LEG REMOVAL	OIL AND DUST SEAL SERVICE	DAMPER SERVICE	SPRING SERVICE	LOWER LEG INSTALLATION	FORK/WHEEL REMOVAL/ INSTALLATION
<b>SAFETY/STARTING EQUIPMENT</b>						
SAFETY GLASSES	X	X	X	X	X	X
APRON	X	X	X	X	X	X
RUBBER GLOVES	X	X	X	X	X	X
CLEAN RAGS (LINT FREE)	X	X	X	X	X	X
OIL PAN	X	X	X	X	X	X
CLEAN WORK AREA	X	X	X	X	X	X
BICYCLE STAND	X	X	X	X	X	X
<b>WRENCHES/PLIERS</b>						
2 mm HEX			X			
4 mm HEX						X
5 mm HEX	X				X	
6 mm HEX						X
24 mm SOCKET			X	X		
TORQUE WRENCH			X	X	X	X
LARGE SNAP RING PLIERS - INTERNAL			X	X		
<b>MISC TOOLS</b>						
PLASTIC Mallet	X	X	X	X	X	
LONG DOWEL ROD (PLASTIC OR WOOD)		X			X	
SHARP PICK			X			
DOWNHILL TIRE LEVER OR LARGE FLAT HEAD SCREWDRIVER		X				
35 mm OIL SEAL/DUST WIPER INSTALLER		X				
RULER				X		X
<b>OIL/LIQUIDS</b>						
5wt ROCKSHOX SUSPENSION OIL			X			
15wt ROCKSHOX SUSPENSION OIL					X	
GREASE (SUSPENSION OIL SOLUBLE)		X	X	X	X	
GRADUATED CYLINDER/BEAKER		X	X	X	X	
ISOPROPYL ALCOHOL	X	X	X	X	X	X

# BOXXER RC TECHNICAL MANUAL

## GETTING STARTED (CONTINUED)

### RECORD YOUR SETTINGS

Take a moment and record all of your BoXXer settings in the chart below. This will allow you to return your fork to its original settings after service. Be sure to record the service date as well, this will help you keep track of service intervals.

To determine your compression and rebound settings perform the following:

**Rebound** - Count the number of clicks while turning the rebound adjuster ↺ fully counter-clockwise.

**Compression** - Count the number of clicks while turning the compression adjuster ↺ fully counter-clockwise.

The number of preload spacers will be determined during Spring Service.

MY SETTINGS	SERVICE DATE	UPPER CROWN HEIGHT	NUMBER OF PRELOAD SPACERS	COMPRESSION	REBOUND

# BOXXER RC TECHNICAL MANUAL

## GETTING STARTED (CONTINUED)

The following chart lists all of the oil volumes and weights for your BoXXer as well as tool sizes and torque values for all of the fasteners.

### OIL VOLUME CHART

	Damper technology (drive side)	Volume (mL)	Height (mm)	Oil wt	Volume (mL)	Oil wt	Spring technology (non-drive side)	Volume (mL)	Oil wt	Volume (mL)	Oil wt
		Upper leg			Lower leg			Upper leg		Lower leg	
		BoXXer RC	Motion Control IS	290	105	5		10	15	Coil	-

### TORQUE CHART

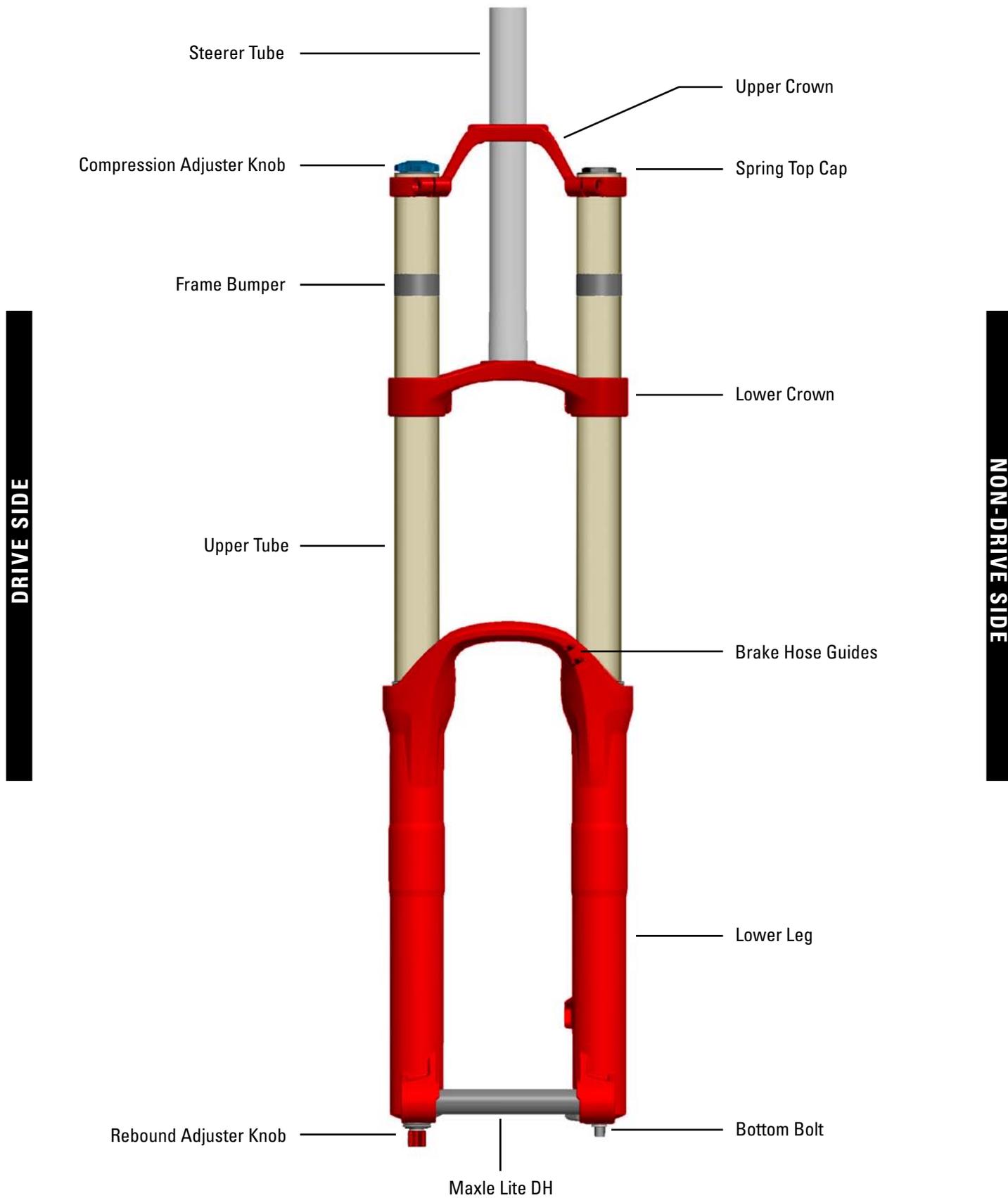
Part/fastener	Tool size	Torque
Maxle DH (non drive-side)	6 mm	8 clicks
Maxle DH (drive-side)	6 mm	5.7 N·m (50 in-lb)
Crown bolts	4 mm	7.3 N·m (65 in-lb)
Bottom bolts	5 mm	7.3 N·m (65 in-lb)
Top caps	24 mm	7.3 N·m (65 in-lb)
Compression adjuster bolt	2 mm	0.6-1.0 N·m (5-9 in-lb)

### SERVICE INTERVALS

The following chart is a summary of the maintenance/service intervals for RockShox forks. Following this schedule is important to ensure the consistent performance and longevity of your fork. Some of the information listed may not be applicable to your fork.

Maintenance	Interval (Hours)
Clean dirt and debris from upper tubes	Every ride
Check air pressure (air forks only)	Every ride
Inspect upper tubes for scratches	Every ride
Lubricate dust seals and upper tubes	Every ride
Check front suspension fasteners for proper torque	25
Remove lowers, clean/inspect bushings and change oil bath (if applicable)	25
Clean and lubricate air spring assembly	50
Change oil in damping system	100
Clean and lubricate coil spring assembly (coil forks only)	100

## ANATOMY





# **SAFETY FIRST!**

At SRAM, we care about YOU. Please, always wear your safety glasses and protective gloves when servicing your RockShox suspension. Protect yourself! Wear your safety gear!



## LOWER LEG REMOVAL

1. Clamp one of the upper tubes, just below the top cap, in a bike stand and place an oil pan beneath the fork to catch any draining oil.

**Do not scratch the upper tube while clamping it into the bike stand. Clean any debris from the stand clamping surface. A clean rag wrapped around the upper tube may be used to protect the tube surface.**

2. Firmly pull the external rebound adjuster knob and remove it from the drive side shaft.
3. Use a 5 mm hex wrench to loosen both shaft bolts three to four turns.
4. Use a plastic mallet to firmly strike each shaft bolt to free the shafts from their press-fit to the lower leg. Remove the shaft bolts completely and allow the oil to drain.

**If oil doesn't drain from either side, the press-fit may not be completely released. Re-install the shaft bolt two to three turns and strike it again.**

5. Remove the lower leg from the fork by firmly pulling each upper tube out of the lower leg assembly.  
**Do not hit the brake arch with any tool when removing the lower leg as this could damage the fork. If an upper tube does not slide out of the lower leg, the press-fit may not be completely released. Re-install the shaft bolt 2 to 3 turns and strike it again.**
6. Allow any remaining oil in the lower leg to drain into the oil pan.
7. Spray isopropyl alcohol onto the upper tubes and clean with a lint free rag.  
**Inspect the upper tubes for damage. Damage such as scratches, chips or wear marks on the surface of the upper tube can cause oil to leak during use and allow dirt and debris to contaminate the internals of the fork. Damaged upper tubes should be replaced.**

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## SEAL SERVICE

### INTRODUCTION

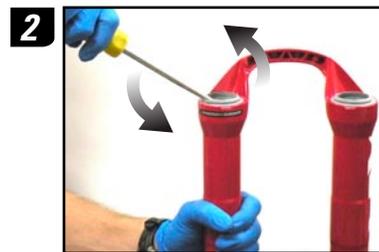
Suspension fork seals are considered "wear and tear" parts and require regular maintenance. The frequency of seal replacement will depend on the frequency of riding, riding terrain, rider body weight, and type of fork. The following chapter covers wiper and oil seal removal and installation.

### WIPER & OIL SEAL REMOVAL

1. Position the tip of a downhill tire lever or large, flat head screwdriver underneath the lip of the lower black oil seal, above the upper bushing.
2. Stabilize the lower leg upright on a bench top or on the floor. Hold the lower leg firmly and use downward force on the tool handle to leverage both seals out at the same time.

**Be sure to stabilize the lower leg in order to prevent it from slipping while installing the seal. Do not allow the lower legs to twist in opposite directions, compress toward each other, or be pulled apart. This will damage the lower leg.**

3. Spray isopropyl alcohol on and into the lower leg. Wipe the lower legs clean, then wrap a clean, lint free rag around a dowel and clean the inside of each lower leg.



### WIPER & OIL SEAL INSTALLATION

1. Position the oil seal, with the grooved side visible, onto the stepped side of the 35 mm seal installation tool.
2. Hold one of the lower legs firmly and use the seal installation tool to push the oil seal evenly and completely into that leg. Repeat for the other leg.

**Be sure to stabilize the lower leg in order to prevent it from slipping while installing the seal. Do not allow the lower legs to twist in opposite directions, compress toward each other, or be pulled apart. This will damage the lower leg.**

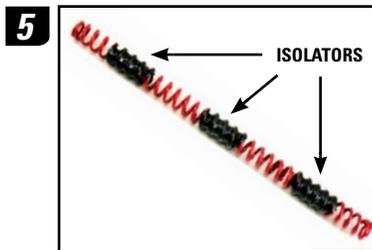
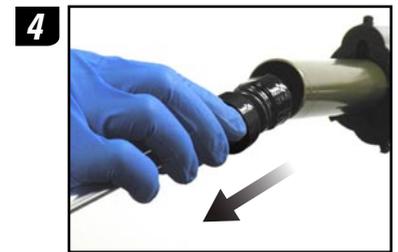
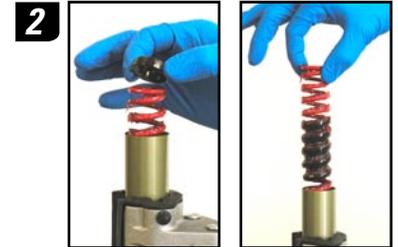
3. Position the dust wiper seal, with the grooved side visible, into the recessed side of the 35 mm seal installation tool.
4. Hold one of the lower legs firmly and use the seal installation tool to push the dust wiper evenly and completely into that leg. Repeat for the opposite leg.



## COIL SPRING SERVICE

### COIL SPRING REMOVAL/SERVICE

1. Use a 24 mm socket wrench to unthread and remove the spring top cap. Use a pick to remove the top cap o-ring. Apply a few drops of suspension oil to a new o-ring and install.
2. Remove the spring pre-load spacer(s) then pull the coil spring from the upper tube.
3. Use large internal snap ring pliers to remove the spring shaft base plate snap ring.
4. Pull the spring shaft and base plate from the upper tube.
5. Spray isopropyl alcohol on the coil spring, spring isolators, spring shaft, base plate, and the outside of the upper tube and wipe dry with a clean rag. Inspect the spring shaft assembly for damage. Replace entire assembly if necessary. **Check the position of the spring isolators. There should be three isolators evenly spaced along the coil spring with approximately 50 mm of exposed coil at each end. If any of the isolators needs to be re-positioned, you can "thread" it along the coil by twisting it by hand. Once the isolator is positioned in place, use a heat gun or hair dryer to shrink down and secure the spring isolators around the spring. Gradually heat the isolators until they emit vapors. Be careful not to get the heat gun too close or you may burn a hole in the isolator. Allow the area to cool before handling.**
6. Spray isopropyl alcohol into the upper tube. Wrap a clean, lint free rag around a long dowel and insert into the upper tube to clean inside the upper tube.



## COIL SPRING INSTALLATION

7. Make sure the base plate is installed on the spring shaft so that the small top out spring is oriented toward the spring perch.
8. Insert the spring perch, spring shaft, and base plate assembly completely into the bottom of the upper tube so that the retaining ring groove is visible.
9. Use large internal snap ring pliers to secure the snap ring into the snap ring groove.

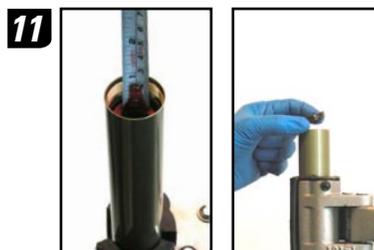
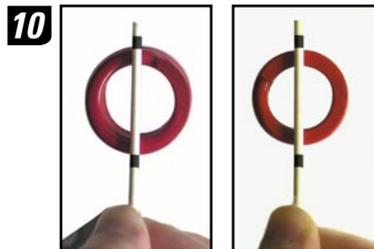
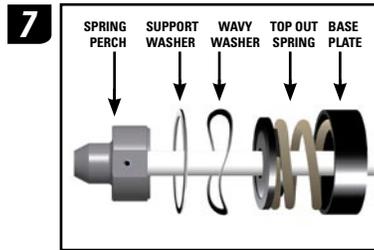
**Make sure the snap ring is securely fastened in the snap ring groove. You can check this by using the snap ring pliers to rotate the snap ring back and forth a couple of times, then firmly pulling down on the damper shaft.**

**Snap rings have two unique sides. One side is flat edged, while the other is round edged. Installing snap rings with the flat edge facing the tool will allow for easier removal and installation.**

10. Identify the smaller diameter end of the coil spring. Use a grease brush and apply a generous amount of grease to the entire length of the coil spring. Install the coil spring, with the smaller diameter end first, into the upper tube.
11. Use a ruler to measure the distance from the top of the coil spring to the top of the upper tube. This distance should be at least 14 mm but not more than 16 mm. If the measurement is greater than 16 mm, add preload spacers until the measurement falls between 14-16 mm (each preload spacer is 2 mm thick).

**If the distance measures greater than 16 mm and is not corrected, the coil spring will experience up/down play in the upper tube and the fork will make a 'knocking' noise. If the distance is less than 14 mm, the coil spring will bind in the upper tube which can lead to damage of the coil spring.**

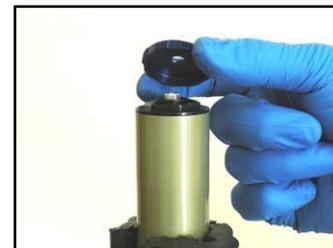
12. Clean the top cap, then apply grease to the top cap threads and o-ring. Insert the top cap into the upper tube/crown and hand thread it into the upper tube. Be careful not to damage the top cap o-ring upon installation. Use a 24 mm socket wrench to tighten to 7.3 N·m (65 in·lb).



## DAMPER SERVICE

### DAMPER REMOVAL/SERVICE

1. Turn the compression adjuster knob counter-clockwise until it stops. Record your setting by counting the number of clicks. This will make tuning your fork after service easier.
2. Use a 2 mm hex wrench to remove the compression adjuster knob retaining bolt. Remove the compression adjuster knob.
3. Use a 24 mm socket wrench to unthread the compression damper top cap.



4. Remove the compression damper from the upper tube by pulling it up and rocking side to side. Once removed, clean the upper tube threads with a rag.



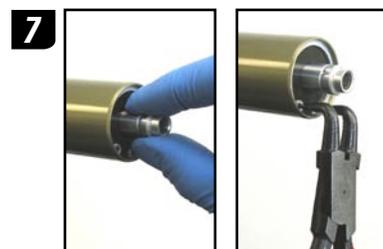
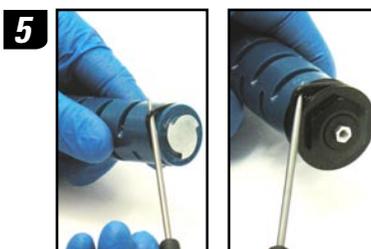
5. Use a pick to remove the compression damper o-rings located at the top and bottom of the damper. Apply grease to the new o-rings and install them.

**Do not scratch or damage the top cap or the surface of the piston during removal of the o-rings. Any damage will allow oil to bypass the o-rings during use, resulting in oil leakage and decreased damper performance.**

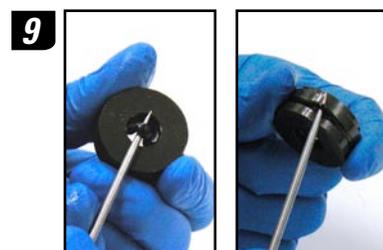
6. Pour any remaining oil from the upper tube into the oil pan.

7. Push the rebound damper shaft into the seal head, leaving just enough shaft exposed to hold onto with your fingers. Use large internal snap ring pliers to remove the seal head snap ring from the snap ring groove.

**Do not scratch or damage the surface of the damper shaft during removal of the snap ring. Any damage will allow oil to bypass the inner o-ring during use, resulting in decreased damper performance and travel loss.**



8. Position the upper tube upright. Firmly pull down on the damper shaft and remove the rebound damper and seal head assembly from the upper tube.



9. Slide the seal head off the damper shaft. Use a pick to remove the inner and outer seal head o-rings. Apply grease to the new o-rings and install them.

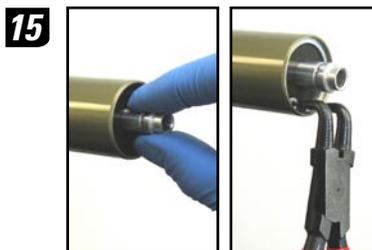
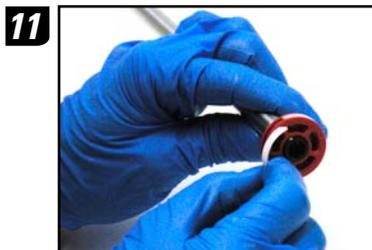
**Do not scratch or damage the seal head during removal of the o-rings. Any damage will allow oil to bypass the o-rings during use, resulting in decreased damper performance and travel loss.**

## DAMPER INSTALLATION

10. Spray isopropyl alcohol on the rebound damper shaft and clean with a lint free rag.
11. Remove the glide ring from the rebound shaft assembly. Apply grease to the new glide ring and install it.
12. Apply grease to the seal head inner o-ring. Slide the rebound seal head onto the rebound damper shaft with the stepped side of the seal head oriented toward the piston.
13. Spray isopropyl alcohol into the upper tube. Wrap a clean, lint free rag around a dowel and clean the inside of the upper tube.
14. Apply a small amount of grease to the seal head outer o-ring. Insert the rebound damper piston into the bottom of the upper tube at an angle, with the side of the glide ring opposite the split entering the upper tube first. Continue to angle and rotate until the glide ring is in the upper tube. Push the seal head firmly into the bottom of the upper tube until the retaining ring groove is visible.
15. Push the rebound damper shaft into the seal head, leaving just enough shaft exposed to hold onto with your fingers. Use large internal snap ring pliers to secure the snap ring into the snap ring groove.

**Make sure the snap ring is securely fastened in the snap ring groove. You can check this by using the snap ring pliers to rotate the snap ring back and forth a couple of times, then firmly pulling down on the damper shaft.**

**Snap rings have a sharper-edged side and a rounder-edged side. Installing snap rings with the sharper-edged side facing towards the tool will allow for easier installation and removal.**



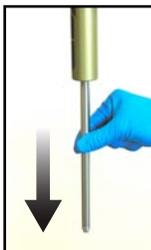
## DAMPER INSTALLATION (CONTINUED)

16. Make sure that the fork is upright in the bicycle stand. Pull the rebound damper shaft down to the fully extended position. Measure and slowly pour 290 mL of 5wt RockShox suspension oil into the upper tube.

**You can use oil height to measure oil fill. This method is recommended for use only when the lower leg is attached to the fork. Pour suspension oil into the upper tube. Compress the fork a few times to circulate the oil throughout the damping system. If the fork is still on the bike, you will need to unweight the front of the bike to allow the fork to fully extend. Measure from the top of the upper tube to the top of the oil level. The measurement should be 105 mm. Add or remove oil as necessary.**

17. Apply grease to the compression damper top cap threads, top cap o-ring, and piston o-ring. Insert the compression damper into the top of the upper tube and push downward until the damper is fully seated in the upper tube.
18. Use a 24 mm socket wrench to thread the compression damper into the upper tube and tighten to 7.3 N·m (65 in-lb).
19. Re-install the compression adjuster knob and retaining bolt. Tighten the retaining bolt to 0.6-1 N·m (5-9 in-lb). Reset the compression adjuster knob to its original setting (documented in the table in the "Getting Started" section).

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## LOWER LEG INSTALLATION

1. Spray the upper tubes with isopropyl alcohol and wipe with a clean rag.

2. Clean and inspect the shaft bolts, nylon crush washers, and crush washer retainers. Replace any crush washers and crush washer retainers if damaged.

**You must clean dirty crush washers and replace damaged crush washers. Dirty or damaged crush washers can cause oil to leak from the fork.**

3. Apply a liberal amount of grease to the inner surfaces of the dust wiper and oil seal.
4. Gently slide the lower leg assembly onto the upper tubes. Be sure each upper tube is inserted into its corresponding side of the lower. Slide the upper tubes into the lower leg until you feel the spring and damper shafts make contact with the inside of the legs, then pull the upper tubes back out a few centimeters to provide clearance for oil lubrication installation.

**Make sure both dust seals slide onto the tubes correctly without folding the seals' lip.**

5. Invert the fork to about 45 degrees, with the fork legs pointing upward. Measure and pour 10 mL of 15wt RockShox suspension oil into the drive side lower leg through the shaft bolt hole, then inject/pour 40 mL of 15wt suspension oil into the non-drive side lower leg through the shaft bolt hole.

6. Slowly slide each upper tube completely into the lower leg until the shaft threads are visible through the shaft bolt holes.

**Sliding the upper tubes and lower legs together too quickly will cause oil to spray out of the shaft bolt holes.**

7. Check for oil in the shaft threads. If there is oil in this area, use the corner of a rag to clean and dry the threads.

8. Thread the rebound damper and coil spring shaft bolts into the threaded shaft ends, through the lower leg holes. Use a 5 mm hex to tighten bolts to 7.3 N·m (65 in-lb).

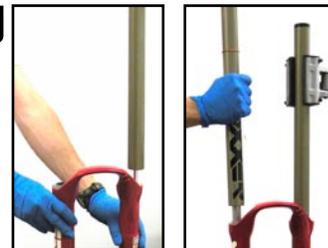
9. Insert the external rebound adjuster knob onto the rebound shaft bolt. To secure the rebound adjuster, press firmly to engage the retaining clip on the shaft bolt.

10. Spray isopropyl alcohol on the entire fork and wipe it with a clean rag.

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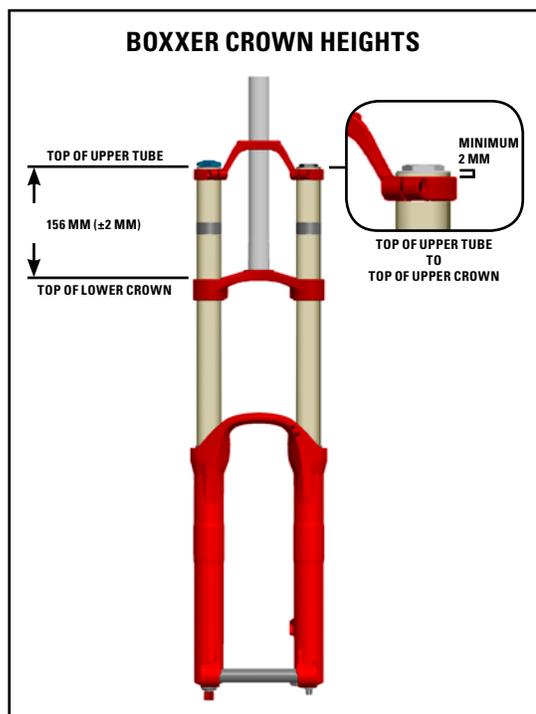
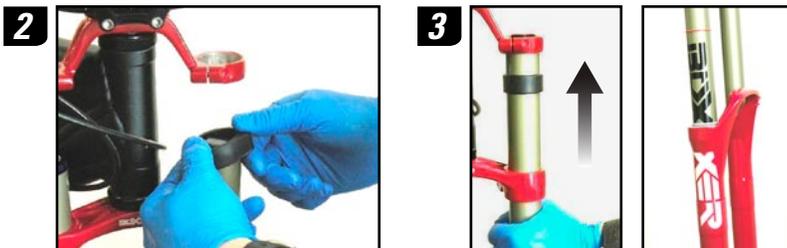
## FORK INSTALLATION

### INTRODUCTION

Re-installing the fork onto your bike is the final step in servicing your BoXXer fork. Once you have installed the fork onto your bike, you will be ready to ride!

1. Slide each upper tube through the lower crown, leaving enough clearance to install the frame bumpers.
2. Spray a liberal amount of isopropyl alcohol or water on the inner surface of the frame bumpers and re-install the bumpers onto the upper tubes.
3. Gently push and twist the upper tubes through the upper crown. With a minimum extension of 2 mm, position both upper tubes to extend past the top of the upper crown by an equal amount. Measure the distance from the top of the upper tube to the top of lower crown. This distance must be

156 mm (+/- 2 mm). Align the logo on the drive side upper tube with the logo on the lower leg.  
**Refer to the BoXXer crown heights diagram for proper crown height dimensions. Improper crown height placement can cause a reduction in handling performance, travel, and/or cause fork damage.**



## FORK INSTALLATION (CONTINUED)

4. Use a 4 mm hex wrench to torque the four lower crown bolts in an alternating fashion to 7.3 N·m (65 in-lb). Torque the two upper crown bolts to 7.3 N·m (65 in-lb).
5. Re-install the brake according to the brake manufacturer's instructions. Fasten the brake hose to the brake hose guides on the fork's lower leg.
6. Position your wheel in the lower leg dropouts. The hub should seat firmly in the dropouts. Be sure to position the disc brake rotor in the caliper. Verify that neither the rotor, hub, nor rotor bolts interfere with the lower legs. If you are unfamiliar with adjusting your disc brakes, see your brake manufacturer's instructions.
7. Slide the externally threaded end of the Maxle DH through the drive side of the hub, until it engages the threads of the lower leg dropout. Use a 6 mm hex wrench to turn the drive side axle bolt and tighten the axle into the dropout. Torque to 5.7 N·m (50 in-lb).
8. Use a 6 mm hex wrench to turn the non-drive side axle bolt clockwise until you hear or feel 8 clicks or you reach a torque value of 3.4 N·m (30 in-lb).

Re-check that all damping adjusters are at their original positions (documented in the table in the "Getting Started" section), or refer to the BoXXer RC Tuning Guide to aid in tuning adjustments for the rider.



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