



ZF Sachs 48mm SHC X-Pro Fork Service Manual

2025 SHC X-Pro Fork Disassembly, Assembly & Lowering

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Introduction

2025 SHC X-Pro Model: The SHC or “Single Hydraulic Chamber” Fork refers to each fork having a specific duty. The (right hand) non brake side utilizes an external spring preload adjustment and main spring. The (left hand) brake side function is the compression and rebound dampening.

The procedures in this manual require a qualified technician, suspension knowledge and specific suspension tooling..

Use extreme caution when clamping any surface of the fork externals, cartridge cylinder, cartridge rod, or any other suspension component.

Using a bench vise should have a protective clamping surface such as brass, aluminum or plastic. Always clean suspension components before assembly, using appropriate solvents and lint free towels to prevent contamination. Replace ALL 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 damage, injury, or death to the rider and property.

#1



#2



#3



#4



Special tools

1. Fork Cap Tool (AB-15021)
2. 19 mm Low Torque Wrench
3. 45-degree Pick
4. Cartridge Holding Tool (AB-15061)
5. Measuring Beaker
6. 48mm Seal Bullet
7. 48mm Seal Driver
8. 27mm Thin Wall 6pt. Socket (AB-15062)

#5



#6



#7

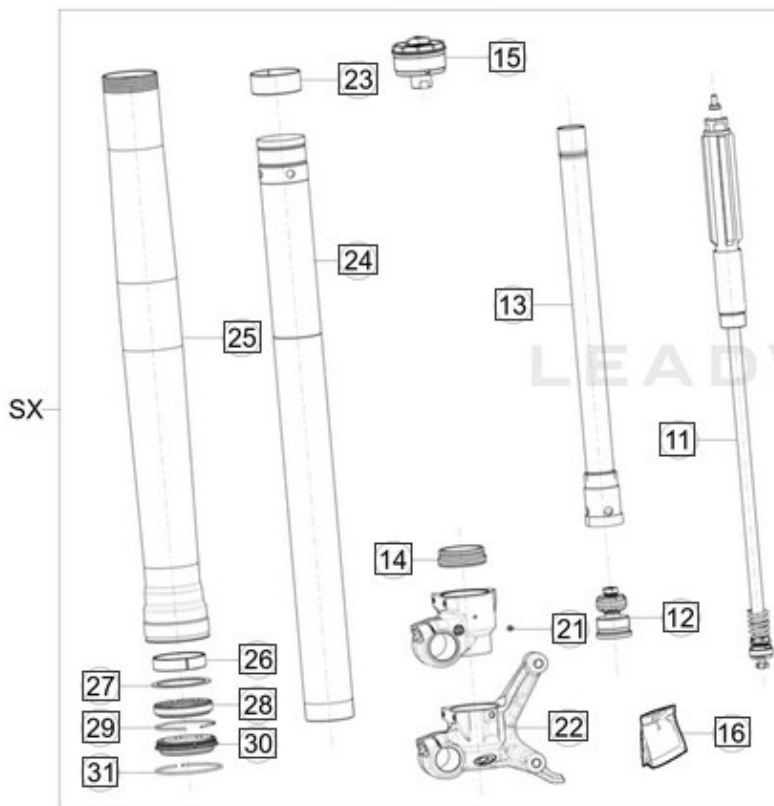


#8

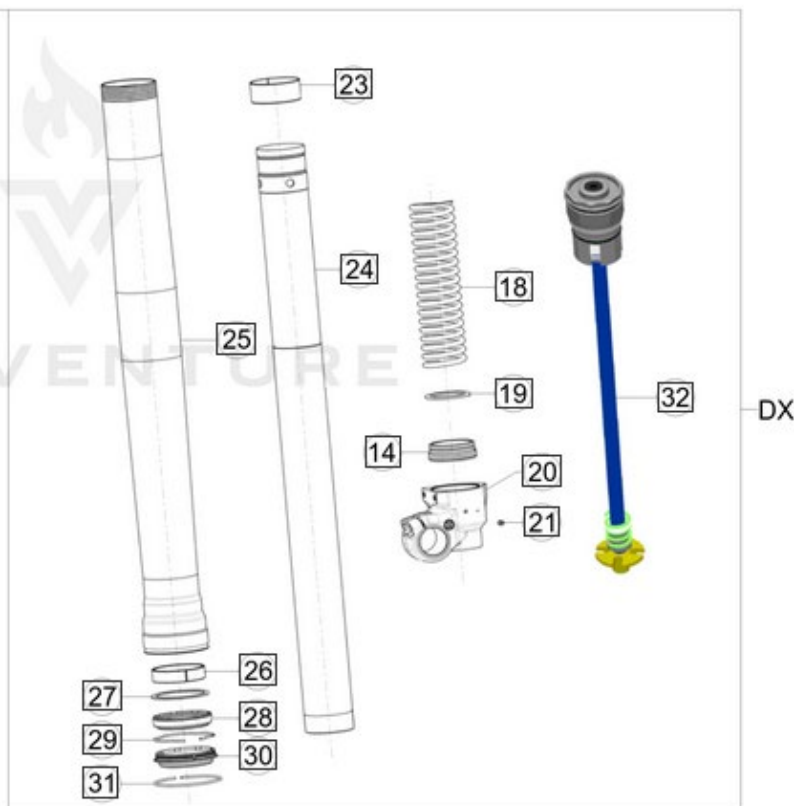


2025 SHC X-Pro Diagram and Component Description

Hydraulic Fork (SX)



Spring Side Fork (DX)

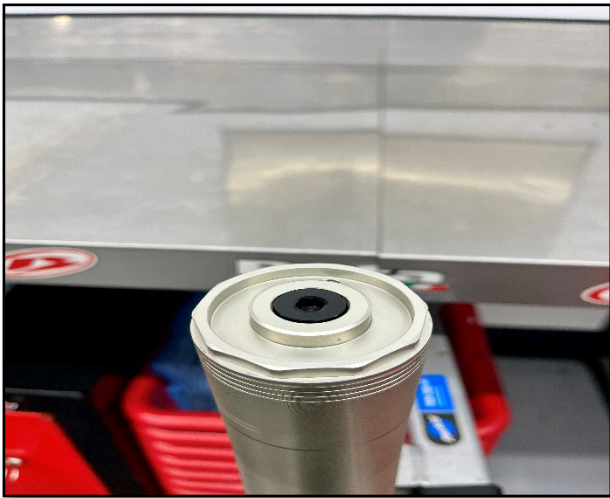


- 11. Cartridge Rod Assembly
- 12. Compression Valve Assembly
- 13. Cartridge Cylinder Assembly
- 14. Aluminum Centering Collar
- 15. Fork Cap Assembly
- 16. Packing / Washer Kit
- 21. Allen Set Screw
- 22. (LH) Axle Lug / Carrier
- 23. Fork Piston Bushing D.45/47 L20
- 24. Fork Inner Tube Assembly – 48mm
- 25. Fork Outer Tube Assembly
- 26. Fork Guide Bushing L12
- 27. Fork Oil Seal Washer
- 28. Fork SKF Oil Seal – Sachs 48mm
- 29. Fork Circlip D.58,45
- 30. Fork SKF Dust Seal – Sachs 48mm
- 31. Fork Outer Tube Protection Ring

- 14. Aluminum Centering Collar
- 18. Fork Main Spring
- 19. Fork Delrin Spring Washer
- 20. (RH) Axle Lug / Carrier
- 21. Allen Set Screw
- 23. Fork Piston Bushing D.45/47 L20
- 24. Fork Inner Tube Assembly – 48mm
- 25. Fork Outer Tube Assembly
- 26. Fork Guide Bushing L12
- 27. Fork Oil Seal Washer
- 28. Fork SKF Oil Seal – Sachs 48mm
- 29. Fork Circlip D.58,45
- 30. Fork SKF Dust Seal – Sachs 48mm
- 31. Fork Outer Tube Protection Ring
- 32. Spring Pre-Load Cartridge Rod Assy

2025 SHC X-Pro Fork "DX" Spring Disassembly

Fork Main Spring & Spring Preload Adjustment



Secure the fork outer tube using a soft jaw vise.



Install a 6mm Allen wrench and turn clockwise. Record and document the revolution amount for reference.

Standard spring pre-load setting is **7 revolutions out** from full clockwise.



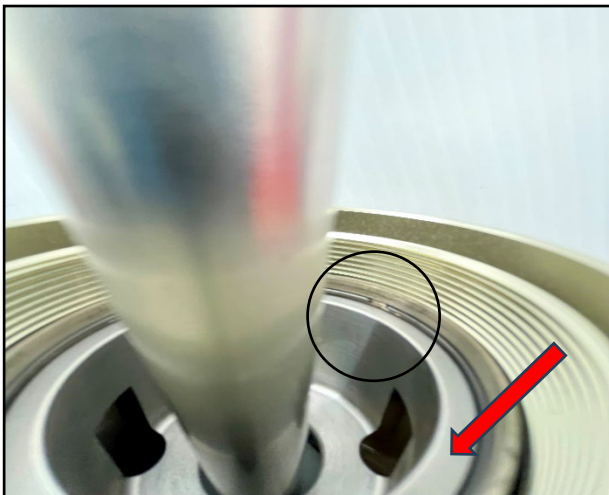
Secure the fork in a soft jaw vise and loosen the cap from the outer fork tube with the 10Pt. Fork Cap Wrench (AB-15021).

2025 SHC X-Pro Fork “DX” Spring Disassembly

Fork Main Spring & Spring Preload Adjustment



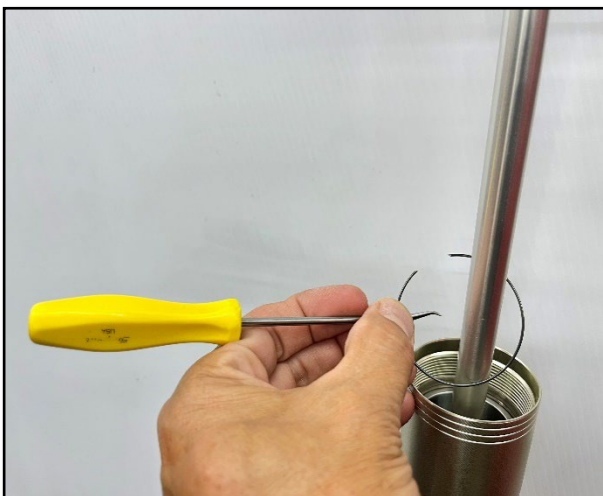
Slide the outer tube downward and drain the fork fluid.



After draining the fluid, secure the fork assembly in an upright position.

Push down on the upper steel spring seat retainer to gain access to the circlip. See (red arrow)

Locate the end of the circlip. (circled area)



Use a 45-degree pick to remove the retaining circlip from the groove.

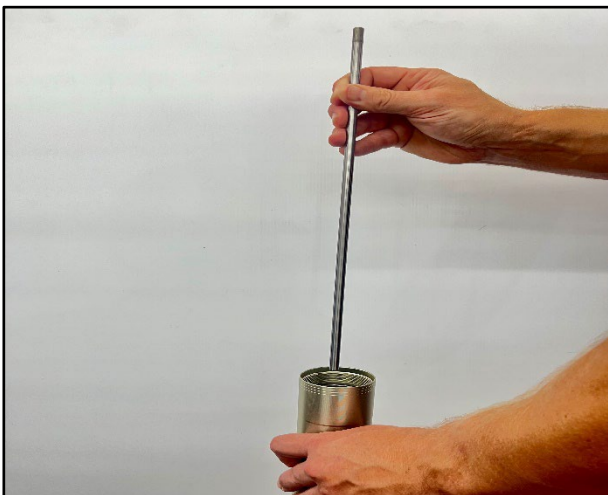
2025 SHC X-Pro Fork "DX" Spring Disassembly

Fork Main Spring & Spring Preload Adjustment



Secure the fork external assembly in an upright position.

Use the cartridge rod assembly and pull upward to remove the steel spring seat from inside the inner tube.



Remove the steel spring pre-load push rod.



Use a telescopic pickup magnet tool to remove the lower steel spring seat disc.

2025 SHC X-Pro Fork “DX” Spring Disassembly



Remove the fork main spring from the inner tube assembly.

OEM Spring rate installed

125 / 200 X-Pro	= .80kg
250 / 300 X-Pro	= .84kg
All 4T X-Pro models	= .96kg



Install the fork cap tool (AB-15021) onto the cap and a 19mm onto the lock nut.

Separate both the lock nut from fork cap.



Remove fork cap from the cartridge rod.

2025 SHC X-Pro Fork “DX” Spring Disassembly



Remove the lock nut from the cartridge rod.



Remove the upper spring seat retainer from the cartridge rod.



Remove the white round plastic spacer.

2025 SHC X-Pro Fork “DX” Spring Disassembly

Fork Main Spring & Spring Preload Adjustment



Thoroughly clean and inspect all parts!

Proceed to the following pages listed below for:

2025 SHC X-Pro Fork “DX” Assembly

- Pages 21 - 24

Fork Lowering Installation

- Pages 33 - 38



2025 SHC X-Pro Fork "SX" Cartridge Disassembly

Fork Compression and Rebound Dampening



Adjust the fork rebound dial clockwise.
Record and document the number of clicks for reference.

Standard rebound setting
11 clicks out from full clockwise.



Secure the fork using a bench vise with soft jaws.

Adjust the fork compression dial clockwise.
Record and document the number of clicks for reference.

Standard rebound setting
11 clicks out from full clockwise.

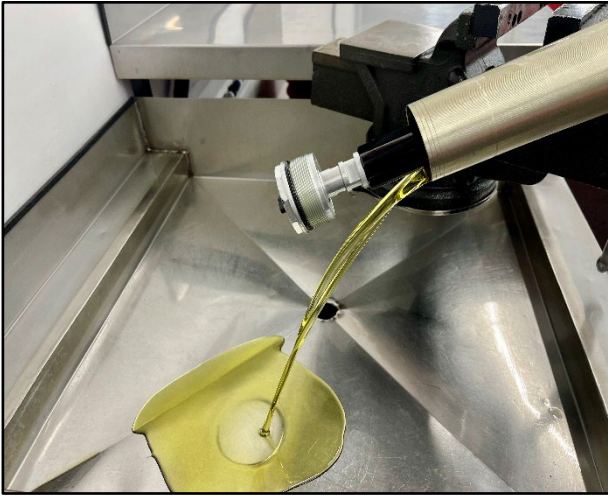


Install the Beta ZF Sachs 10pt. wrench (AB-15021) onto the fork cap.

Unthread the fork cap from the outer tube and slide the tube downward.

2025 SHC X-Pro Fork "SX" Cartridge Disassembly

Fork Compression and Rebound Dampening



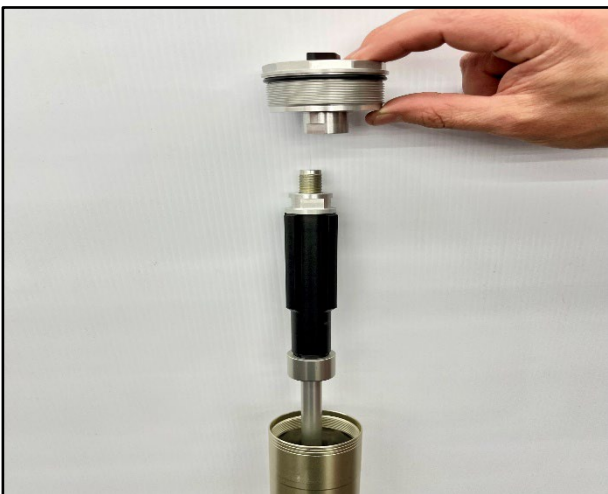
Drain the fork fluid.



Install the Beta ZF Sachs 10pt. wrench (AB-15021) onto the fork cap.

Insert a 19mm low torque open end wrench onto the aluminum nut of the black plastic guide.

Secure the 19mm wrench and remove the cap using the 10pt. hex wrench counterclockwise.

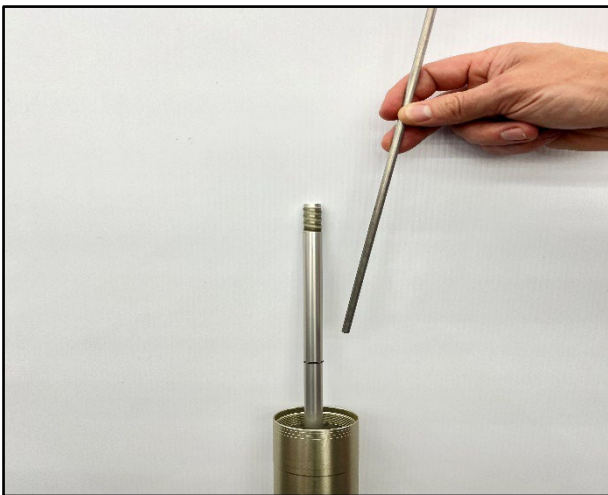


Remove fork cap from cartridge rod

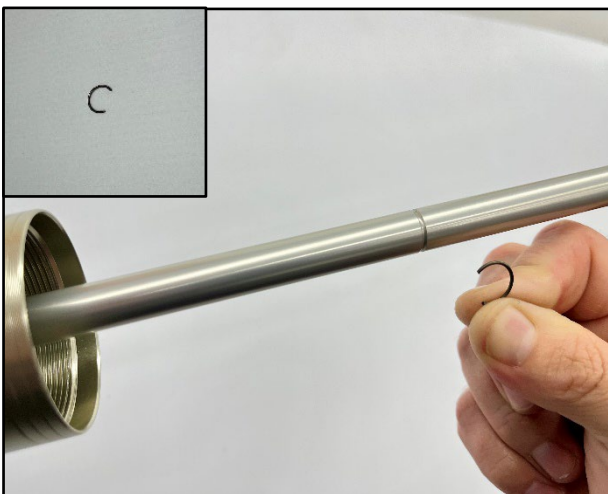
2025 SHC X-Pro Fork "SX" Cartridge Disassembly



Remove the fork plastic guide.



Remove the aluminum rebound push rod.



Remove the steel circlip from the cartridge rod groove.

2025 SHC X-Pro Fork "SX" Cartridge Disassembly



Secure the external fork assembly at the axle carrier using a bench vise with soft jaws.

Install the Sachs X-Pro fork cartridge holding tool (AB-15061) inside with the teeth facing downward.

Apply downward pressure on the tool to prevent the cylinder from spinning.



The teeth on the cartridge holding tool should be aligned and completely seated over the steel cylinder tabs inside the fork.

Use picture for reference.



The X-Pro ZF Sachs 6-point thin wall 27mm special socket (AB-15062) will be required to remove the compression base valve assembly.

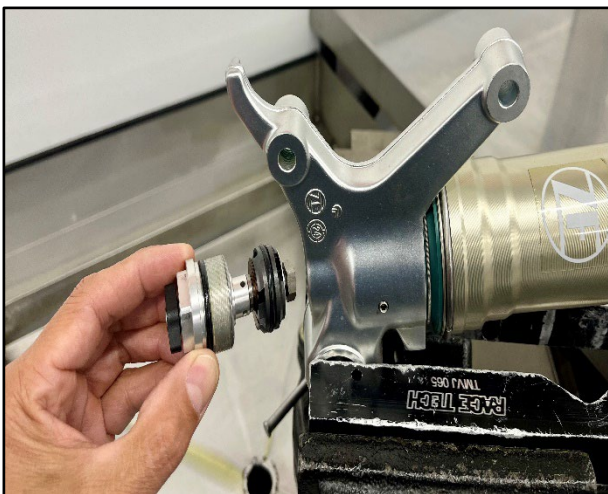
2025 SHC X-Pro Fork "SX" Cartridge Disassembly



Install the X-Pro ZF Sachs 6-point thin wall 27mm special socket (AB-15062) onto the compression base valve assembly.



Use an impact gun and 19mm socket with the X-Pro fork tool to remove the base valve assembly.

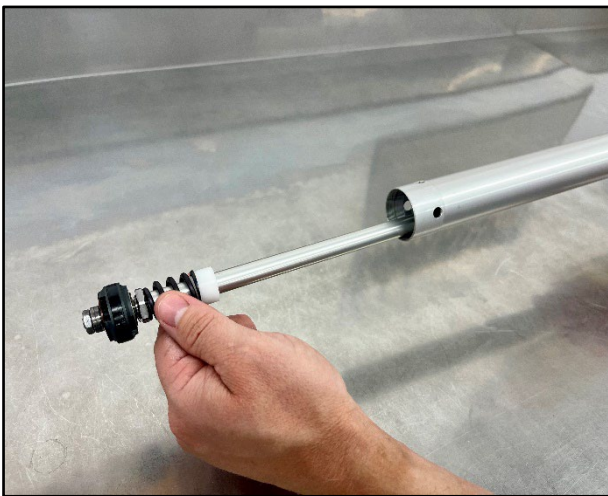


Remove the compression base valve assembly from the bottom of the fork.

2025 SHC X-Pro Fork "SX" Cartridge Disassembly



Remove the cartridge rod and cylinder from the inner fork tube assembly.



Remove the cartridge rod from inside the cartridge cylinder.



Now thoroughly clean and inspect all parts!

Fork External Disassembly

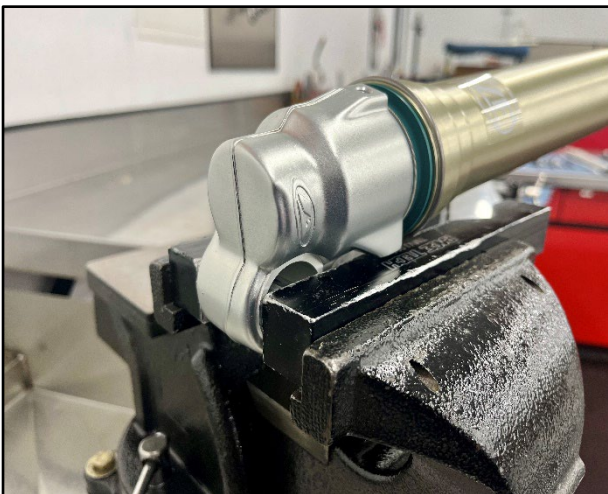
Fork Seal & Bushing Removal



Use a flathead screwdriver between the dust seal and outer tube to separate.



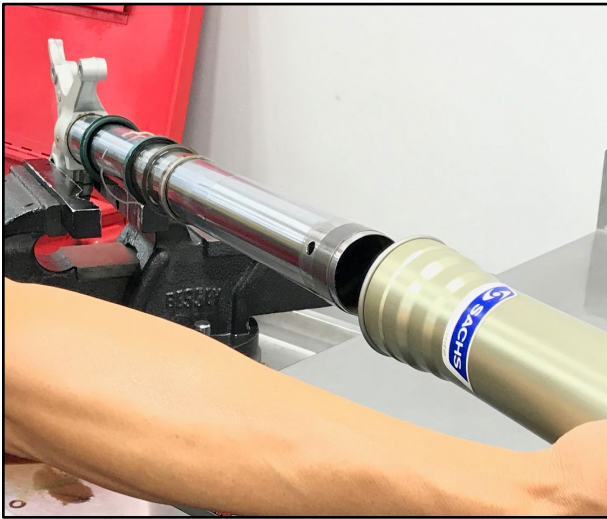
Use a 45-degree pick to remove the oil seal circlip.



Secure the axle carrier using a bench vise with soft jaws.

Fork External Disassembly

Fork Seal & Bushing Removal



Pull the outer tube apart from the inner tube assembly.

Take a picture or document the seal and bushing orientation before removing them from the inner tube assembly.

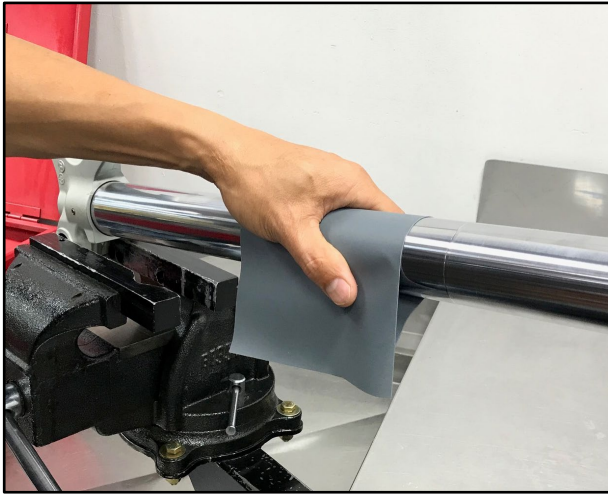


Clean and inspect all components, replace all common wear parts.

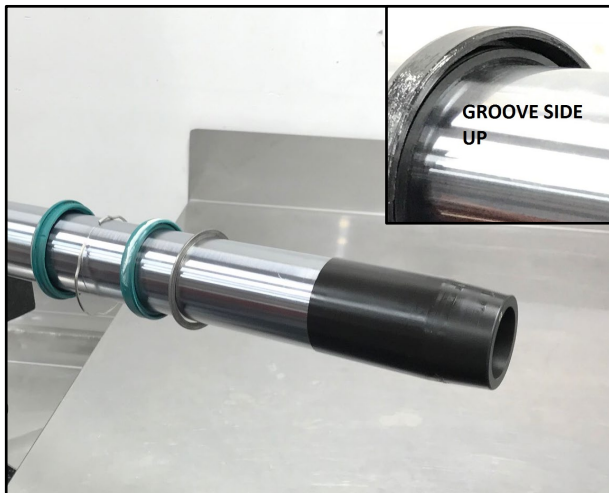


Fork External Assembly

Fork Seal & Bushing Installation

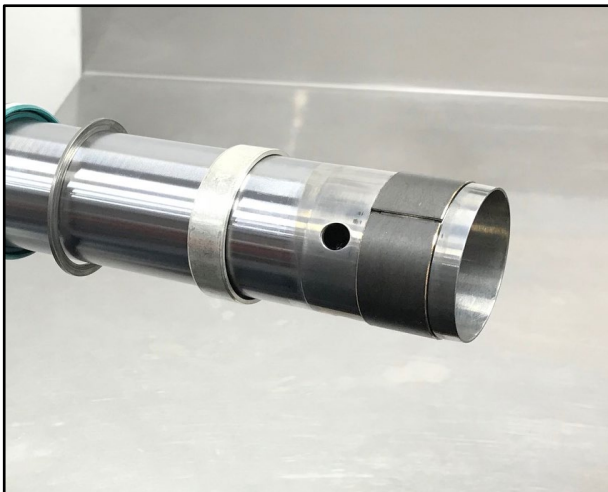


Use 600 grit wet/dry sandpaper with a twisting motion back and forth to clean up any sharp edges, or burrs on the outside surface of the inner fork tube.



Apply grease to the inside surface of the new dust seal and inner and outer area of the oil seal.

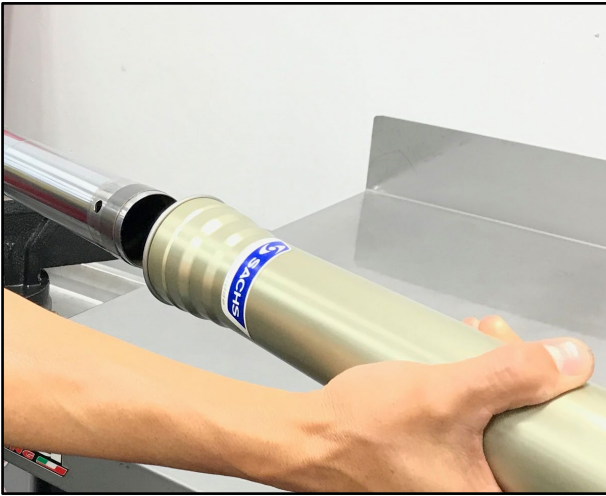
Install a 48mm fork seal bullet over the inner tube. Install the dust seal, circlip, oil seal and support washer in this orientation.



Remove the seal bullet and install the new slide and guide bushing.

Fork External Assembly

Fork Seal & Bushing Installation



Slide the outer fork tube assembly over the slide bushing.



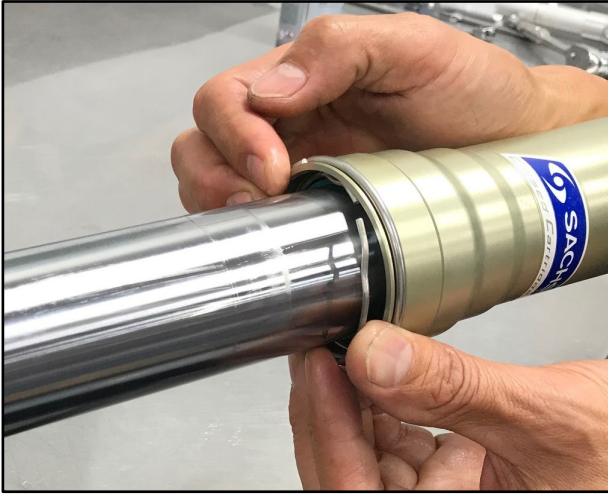
Use a 48mm seal driver against the support washer to install the guide bushing.



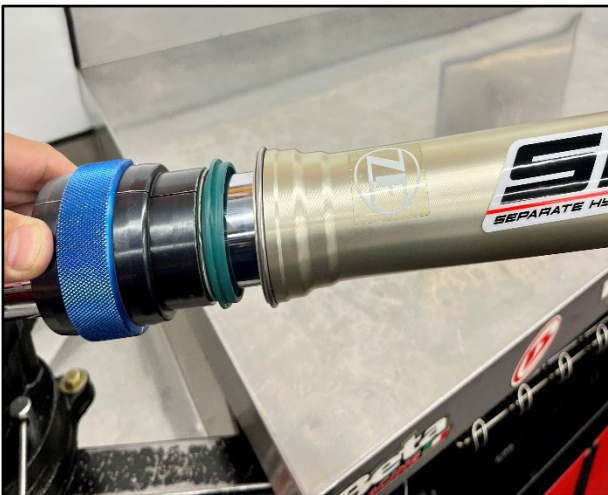
Use the 48mm seal driver to install the oil seal.

Fork External Assembly

Fork Seal & Bushing Installation



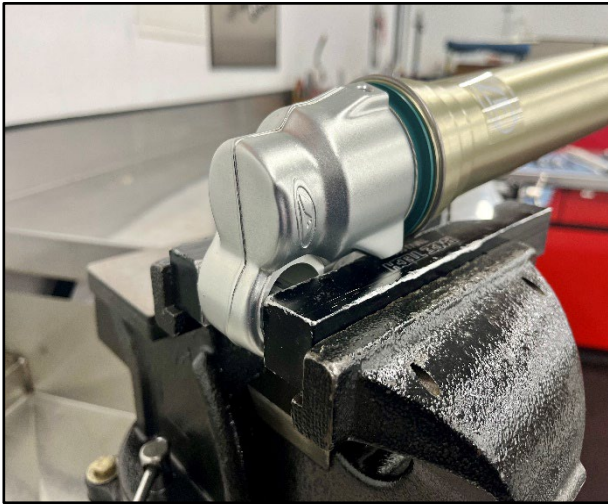
Insert the oil seal retaining circlip inside the seal housing area. Confirm it is fully seated into the groove.



Use the 48mm seal driver to install the dust seal.



2025 SHC X-Pro Fork "DX" Spring Assembly



Secure the axle carrier using a bench vise with soft jaws.

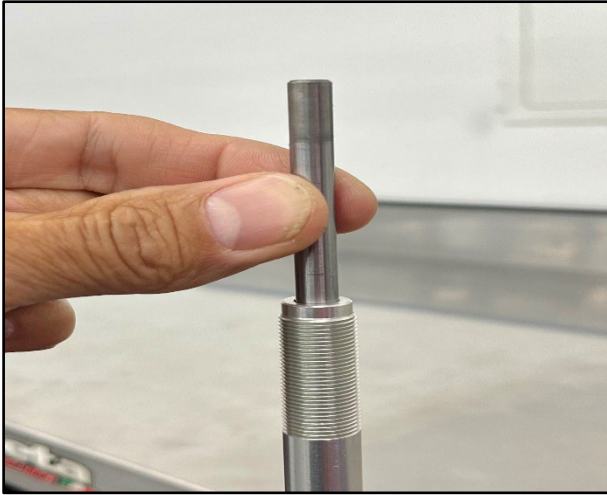


Install the fork main spring. The spring end is non-directional.



Install the lower steel spring seat disc with the tip facing downward.

2025 SHC X-Pro Fork “DX” Spring Assembly



Install the steel spring pre-load rod inside the cartridge rod.



The aluminum cartridge rod and steel spring pre-load rod should align with the center hole of the lower spring seat disc.

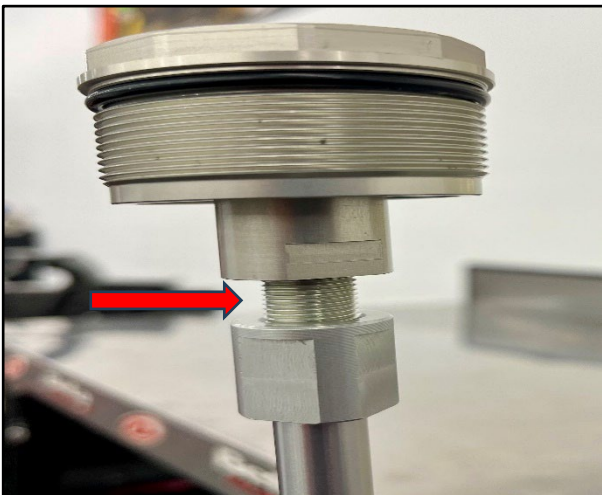


Install the upper spring seat retainer with the flat side facing towards the bottom.

2025 SHC X-Pro Fork "DX" Spring Assembly



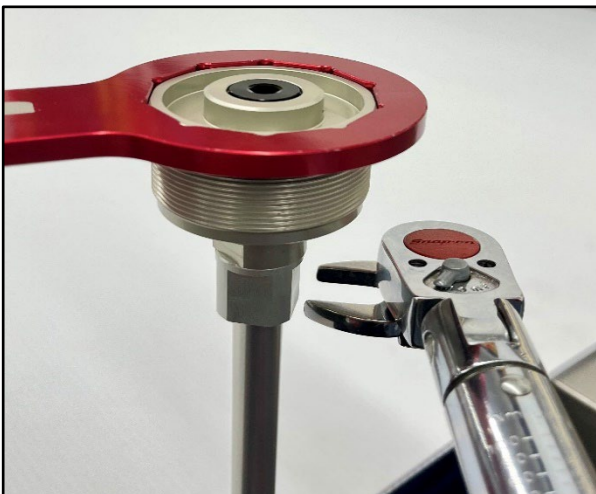
Completely thread the lock nut onto the cartridge rod with the shoulder side facing upward until bottomed.



Completely thread the pre-load fork cap onto the cartridge rod until bottomed.

Note:

When both the lock nut and fork cap are bottomed, the gap is approximately **10 mm**.



Rotate the lock nut upward to adjoin with the bottom of the fork pre-load cap.

Use a 19mm crow's foot, torque wrench, Beta fork cap tool and set cap torque to **29 N/m or 22 ft. lbs.**

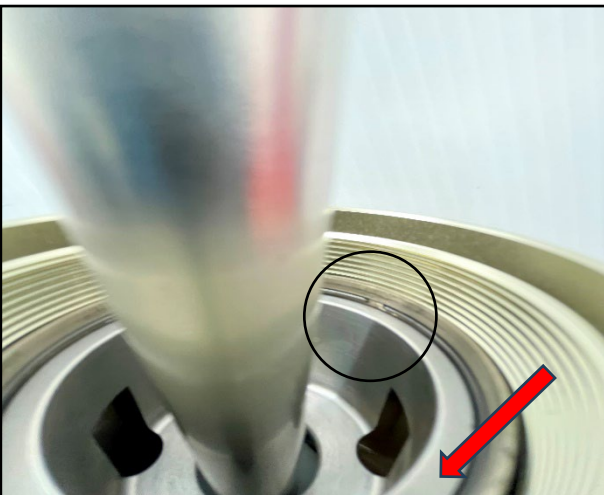
2025 SHC X-Pro Fork "DX" Spring Assembly



Secure the external fork assembly.

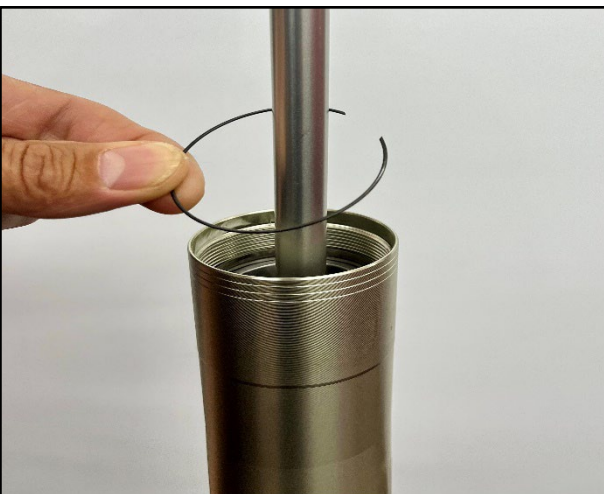
Center the cartridge rod assembly with the steel push rod and lower spring seat disc.

Install the upper steel spring seat retainer inside the inner tube assembly.



Push down on the upper steel spring seat retainer until the entire circlip groove is exposed.
See (red arrow)

In this photo, the circlip groove is located above the spring seat retainer.
See (circled area)

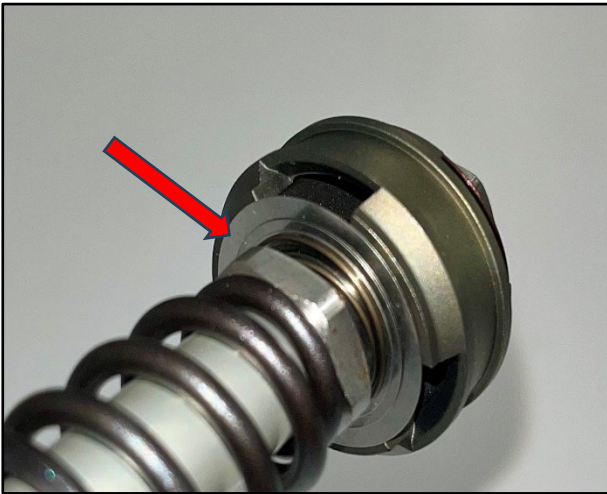


Install the steel wire circlip into the groove.

Confirm the entire steel circlip is seated to assure the upper steel spring retainer is secure.

2025 SHC X-Pro Fork “SX” Hydraulic Settings List

Mid Valve Shim Inspection & Replacement



Important note:

Check all valve shims under the mid valve during service intervals. Shims may be fatigued, cracked, or broken.

Mid valve shims should be replaced every service interval to preserve the shim integrity.

2T Mid Valve Settings List

Qty	Shim Size
2	24 x 0.10
	22 x 0.10
	20 x 0.10
	18 x 0.10
	16 x 0.10
	14 x 0.10
	10 x 0.15
	10 x 0.15
	11 x 0.20
	11 x 0.20

4T Mid Valve Settings List

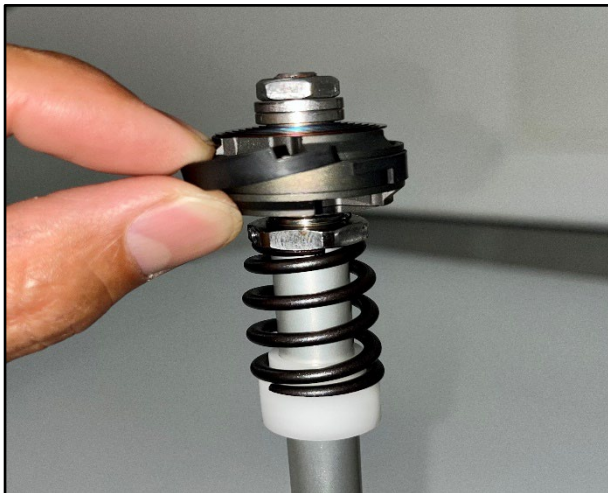
Qty	Shim Size
2	24 x 0.10
	24 x 0.10
	22 x 0.10
	20 x 0.10
	18 x 0.10
	16 x 0.10
2	14 x 0.10
	10 x 0.15
2	10 x 0.15
	11 x 0.15
2	11 x 0.15
	11 x 0.15

2025 SHC X-Pro Fork "SX" Cartridge Assembly



Wrap the Teflon Z band around a screwdriver.

Creating this tight spiral shape before installing, will help retain it around the valve for assembly.



Install the Teflon Z band around the valve.

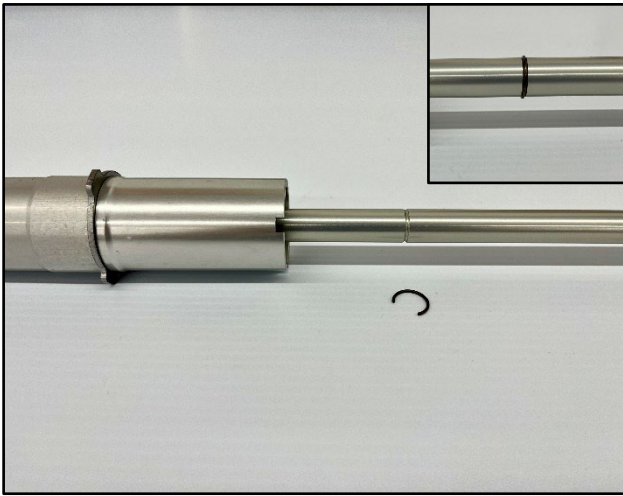
Suspension grease may be applied to help keep the band intact.



Install the cartridge rod assembly through the bottom of the cartridge cylinder.

Pay attention the Teflon Z band is seated around the valve and slides smoothly inside the cylinder without binding.

2025 SHC X-Pro Fork "SX" Cartridge Assembly



Install the steel circlip over the cartridge rod circlip groove.



Install the cartridge assembly into the external fork assembly.

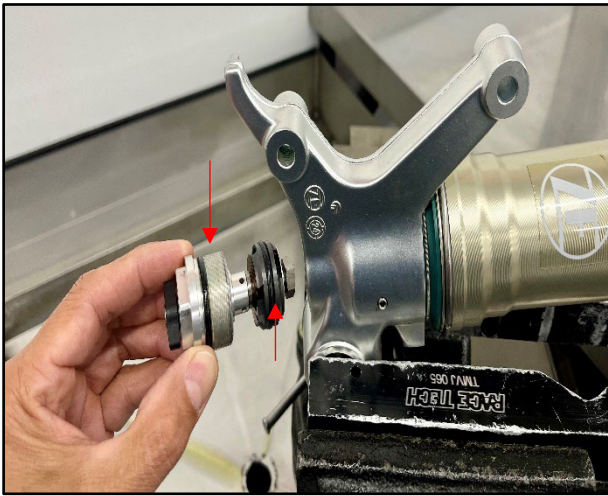


Secure the external fork assembly at the axle carrier using a bench vise with soft jaws.

Install the Sachs X-Pro fork cartridge holding tool (AB-15061) inside with the teeth facing downward.

Apply downward pressure on the tool to prevent the cylinder from spinning.

2025 SHC X-Pro Fork "SX" Cartridge Assembly



Apply suspension grease to the valve O-ring and base valve threads before installing.

Thread the compression base valve assembly into the cartridge cylinder by hand.



The X-Pro ZF Sachs 6-point thin wall 27mm special socket (AB-15062) will be required to install the compression base valve assembly.



Install the X-Pro ZF Sachs 6-point thin wall 27mm special socket (AB-15062) onto the compression base valve assembly.

2025 SHC X-Pro Fork "SX" Cartridge Assembly



Secure the cartridge holding tool (AB-15061) by applying downward pressure, eliminating the tool to turn.

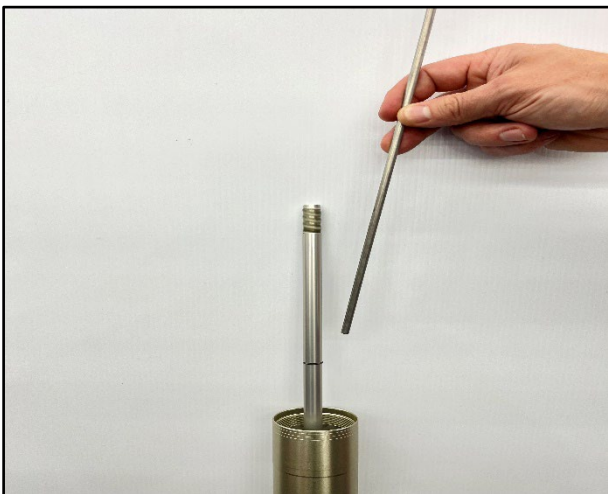
Use a 19mm socket and torque wrench and tighten the base valve assembly to **35 N/m or 25 ft. lb.**



Before installing the plastic guide, it is recommended to drill the OEM existing bleed hole to a 3mm diameter.

This will help avoid cracking, or failure due to minimal bleed relief.

Install guide after drilling procedure.

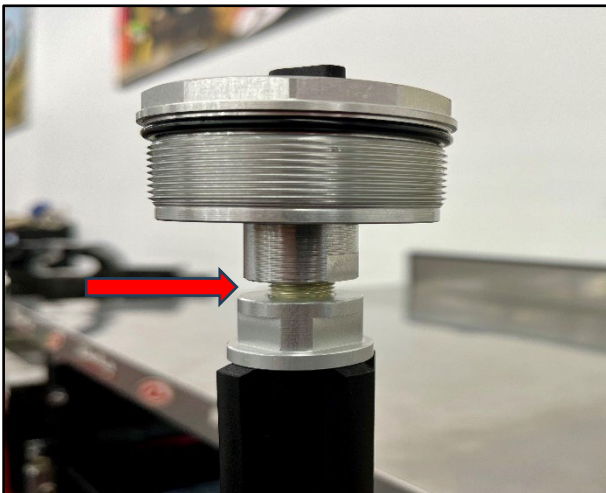


Insert the aluminum rebound push rod into the aluminum cartridge rod.

2025 SHC X-Pro Fork "SX" Cartridge Assembly



Install the fork cap onto the cartridge rod.



Completely thread the fork cap onto the aluminum cartridge rod.

There should be a **5mm** gap between the plastic guide top lock nut and bottom of the fork cap.



Install the Beta ZF Sachs 10pt. wrench (AB-15021) onto the fork cap.

Insert a 19mm low torque open end wrench onto the guide lock nut.

Torque the cap against the guide lock nut to approximately **25 N/m or 18 ft. lbs.**

2025 SHC X-Pro Fork “DX” Oil Fill Procedure



Fill inner tube with the suggested Liqui Moly 5wt. fork fluid amount.

Oil Fluid Range w/ Standard fork travel:

Minimum 675cc – Max 740cc

2T & 4T Models = 710cc

Oil Fluid Range w/ -1” fork lowering kit:

Minimum 675cc – Max 735cc

2T & 4T Models = 705cc

Oil Fluid Range w/ -2” fork lowering kit:

Minimum 670cc – Max 730cc

2T & 4T Models = 700cc

2025 SHC X-Pro Fork “DX” Oil Fill Procedure



Use the Beta ZF Sachs 10pt. wrench (AB-15021) to tighten the fork cap.

Torque cap to **28N/m or 21 ft. lbs.**



Set external spring pre-load adjustment to documented setting, or preference.



2025 SHC X-Pro Fork "SX" Oil Fill Procedure



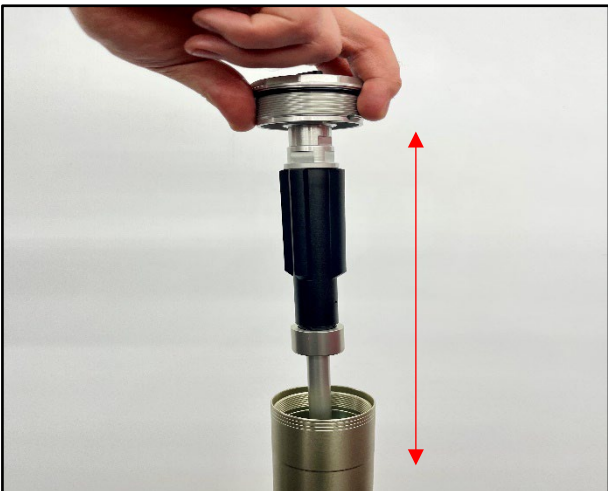
Fill inner tube with Liqui Moly 5wt. Fluid.

Oil Fluid Range:

Minimum 565cc – Max 675cc

2T Models Standard level = 625cc

4T Models Standard level = 640cc



Cycle the cartridge rod assembly up and down to circulate the oil through the cartridge until all trapped air is dissolved.



Use the Beta ZF Sachs 10pt. wrench (AB-15021) to tighten the fork cap.

Torque cap to **28N/m or 21 ft. lbs.**

Set external rebound adjustment to documented setting, or preference.

2025 SHC X-Pro Fork “DX” Lowering Procedure

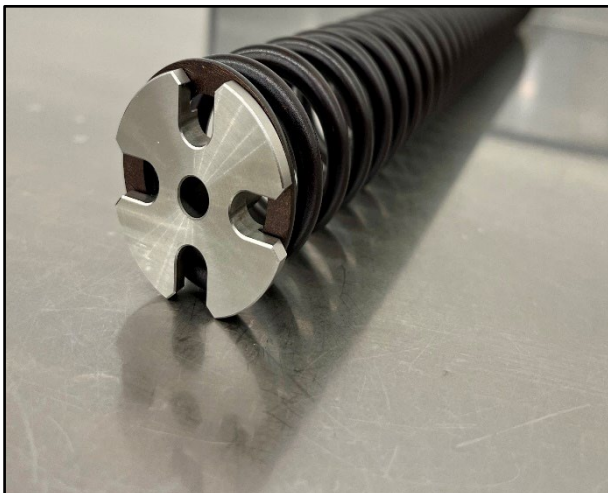
Follow the fork disassembly procedures on pages 4-7.



1" Lowering Kit X-Pro Models
Part # AB-41127



2" Lowering Kit X-Pro Models
Part # AB-41128



NOTICE:

All lowering kits require a shorter length fork spring and Beta exclusive lower spring seat disc.



Cartridge rod assembly with
X-Pro fork lowering spacer.

2025 SHC X-Pro Fork “DX” Lowering Procedure



Step #1

Install the Beta fork cap tool (AB-15011) onto the fork cap and a 19mm open end wrench onto the lock nut.

Separate both the lock nut from fork cap.



Step #2

Remove fork cap from the cartridge rod.



Step #3

Remove the lock nut from the cartridge rod.

2025 SHC X-Pro Fork “DX” Lowering Procedure



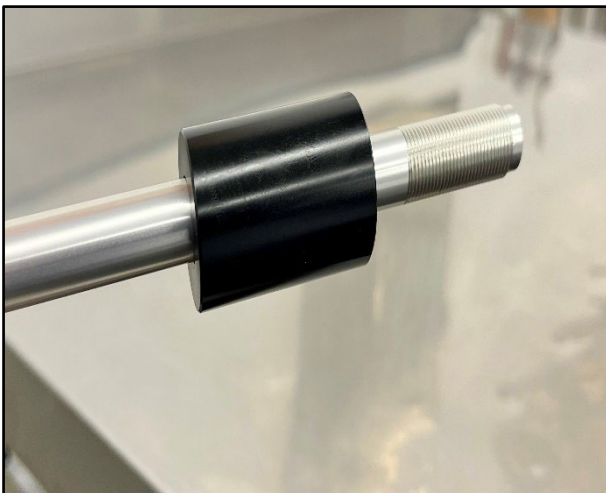
Step #4

Remove the upper spring seat retainer from the cartridge rod.



Step #5

Remove the white round plastic spacer and set it aside. This will not be utilized when installing the new Beta fork lowering spacer.



Step #6

Install the Beta X-Pro fork lowering spacer onto the cartridge rod.

2025 SHC X-Pro Fork “DX” Lowering Procedure



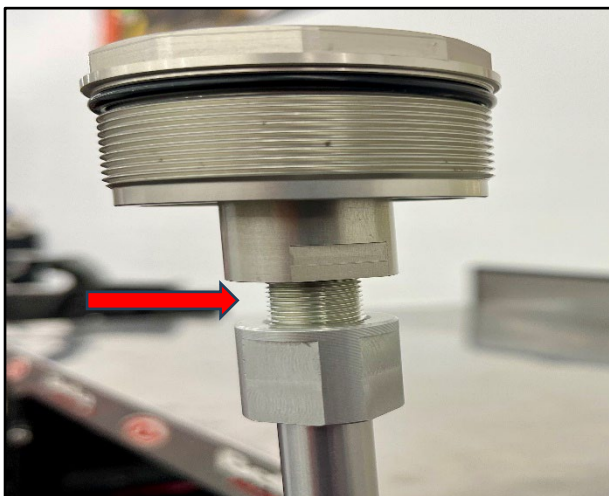
Step #7

Install the upper spring seat retainer onto the cartridge rod.



Step #8

Thread the lock nut onto the cartridge rod with the shoulder side facing upward until bottomed.



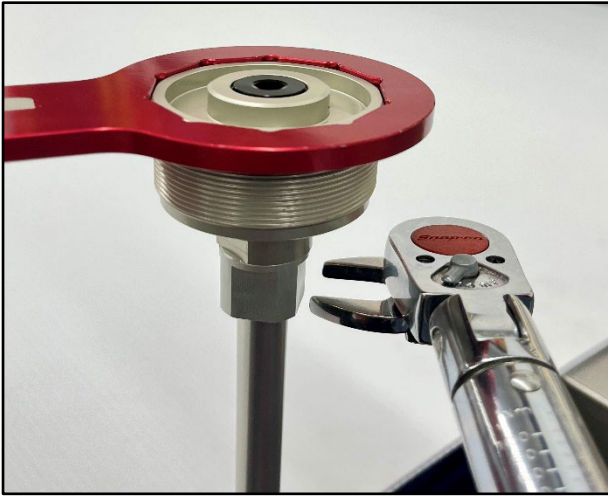
Step #9

Completely thread the pre-load fork cap onto the cartridge rod until bottomed.

Note:

When both the lock nut and fork cap are bottomed, the gap is approximately 10 mm.

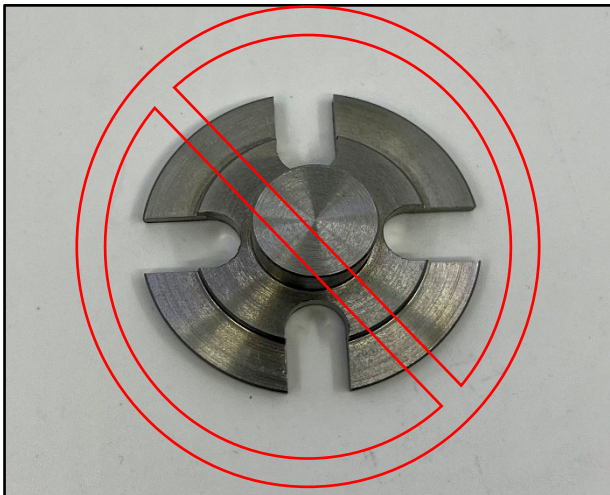
2025 SHC X-Pro Fork “DX” Lowering Procedure



Step #10

Rotate the lock nut upward to adjoin with the bottom of the fork pre-load cap.

Use a 19mm crow's foot, torque wrench, Beta fork cap tool and set torque to **29 N/m or 22 ft. lbs.**



The OEM lower spring seat disc can **ONLY BE USED WITH THE OEM SPRING, NEVER WITH A BETA FORK LOWERING KIT.**



Due to aftermarket spring dimensions, ALL Beta fork lowering kits must utilize the lower spring seat disc with the Beta etched logo.

This requirement also applies to installing ANY Beta aftermarket X-Pro fork spring.

Proceed to page 21 for assembly procedure