



2020-23' KYB AOS Closed Cartridge Fork Service Manual
Fork Disassembly and Assembly including lowering

CONFIDENTIALITY NOTICE

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11-2020

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

Table of Contents

Introduction / Special tools	Page 2
Fork Diagram and Component Description.....	Page 3
Cartridge Removal/Disassembly	Pages 4-8
Fork External Disassembly.....	Pages 9
Cartridge Assembly.....	Page 10-12
Fork External Assembly.....	Pages 12-14
Fork Assembly.....	Pages 15-17
Beta KYB AOS Technical Data.....	Pages 17
Fork Lowering Procedure.....	Page 18

*** *SYMBOL KEY* ***



Fork spring change ONLY



Fork seal change without complete disassembly

Introduction

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 a 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 damage, injury, or death to the rider and property.



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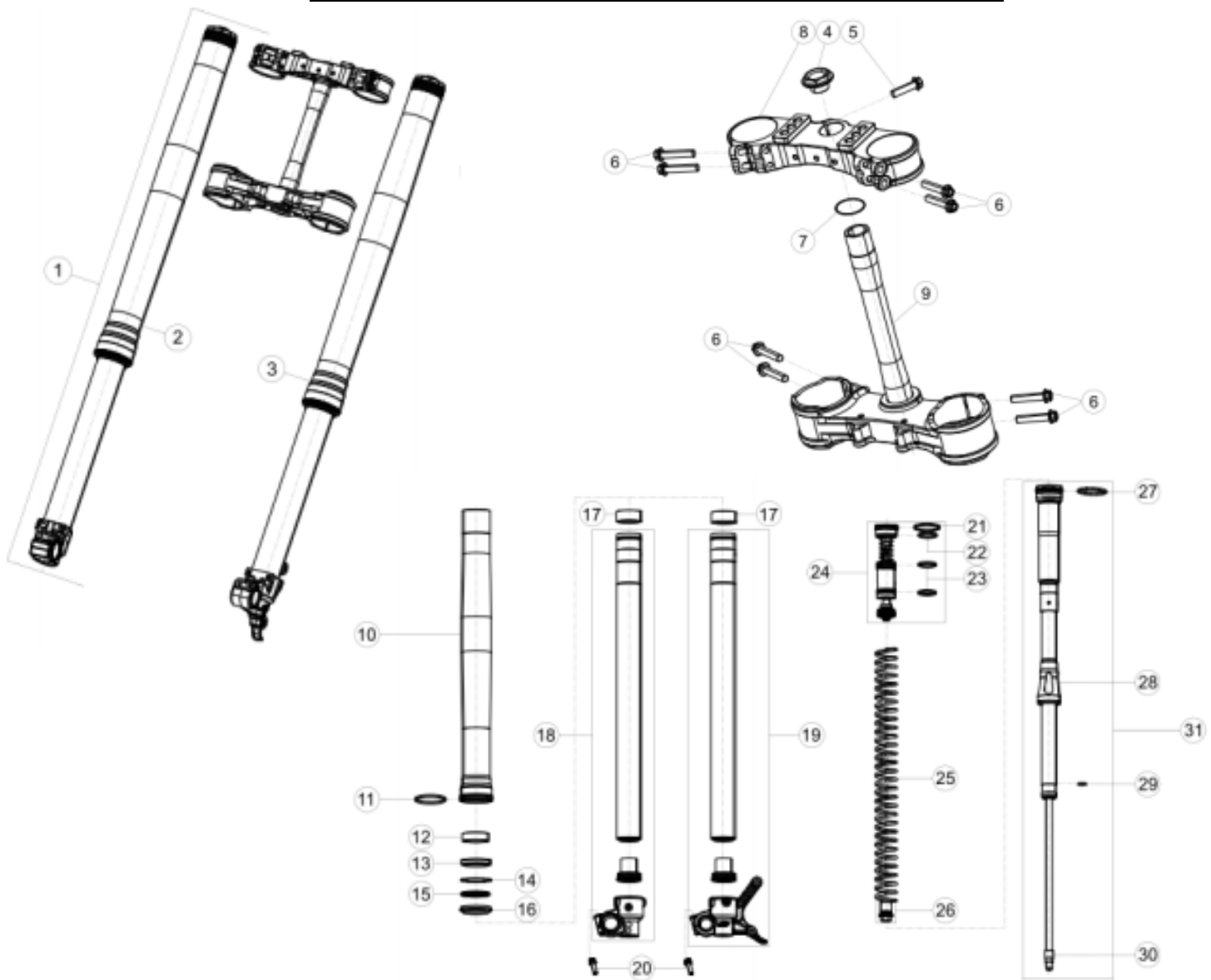


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Special tools

1. Fork inner cap wrench AB-15025
2. 3/8 drive ratchet
3. 8 point fork cap wrench AB-15021
4. 15mm Open end wrench
5. 48mm seal bullet
6. 48mm seal driver
7. Ratio Rite
8. 17mm 3/8 6 pt. socket
9. Synthetic Fork Seal Grease
10. Cartridge rod holding tool

Fork Diagram and Component Description



1. Complete Fork Assembly

2. RH Fork Leg

3. LH Fork Leg

4. Steering Stem Nut

5. Top Clamp Stem Bolt

6. Triple Clamp Bolts

7. Top Clamp O-ring

8. Top Clamp Assembly

9. Steering Stem

10. Outer Tube

11. Outer Tube Wear Ring

12. Guide Bushing

13. Oil Seal adjuster

14. Oil Seal Housing Cir-clip

15. Split Ring Dust Wiper

16. Dust Seal

17. Slide Bushing

18. Inner Tube Assembly, Right

19. Inner Tube Assembly, Left

20. Axle Carrier Pinch Bolts

21. Fork Cap O-ring, Big

22. Fork Cap O-ring, Small

23. Free Piston O-rings

24. Fork Inner Compression Assembly

25. Fork Main spring

26. Rebound Adjuster

27. Cylinder Sub-tank O-Ring

28. Spring Perch

29. Oil Lock Collar Cir-clip

30. Cartridge Rod Jam Nut

31. Fork Inner Cartridge Assembly

Cartridge Assembly Removal/Disassembly



Secure the outer fork tube with a bench vice, using soft jaws, a Park tool, or similar.



Use the 8 Point wrench (AB-15021) to loosen the the outer fork tube. ▼☀



Securely hold the brown anodized outer fork cap housing with the 8 point wrench. Unscrew the compression assembly counter-clockwise, using the inner fork cap tool (AB-15025) from the outer fork cap.



Push down on the outer fork tube to push up the compression assembly and remove.



Drain oil from both inner and outer chambers at the same time for complete service.

Drain the outer fork fluid ONLY, Inner compression assembly NOT REMOVED ▼☀



Using a 3/8 ratchet with a 17mm socket, remove the rebound adjuster counter-clockwise from the lower fork axle lug. ▼☀



Compress the inner cartridge assembly exposing the cartridge rod and insert the holding tool AB-15027. ▼☀



Install a 15mm open end wrench onto the cartridge rod jam nut and hold securely. Using a 3/8 ratchet with a 17mm socket, remove the rebound adjuster counter-clockwise until removed from the cartridge rod. ▼☀



Compress the inner cartridge assembly downward to release pressure on the holding tool and remove it. ▼☀



Remove the inner cartridge assembly from the fork external. ▼ ☀



Remove the rebound adjuster push rod. ▼ ☀



Remove the fork spring from inside the inner fork tube. ▼ ☀



Remove the cartridge rod jam nut from the cartridge rod.



Wrap Teflon tape around threaded area on the cartridge rod to prevent seal damage. Push the cartridge rod completely through the cartridge cylinder. Be careful to not to damage the inner cartridge rod seal when removing the cartridge rod.

Note: For fork lowering, proceed now to page 18.

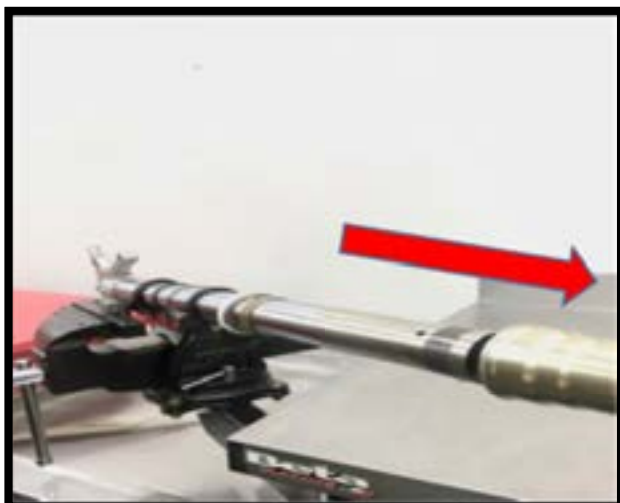
Fork External Disassembly



Using a flathead screwdriver, lightly pry the dust seal to unseat it from the outer fork tube. ▼



Slide the split-ring dust wiper downward to gain access to the oil seal circlip. Using a pick, carefully remove the cir-clip from the cir-clip groove inside the outer tube. ▼



Use a bench vice to secure the fork lug. Pull the outer tube off with one firm motion. ▼

Remove the slide bushing, guide bushing, support washer, back-up ring, oil seal, cir-clip, split ring wiper and dust seal. Note the order of removal and orientation.

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

Cartridge Assembly



Apply synthetic grease to the compression assembly O-rings.

Submerge the compression piston in fork oil to cover the piston. This will help with assembly and remove any trapped air.



Apply Teflon tape to the cartridge rod threads to help prevent damage to the cartridge rod seal when re-installing.



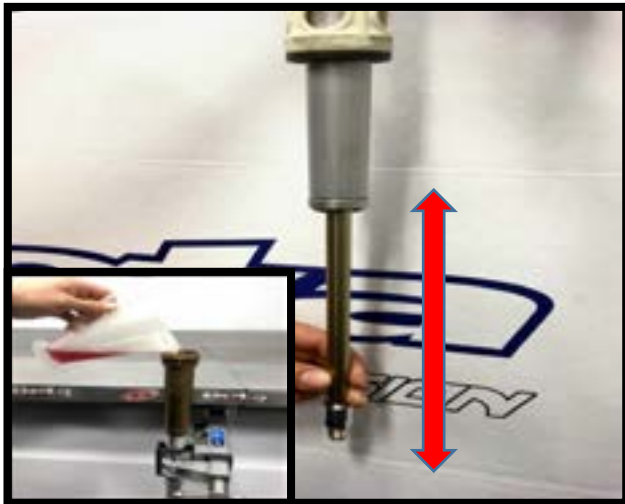
Insert the cartridge rod assembly into the cartridge cylinder assembly.

Using a 10mm T-handle on the rebound piston nut, push the cartridge rod assembly through the opposite end of the cartridge cylinder with a twisting motion.



Remove the Teflon tape from the cartridge rod assembly before installing the jam nut.

Install the cartridge rod jam nut onto the rod until fully bottomed.



Measure 215cc's of fork oil and pour it inside the cartridge assembly.

Raise and lower the cartridge rod in until all air is bled from the cartridge assembly.



Insert the compression assembly into the cartridge and tighten.



Lay the cartridge assembly diagonal, with one of the small bleed holes facing downward.

Compress the cartridge rod assembly completely until it bottoms. Note: a surplus of oil will come out. If no oil has bled out, you must repeat the bleeding process due to insufficient oil during assembly.

The cartridge rod should fully extended by itself.

Fork External Assembly



Use 600 grit sandpaper with a twisting motion back and forth to clean up any nick's, or burrs on the inner fork tube. ▼



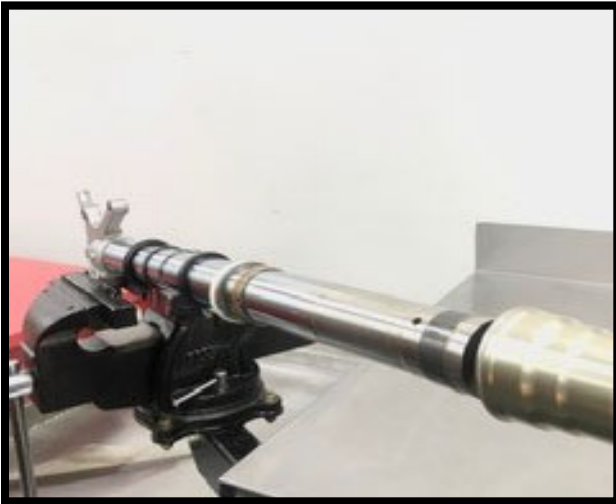
Apply synthetic grease to the inside edge of the new dust seal, including the inner and outer edge of the new oil seal.

Using a 48mm seal bullet, install the dust seal, split ring wiper, cir-clip, oil seal, backup ring, and support washer.

The spring side of the dust seal should face down and the groove on the oil seal should face up. ▼



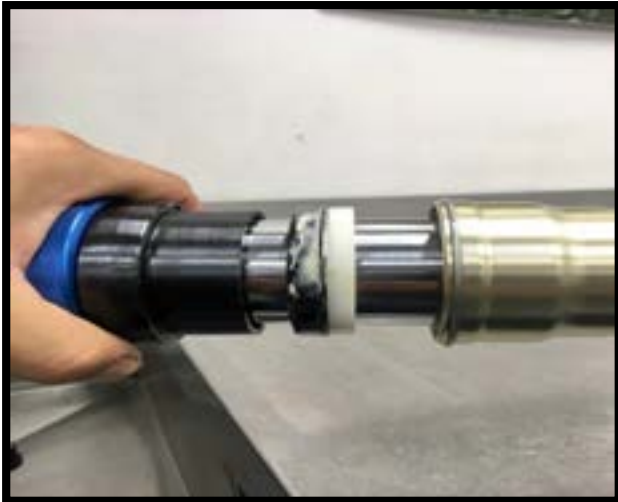
Remove the seal bullet then install the new slide and guide bushings. ▼



Install the outer fork tube over the slide bushing, located on the inner tube. ▼



Use the 48mm seal driver against the support washer to insert the slide bushing into the outer fork leg. ▼



Use the 48mm seal driver to insert the oil seal and back-up ring into the outer fork leg. ▼



Insert the oil seal cir-clip into the outer fork tube. Confirm the cir-clip is fully seated into the groove. ▼



Seat the fork dust seal against the outer tube using the axle lug. Inspect the dust seal to confirm it is completely seated. ▼

Fork Assembly



Install the fork spring. ▼☀

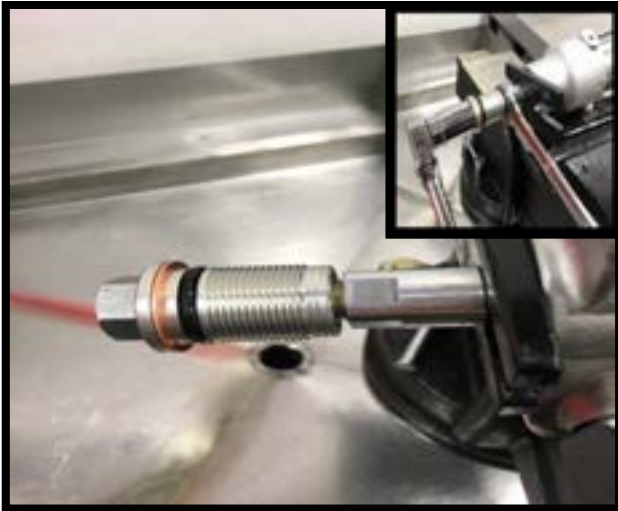


Insert the cartridge assembly into the external fork leg assembly. ▼☀



Compress the cartridge assembly downward to expose the cartridge rod, allowing enough room for the cartridge rod holding tool.

Grease the rebound adjuster push rod and reinstall inside the cartridge rod. ▼☀



Completely thread the rebound adjuster onto the cartridge rod. There should be approximately 1.5mm between the rebound adjuster and the jam nut, assuring the rebound adjuster is completely bottomed.

Secure the jam nut using a 15mm open end wrench. Using a 3/8 ratchet with a 17mm socket, torque the rebound adjuster to 29Nm against the jam nut. ▼☀



Apply synthetic grease to the rebound adjuster O-ring and threads. Compress the cylinder assembly downwards to remove the cartridge rod holding tool and tighten the rebound adjuster to 50Nm. ▼☀



Measure 325cc of Motul 5wt. fork oil into a ratio-rite. Pour the fork fluid amount inside the outer fork tube.

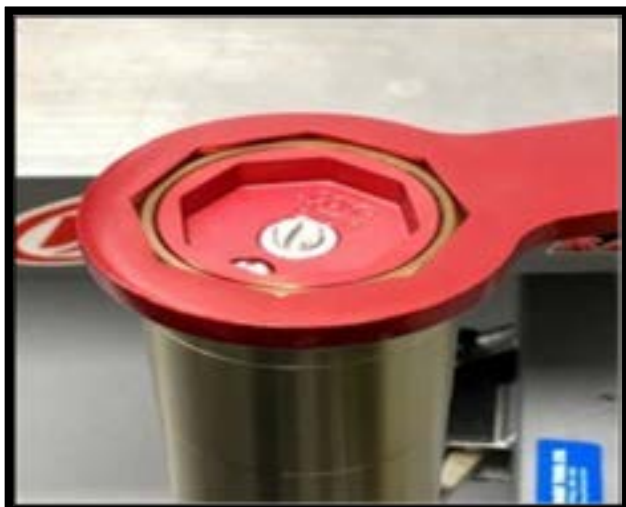
Raise the outer fork tube to the cartridge cylinder assembly. ▼☀

*** Standard Travel**

Outer Chamber Oil Range: 300-375 cm³

1" Lowering Kit – 325 cm³

2" Lowering Kit – 300 cm³



Apply grease to the cylinder O-ring then thread the cartridge cylinder assembly into the outer fork tube and tighten. ▼☀

Beta KYB AOS Fork Technical Data:

	125	200	250/300	RX300	350/350/ 390/480
<i>Fork Main Spring Rate</i>	<i>.40 kg</i>	<i>.41 kg</i>	<i>.44 kg</i>	<i>.46 kg</i>	<i>.47 kg</i>
<i>Fork Spring Length</i>	<i>454 mm</i>	<i>454 mm</i>	<i>454 mm</i>	<i>500 mm</i>	<i>454 mm</i>
<i>Inner Pressure Spring</i>	<i>20Nm</i>	<i>20Nm</i>	<i>20Nm</i>	<i>20Nm</i>	<i>20Nm</i>
<i>Oil Volume (Outer)</i>	<i>320 cm3</i>	<i>340 cm3</i>	<i>330 cm3</i>	<i>325 cm3</i>	<i>320 cm3</i>
<i>1" Lowering Kit</i> ★	<i>325 cm3</i>	<i>325 cm3</i>	<i>325 cm3</i>	<i>325 cm3</i>	<i>325 cm3</i>
<i>2" Lowering Kit</i> ★	<i>300 cm3</i>	<i>325 cm3</i>	<i>300 cm3</i>	<i>300 cm3</i>	<i>300 cm3</i>
<i>Oil Volume - Cartridge</i>	<i>215 cm3</i>	<i>215 cm3</i>	<i>215 cm3</i>	<i>215 cm3</i>	<i>215 cm3</i>
<i>Compression Setting</i>	<i>12 out</i>	<i>12 out</i>	<i>12 out</i>	<i>8 out</i>	<i>12 out</i>
<i>Rebound Setting</i>	<i>12 out</i>	<i>12 out</i>	<i>12 out</i>	<i>12 out</i>	<i>12 out</i>

SYMBOL KEY

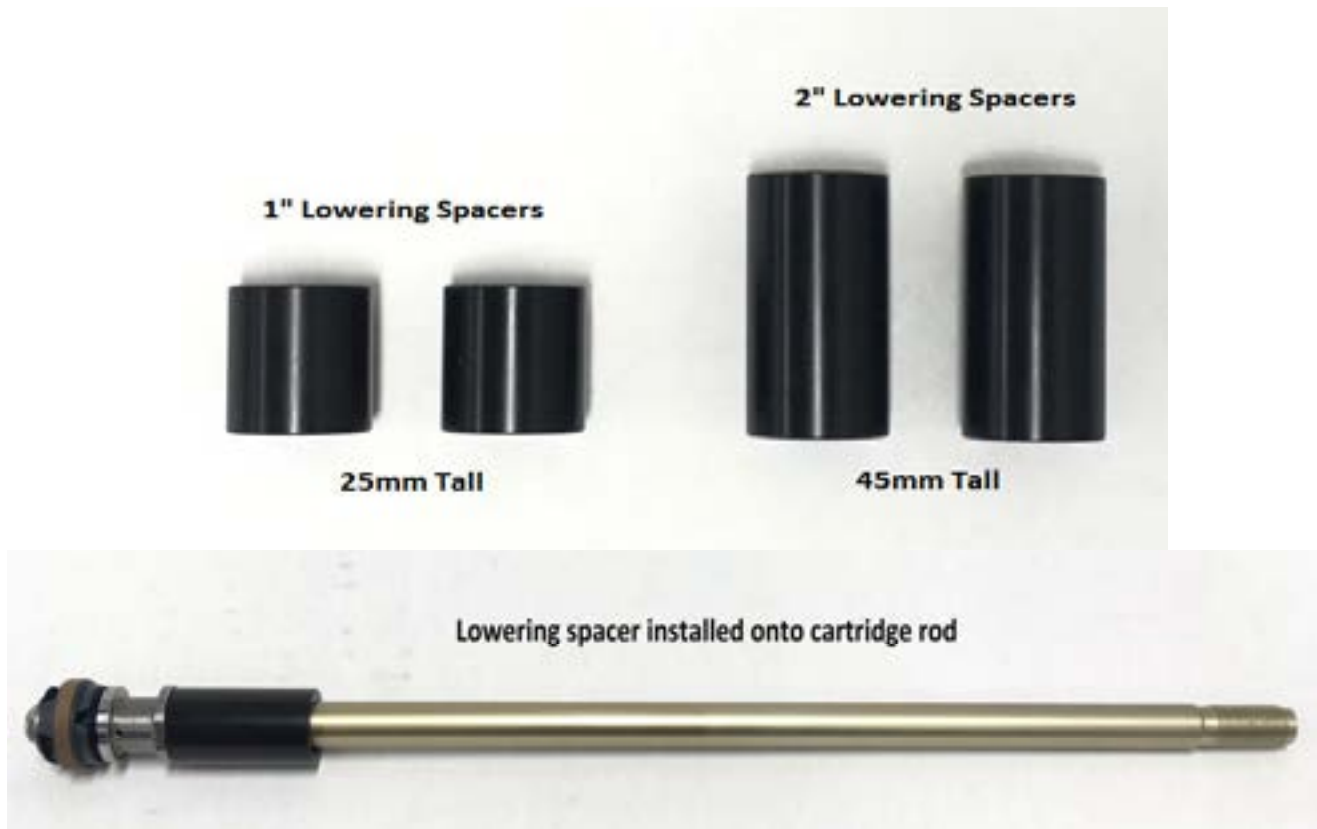


1" Lowering Kit



2" Lowering Kit

Fork Lowering Procedure



1. Follow the fork disassembly procedures on pages 4-8.
2. Install the appropriate fork lowering spacer onto the cartridge rod.
3. ***Proceed now to pages 10-12; 15-17 .***