



vorsprung Smashpot Bottomless Coil Spring System Instruction Manual

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System Instruction Manual*

Smashpot

BOTTOMLESS COIL SPRING SYSTEM

INSTALLATION MANUAL

REVISION E



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TOOLS & SUPPLIES REQUIRED

NOTE: Do not proceed unless you have the following tools and supplies on hand.

- Torque wrench
- Torque wrench to spanner adaptor
- 12mm Spanner
- 13mm Spanner (29er PIKE only)
- 14mm Cone Wrench
- 22mm Cone Wrench
- 12mm Socket
- 28mm Chamfer less Socket

- 32mm Chamfer less Socket (FOX 38 ONLY)
- 2mm + 1.5mm Allen Keys
- Oil syringe or graduated cylinder
- Sharp knife or scissors
- Slick Honey Grease or alternative
- 110ml of 20wt fork oil (Fox 38 Only – 120ml of 20wt fork oil)

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PART 1 – REMOVING THE STOCK AIR SPRING ASSEMBLY FROM YOUR FORK

- 1.1 See manufacturers service instructions for disassembling the stock air spring and removing it completely from your fork. The Vorsprung Smash pot kit will replace the entire stock air spring assembly including foot stud and top cap and this must be removed first.

Refer to the relevant factory service instructions up until you have removed the air spring from the stanchion. Unless your fork requires additional servicing, the damper and seals will not need to be touched to install the Smashpot.

FOX: <https://www.ridefox.com/fox17/help.php?m=bike&listall=service>

ROCKSHOX: <https://www.sram.com/service/rockshox/7,434>

Refer to the Factory service instructions for torque specifications, lubrication specifications and general disassembly/reassembly.

PART 2 – CONFIGURING YOUR SMASHPOT TO YOUR TRAVEL & SPRING RATE

KIT CONTENTS

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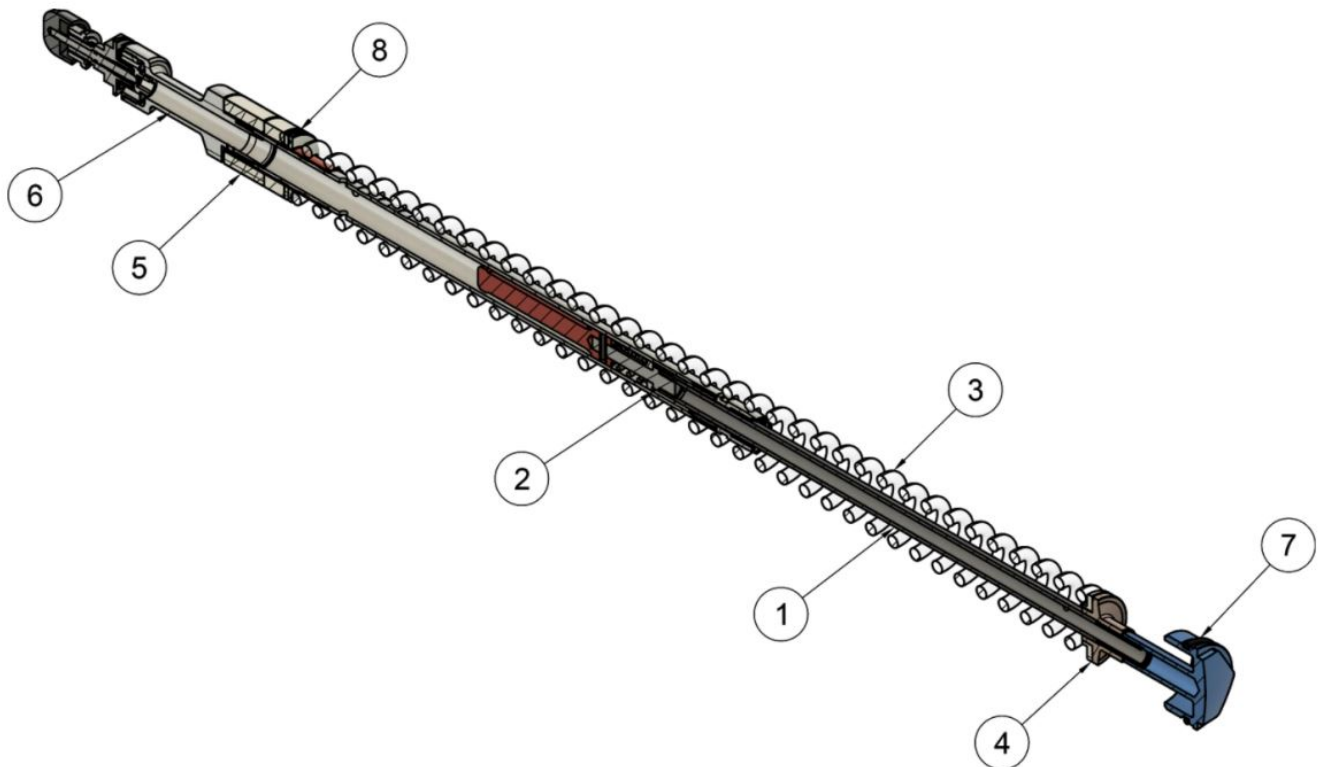


Smashpot Coil spring, spring perch & heat shrink

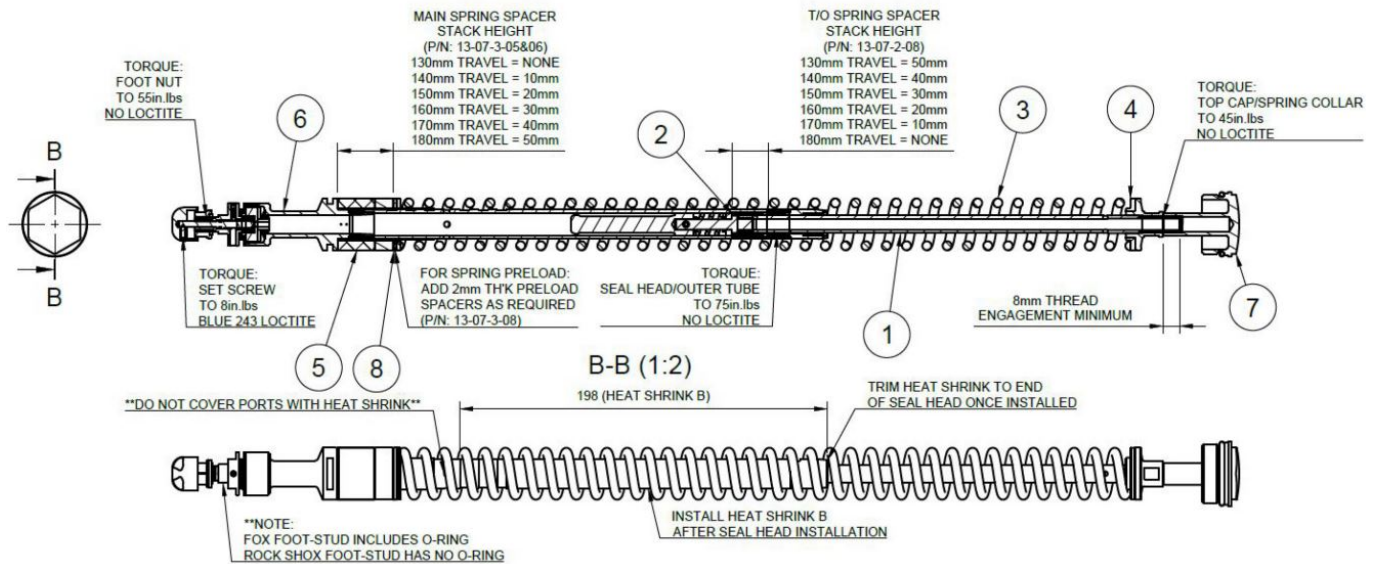
- Smashpot Inner Tube Assemble
- Smashpot Outer Tube Assembly
- Smashpot Top Cap

PARTS LIST & SECTION VIEW

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	13-07-2-A01	SMASHPOT - INNER TUBE ASSEMBLY
2	AS REQ'D	1-07-2-07	SMASHPOT - SPACER = TOP OUT SPRING (10mm) SEE CHART FOR STACK HEIGHT
3	1	13-07-5-xx	SMASHPOT - COIL SPRING (TO SUIT YOUR WEIGHT/RIDING)
4	1	13-07-3-1x	SMASHPOT - SPRING PERCH (TO SUIT YOUR SPRING SIZE)
5	AS REQ'D	13-07-3-05/06	SMASHPOT - SPACER MAIN SPRING (20mm AND 10mm) SEE CHART FOR STACK HEIGHT
6	1	13-07-3-Axx	SMASHPOT - OUTER TUBE COMPLETE ASSEMBLY (TO SUIT YOUR FORK MODEL)
7	1	13-07-1-Axx	SMASHPOT - TOP CAP (TO SUIT YOUR FORK MODEL)
8	IF REQ'D	13-07-3-08	SMASHPOT - SPACER - MAIN SPRING 2mm - USED FOR PRELOAD IF REQ'D



DRAWING 2: TRAVEL SPACER, TORQUE SETTINGS & HEAT SHRINK DETAILS

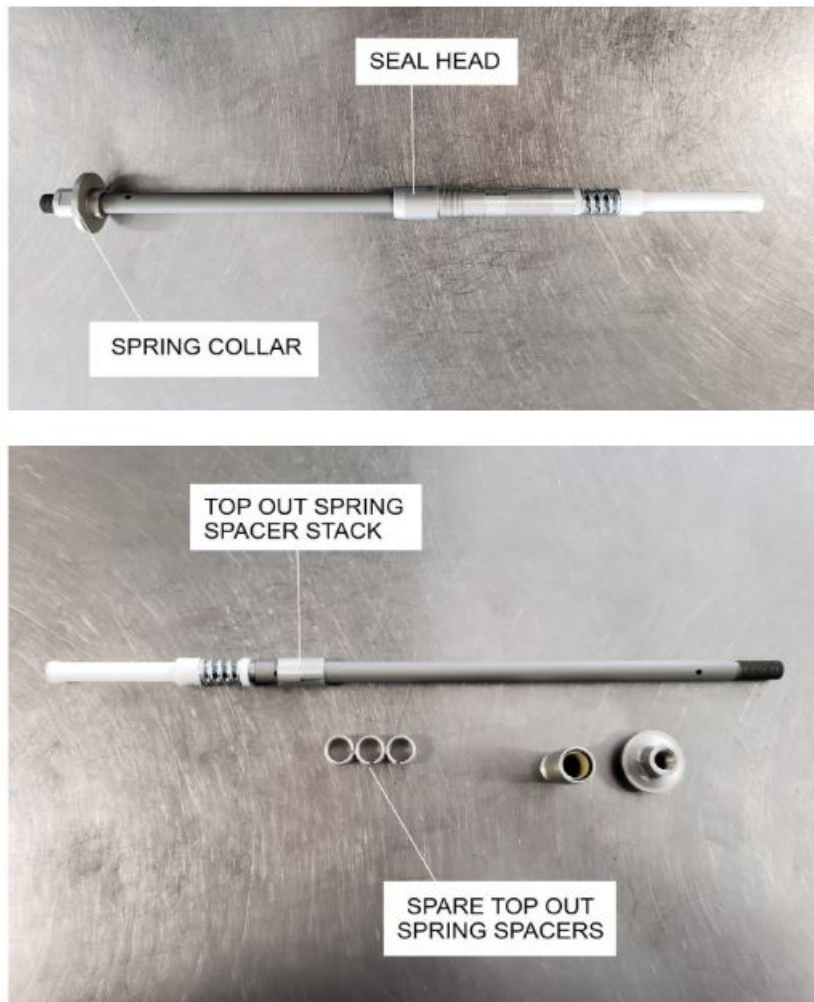


Your kit will consist of a number of items as per the above parts list. Depending on the travel of your fork you will have to configure the top out and main spring spacers accordingly.

In some cases the travel of your fork may be increased, however, it is your responsibility to check with the fork manufacturer to ensure this is permissible. Bushing overlap and damper length may restrict this and improperly installed products can fail, causing the rider to lose control resulting in **SERIOUS INJURY OR DEATH**. Check the maximum allowable travel of your fork with the fork manufacturer prior to increasing travel above your factory-set travel.

- 2.1 Remove SPRING COLLAR from the INNER TUBE ASSEMBLY in order to remove the SEAL HEAD and access the TOP OUT SPRING SPACERS.

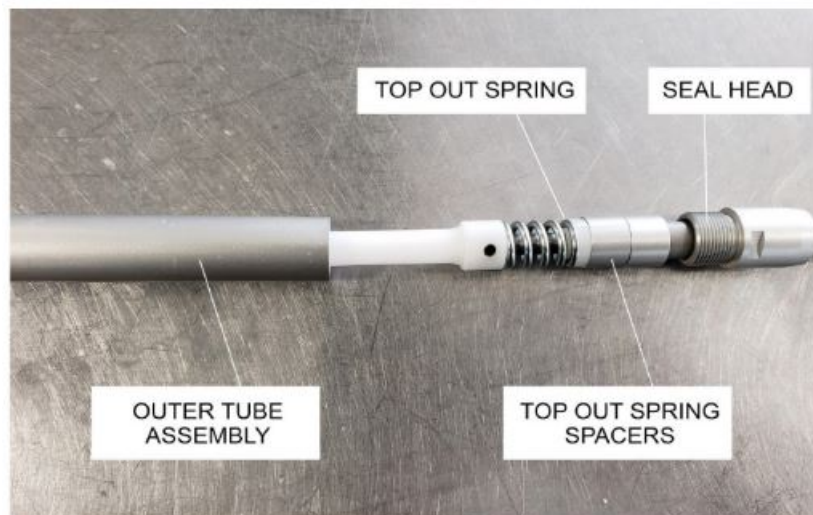
Part Number: 13-07-2-08



- 2.2 Install a stack height of TOP OUT SPRING SPACERS as required to suit your fork travel. TOP OUT SPRING SPACERS must sit on the INNER TUBE between TOP OUT SPRING ASSEMBLY and SEALHEAD. See Drawing 2 and table below for details. For example: a 160mm travel fork requires 20mm of TOP OUT SPRING SPACERS so install 2 x 10mm spacers.

TOP OUT SPRING SPACERS	
Fork Travel (mm)	Spacer Stack Height (mm)
130	50
140	40
150	30
160	20
170	10
180	NONE

- 2.3 Re-install the SEAL HEAD onto the INNER TUBE ASSEMBLY and insert the INNER TUBE ASSEMBLY into the OUTER TUBE ASSEMBLY.



- 2.4 Using a 14mm cone wrench on the SEAL HEAD and a 22mm cone wrench on the BOTTOM OUT CUP – use a Torque wrench to torque SEAL HEAD to 75in.lbs without Loctite.



- 2.5 Position and install the included length of HEAT SHRINK just shy of the ports and extending over the end of the SEAL HEAD using a heat gun. **Make sure you do not cover the ports with Heat Shrink



- 2.6 Push INNER TUBE into the OUTER TUBE assembly as far as possible. Using a sharp knife or scissors, trim back the Heat Shrink to be in line with the end of the Seal Head. (Try not to score the shaft with the knife but note that scratches are not critical – it is not a sealing surface.)

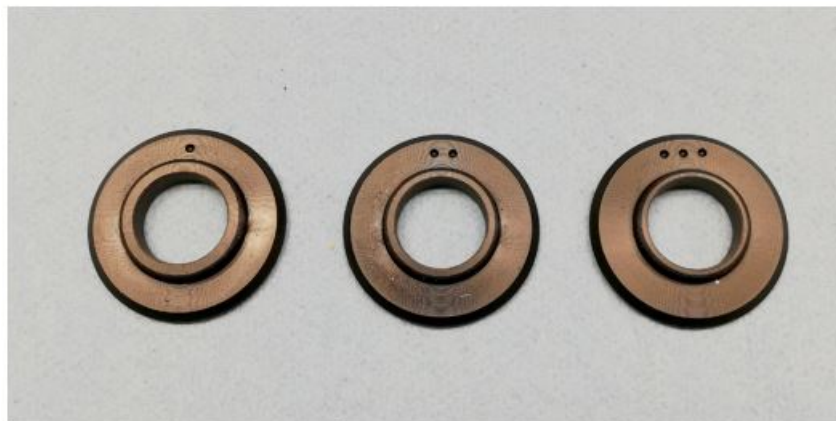


- 2.7 Install a stack height of MAIN SPRING SPACERS on the outer tube as required to suit your fork travel. See Drawing 2 above and following table for details. For example: a 160mm travel fork requires 30mm of MAIN SPRING SPACERS so install 1 x 20mm spacer + 1 x 10mm spacer.



MAIN SPRING SPACERS	
Fork Travel (mm)	Spacer Stack Height (mm)
130	NONE
140	10
150	20
160	30
170	40
180	50

- 2.8 ZEB / 38 FORKS Do not use Spring Perch included in the Spring bag, use spring perch supplied with the Top Cap. You will have 3 sizes (1 dot, 2 dots, 3 dots). Place the acetal SPRING PERCH that fits best, into the end of the COIL SPRING. It may fit one end of the spring better than the other. The better fitting end will be the top of the spring as oriented in the fork.



Other forks: Place the acetal SPRING PERCH included in the spring bag, into the end of the COIL SPRING. It may fit one end of the spring better than the other. The better fitting end will be the top of the spring as oriented in the fork.



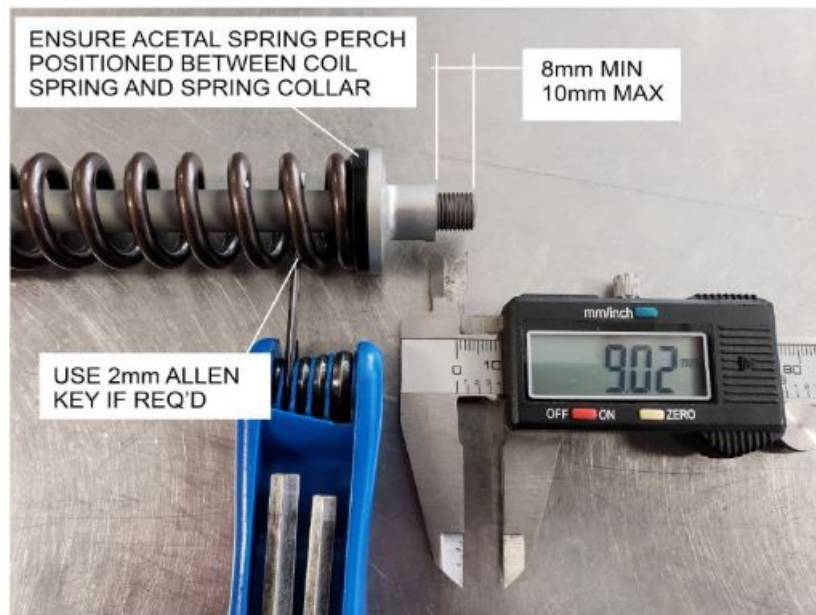
- 2.9 Slide the Heat Shrink provided on to the COIL SPRING , approximately 100mm from the top end of the spring where the SPRING PERCH will be fitted.



- 2.10 Use a heat gun to heat the Heat Shrink until it fits snugly over the COIL SPRING. Once shrunk, trim any excess from the ends of the Heat Shrink that protrudes inside the inner diameter of the COIL SPRING. When complete, check that the spring slides smoothly over the cartridge OUTER TUBE.



- 2.11 Install the COIL SPRING, SPRING PERCH and SPRING COLLAR onto the assembly.



Ensure the SPRING PERCH is positioned between the COIL SPRING and the SPRING COLLAR. Correct preload needs to be set such that the SPRING COLLAR is tightened 1-4mm beyond the point at which the COIL SPRING is first contacted by the SPRING PERCH and has no play along the length of the cartridge tube.

Preload needs to be adjusted using the included spacers so that the spring is properly secured when approximately 9mm of INNER TUBE thread is exposed (min 8mm, max 10mm). Too little preload may result in the spring moving around and causing noise – too much may result in top out noise. If you are experiencing substantial top out noise even with minimum preload, please contact us.

Insert a 2mm allen key through the hole in the INNER TUBE to prevent it from rotating if required.

- 2.12 Check that the COIL SPRING is adequately preloaded so that it is not able to rattle around. One or two of the 2mm SPRING SPACERS (part number: 13-07-3-08) may be required for appropriate preload. Position the longest spacers closest to the COIL SPRING and the shortest spacers furthest away as this help stabilise the spring assembly during use.

****NOTE:** Getting preload right is necessary for proper operation of the fork. Too much or too little can cause substantial noise.



**ADDITIONAL STEPS (13 & 14) FOR:
2014-17 PIKE 29er 2021+ Fox 36 (Factory & Performance only, not Rhythm Series)
2021+ ZEB FORKS ONLY**

- 2.13 All appropriate kits include a 20 mm long TOPCAP ADAPTOR to be used when installing the kit in forks mentioned above.



- 2.14 Thread the TOP CAP ADAPTOR into the TOPCAP. Use a Torque wrench, 28mm or 32mm chamfer less socket and 13mm Spanner to torque to 45in.lbs without Loctite.



- 2.15 Thread the TOPCAP onto the INNER SHAFT ASSEMBLY



- 2.16 Use a Torque wrench + chamferless socket on the TOPCAP and a 12mm Spanner on the SPRING COLLAR to torque to 45in.lbs without loctite. DO NOT EXCEED TORQUE SPECIFICATION.

**It is important that the SPRING COLLAR be tightened against the TOPCAP. Do not simply tighten the TOPCAP onto the INNER SHAFT until the threads bottom out. This will damage the assembly.

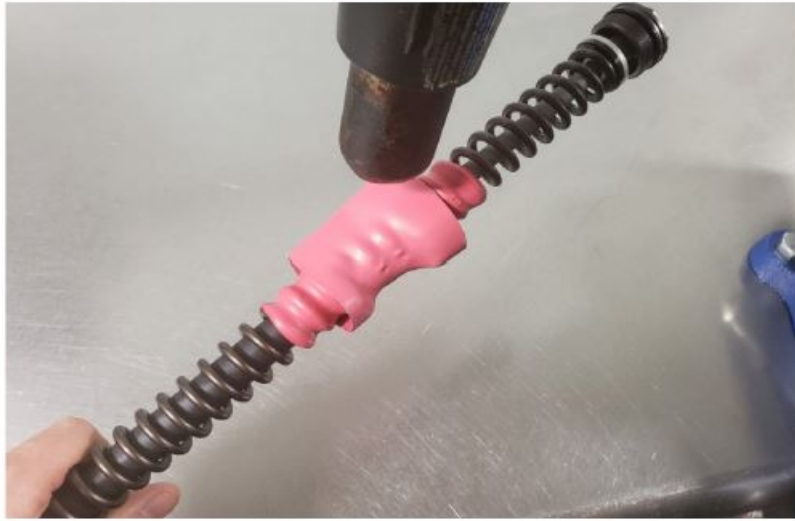


ADDITIONAL STEP 17 FOR FOX 36 FORKS ONLY

- 2.17 Using a Heat Gun, install additional 50mm length of red Heat Shrink over the top of existing Heat Shrink on the COIL SPRING.

This step helps prevent noise from spring deflection due to the larger diameter stanchion on the Fox 36.

NOTE: NOT NECESSARY ON 36 RHYTHM.



The complete Smashpot assembly is now ready to be inserted into your fork and should look like the picture to the right.



PART 3 – INSTALLING THE SMASHPOT ASSEMBLY INTO YOUR FORK

ADDITIONAL STEPS FOR ROCKSHOX ZEB & FOX 38 FORKS ONLY

- 3.1A** Prepare completed Smashpot unit
& PVC Isolator sleeve

Insert PVC isolator into stanchion, leaving 5mm
out.



Apply a generous amount of Slick Honey grease to the COIL SPRING especially the portion covered in Heat Shrink.

Insert assembly into the fork as shown.

Ensure the PVC overlaps the spring perch spacer.



Push in completely (a little force may be required).



OTHER FORKS:

- 3.1B Apply a generous amount of Slick Honey grease to the COIL SPRING especially the portion covered in Heat Shrink. Insert assembly into the fork as shown. Be careful as the needle adjuster is a small diameter and could be damaged if the assembly is dropped into the fork lower.



- 3.2 Install CRUSH WASHER and FOOTNUT onto the FOOTSTUD.



- 3.3 Use a Torque wrench and 12mm socket to torque the FOOTNUT to 55in.lbs without loctite.

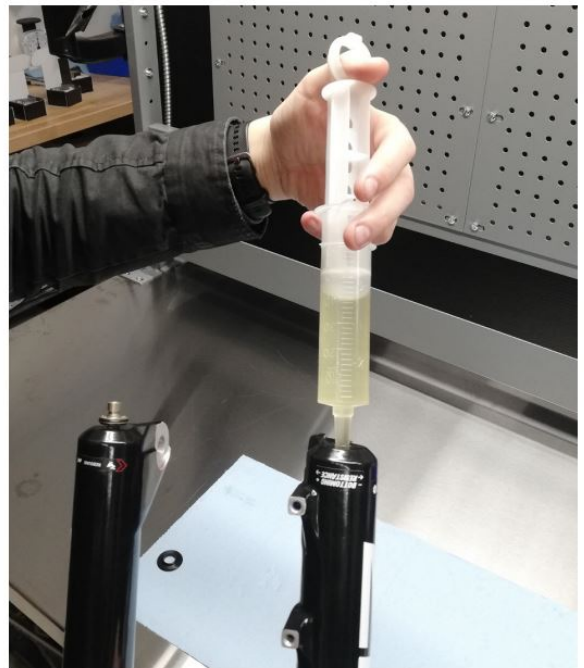


- 3.4 Apply a fresh drop of blue 243 loctite to the set screw and torque to 8in.lbs using a 1.5mm Allen key. Ensure the set screw is aligned so that it contacts the flat portion of the adjuster shaft.



- 3.5** Using a syringe or graduated cylinder add 20wt suspension fluid as per the following table.

REQUIRED OIL QTY	
Fork	20wt Suspension Fluid (mL)
PIKE	100
LYRIK	110
ZEB	110
FOX 36	110
FOX 38	120



- 3.6 Use a Torque wrench and 28mm chamferless socket to torque the TOPCAP to 220in.lbs (for FOX) 250in.lbs (for ROCKSHOX) without loctite.



Installation is complete. Now go ride your bike!

SMASHPOT TUNING – ADJUSTER DIAL

The Smashpot utilises a hydraulic damping system that engages during the last third of the fork travel in order to prevent harsh bottom out of the suspension. The amount of damping force can be adjusted by modifying the adjuster dial position or by modifying the shim stack.

Given you are running the correct spring rate for your weight and riding style, the adjustment range provided by using the adjuster dial should be adequate for the majority of riders.

1. Adjuster Dial

To increase (+) bottom out stroke compression damping (firmer), turn the Smashpot adjuster dial clockwise.

To decrease (-) bottom out stroke compression damping (softer), turn the Smashpot adjuster dial counter-clockwise.



SMASHPOT TUNING – SHIM STACK

If you cannot obtain the desired level of bottom out resistance by modifying the position of the adjuster dial, there is also a speed sensitive shim stack that can be reconfigured to increase or decrease the damping force.

If you have wound the adjuster dial all the way out (anti-clockwise) and find there is still too much bottom out resistance. Or if you have wound the adjuster dial all the way in (clockwise) and find there is still not enough bottom out resistance – follow the below procedure:

SHIM STACK MODIFICATION

1. Remove Smashpot assembly from your fork by working backwards through the installation instructions.



2. Use a 22mm Cone Wrench on the BOTTOM OUT CONE and a 12mm Spanner on the FOOTSTUD to remove the FOOTSTUD and shim stack assembly from the rest of the OUTER TUBE ASSEMBLY.



3. Once removed, shims can be repositioned to increase or decrease the bottom out resistance. See Drawing 3 below.

To decrease bottom out resistance - reposition one of the MAIN SHIMS to be located in between the SPACER SHIM and the CLAMP SHIM.

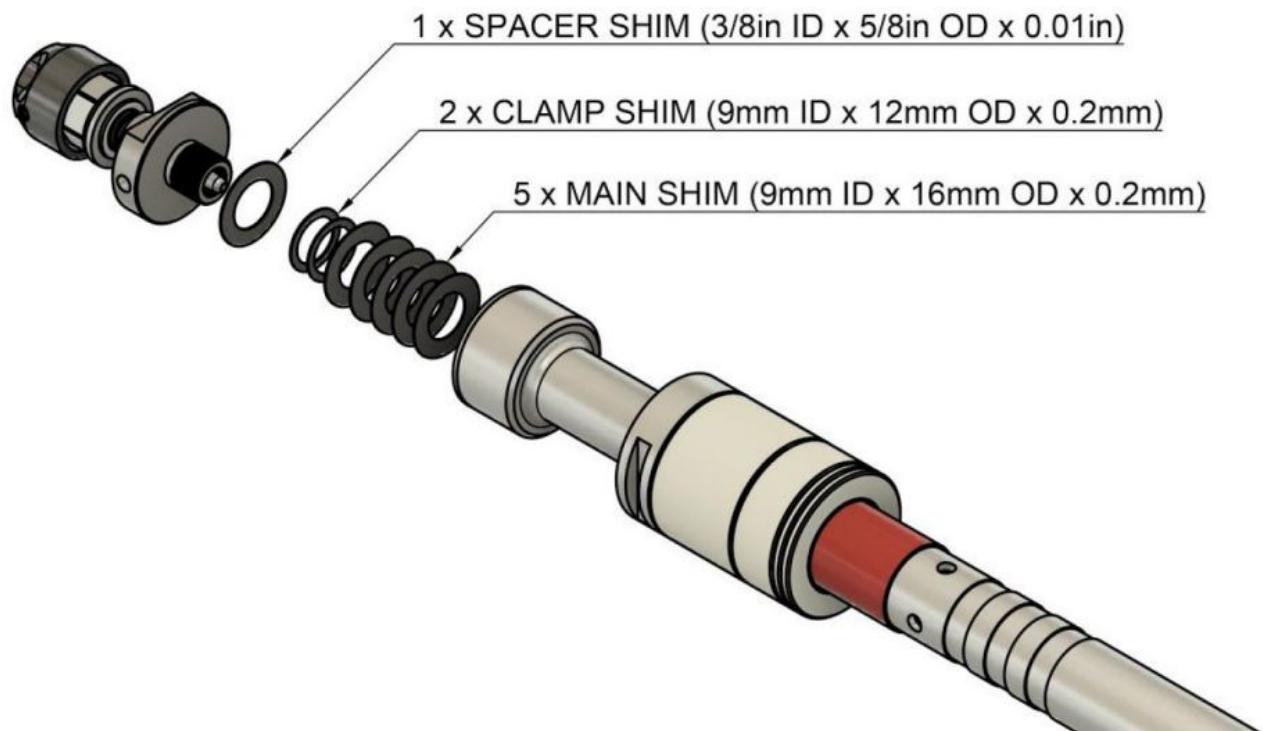


To increase bottom out resistance - add an additional MAIN SHIM to the existing stack of 5 MAIN SHIMS. 9mm ID x 16mm OD x 0.2mm thick

4. Reinstall the FOOTSTUD and modified shim stack into the OUTER TUBE ASSEMBLY.

Using a 12mm spanner on the FOOTSTUD and a 22mm Cone Wrench on the BOTTOM OUT CONE Torque to 75in.lbs without loctite.





DRAWING 3: Stock shim stack configuration

CHANGING COIL SPRINGS

The correct spring for your weight and riding style should have been selected at the time of purchase. If you are running too much or too little sag and need to remove and replace the spring, this can be done by following the below procedure. Note: having a new, clean gear shift cable on hand will make this a much easier process.

REMOVING & REPLACING COIL SPRING

1. Remove TOPCAP using 28mm chamferless socket.



2. Use a 28mm chamferless socket on the TOPCAP and a 12mm Spanner on the SPRING COLLAR to remove the TOPCAP



3. Remove SPRING COLLAR, SPRING PERCH and COIL SPRING. The INNER TUBE will fall down inside the stanchion. Compress the fork fully and you should be able to grab the INNER TUBE and pull it out of the stanchion.



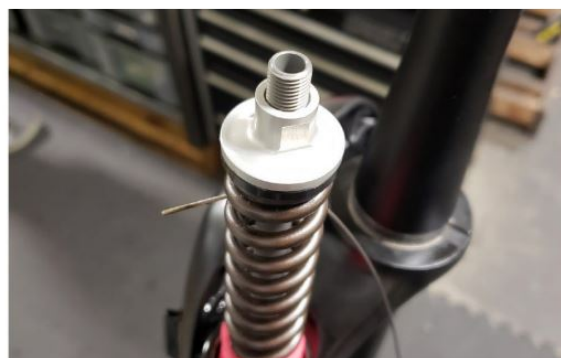
4. Thread a gear shift cable through the hole in the top of the INNER TUBE and through the new COIL SPRING. The COIL SPRING should be orientated with the HEAT SHRINK closest to the top.



5. Use the shift cable to pull the INNER TUBE up through the COIL SPRING until the threads of the INNER TUBE are exposed above the COIL SPRING.

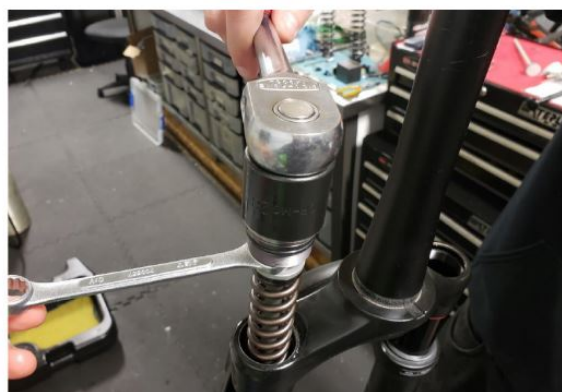


6. Install the SPRING PERCH and SPRING COLLAR onto the INNER TUBE and tighten down until 8-10mm of threads are exposed.



7. Thread the TOPCAP onto the INNER SHAFT ASSEMBLY
8. Use a Torque wrench + 28mm chamferless socket on the TOPCAP and a 12mm Spanner on the SPRING COLLAR to torque to **45in. lbs** without loctite. **DO NOT EXCEED TORQUE SPECIFICATION.**


****It is important that the SPRING COLLAR be tightened against the TOPCAP. Do not simply tighten the TOPCAP onto the INNER SHAFT until the threads bottom out. This will damage the assembly.**



Questions?

Email steve@vorsprunguspension.com www.vorsprunguspension.com

Documents / Resources

	<p>vorsprung Smashpot Bottomless Coil Spring System [pdf] Instruction Manual Smashpot, Bottomless Coil Spring System, Smashpot Bottomless Coil Spring System</p>
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References

-  [Engineered Suspension – Vorsprung Suspension](#)
-  [Bike Help Center | FOX](#)