



# Front Suspension Setup and Tuning Guide



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# Introduction

To achieve maximum suspension performance, proper setup and tuning is essential.

This guide will help you identify and understand the features and adjustments that may be included on your RockShox® suspension fork, as well as guide you through spring setup, damper adjustments and tuning, and air spring bottom out tuning.

Tuning suggestions are starting points. It may take trying various adjustments to find the settings that work best for each individual rider and trail condition.

Try the **Quarq® ShockWiz™** suspension tuning device for more detailed ride data analysis and setting suggestions. Go to [www.quarq/shockwiz.com](http://www.quarq/shockwiz.com) for more information.

For quick setup after fork service and tuning has been performed, make a note of your fork settings on [page 31](#).

Go to [www.rockshox.com/app](http://www.rockshox.com/app) for suggested air spring pressure and rebound damper settings for your fork.

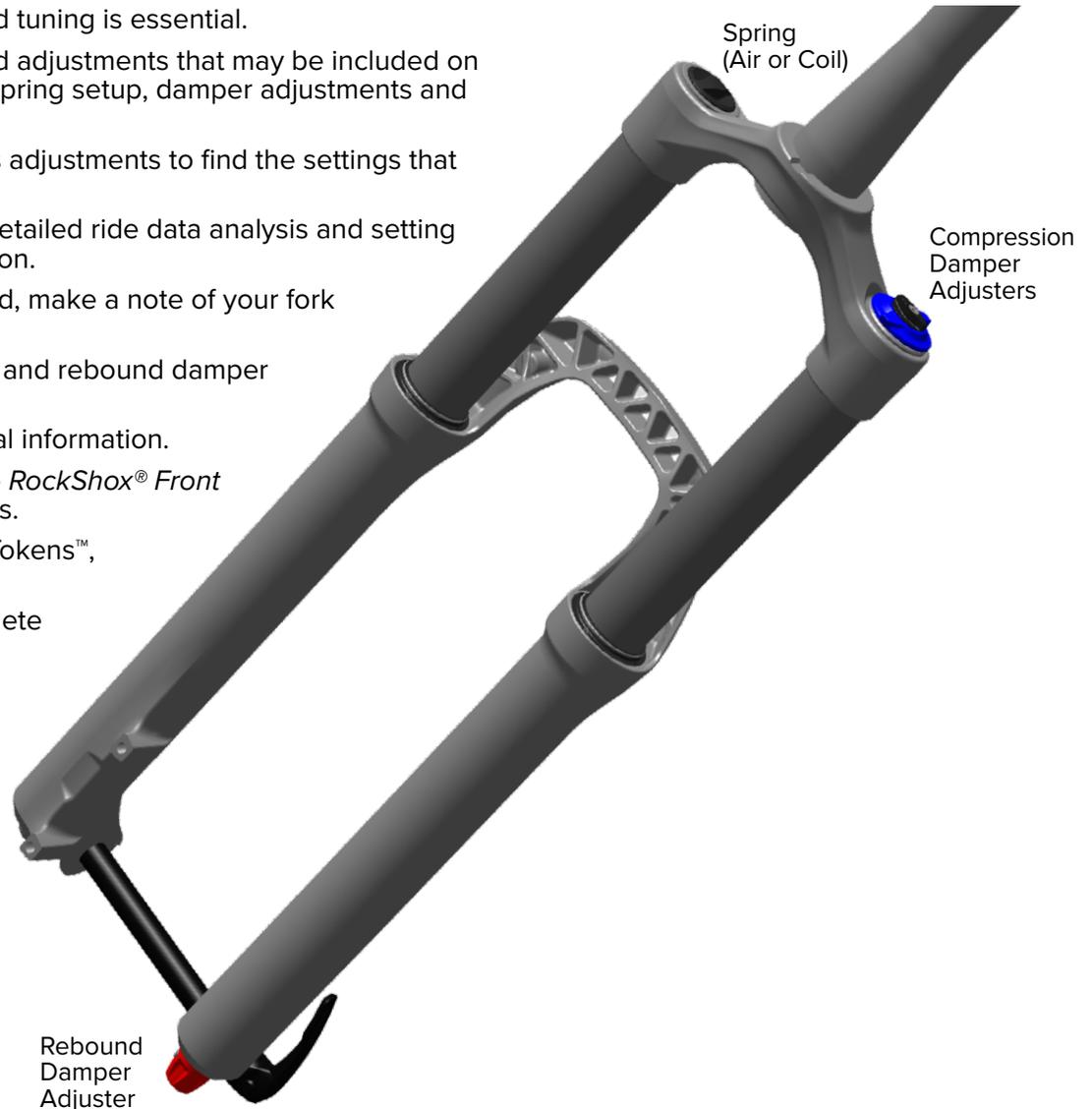
Go to [www.sram.com/service](http://www.sram.com/service) for additional product and technical information.

- Air spring pressure and coil spring tables are available in the *RockShox® Front Suspension Oil, Air, Coil, Token, and Specification* documents.
- For a complete list of available coil springs and Bottomless Tokens™, consult the *RockShox Spare Parts Catalog*.
- Consult the RockShox service manual for your fork for complete disassembly and assembly procedures.

Your product's appearance may differ from the images in this publication.

All setup procedures picture the fork only. Perform actual fork sag and tuning on a complete, assembled bicycle.

All performance examples illustrated are for conceptualization and may vary from actual performance.



# Set Sag

Suspension sag can be used to set the proper suspension spring rate.

Sag is the amount of travel, measured as a percentage of full travel, that the suspension compresses when the rider, including gear, is on the bicycle in the normal riding position. Setting the correct sag allows the suspension to actuate effectively and efficiently.

- **More sag** (20% - 30%) increases bump sensitivity and suspension movement. More bump sensitivity results in a smoother ride and is typically preferred on longer travel bicycles.
- **Less sag** (10% - 20%) decreases bump sensitivity and suspension movement. Less bump sensitivity results in a more firm, efficient ride and is typically preferred on shorter travel bicycles.

Air pressure recommendations on the back of your fork, or at [www.rockshox.com/app](http://www.rockshox.com/app), are suggested for initial spring setup. After sag is set, your fork's optimal air pressure may differ based on fork travel, bicycle geometry, and rider preference.

**Important** - Sag must be set **before** making any damping adjustments.

*Many RockShox® forks include sag percentage gradients and a sag o-ring on one of the upper tubes.*

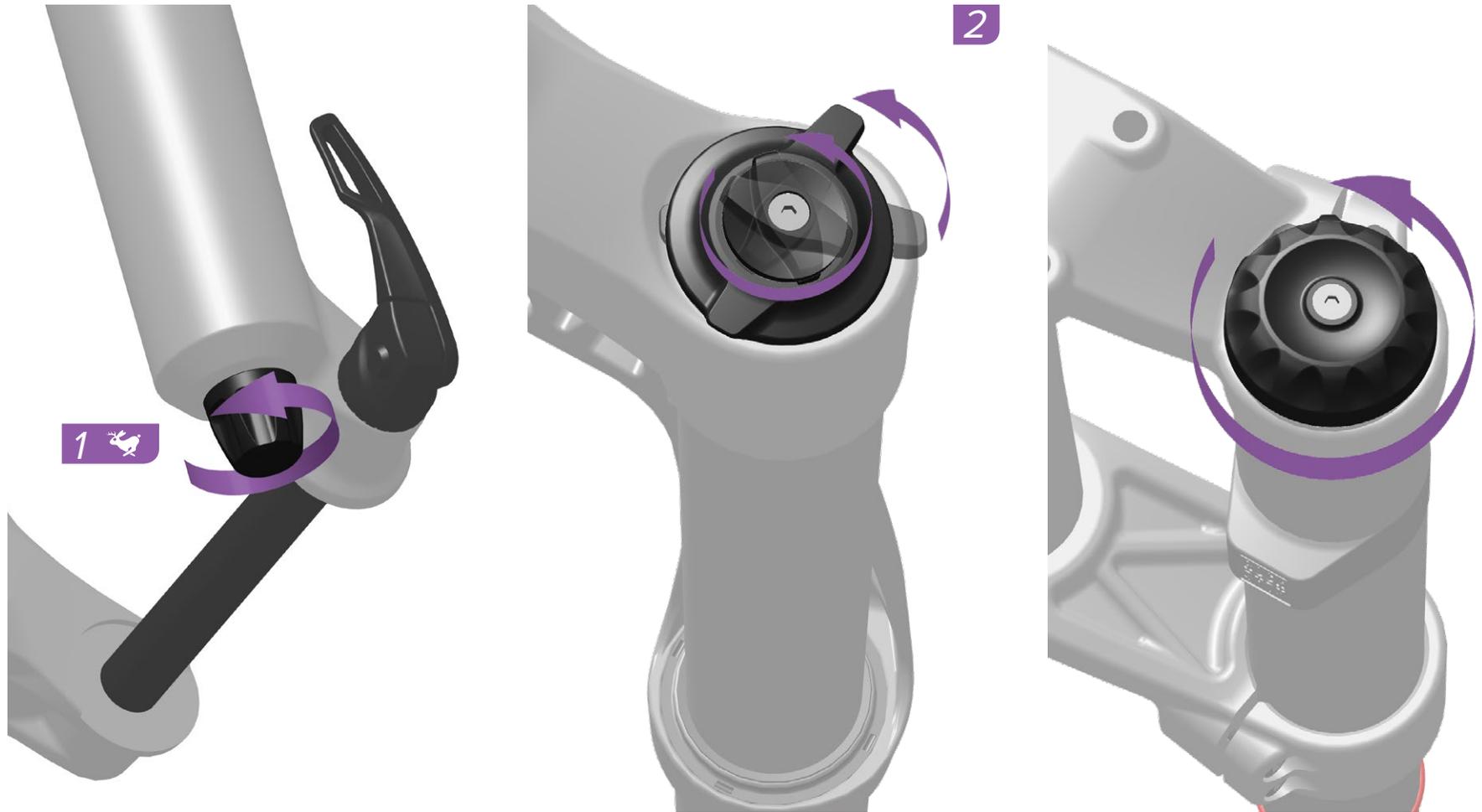
*If a sag o-ring is not on your fork, install a plastic cable tie around the upper tube just tight enough so it does not slide down the upper tube. Remove the cable tie before riding.*

*If your fork does not have sag percentage gradients, multiply the target sag percentage by the total amount of suspension fork travel. Use a ruler to measure the length of exposed upper tube above the dust wiper seal to the sag o-ring.*

*If your fork's travel is unknown, before sag is measured, fully compress the fork to bottom out. Release and use a ruler to measure the length of exposed upper tube below the sag o-ring.*



# Dampers



Before setting sag, set the dampers to the full open positions. Rotate the knobs counter-clockwise until they stop.

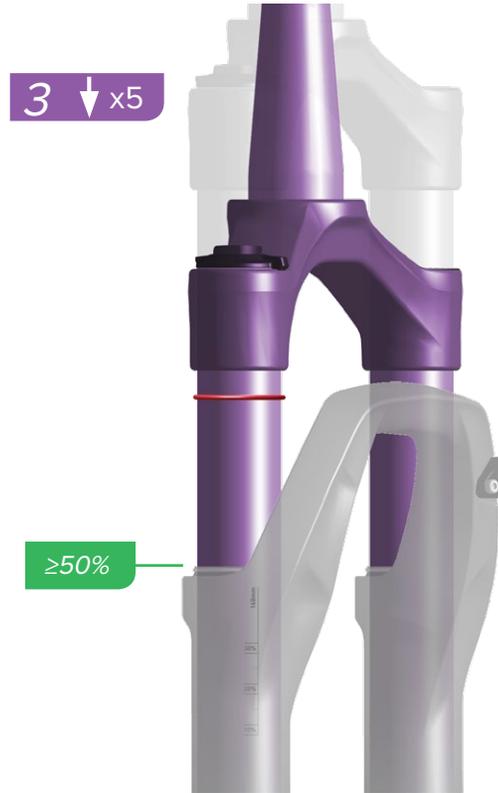
# Air Springs - Solo Air™, DebonAir™, Dual Position Air™



Pressurize the air spring to the recommended starting air pressure.

Remove the pump.

*For Dual Position Air forks, pressurize the fork in the full travel position. Proceed to [step 6](#).*



**Solo Air and DebonAir only:** Compress the fork through at least 50% of its travel five times to equalize positive and negative air pressures.

Air pressure equalization ensures the positive air spring is accurately pressurized.



Pressurize the air spring to the recommended starting pressure once more.

Remove the pump.



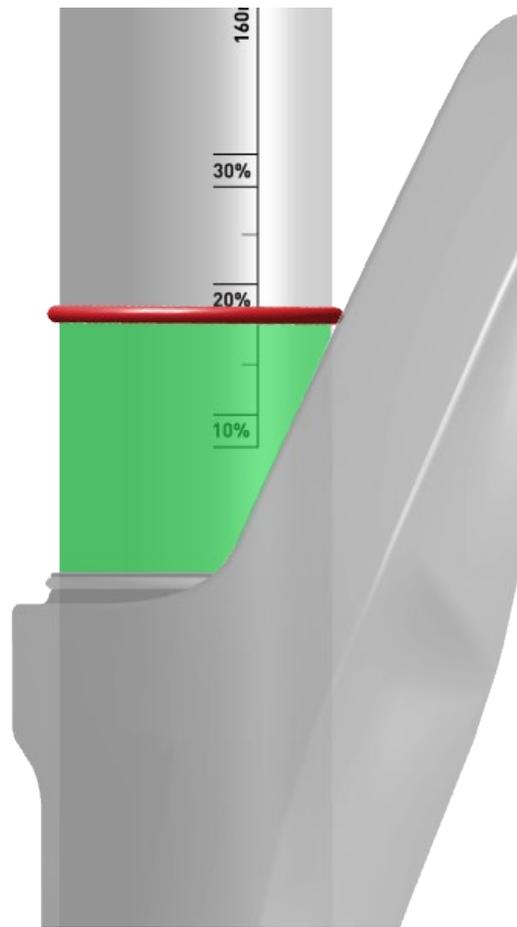
**Solo Air™ and DebonAir™ only:** Compress the fork through at least 50% of its travel five more times to equalize positive and negative air pressures.

With riding gear on, and an assistant holding the bike, stand on the pedals, and compress the fork three times. Then sit or stand in your normal riding position.

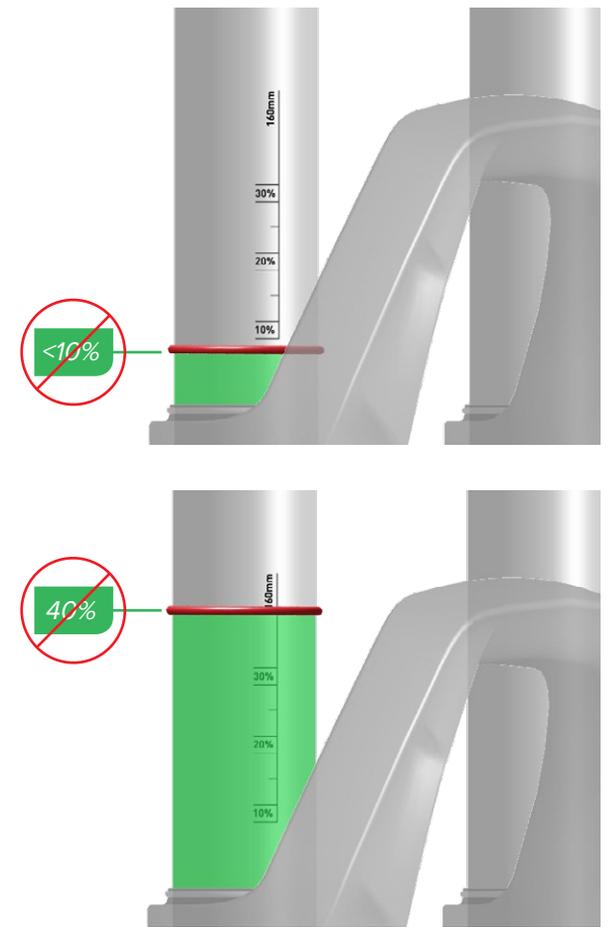
Have your assistant slide the sag o-ring down to the top of the dust wiper seal.



Gently step off the bicycle without compressing the fork any further.



Note the sag percentage where the o-ring stopped.



If your [target sag](#) percentage is **not** achieved, air pressure must be adjusted.

**Increase** air pressure to **decrease** sag.

**Decrease** air pressure to **increase** sag.

Repeat the sag process until your target sag percentage is achieved.

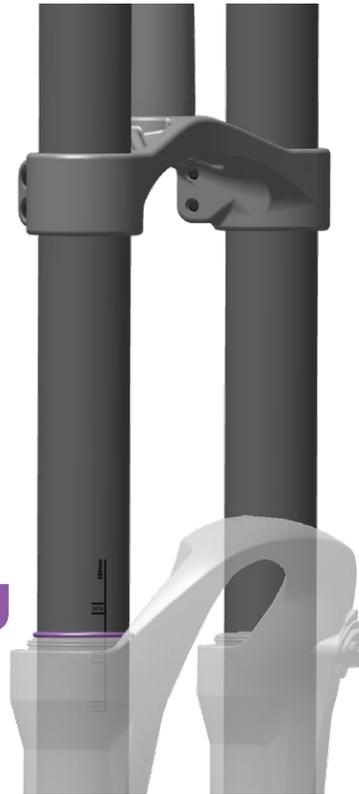
# Coil Spring - Dual Crown Forks

1 ↓ x3



With riding gear on, and an assistant holding the bike, stand on the pedals, and compress the fork three times. Then sit or stand in your normal riding position.

2 ↓

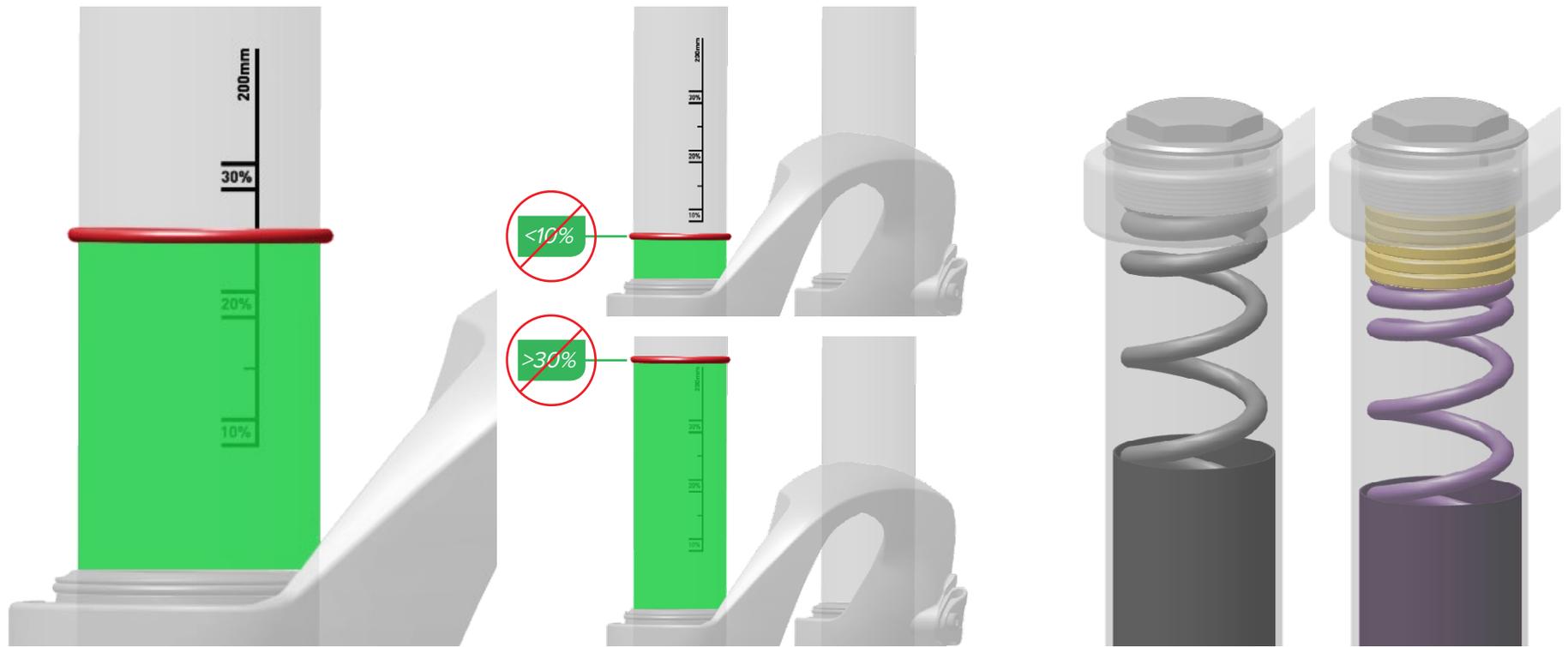


Have your assistant slide the sag o-ring down to the top of the dust seal.

3 ↑



Gently step off the bicycle without compressing the fork any further.



Note the sag percentage where the o-ring stopped.

If your [target sag](#) percentage is **not** achieved, spring preload adjustment and/or coil spring replacement must be performed.

Coil spring **preload** in RockShox® dual crown forks is an internal adjustment that compresses or decompresses the spring without initiating travel.

The coil spring can be preloaded with up to **five** internal preload spacers.

**Remove** preload spacers to **decrease** preload and **increase** sag.

**Install** preload spacers to **increase** preload and **decrease** sag.

Spring preload can be used to fine tune sag, but preload does not change coil spring rate and is not a substitute for the proper coil spring rate.

If your target sag cannot be achieved with the **maximum of five** preload spacers, replace the coil spring with a **firmer** spring.

If your target sag cannot be achieved with **zero** preload spacers, replace the coil spring with a **softer** spring.

Repeat the sag process until your target sag percentage is achieved.

# Coil Spring - External Preload Adjuster Knob



Turn the preload adjuster knob counter-clockwise until it stops.  
This is the least amount of spring preload, or the softest setting.



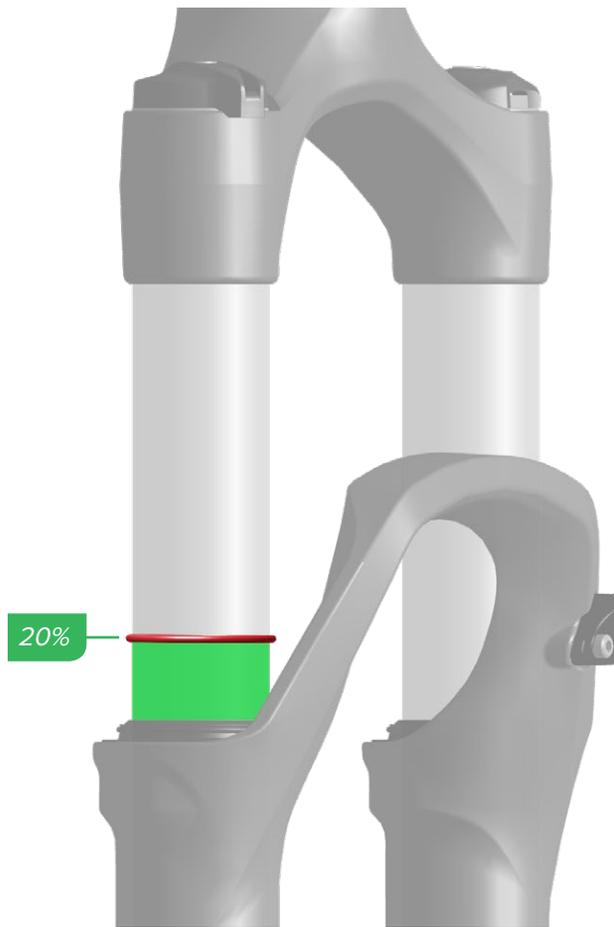
With riding gear on, and an assistant holding the bike, stand on the pedals, and compress the fork three times. Then sit or stand in your normal riding position.



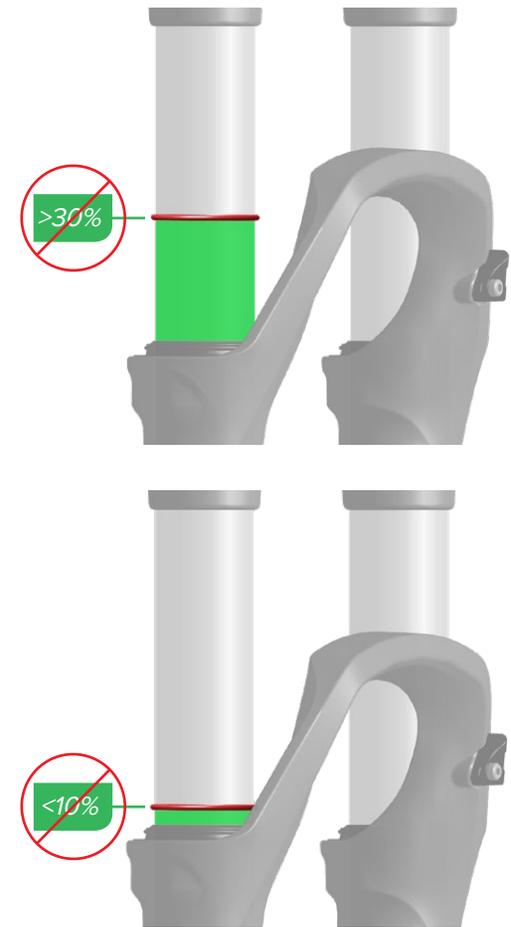
Have your assistant slide the sag o-ring down to the top of the dust seal.



Gently step off the bicycle without compressing the fork any further.



Note the sag percentage where the o-ring stopped.



If your [target sag](#) percentage is **not** achieved, spring preload adjustment and/or coil spring replacement must be performed.



External spring **preload** adjustment compresses or decompresses the spring without initiating travel.

Turn the preload adjuster knob **clockwise** to **increase** spring preload and **decrease** sag.

Turn the preload adjuster knob **counter-clockwise** to **decrease** spring preload and **increase** sag.



Spring preload adjustment can be used to fine tune sag, but preload does not change spring rate and is not a substitute for the proper coil spring weight.

If the proper sag cannot be achieved after external preload adjustment, the coil spring assembly must be replaced with a softer or firmer spring.

To **increase** sag, install a **softer** coil spring assembly.

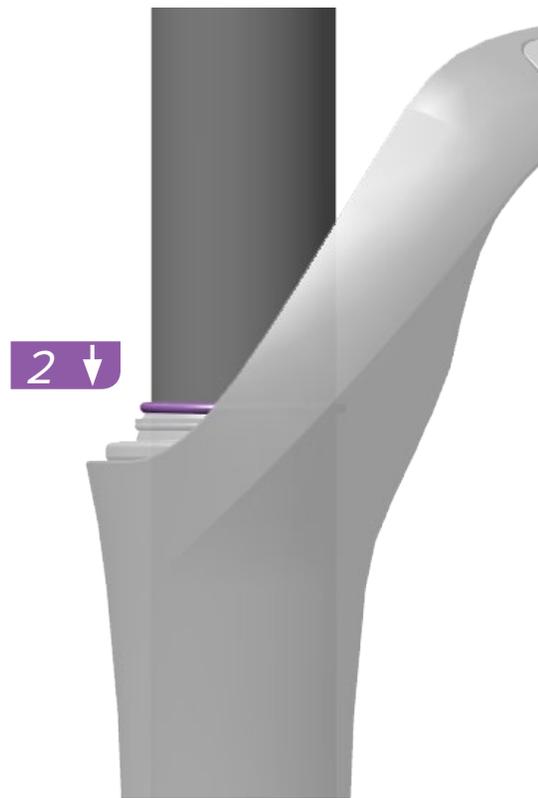
To **decrease** sag, install a **firmer** coil spring assembly.

Repeat the sag process until your target sag percentage is achieved.

# Coil Spring - Paragon™ Silver



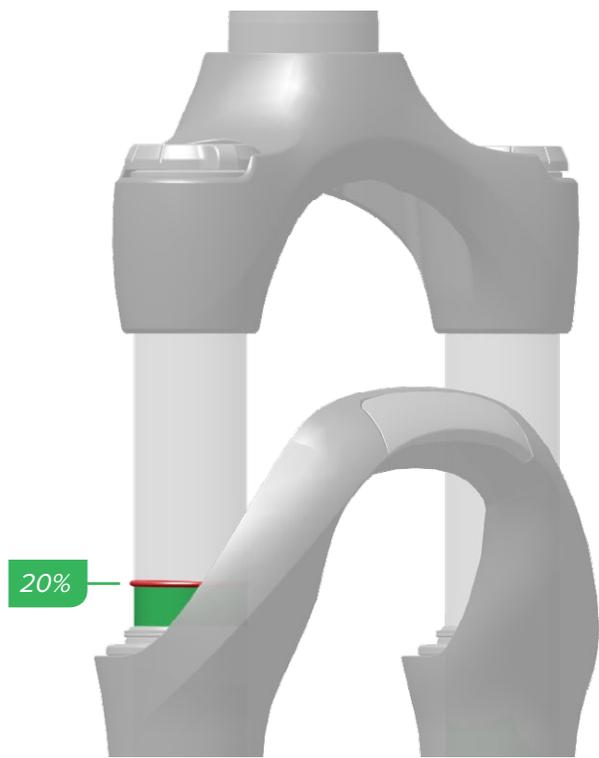
With riding gear on, and an assistant holding the bike, stand on the pedals, and compress the fork three times. Then sit or stand in your normal riding position.



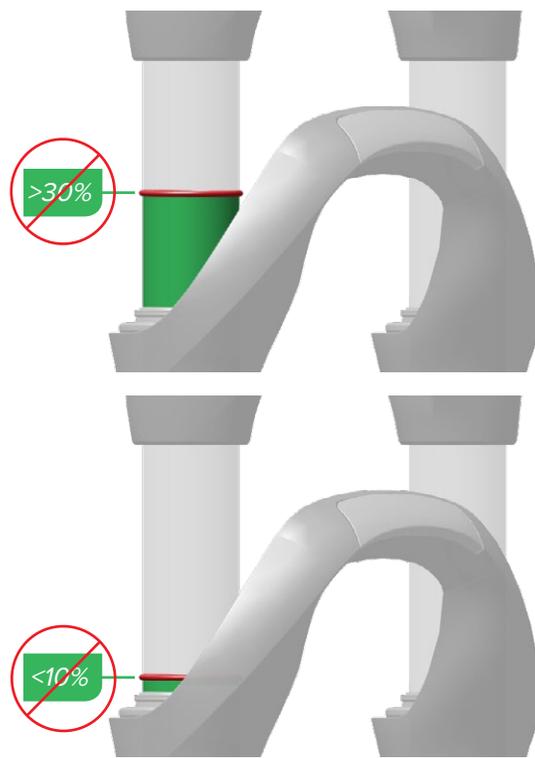
Have your assistant slide the sag o-ring down to the top of the dust seal.



Gently step off the bicycle without compressing the fork any further.



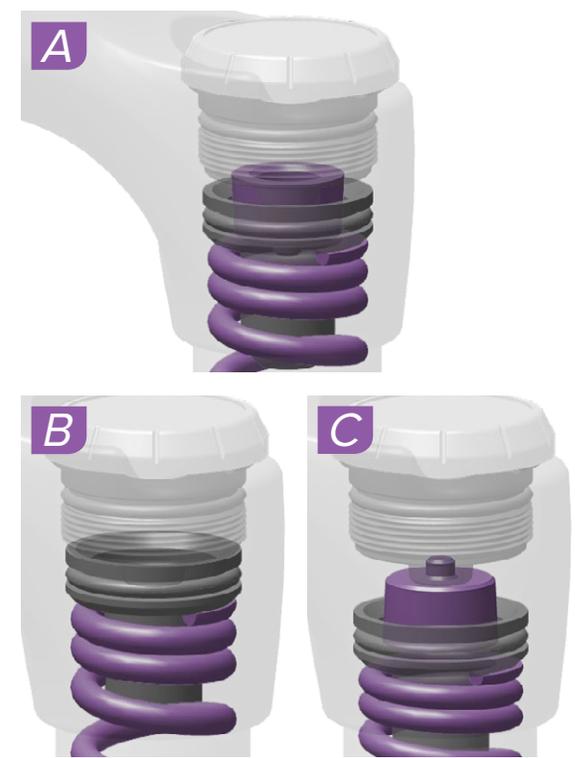
Note the sag percentage where the o-ring stopped.



If your [target sag](#) percentage is **not** achieved, spring preload adjustment must be performed.

Coil spring **preload** in RockShox® Paragon™ is an internal adjustment that compresses or decompresses the spring without initiating travel.

The coil spring can be preloaded 5 mm or 10 mm with the internal preload spacer.



Remove the top cap to remove or re-orient the internal preload spacer.

**A) Standard 5 mm** (factory installed) preload spacer orientation.

**B) To decrease** preload and **increase** sag, remove the preload spacer.

**C) To increase** preload and **decrease** sag, reorient the preload spacer to the **10 mm** preload position.

Repeat the sag process until your target sag percentage is achieved.

# Rebound Damping

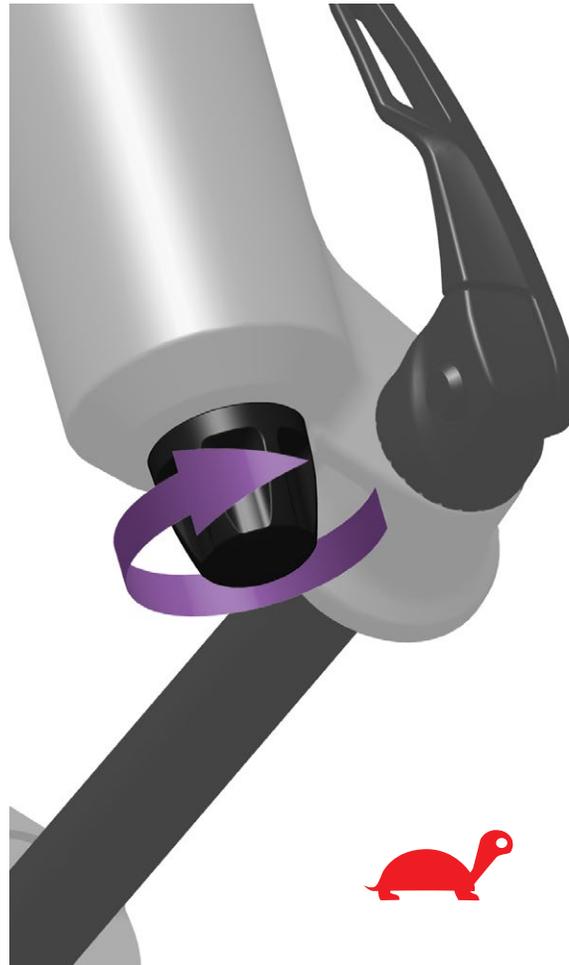
Rebound damping controls suspension fork **extension/return speed** which affects traction and control.

- **Optimal** rebound damping allows the fork to extend at a controlled speed and maintain traction and control.
- Rebound that is **too fast** allows the fork to extend too quickly which causes the wheel to bounce off of objects and the ground resulting in a 'pogo' effect.
- Rebound that is **too slow** prevents the fork from extending quickly enough to regain contact with the ground or prepare for the next impact.

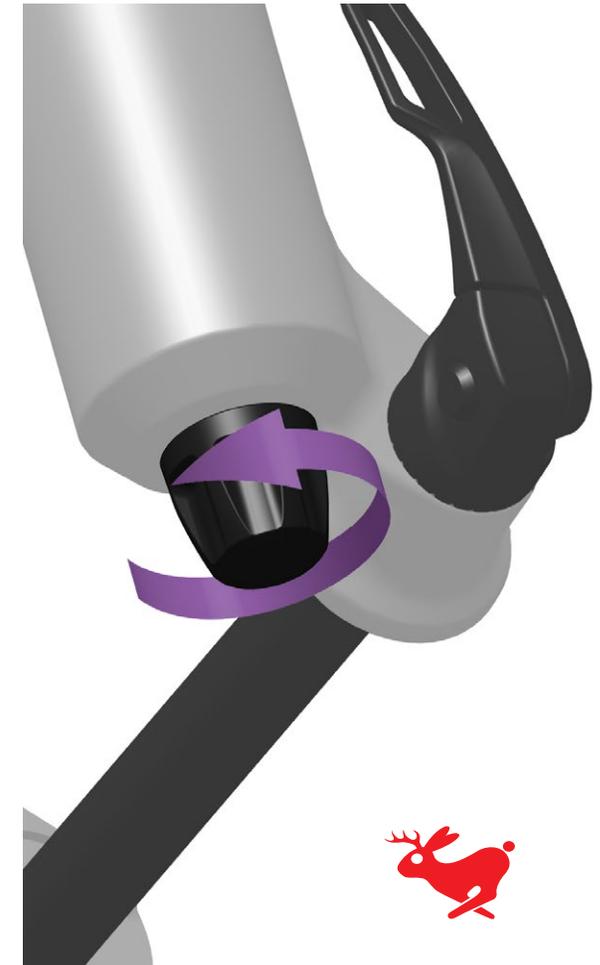
Rebound damping can be tuned to rider weight, spring rate, and travel, as well as for terrain and rider preference.

As air pressure or spring rate increases, extension/return speed increases. To achieve the optimal setting, rebound damping may need to be increased when air pressure or spring rate increases.

For recommended rebound settings go to [www.rockshox.com/app](http://www.rockshox.com/app). After setting **sag**, adjust the rebound damper, go for a ride, and adjust again as preferred.



To **decrease** rebound speed (slower return), turn the rebound adjuster clockwise.



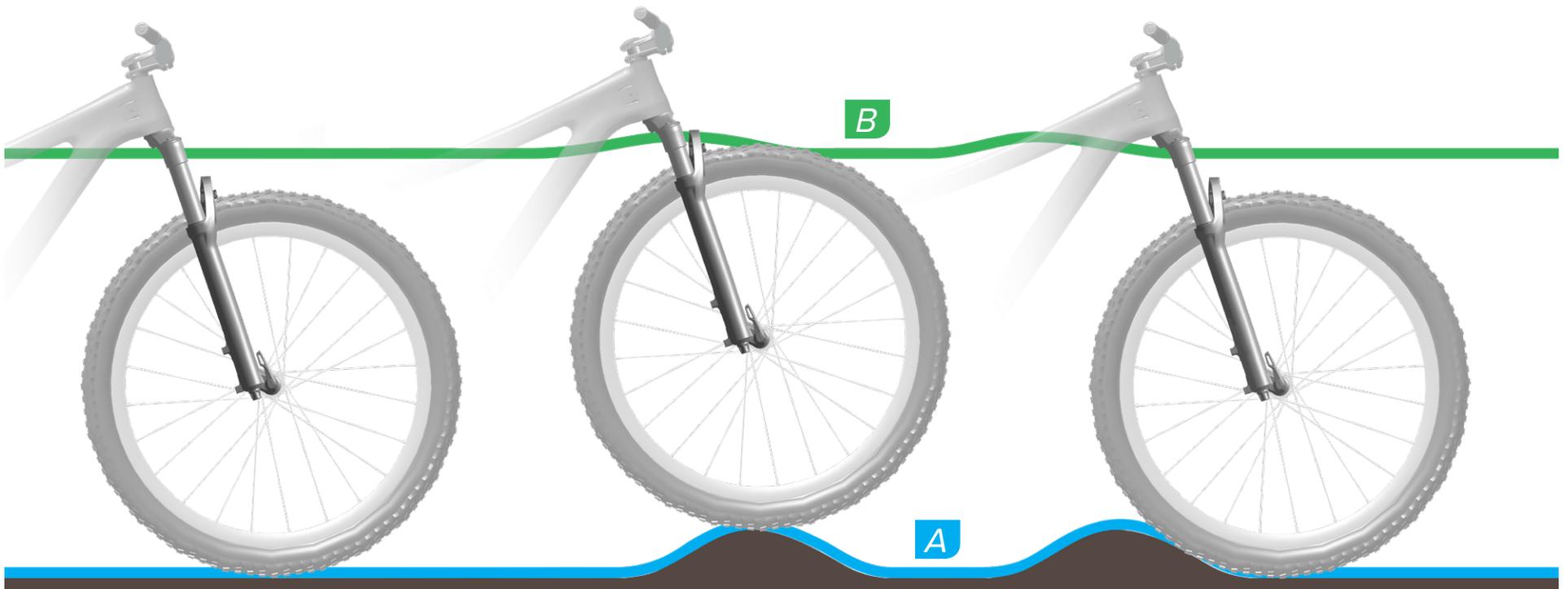
To **increase** rebound speed (faster return), turn the rebound adjuster counter-clockwise.

# Rebound - Optimal

**A** The fork rebounds at a controlled speed and the wheel maintains contact with the ground.

**B** The fork crown, handlebars, and rider are more level with the ground over each bump. Suspension movement is predictable and controlled.

**Adjustment** - No adjustment is needed.

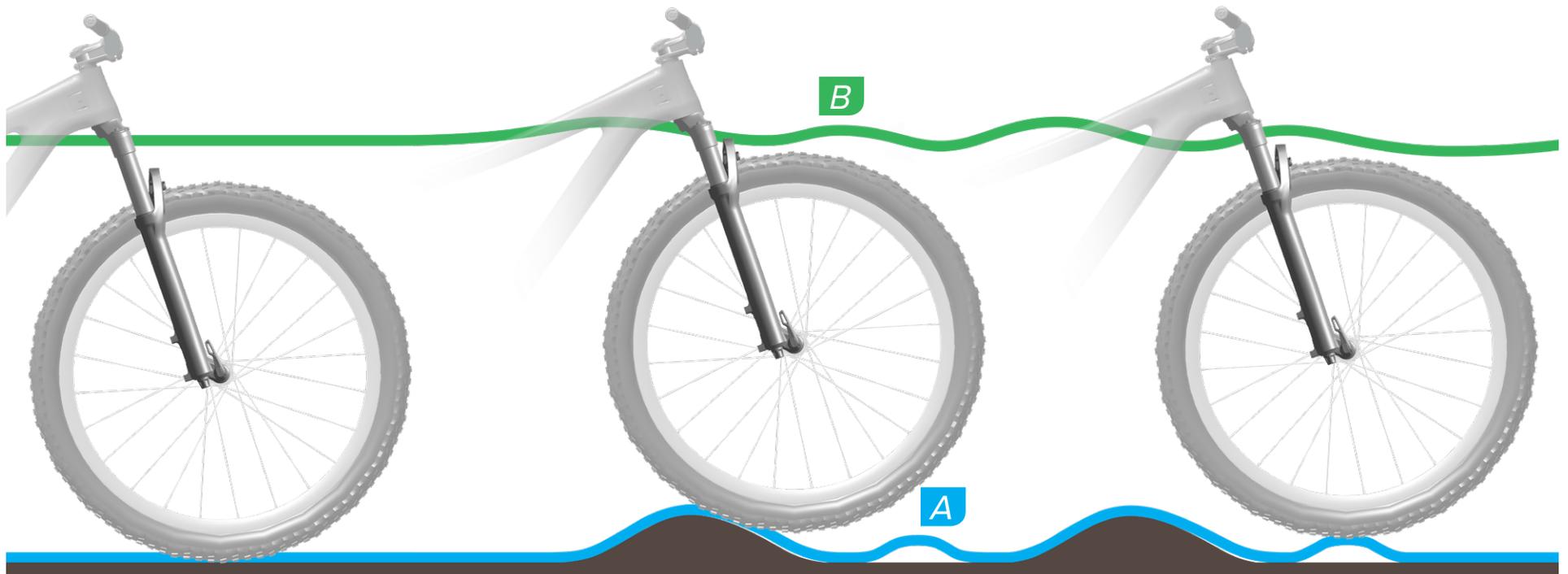
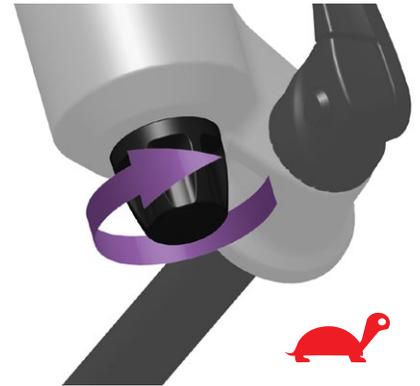


# Rebound - Too Fast

**A** The fork rebounds too quickly causing a 'pogo' effect where the wheel bounces off of the terrain unpredictably. Traction and control are decreased.

**B** The fork crown and handlebars are forced upward after the wheel bounces off of the ground. Rider weight may shift upward and back uncontrollably.

**Adjustment** - Turn the rebound adjuster clockwise to decrease rebound speed, and increase traction and control.

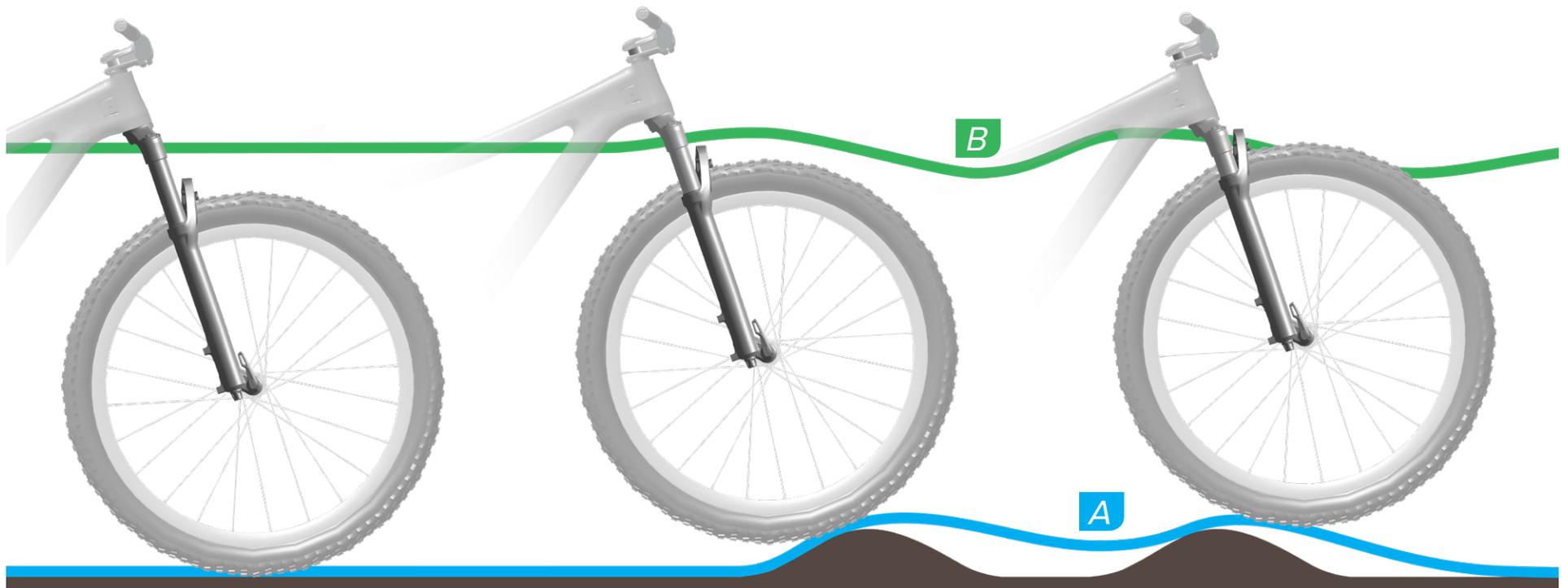


# Rebound - Too Slow

**A** The fork does not extend quickly enough after absorbing a bump. The fork stays compressed through successive bumps, reducing travel and increasing impact firmness. Available travel, traction and control are decreased.

**B** The fork stays in a compressed state which puts the crown and handlebars in a lowered position. Rider weight may shift forward.

**Adjustment** - Turn the rebound adjuster knob counter-clockwise to increase rebound speed and improve bump performance.



# Low Speed Compression Damping

Low speed compression (LSC) damping adjustment controls compression **stroke speed**, or the rate at which the fork compresses, during slow compression stroke scenarios. LSC affects bump absorption and efficiency during rider weight shifts, transitions, cornering, more gradual bump impacts, and braking.

## Increased LSC damping:

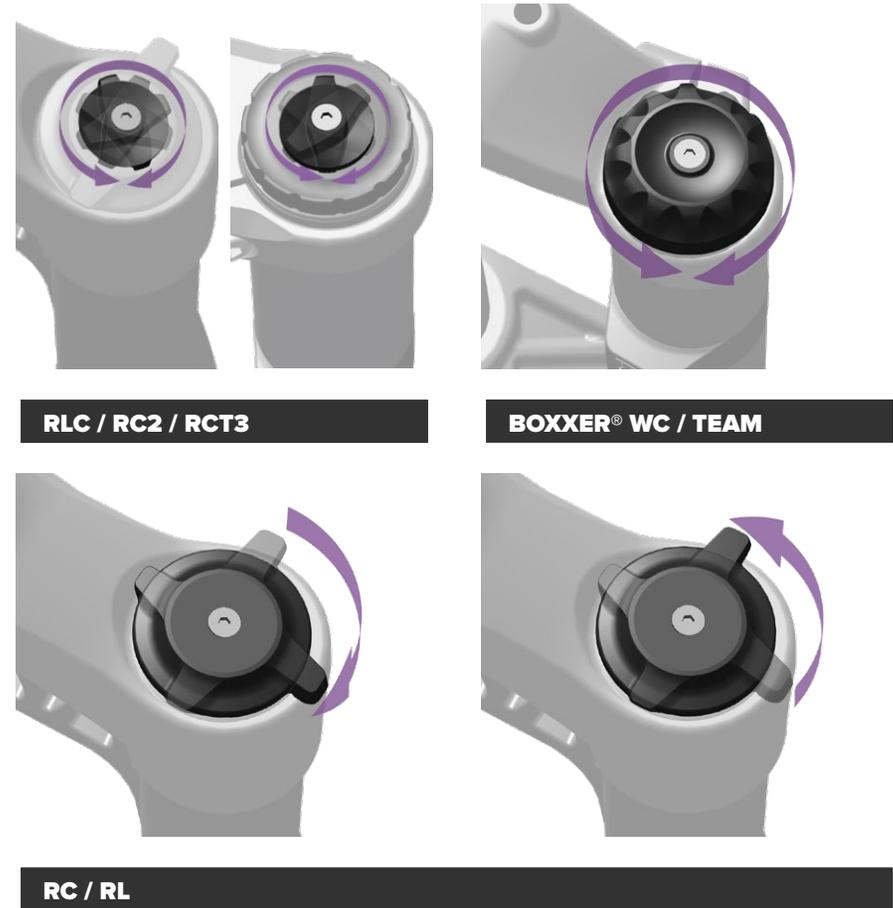
- Keeps the suspension fork riding higher in its travel. This may help the rider improve efficiency and maintain momentum over gradual, rolling terrain and through corners.
- Suspension compression may feel more firm on bumpier terrain.

## Decreased LSC damping:

- Allows the fork to compress quickly and easily. This may help the rider maintain momentum and speed on bumpier terrain.
- Suspension compression may feel less firm on bumpier terrain.

LSC damping adjustments have less effect during high speed compression stroke scenarios. Drops and large bump impacts can exceed the LSC damper's effective range of control and will cause the suspension fork to compress suddenly and quickly, regardless of the LSC damper setting.

Increase LSC damping to reduce compression stroke speed and increase efficiency on rolling or smoother terrain, and when climbing out of the saddle.



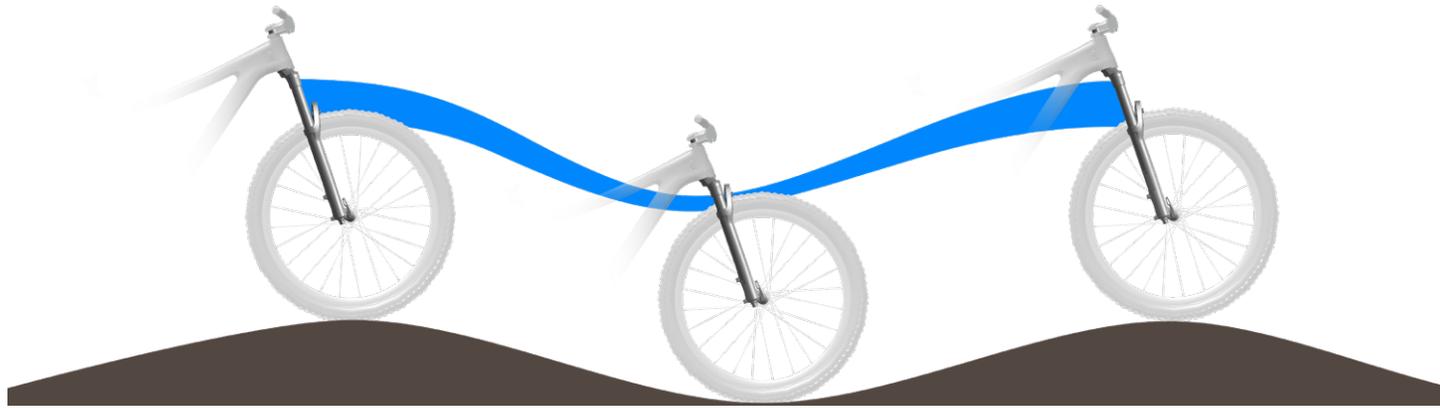
To **increase (+)** low speed compression damping (**firm**), turn the compression adjuster knob clockwise.

To **decrease (-)** low speed compression damping (**soft**), turn the compression adjuster knob counter-clockwise.

# Rolling Terrain

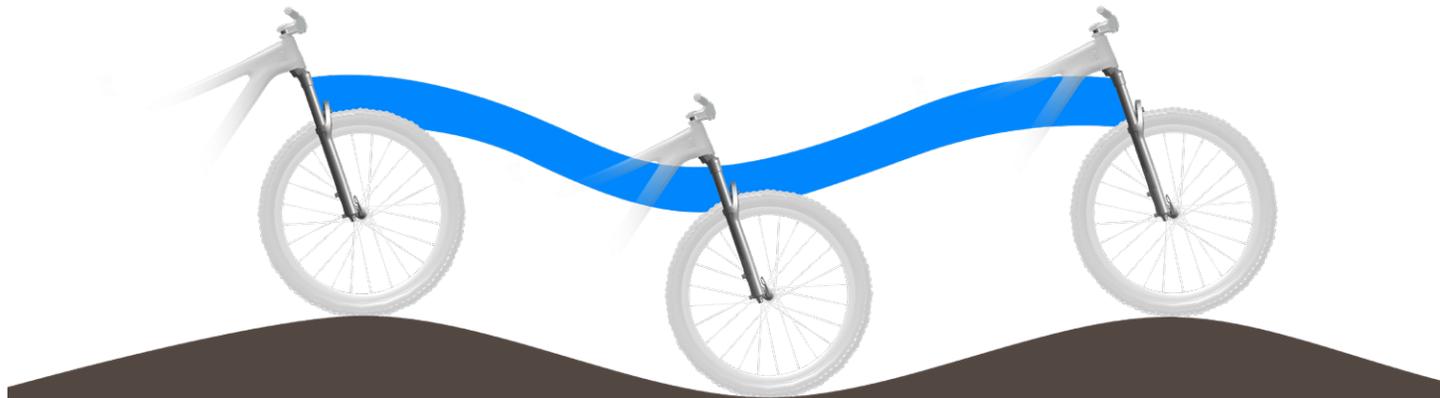
## Low Speed Compression Damping - Open / Too Soft

The fork compresses low into the compression stroke through the low point of the terrain. Suspension travel is used quickly, the rider's weight may shift forward, and bicycle momentum may be reduced.



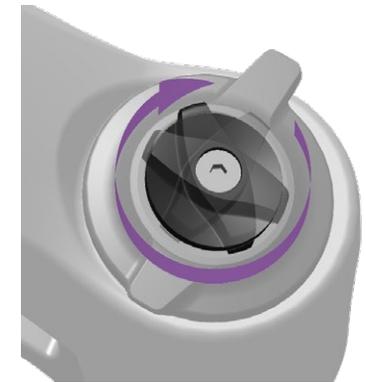
## Low Speed Compression Damping - Mid to Firm

The fork resists compressing, remains higher in its travel, and helps the rider maintain speed into and through the rolling section of terrain.



## Adjustment:

To improve efficiency on rolling and smoother terrain, rotate the LSC or Compression adjuster knob clockwise to **increase** compression damping and firmness, and **decrease** compression stroke speed.

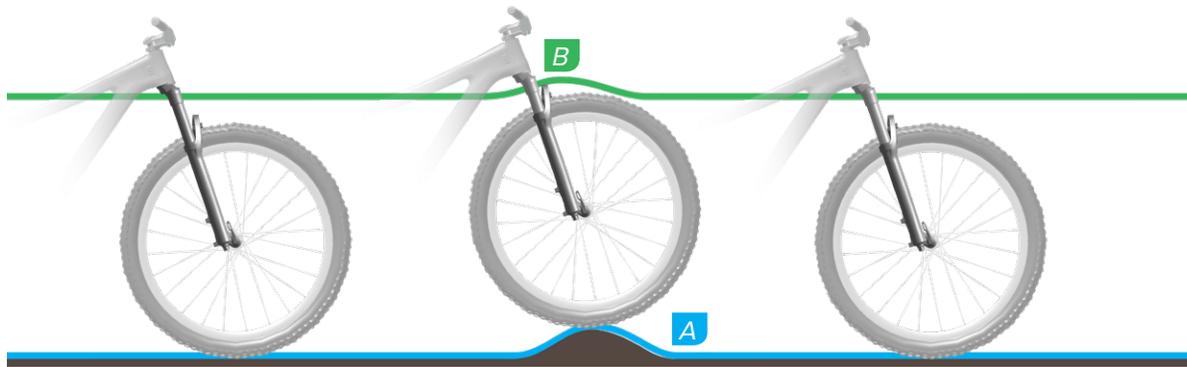


# Bumps

## Low Speed Compression Damping - Soft to Mid

**A** At bump impact, the fork compresses quickly and freely, and the bump is absorbed. Traction is maintained.

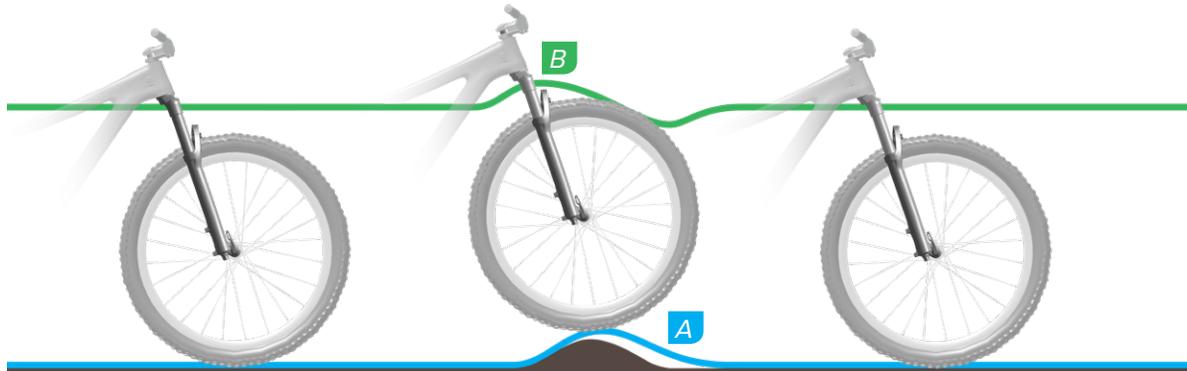
**B** The fork reacts quickly to the impact. The crown and handlebar rise slightly as the bump is absorbed.



## Low Speed Compression Damping - Too Firm

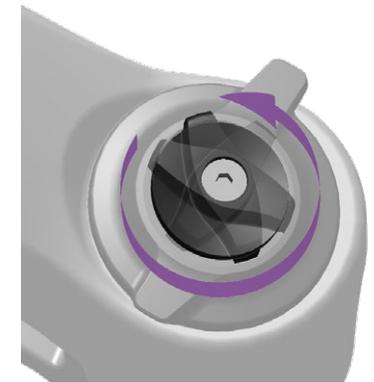
**A** At bump impact, the fork compresses too slowly and the wheel deflects off of the bump. Traction is decreased.

**B** The crown and handlebar are forced upward significantly, which can decrease control.



## Adjustment:

To increase small bump sensitivity rotate the LSC or Compression adjuster knob counter-clockwise to **decrease** compression damping and firmness, and **increase** compression stroke speed.



# High Speed Compression Damping

High speed compression (**HSC**) damping adjustment controls compression **stroke speed**, or the rate at which the fork compresses, during quick compression scenarios. HSC affects bump impact absorption and efficiency over large and square edge bumps, and down drops.

Bump size and shape, as well as riding speed, can affect compression stroke speed. Large or square edge/sharp bumps will cause the fork to compress suddenly and quickly. Impacts of any size and shape will compress quicker when impacted at increased riding speed.

## Increased HSC damping:

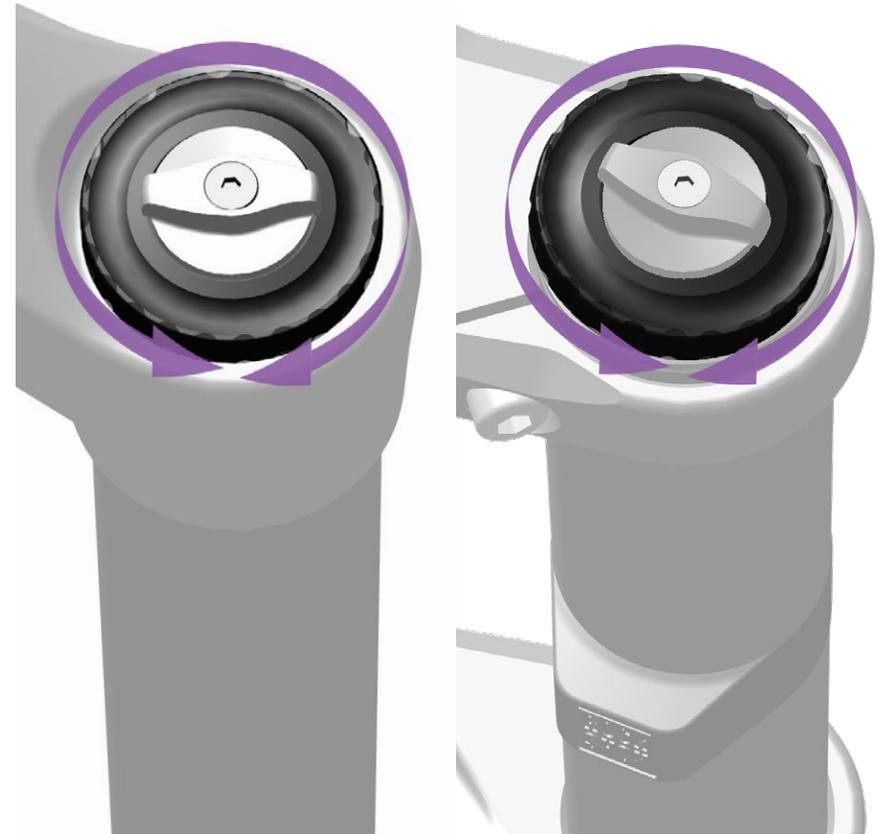
- Suspension travel used on bumpier terrain may be limited and may vary depending on bump or drop size. This can prevent premature bottom out when riding over and through larger impacts.
- Suspension compression may feel more firm on bumpier terrain.

## Decreased HSC damping:

- Allows the suspension to compress easily. This may help the rider maintain speed and momentum on moderately bumpier terrain.
- May allow premature bottom out when riding quickly over and through larger bumps and drops.
- Suspension compression may feel less firm on bumpier terrain.

HSC damping adjustments have less effect during low speed compression stroke scenarios. Rider weight shifts, transitions, cornering, more gradual impacts, and braking do not create enough force to enter the HSC damper's effective range of control.

Increase HSC damping to reduce high speed compression stroke speed on moderate to larger impacts and very aggressive terrain.



**RC2**

To **increase (+)** high speed compression damping (**firm**), turn the HSC adjuster knob clockwise.

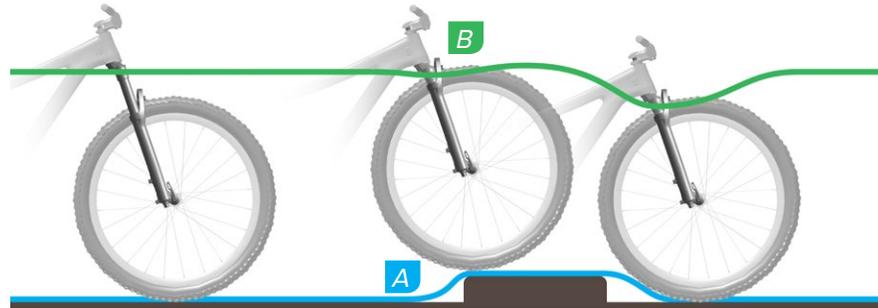
To **decrease (-)** high speed compression damping (**soft**), turn the HSC adjuster knob counter-clockwise.

# Square Bumps and Drops

## HSC Damping - Soft

**A** The fork compresses through full travel quickly and freely. The fork can bottom out as the impacts are fully absorbed.

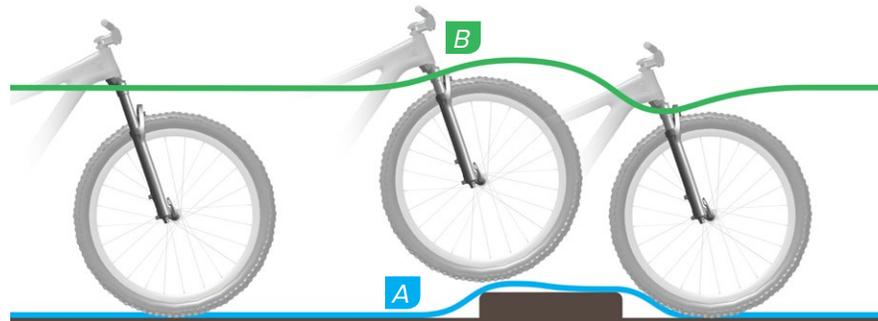
**B** The fork crown and handlebar drop significantly at full compression, or fork bottom out.



## HSC Damping - Mid

**A** The fork can compress through its effective travel, absorbing the impact in a controlled manner. Use of full travel may depend on rider speed and bump size.

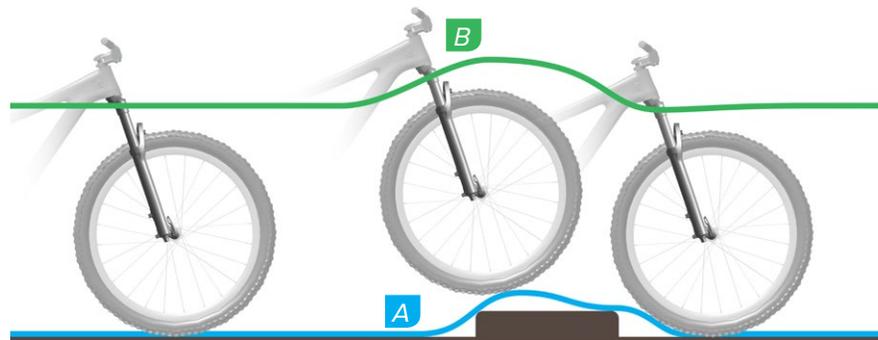
**B** The fork crown and handlebar rise moderately at bump impact, and drop moderately after the drop.



## HSC Damping - Firm

**A** The fork can resist compressing and impact force may be transmitted to the rider. The fork compresses partially and does not bottom out. Use of full travel depends on rider speed and bump size.

**B** The fork crown and handlebar are suddenly forced up at bump impact, and drop minimally after the drop as the fork resists compressing.

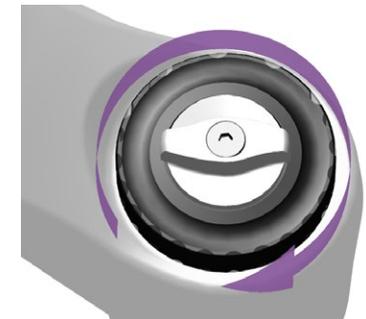


## Adjustment:

Rotate the HSC adjuster knob counter-clockwise to **decrease** compression damping and **increase** stroke speed.

Rotate the HSC adjuster knob clockwise to **increase** compression damping and **decrease** stroke speed.

Start with a **Mid** setting and adjust as desired. Larger bumps and drops, and increased riding speed will typically allow for a firmer HSC setting.



# Threshold (Pedal)

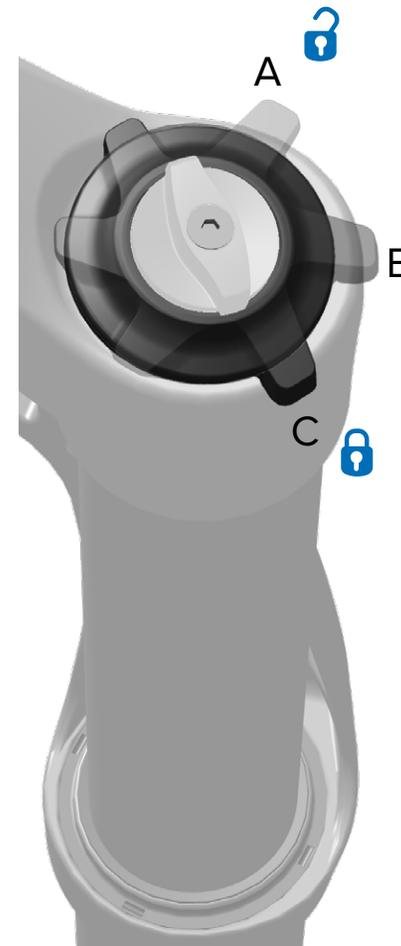
Threshold (Pedal) modes prevent the suspension fork from compressing until **moderate** to significant bump impact or downward force occurs. Threshold modes increase efficiency on smoother terrain.

Use the threshold **pedal** and **lock** settings to increase pedaling efficiency on flat, rolling, smooth, or moderately bumpy terrain. When in the pedal or lock modes, increased bicycle speed will increase bump impact force causing the fork to compress and absorb the bump.

- When the threshold knob is in the **(A) open** position (full counter-clockwise) the suspension fork will compress quickly and freely through its full range of travel.
- When the threshold knob is in the **(B) Pedal** position the suspension fork will resist compressing until **moderate** bump impact or downward force occurs.
- When the threshold knob is in the **(C) lock** (full clockwise) position the suspension fork will resist compressing into its travel until **significant** bump impact or downward force occurs.

To activate threshold, rotate the knob to the **Pedal** or **lock** positions.

Threshold on forks equipped with a remote can be actuated with the handlebar mounted remote at any time during use. Refer to the appropriate remote user manual at [www.sram.com/rockshox/component/remotes](http://www.sram.com/rockshox/component/remotes) for more information.



RCT3 - CHARGER



RCT3 - MOTION CONTROL™

# Lockout

Lockout mode prevents the suspension fork from compressing. Use lockout mode for maximum pedaling efficiency on smoother terrain.

- When the lockout adjuster knob is in the **open** position (full counter-clockwise) the suspension fork is able to compress quickly and freely through its full range of travel.
- When the lockout adjuster knob is in the **lock** (full clockwise) position the suspension fork will resist compressing into its travel until **significant** bump impact or downward force occurs.

To activate lockout mode, rotate the adjuster knob clockwise until it stops.

To deactivate lockout mode, rotate the adjuster knob counter-clockwise.

Lockout on forks equipped with a remote can be actuated with the handlebar mounted remote at any time during use. Refer to the appropriate remote user manual at [www.sram.com/rockshox/component/remotes](http://www.sram.com/rockshox/component/remotes) for more information.



RLC



RL



RL



RL / TK



RL / TK - Paragon™

# Compliance and Blow-Off

Lockout mode features key rider benefits when activated - **Compliance** and **Blow-Off**.

## **Motion Control™ and Turnkey™**

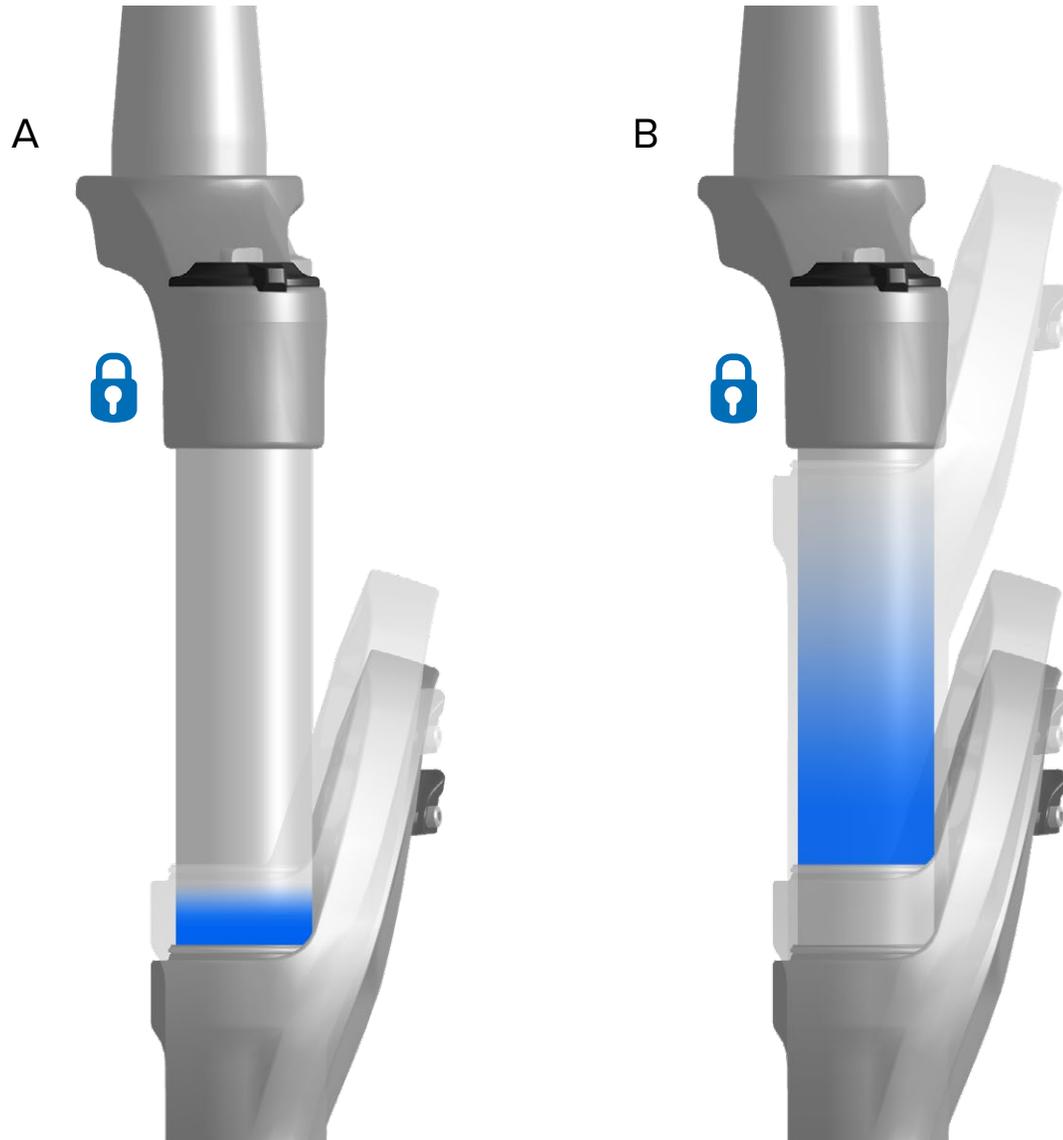
**(A) Compliance** - A fixed amount of suspension fork movement that improves traction and control over small bumps while in the **lock** position.

When locked out a small amount of compliance prevents the wheel from bouncing off of impacts which helps maintain traction.

## **Charger Damper™, Charger 2 Damper™, Motion Control, and Turnkey**

**(B) Blow-Off** - A valve in the compression damper that allows the suspension fork to safely compress if an impact greater than the valve's lockout force is encountered, such as a drop or large bump.

The Blow-Off valve allows the suspension fork to compress without causing internal damage to the damper.



# Air Spring Bottom Out Tuning - Bottomless Tokens™

Ending stroke air spring ramp, or bottom out resistance, can be tuned on select RockShox® air spring forks compatible with air spring volume reducing Bottomless Tokens.

Bottomless Tokens reduce air spring volume and increase bottom out resistance. Reduced volume, with the correct sag, increases mid to ending stroke spring ramp without significantly affecting sag and small to medium bump sensitivity. Increased spring ramp at bottom out can be beneficial on larger drops or fast bumpy trails where the fork uses most of its travel.

If sag is set correctly and the fork bottoms out quickly and often, try adding Bottomless Tokens until you find the preferred bottom out feel.

It is recommended that you repeat the [Sag](#) process and make damping adjustments after Tokens have been installed or removed. Adding Tokens may cause the fork to rebound quicker; rebound damping may need to be increased to compensate.

To avoid damaging the fork, the maximum number of Tokens installed should **not** be exceeded. Refer to the *RockShox® Front Suspension Oil, Air, Coil, Token, and Specification* document at [www.sram.com/service](http://www.sram.com/service) for the maximum number of Tokens compatible with your fork.

For a complete list of available Bottomless Tokens™, consult the *RockShox Spare Parts Catalog* at [www.sram.com/service](http://www.sram.com/service).

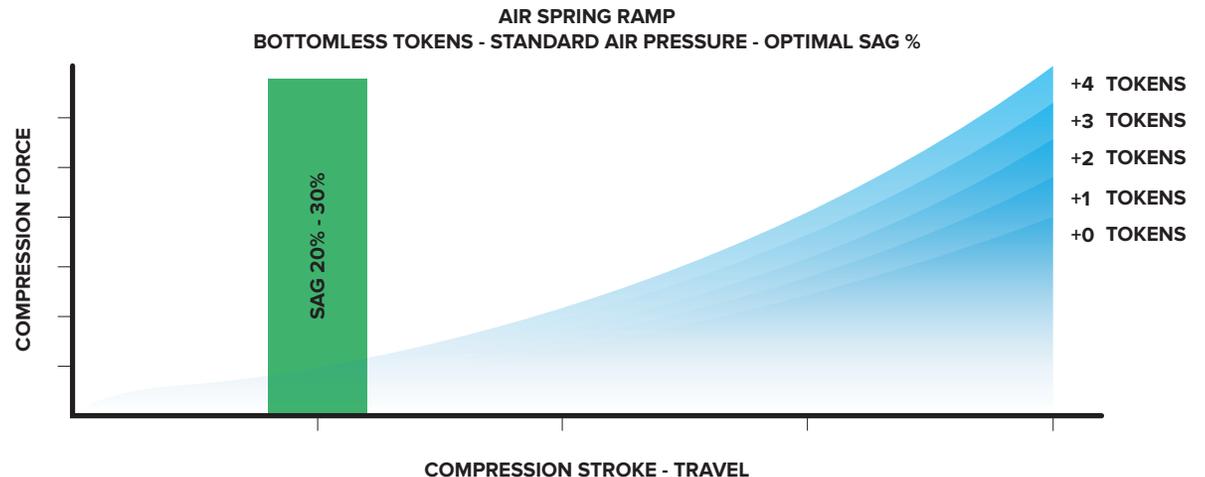
For Bottomless Token installation and removal procedures, consult the service manual for your fork at [www.sram.com/service](http://www.sram.com/service).



Dual Position Air™ - Bottomless Tokens



Solo Air™ and DebonAir™ - Bottomless Tokens



# Fork Models and Damper Adjustments

Fork Model	Damper	Damper Adjustments					
		Rebound	Low Speed Compression	High Speed Compression	Threshold	Lockout	Remote
BoXXer™ World Cup (RC2)	Charger 2 Damper™	✓	✓	✓	-	-	-
RC2	Charger 2 Damper	✓	✓	✓	-	-	-
RCT3	Charger 2 Damper	✓	✓	-	✓	-	-
RCT R	Charger 2 Damper	✓	✓	-	✓	-	✓
RLC	Charger 2 Damper	✓	✓	-	-	✓	-
RLC R	Charger 2 Damper	✓	✓	-	-	✓	✓
BoXXer World Cup/Team	Charger Damper™	✓	✓	-	-	-	-
BoXXer Charger RC	Charger Damper RC	✓	✓	-	-	-	-
Charger RC	Charger Damper RC	✓	✓	-	-	-	-
BoXXer RC	Motion Control™	✓	✓	-	-	-	-
XX™	Motion Control	✓	-	-	-	✓	✓
RC	Motion Control	✓	✓	-	-	-	-
RC R	Motion Control	✓	✓	-	-	-	✓
RL	Motion Control	✓	✓	-	-	✓	-
RL R	Motion Control	✓	✓	-	-	✓	✓
TK	TurnKey™	✓	-	-	-	✓	-
TK R	TurnKey	✓	-	-	-	✓	✓



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