



Beta EVO Standard Edition Fork Service Manual
Fork Disassembly, Assembly, Seal and Bushing Replacement

2013-2023



CONFIDENTIALITY NOTICE

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Jan-2023

Work must be performed by trained technician.
Beta USA, Inc.

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Introduction

The SFF or Single Function Fork refers to each fork having a specific duty. The right fork function is rebound dampening. The left side utilizes a main spring, external spring pre-load adjustment and compression dampening.

The procedures in this manual must take place in a clean environment using professional and some specific tools.

Use caution not to damage the surface of the fork tubes, cartridge, rod, or any other suspension components.

When using the bench vise, always use protective jaws made from brass, aluminum or plastic. Always clean suspension components before assembly, using appropriate solvents and lint free towels to prevent contamination. Replace common wear parts such as seals, gaskets, bushings and O-rings every service interval.

CAUTION:

Always wear protective eyewear, gloves and appropriate clothing. Before you perform any maintenance, be sure to read and carefully follow the detailed instructions described in this manual.

Incorrect disassembly/assembly of the fork may cause serious property damage, injury, or death to the rider.

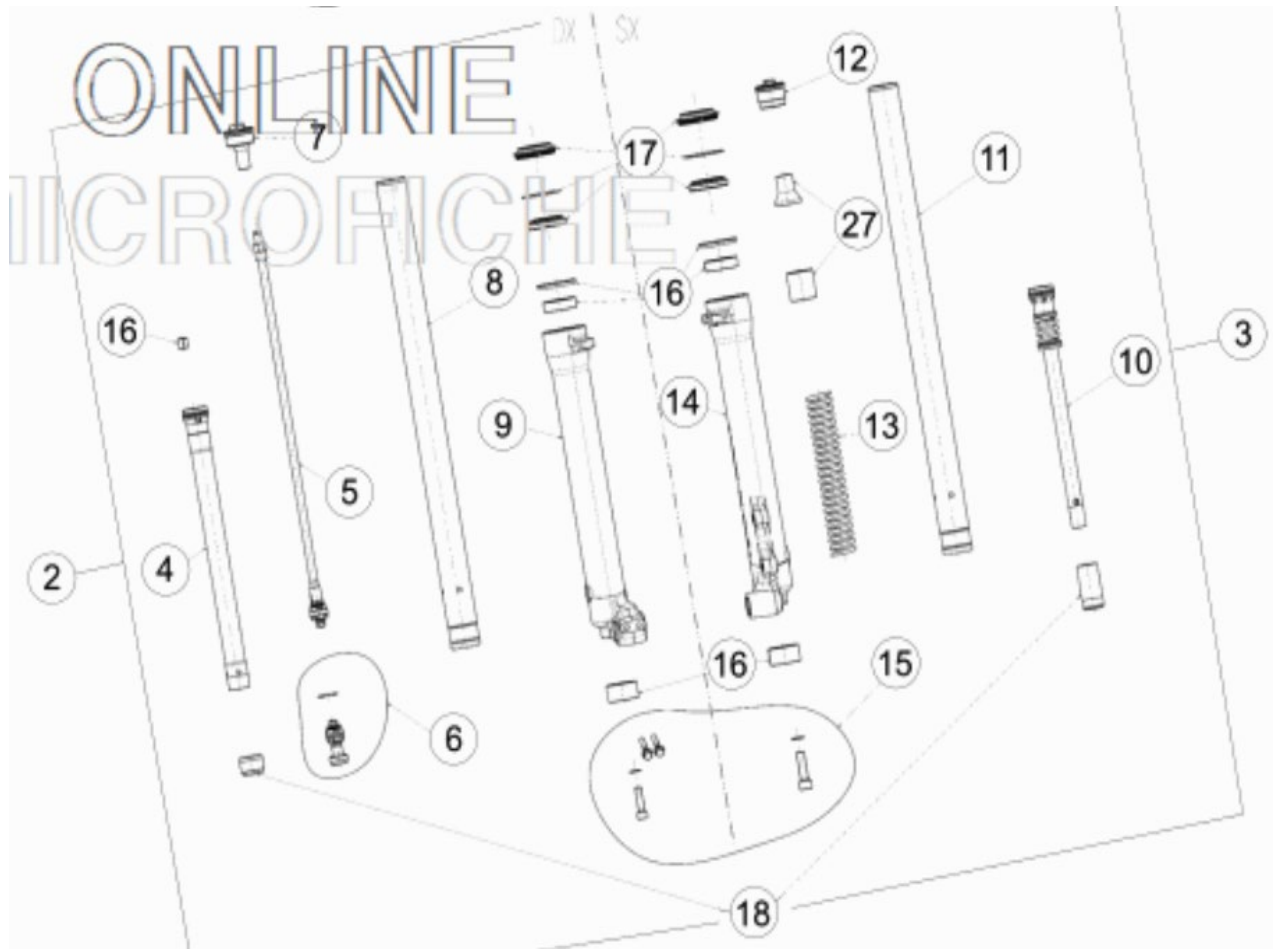
Tools Required

- 38mm Seal driver & bullet
- 13mm Open end wrench
- 14mm Open end wrench
- 17mm Open end wrench
- 3/8 Drive impact wrench
- 3/8 Drive 12mm socket
- 3/8 Drive 6mm Allen
- Fork Oil Level Syringe
- Measuring beaker

RH Fork

Fork Diagram

LH Fork



- 4. Fork Cartridge cylinder
- 5. Fork Cartridge rod
- 6. Fork Compression base valve
- 7. Fork Cap (Right)
- 8. Fork Slider Tube Assembly (Right)
- 9. Fork Outer Tube Assembly (RH)
- 10. Fork Cartridge
- 11. Fork Slider Tube Assembly (Left)
- 12. Fork Cap Pre-load (Left)
- 13. Fork main spring
- 14. Fork Outer Tube Assembly (LH)
- 15. Screw Fastener kit
- 16. Fork Bushing kit
- 17. Fork Seal kit
- 18. Fork Oil lock kit
- 27. Fork pre-load spacer kit

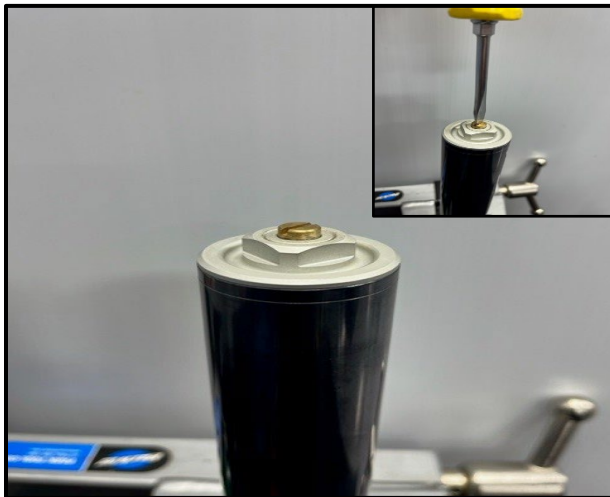
RH Fork Disassembly

(Rebound dampening side)

Clamp the inner fork tube assembly in a vise using soft jaws, or similar. Use enough tension to keep the outer fork tube from turning.



Document the rebound setting adjustment by counting the clicks clockwise. Next, open the rebound adjustment by turning knob counterclockwise before fork cap removal.



Install a 17mm wrench onto the top of fork cap and unthread from outer tube by turning counter-clockwise.





Unthread the fork cap from the inner tube assembly.



Install a 14mm open end wrench around the cartridge rod jam nut, located under the fork cap.

Install a 17mm open end wrench onto the top of the fork cap.

Keep the 14mm wrench stationary and turn the 17mm wrench counterclockwise to unthread the fork cap from the cartridge rod.



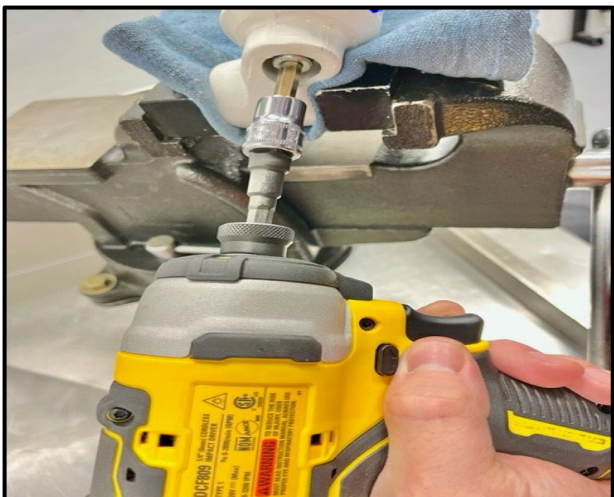
Remove the fork cap from the cartridge rod.



Drain the fork fluid.

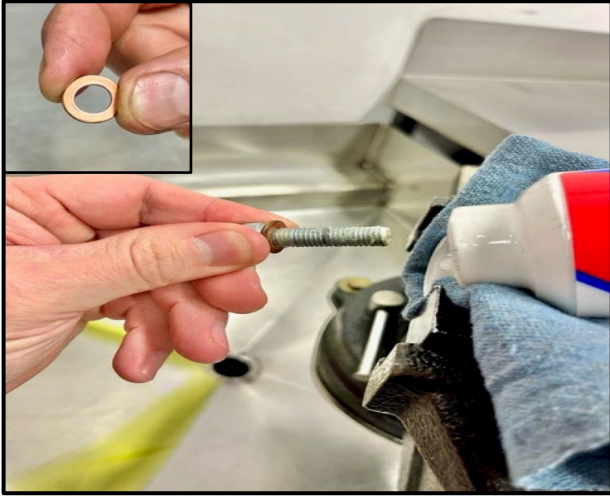


Clamp and secure the outer fork tube using A bench vice with soft jaws.



Insert a 6mm Allen socket into the bottom bolt. Use a 3/8 drive impact to remove the bolt.

Note: Using a ratchet does not always work, as the bolt requires a fast-spinning motion to unscrew from the cartridge.

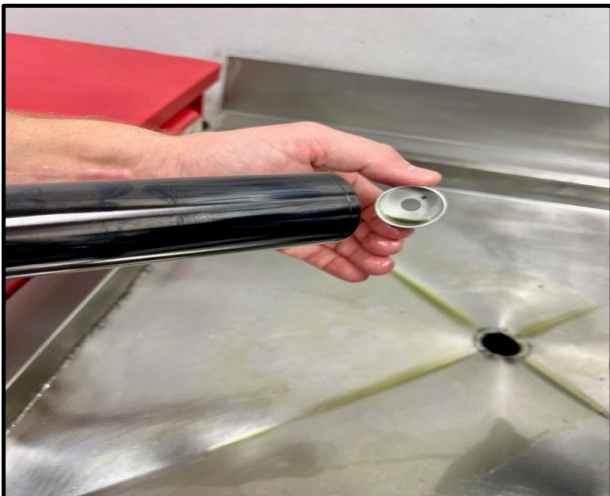


Remove the steel Allen bolt and copper washer from the bottom of the outer fork tube.

Note: The Allen bolt utilizes a copper washer and may be stuck on the bottom of the outer tube when the bolt is removed.



Remove the cartridge assembly from inside the inner fork tube assembly.



At the bottom of the (RH) inner tube you will find an oil lock collar. Remove it and keep with all other components removed from this side.

Note: The inner tube assembly is specified to the (RH) fork.



Remove the cartridge rod lock nut.



Thread the Allen bolt inside the base valve assembly.



Push the base valve assembly towards the inside of the cartridge cylinder using the bolt.



Use a pick to remove the circlip from the cylinder groove.



Remove the circlip from the cartridge cylinder.



Use the 6mm Allen bolt to remove the base valve assembly from the cartridge cylinder.



Push out the cartridge rod from the bottom of the cartridge cylinder. The purpose for the cartridge rod removal is to inspect all components, and thoroughly clean the cylinder and cartridge rod assembly.



Remove the Z-cut piston ring band from the rebound valve.

RH Fork Assembly (Rebound dampening side)



Thoroughly clean all suspension parts with an approved cleaning agent and allow the parts to dry before re-assembly.



Wrap the Z-cut piston band around a screwdriver to create a spiral shape.



Wrap the Z-cut band around the rebound valve. Confirm the band is completely seated.



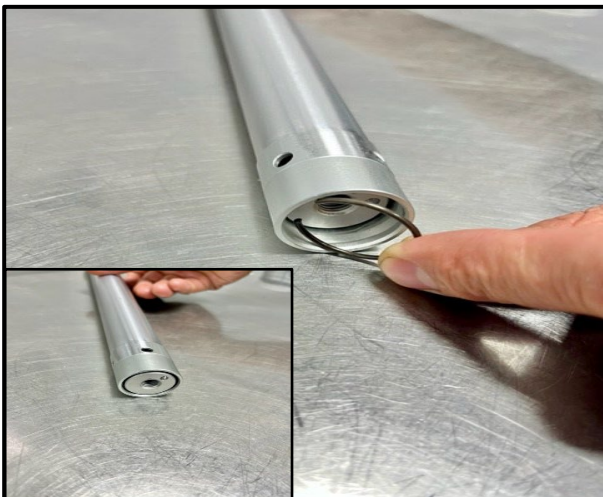
Insert the cartridge rod from the bottom of the cartridge cylinder. As the rebound valve enters the cylinder, make sure the band stays seated around the valve.



Use suspension grease on the base valve assembly O-ring. Replace the O-ring if compromised.



Insert the base valve assembly into the cartridge cylinder beyond the circlip groove.



Install the circlip into the cylinder groove. Push the cartridge rod downward to seat the base valve assembly against the circlip.



Thread the cartridge rod lock nut completely until fully bottomed.



Grease the bottom of the cartridge cylinder assembly.



The oil lock collar has a dimple inside of it and will slide over the bottom of the cartridge cylinder.



Important: The dimple inside the oil lock collar **MUST** line up with the steel point on the bottom of the base valve assembly.



Install the oil lock collar over the cylinder. A useful tip is when installing to push down and turn until the point and dimple mate with each other. The grease will help keep the oil lock collar in position.



Tricky Situation: Carefully place the cartridge cylinder assembly into the inner tube without the oil lock collar falling off. If this happens, repeat the step above and lower the external tube assembly over the cartridge assembly. Clamp the external with the bench vise.



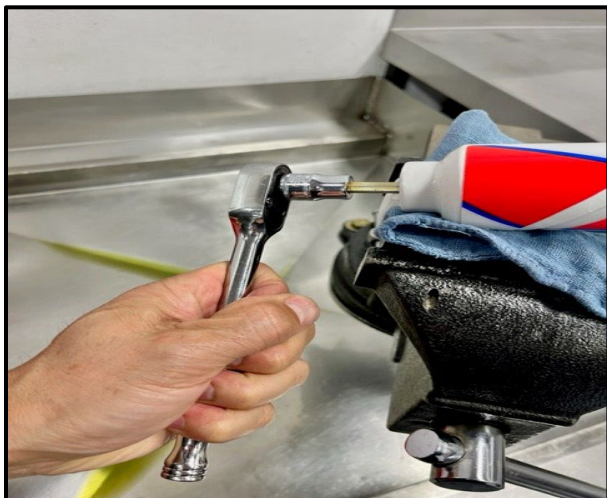
Inspect the copper washer and place onto the steel Allen bolt. Replace the copper washer if compromised.



Apply a small amount of **BLUE** thread locking agent to the Allen bolt.



Thread the steel Allen bolt inside the bottom of the outer tube. This will tighten down the cartridge assembly.

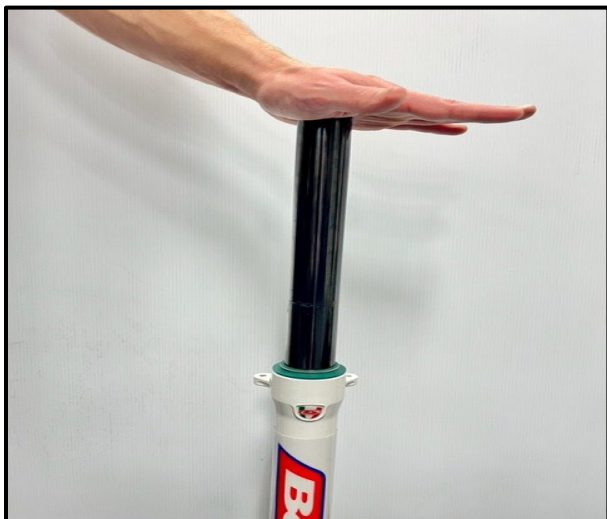


Tighten the 6mm Allen steel bolt to 22Nm. Make sure the bolt is tight and does not continue to turn.

SEE CHART ON PAGE 38 FOR OIL LEVELS & AIR GAP MEASUREMENTS



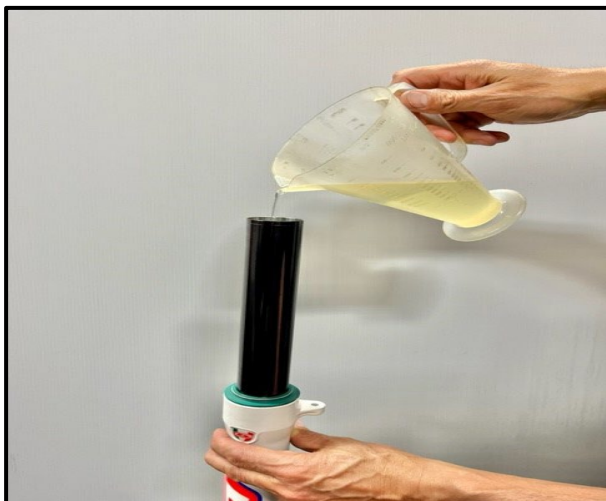
Models with ml fluid volume:
See chart for your EVO model and year. Use a ratio-rite or measuring beaker and fill inner fork tube with the suggested amount of Liqui Moly 5wt fork fluid.



Use your palm to cover the top opening of the inner tube and compress downward to help force the fork fluid into the cartridge. Repeat this step 2-4 times.



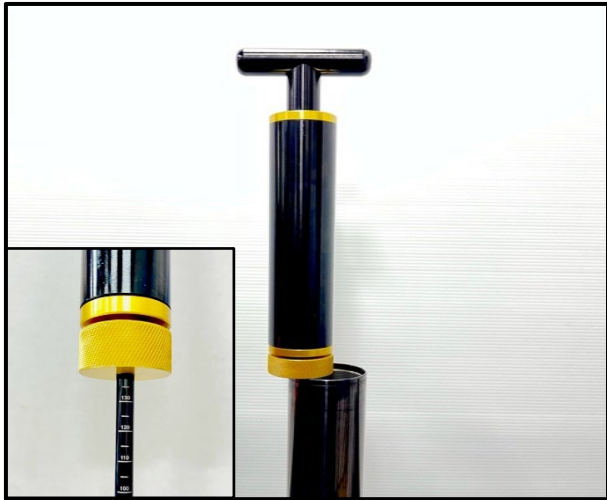
Cycle the cartridge rod up and down until the cartridge rod has a consistent resistance throughout the entire stroke. **Proceed to page 18 for cap installation.**



Models with mm air gap measurement: Use a ratio-rite or measuring beaker and fill inner fork tube with Liqui Moly 5wt fork fluid approximately 3" from the top of the tube. **Perform the last 2 steps above before setting air gap level!!**

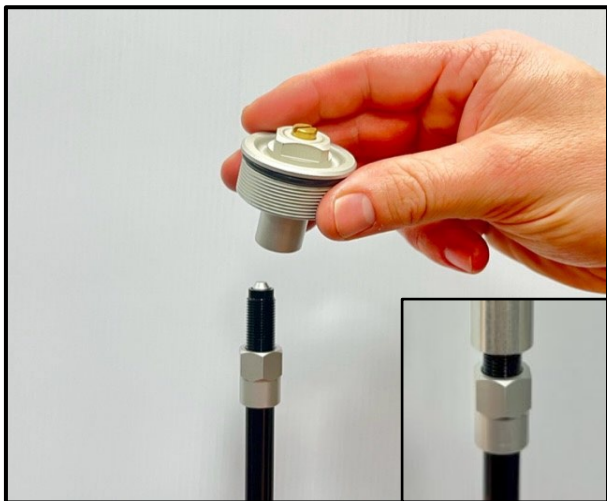


Use an approved fork oil level syringe to set the appropriate air gap level.



First, the inner fork tube and cartridge rod must bottom out before setting the air gap level. See chart on page 38 for your EVO model and year.

Second, adjust syringe to desired air gap in millimeters. Rest the tool on the top of the inner fork tube with syringe inside. Remove any additional oil above your desired measured area with syringe.



Thread the fork cap onto the cartridge rod until fully bottomed.

Note: An approximate 6mm gap between the cap and lock nut confirms the cap is completely threaded.



Install a 14mm open end wrench onto the cartridge rod jam nut.

Install a 17mm open end wrench onto the top of the fork cap.

Keep the 14mm wrench stationary and turn the 17mm wrench clockwise to secure the fork cap and jam nut together. Torque fork cap to 22Nm.



Thread the fork cap inside the inner tube and secure cap by tightening with a 17mm open end wrench.



Turn rebound adjustment knob clockwise until it bottoms. Set your rebound to the documented setting by turning out counterclockwise. Factory setting is 22 clicks out.

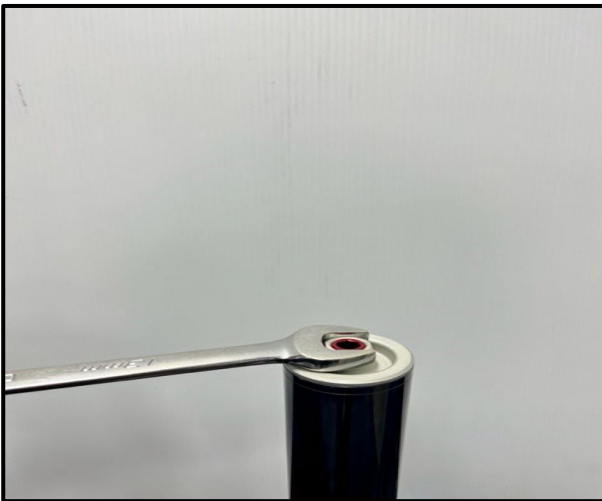
LH Fork Disassembly (Compression / Spring side)



Clamp the inner fork tube assembly in a vise using soft jaws, or similar. Use enough tension to keep the outer fork tube from turning.



Install a 6mm Allen into the pre-load adjuster and record the number of revolutions you turn clockwise.



Use a 13mm open end wrench to unscrew the fork cap from the inner tube assembly.



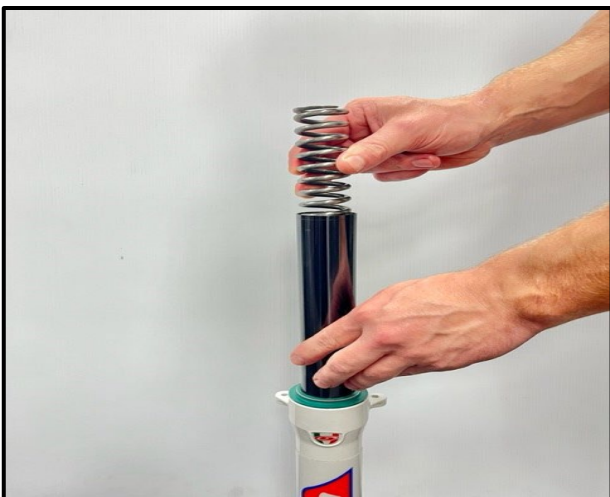
Remove the fork cap and lower the inner tube assembly downward until it bottoms.



Remove the pyramid shaped plastic pre-load spacer underneath the fork cap.



Remove the cylindrical shaped plastic pre-load spacer on top of spring.



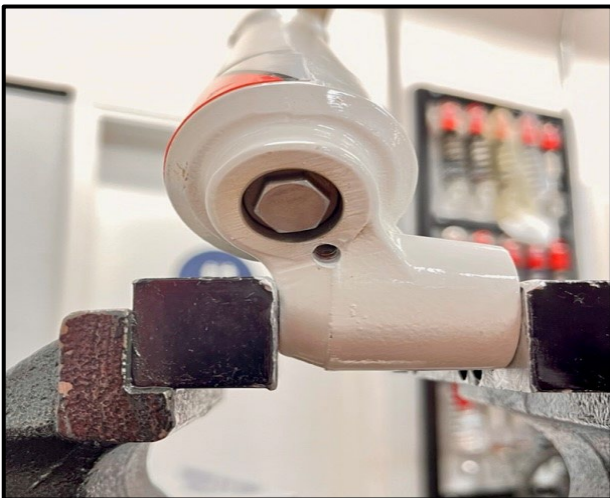
Remove the spring from the inside of the inner fork tube.



Remove the spring from the inner tube assembly.



Drain the fork fluid.



Clamp the outer fork tube with a bench vise using soft jaws.



Re-install the fork spring with the inner tube collapsed.

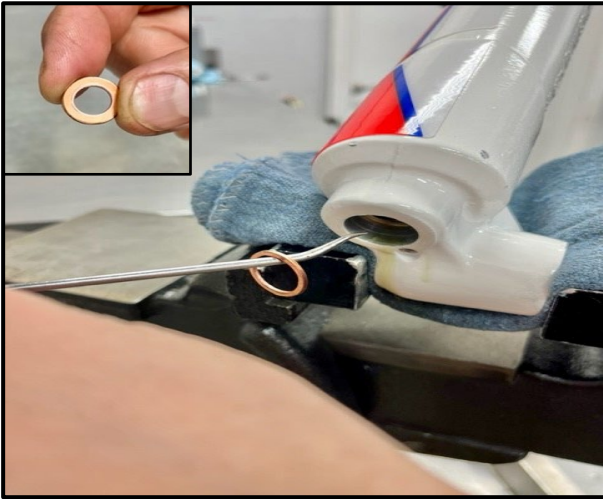


Use a 3/8 impact wrench with a 12mm 6pt. socket counterclockwise to remove the bolt.

Note: Apply pressure on the fork spring while unscrewing the adjustment bolt if you are unable to remove it, or the bolt continues to spin.



Remove the 12mm hex head bolt from the cartridge and outer tube assembly.



Look for a copper washer gasket if it doesn't come out with the bolt.

Note: Sometimes the copper washer will adhere to the bottom of the outer tube. A pick may be necessary to remove it.

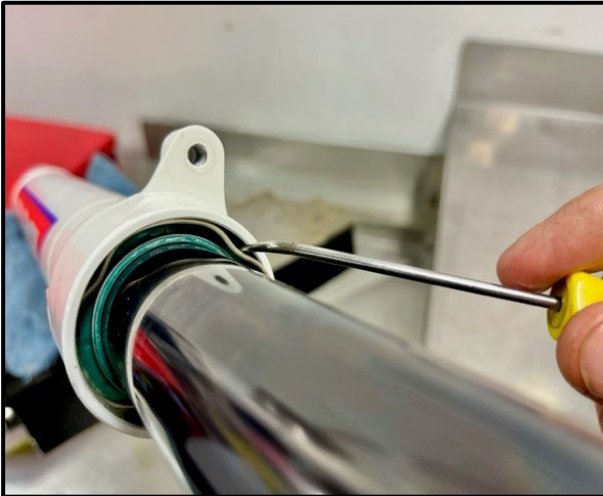


Remove the cartridge from the inner fork tube assembly.



LH & RH Fork Seal & Bushing Removal

Use a flathead screwdriver to remove the dust seal from the outer tube assembly.



Use a 45-degree pick to remove the oil seal housing circlip.



Using two hands on the inner tube assembly, pull apart the inner tube from the outer tube assembly.



Note the orientation and direction of the fork seals, circlip, oil seal washer, guide bushing, slide bushing, and remove them from the inner fork tube.



You will find a **RED** anodized oil lock collar at the bottom of the inner tube assembly when you pull the externals apart.

Note: This inner tube is specific for the (LH) fork internal and external parts.



The aluminum non-anodized oil lock collar is specific to the (RH) fork inner tube.

Note: This inner tube is specific for the (RH) fork internal and external parts.



Remove the slide bushing by using a flathead screwdriver.

LH & RH Fork Seal & Bushing Installation



Install a new slide bushing onto the inner tube assembly.

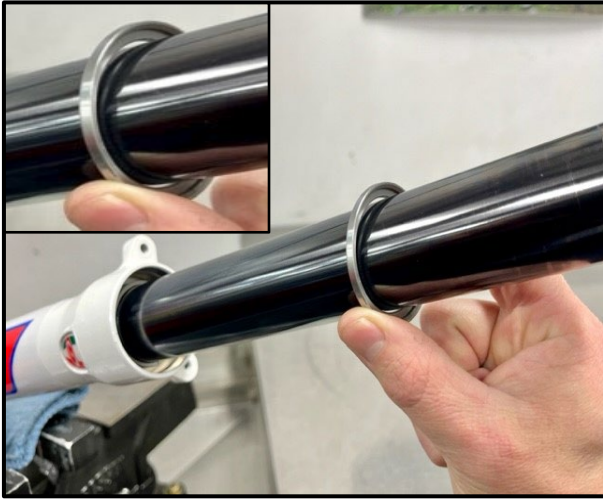


Insert the inner tube into the outer tube assembly.

Note: Inside the RH fork inner tube is open and specific to the RH internals and external outer tube.



Install the slide bushing over the inner tube assembly.



Install the oil seal washer onto the inner tube assembly.

Note: The oil seal washer with the recessed area must face upward when installing.



Install the **RED** oil lock collar into the bottom of the inner fork tube with the flat side of the collar facing downward. Slide the inner tube with oil lock into the outer tube.

Note: Inside the bottom of the LH fork inner tube is blocked and only allows the collar to fit inside the designated area. LH internals and external are specific to this fork leg.



Use a 38mm fork seal driver against the oil seal washer to install the guide bushing into the outer fork assembly.



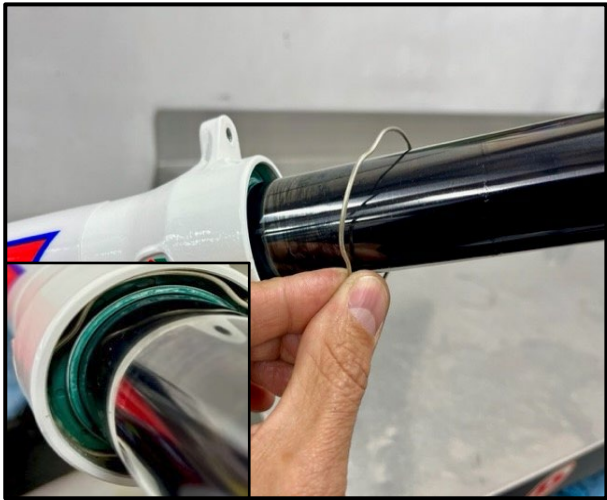
Use synthetic suspension grease on the inside of the new “SKF” oil seal.
Note: The oil seal direction is recessed side facing downward.



Use a 38mm fork seal bullet to install the oil seal onto the inner tube assembly.



Use a 38mm fork seal driver against the oil seal to install it into the outer fork assembly.
Note: Be sure the oil seal is completely bottomed exposing the entire circlip groove.

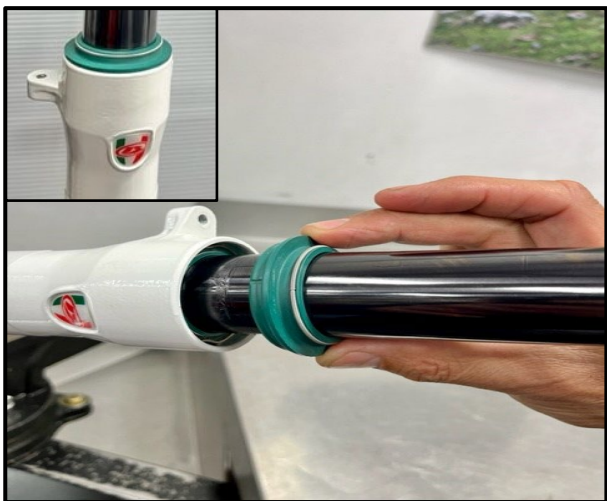


Install the oil seal housing circlip into the outer fork tube assembly groove.

Note: Make sure the circlip is completely seated inside the groove.



Use synthetic suspension grease on the inside of the new “SKF” Dust seal.



Install the dust seal onto the inner tube and press into the outer fork tube assembly .

Note: Be sure the dust seal is completely seated.

LH Fork Assembly

(Compression / Spring side)

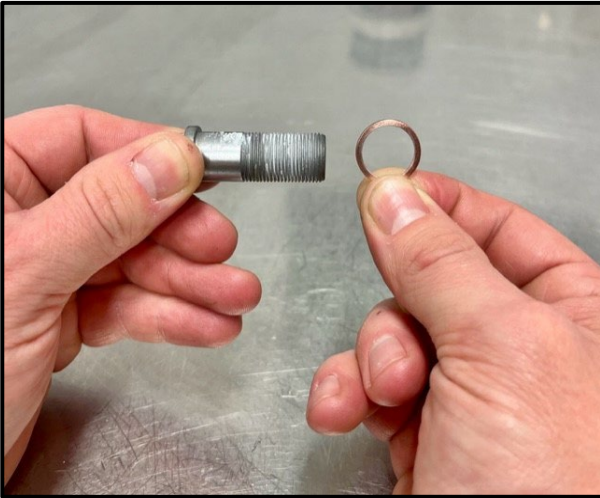
Install the cartridge into the (LH) inner tube.



To help you understand, after you install the cartridge inside the LH inner tube it will fit inside the **RED** oil lock collar located at the bottom.



This is what the cartridge would look like inside when it is installed with external. Notice you can see the threads of the cartridge in the center of the oil lock collar.



Inspect the copper washer and place over the bolt. Replace the copper washer if compromised.



Apply a small amount of **BLUE** thread locking agent to the 12mm hex head bolt.



Re-install the fork spring with the inner tube collapsed. Apply pressure on the spring to keep the cartridge bottomed.



Install the 12mm hex head bolt and thread it into the cartridge from the bottom of the outer tube assembly.



Install a 12mm 6pt. socket with ratchet onto the 12mm hex head bolt.

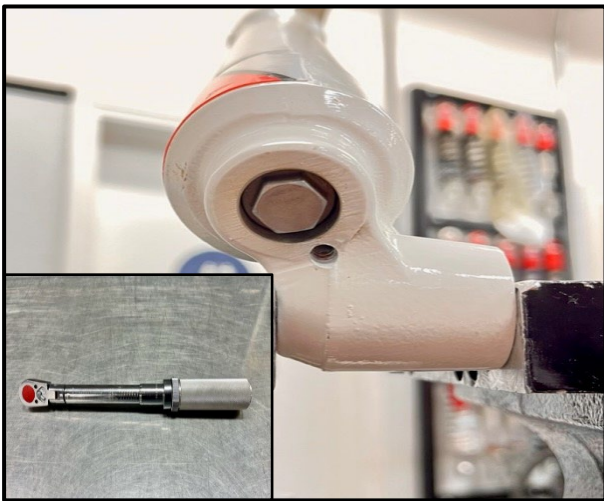


Apply downward pressure onto the fork spring while you tighten the bolt with the 12mm socket and ratchet.

Note: The spring pressure will keep the cartridge from spinning, allowing the bolt to tighten.



If you are unable to get bolt tight using a ratchet, use a 12V impact to assist tightening.



Torque the bolt to 21 Nm.

SEE CHART ON PAGE 38 FOR OIL LEVELS & AIR GAP MEASUREMENTS



Models with ml fluid volume:

See chart for your EVO model and year.

Use a ratio-rite or measuring beaker and fill inner fork tube with the suggested amount of Liqui Moly 5wt fork fluid.



Pull up and down 6-8 inches on the inner tube to help circulate fork fluid through the cartridge. Repeat this step 2-4 times.

Proceed to page 36 for fork cap and spring installation.



Models with mm fluid volume: Use a ratio-rite or measuring beaker and fill inner fork tube with Liqui Moly 5wt fork fluid approximately 2" from the top of the tube.



Use an approved fork oil level syringe to set the appropriate air gap level.



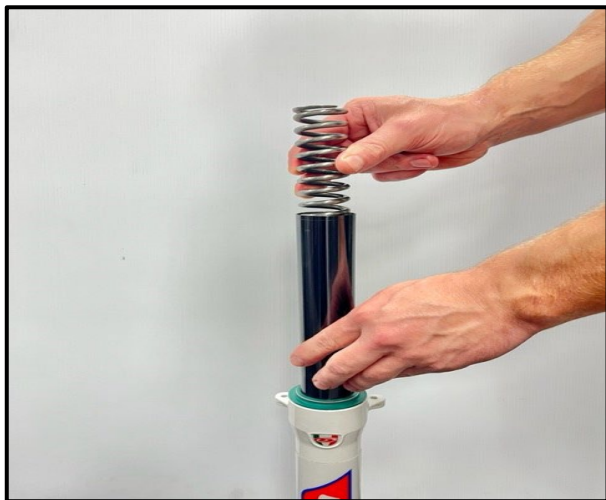
Models with mm fluid level air gap:

See chart for your EVO model and year.

First, the inner fork tube must bottom out before setting the air gap level.

Second, adjust syringe to desired air gap in millimeters. Rest the tool on the top of the inner fork tube with syringe inside.

Remove any additional oil above your desired measured area with syringe.



Install the fork spring.



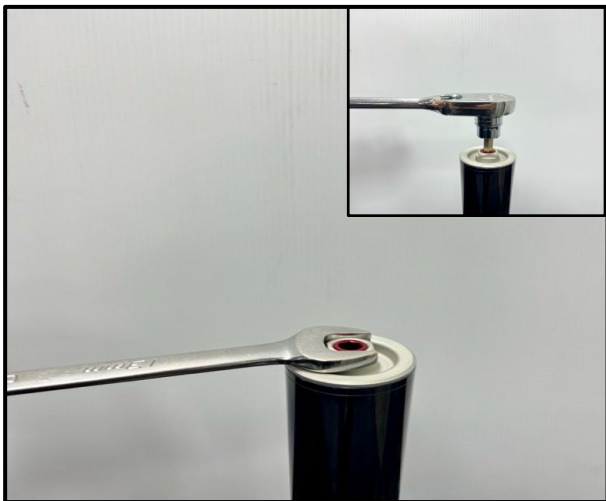
Install the cylindrical shaped plastic spring pre-load spacer on top of the fork spring.



Install the pyramid shaped plastic spring pre-load spacer on top of the cylindrical spacer.



Install the fork cap.



Use a 13mm open end wrench to tighten the fork cap. Set your pre-load to desired setting. Factory setting is completely out, or minimum pre-load.

Oil Levels / Air Gap Chart 2013 - 2023

2013 EVO 2T	(LH) 130mm	(RH) 70mm
2013 EVO 4T	(LH) 350cc	(RH) 370cc
2014 EVO 2T	(LH) 130mm	(RH) 70mm
2014 EVO 4T	(LH) 125mm	(RH) 65mm
2015 EVO 2 & 4T	(LH) 125mm	(RH) 65mm
2016 EVO 2 & 4T	(LH) 125mm	(RH) 65mm
2017 EVO 2 & 4T	(LH) 125mm	(RH) 65mm
2018 EVO 2T	297ml each fork leg	
2018 EVO 4T	(LH) 125mm	(RH) 65mm
2019 EVO 2 & 4T	297ml each fork leg	
2020 EVO 2 & 4T	297ml each fork leg	
2021 EVO 2 & 4T	297ml each fork leg	
2022 EVO 2T 200	297ml each fork leg	
2022 EVO 2T	(LH) 287ml	(RH) 320ml
2022 EVO 4T	297ml each fork leg	
2023 EVO 2T 200	297ml each fork leg	
2023 EVO 2T	(LH) 287ml	(RH) 320ml
2023 EVO 4T	297ml each fork leg	

Fork service is complete 😊

