

2011 Service Manual

SRAM LLC WARRANTY

SRAM warrants its products to be free from defects in materials or workmanship for a period of two years after original purchase. This warranty only applies to the original owner and is not transferable. Claims under this warranty must be made through the retailer where the bicycle or the SRAM component was purchased. Original proof of purchase is required.

This warranty statement gives the customer specific legal rights. The customer may also have other rights which vary from state to state (USA), from province to province (Canada), and from country to country elsewhere in the world.

To the extent that this warranty statement is inconsistent with the local law, this warranty shall be deemed modified to be consistent with such law, under such local law, certain disclaimers and limitations of this warranty statement may apply to the customer. For example, some states in the United States of America, as well as some governments outside of the United States (including provinces in Canada) may:

- a. Preclude the disclaimers and limitations of this warranty statement from limiting the statutory rights of the consumer (e.g. United Kingdom).
- b. Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations.

To the extent allowed by local law, except for the obligations specifically set forth in this warranty statement, in no event shall SRAM or its third-party suppliers be liable for direct, indirect, special, incidental, or consequential damages.

- This warranty does not apply to products that have been incorrectly installed and/or adjusted according to the respective SRAM technical installation manual. The SRAM installation manuals can be found online at www.sram.com, www.rockshox.com or www.avidbike.com.
- This warranty does not apply when the product has been modified.
- This warranty does not apply when the serial number or production code has been deliberately altered, defaced or removed.
- This warranty does not apply to damage to the product caused by a crash, impact, abuse of the product, non-compliance with manufacturer's specifications of usage or any other circumstances in which the product has been subjected to forces or loads beyond its design.
- This warranty does not apply to normal wear and tear. Wear and tear parts are subject to damage as a result of normal use, failure to service according to SRAM recommendations and/or riding or installation in conditions or applications other than recommended.

Wear and tear parts are identified as:

Dust seals/Bushings/Air sealing o-rings/Glide rings/Rubber moving parts/Foam rings/Rear shock mounting hardware and main seals/Stripped threads and bolts (aluminum,titanium, magnesium or steel)/Upper tubes (stanchions)/Brake sleeves/Brake pads/Chains/Sprockets/Cassettes/Shifter and brake cables (inner and outer)/Handlebar grips/Shifter grips/Jockey wheels/Disc brake rotors/Wheel braking surfaces/Bottom out pads/Bearings/Bearing Races/Pawls/Transmission gears/Tools

- This warranty shall not cover damages caused by the use of parts of different manufacturers.
- This warranty shall not cover damages caused by the use of parts that are not compatible, suitable and/or authorized by SRAM for use with SRAM components.
- This warranty shall not cover damages resulting from commercial (rental) use.

ROCKSHOX SUSPENSION SERVICE

We recommend that you have your RockShox suspension serviced by a qualified bicycle mechanic. Servicing RockShox suspension requires knowledge of suspension components as well as the special tools and fluids used for service.

Used suspension fluid should be recycled or disposed of in accordance to local and federal regulations.

NEVER pour suspension fluid down a sewage or drainage system or into the ground or a body of water.

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For exploded diagram and part number information, please refer to the Spare Parts Catalog available on our web site at www.sram.com.

For order information, please contact your local SRAM distributor or dealer.

Information contained in this publication is subject to change at any time without prior notice. For the latest technical information, please visit our website at www.sram.com.

Your product's appearance may differ from the pictures/diagrams contained in this catalog.

Product names used in this document may be trademarks or registered trademarks of others.

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SAFETY FIRST!

At SRAM, we care about YOU. Please, always wear your safety glasses and protective gloves when servicing your RockShox suspension. Protect yourself! Wear your safety gear!

TOOLS NEEDED FOR SERVICE

The following chart is a list of the tools needed for service on your 2012 Kage rear shock. While this chart is intended to be comprehensive, it is still only a guide. The tools required for each step of service are detailed in the text of the service section.

TOOLS
Safety/starting equipment
Safety glasses
Nitrile gloves
Apron
Clean, lint-free rags
Oil measuring device
Oil pan
Clean work area
Bench vise
Aluminum soft jaws
General tools
T10 TORX®
2 mm hex
Pick/scriber
Schrader valve tool
Ratchet
Torque wrench
13 mm open end wrench
13 mm socket
17 mm open end wrench
17 mm socket
31 mm flat wrench
SRAM Tools
Mounting hardware/eyelet bushing tool
Shaft clamps
RockShox shock body vise blocks
Gauged shock pump
Vivid air pump adapter (for IFP reservoir)
2011 24 mm pin spanner
Oil/Liquids
Suspension fluid (RockShox 3wt)
Grease (Parker® O-Lube)
Isopropyl alcohol

MOUNTING HARDWARE AND BUSHING SERVICE

Prior to servicing your rear shock, you will first need to remove it from your bicycle frame according to your bicycle manufacturer's instructions. Once your shock is off your bicycle, you will need to remove the mounting hardware before performing any service.

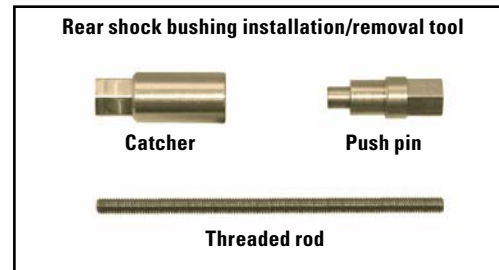
When you clamp the rear shock eyelets into a vise, use aluminum soft jaws to prevent damage to the eyelets.

MOUNTING HARDWARE REMOVAL

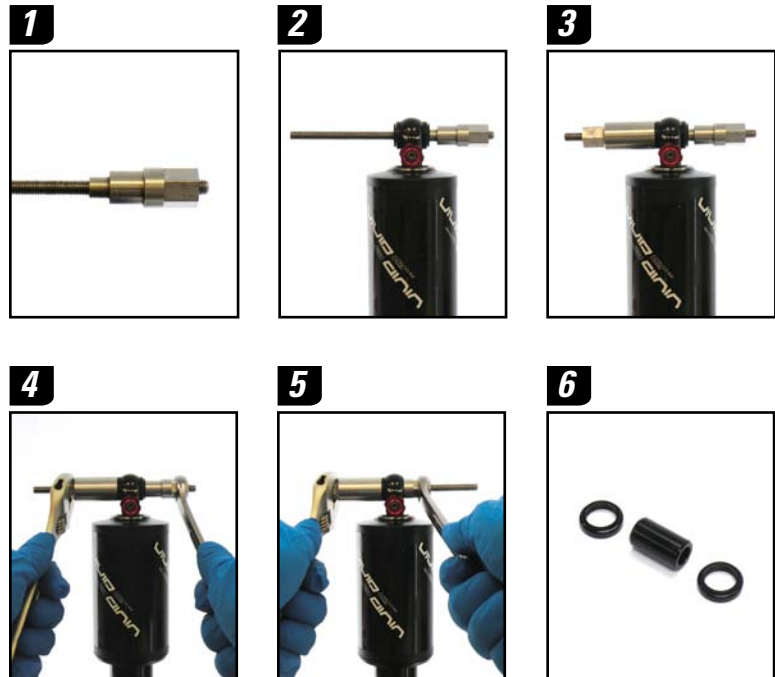
Some mounting hardware is easily removed using only your fingers. Try to remove the end spacers with your fingernail, then push the bushing pin out of the bushing. If this works, move on to the next section titled "Bushing Service".

If you are unable to remove your mounting hardware using your fingers, use the SRAM rear shock bushing installation and removal tool.

Note: images in the following steps are of Vivid Air, but are applicable to Kage.



1. Thread the push pin onto the threaded rod, small diameter end first, until the rod is flush with or slightly protrudes from the hex-shaped end of the push pin.
2. Insert the threaded rod through the shock eyelet until the push pin rests against the bushing pin.
3. Thread the catcher, with the large open end first, along the rod until it rests over the end spacer on the opposite side of the bushing pin.
4. Clamp the catcher in a vise or hold it secure with a 13 mm or adjustable wrench. Use a second 13 mm open end or adjustable wrench to thread the push pin along the rod until it stops against the end spacer. Unthread the push pin from the threaded rod and remove the end spacer from that side.
5. Re-install the push pin onto the threaded rod and hand thread it along the rod until it rests against the bushing pin (inside the shock eyelet bushing) again. Use a 13 mm wrench to thread the push pin along the rod until it stops against the shock eyelet.
6. Unthread the catcher from the threaded rod. Remove the end spacer from the threaded rod and the bushing pin from the catcher. Remove the push pin and threaded rod from the shock. Set the mounting hardware aside until you have finished servicing your shock. Repeat for the other eyelet.

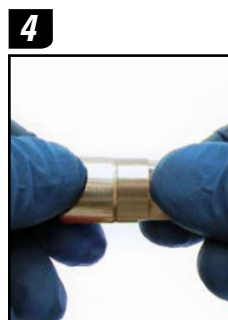
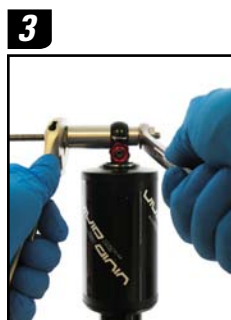
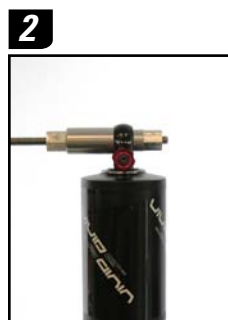


BUSHING SERVICE

To replace damaged or worn out bushings, use the RockShox rear shock bushing installation and removal tool.

BUSHING REMOVAL

1. Insert the threaded rod through the shock eyelet until the base of the push pin rests against the bushing.
2. Thread the catcher, with the large open end first, along the rod until it rests on the opposite side of the shock eyelet.
3. Clamp the catcher in a vise or hold it secure with a 13 mm wrench. Use a second 13 mm wrench to thread the push pin along the rod until the push pin rests against the shock eyelet.
4. Unthread the catcher from the threaded rod. Remove the tool from the shock eyelet and discard the old bushing. Repeat for other eyelet.



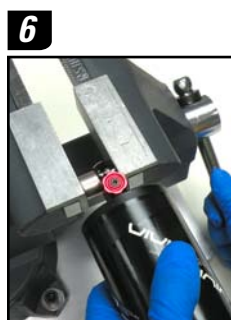
BUSHING INSTALLATION

5. Apply a small amount of grease to the outside of the new bushing.
6. Position the shock eyelet and bushing between the soft jaws of a vise. Slowly turn the vise handle to begin pressing the bushing into the shock body.

Check the alignment of the bushing as it enters the eyelet. If the bushing starts to enter the eyelet at an angle, remove the bushing from the eyelet, regrease the bushing, and repeat this step until the bushing enters the eyelet straight.

To prevent damage to the shock, position the eyelet in the vise so that the adjustment knobs are clear of the vise jaws.

7. Continue to press the bushing until it is completely seated in the eyelet.
8. Remove the shock from the vise and repeat the installation process for the other bushing and eyelet.



MOUNTING HARDWARE INSTALLATION

Some mounting hardware is easily installed using only your fingers. Press the bushing pin into the shock eyelet bushing until the pin protrudes from both sides of the eyelet an equal amount. Then press an end spacer, large diameter side first, completely onto each end of the bushing pin. If this works, you have completed mounting hardware and bushing service.

If you are unable to install your mounting hardware using your fingers, use the SRAM rear shock bushing installation and removal tool.

1. Thread the push pin onto the threaded rod, small diameter end first, until the rod is flush with or slightly protrudes from the hex-shaped end of the push pin.
2. Insert the threaded rod through the bushing pin then through the shock eyelet so that the bushing pin is positioned between the push pin and the shock eyelet.
3. On the opposite side of the shock eyelet, thread the catcher, opening side first, along the rod until it rests against the shock eyelet.
4. Clamp the catcher in a vise or hold it secure with a 13 mm wrench. Use a second 13 mm wrench to thread the push pin along the rod until it pushes the bushing pin into the shock eyelet bushing. Continue to thread the push pin until the bushing pin protrudes from both sides of the eyelet an equal amount (you may need to unthread the catcher slightly to check the bushing pin spacing).
5. Unthread the catcher from the threaded rod and remove the tool from the shock eyelet.
6. Use your fingers to push an end spacer onto each end of the bushing pin, with the large diameter side of the spacers facing the shock eyelet.

1



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4



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REAR SHOCK SERVICE

INTRODUCTION

Prior to servicing your rear shock, you will first need to remove it from your bicycle frame according to your bicycle manufacturer's instructions. Once your shock is off your bicycle, be sure to remove the shock mount hardware.

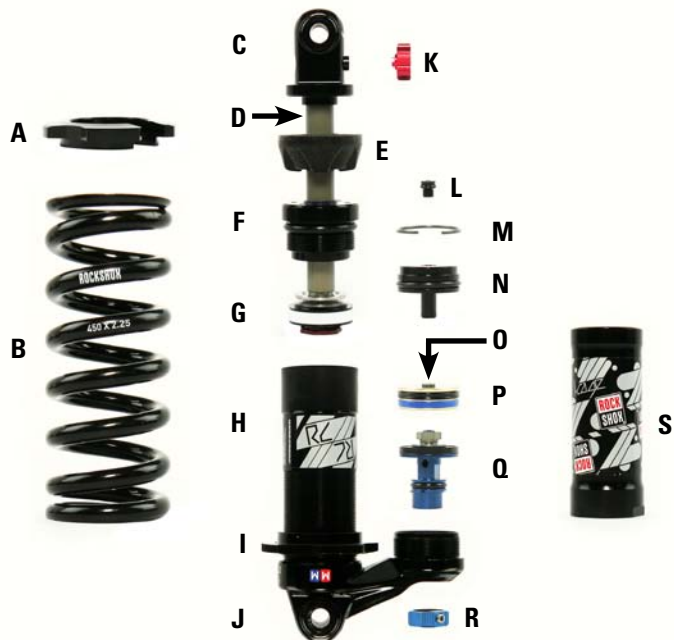
Kage rear shock service includes instructions for completing both routine and comprehensive service procedures. Routine service procedures are maintenance items that should be completed routinely in order to keep your shock performing optimally. Comprehensive service procedures are long-term maintenance items that are performed in addition to the routine service items. For routine service intervals, you only have to perform the sections called out as 'Routine Service'. For comprehensive service intervals, you will complete all instructions, in order, including the routine service procedures.

SERVICE INSTRUCTIONS

GETTING STARTED

1. Remove the shock mounting hardware (see the **Mounting Hardware And Bushing Service** section).
2. Place an oil pan on the floor underneath the area of the shock. Place a large oil absorbing rag directly underneath the vise where the shock will be clamped to catch all oil that will spill from the shock during service.
3. Turn the Rebound adjuster to the open position, toward the rabbit, until it stops. Turn the Low Speed Compression adjuster (**Kage RC only**) to the closed position, toward the "+" symbol, until it stops.
Count each detent click as you turn the adjuster and record the number of clicks to assist with post-service set-up.

EXPLODED VIEW - KAGE REAR SHOCK ASSEMBLY



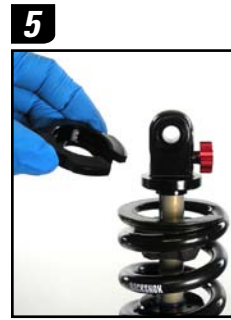
- | | | | |
|----------------------|----------------------|---------------------------------|---|
| A. Spring retainer | G. Piston | M. Reservoir cap retention clip | Q. Low speed compression assembly (RC) |
| B. Coil spring | H. Shock body | N. Reservoir cap | R. Low speed compression adjuster knob (RC) |
| C. Shaft eyelet | I. Preload adjuster | O. IFP bleed screw | S. IFP reservoir |
| D. Shaft | J. Body eyelet | P. IFP | |
| E. Bottom out bumper | K. Rebound adjuster | | |
| F. Seal head | L. Nitrogen fill cap | | |

3



SPRING REMOVAL (ROUTINE SERVICE)

4. Turn the pre-load collar counter-clockwise until it stops.
5. Remove the spring retainer and spring. Set aside the parts until the **Shock Bleed & Reassembly** section.



SHOCK BODY DISASSEMBLY (ROUTINE SERVICE)

6. Use the RockShox Shock Body Vise Blocks to clamp the the shock body into the vise. **The preload collar and reservoir must be clear of the vise jaws.**
7. Use a T10 TORX® wrench to remove the fill cap from the IFP reservoir cap and discharge the air by depressing the valve. Use a Schrader valve tool to remove the Schrader valve core.



⚠ CAUTION
Failure to remove all air pressure can cause the air can to forcefully separate from the shock body which can lead to personal injury.

8. Use the SRAM 24 mm pin spanner to loosen and unthread the damper seal head. **Hold the pin spanner head in place with your opposite hand to prevent slippage and damage to the seal head pin holes.**



9. Pull up on the seal head and remove the entire shaft assembly.



10. Remove the shock body from the vise. Pour any remaining suspension fluid from the shock body into the oil pan. Set the shock body aside.



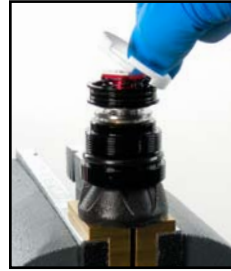
**SHOCK BODY SHAFT ASSEMBLY SERVICE
(ROUTINE SERVICE)**

11. Spray the shaft assembly with isopropyl alcohol and wipe it with a clean rag.
12. Use the RockShox shaft clamp tool to clamp the shaft assembly into the vise.
Spray isopropyl alcohol on the shaft clamp and wipe it with a clean rag prior to use.

12



13



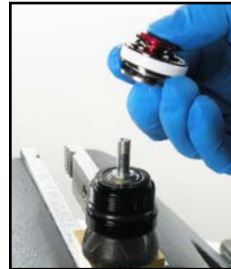
13. Remove and replace the glide ring located on the damper piston.

14



14. Use a 17 mm socket wrench to unthread the piston nut. Carefully remove the main piston assembly (piston nut, damper piston, and shim stack washers), keeping all parts together, and set it aside.

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15. Firmly pull up on the seal head to remove it.

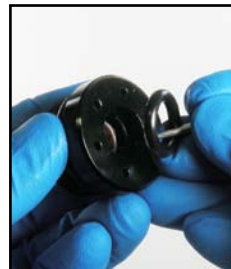
16. Use a pick to remove and replace the shaft wiper seal and main shaft o-ring located in the interior of the seal head.

16



17. Remove and replace the o-ring top out pad located on the backside of the seal head.

17



17



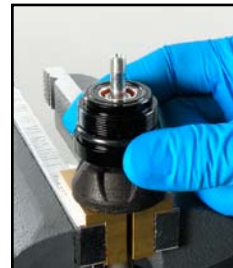
18. Grease the interior of the seal head and install it onto the shaft assembly with the seal head threads oriented upward.

Do not allow the shaft wiper seal to fold over when installing the seal head.

18



19. Install the piston assembly back onto the shaft assembly. Make sure the preload spring is centered on the piston assembly. Use a torque wrench with a 17 mm socket to tighten the piston nut to 6.7 N·m (60 in·lb). **Do not over-tighten!**



20. Remove the shaft assembly from the vise and set it aside until you get to the **Shock Bleed & Reassembly** section.

20



SERVICE INSTRUCTIONS (CONTINUED)

IFP RESERVOIR SERVICE (ROUTINE SERVICE)

21. Clamp the shock body by the eyelet into the vise.
22. Use your finger to push the IFP seal head cap into the reservoir until it stops.
23. Use your finger to push on the reservoir cap retention clip, opposite the split, until the clip rotates and protrudes out of the top of the reservoir. Use your thumb and finger to pull the retention clip out of the reservoir.
24. Thread the Vivid Pump Adapter into a shock pump. Thread the pump and Vivid Pump Adapter into the IFP reservoir cap. Pull up on the pump to remove the cap from the reservoir. Unthread the reservoir cap from the pump/adapter.
25. Remove and replace the reservoir cap o-ring.
26. Use a 31 mm flat wrench, at the base of the IFP reservoir, to unthread and remove the reservoir.
27. Use your finger to push the IFP out of the reservoir from the threaded side.
28. Use your fingers to remove the reservoir o-ring and shoulder washer, located above the threads inside the base of the reservoir. Apply grease to a new o-ring. Install the shoulder washer and the new o-ring into the base of the reservoir.
29. Use a pick to remove and replace the IFP glide ring and quad-ring seal.
30. Use a T10 TORX® to remove the IFP bleed screw.
31. Use a pick to remove and replace the IFP bleed screw o-ring.
32. Set aside the IFP, IFP bleed screw, reservoir, and reservoir cap until you get to the **Shock Bleed & Reassembly** section.

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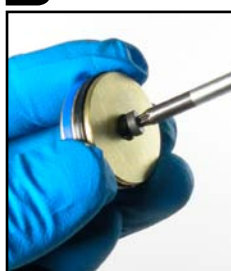
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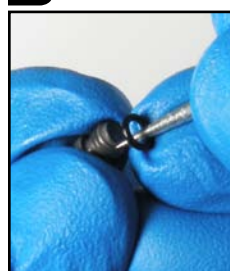
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31



**LOW SPEED COMPRESSION VALVE SERVICE
(KAGE RC ONLY - COMPREHENSIVE SERVICE)**

33. Use a 2 mm hex to loosen the Low Speed Compression knob set screw. Remove the Low Speed Compression knob.

33



34. Squeeze the Low Speed Compression valve assembly between your fingers, and carefully push it up and out of the IFP reservoir base. *Continue to squeeze the compression valve assembly together as you remove it; it houses the detent ball and spring. Once it is removed, set the assembly aside, being careful not to lose these parts.*

34



35. Separate the inner knob and detent ball and spring from the Low Speed Compression valve assembly.

36. Use your fingers to unthread the compression needle from the back of the Low Speed Compression valve assembly.

35



36



37. Remove and replace the Low Speed Compression valve main o-ring, compression piston crush washer, and compression needle o-ring.

38. Remove the shock from the vise. Pour any remaining suspension fluid from the shock into the oil pan. Clamp the shock by the body eyelet back into the vise.

37

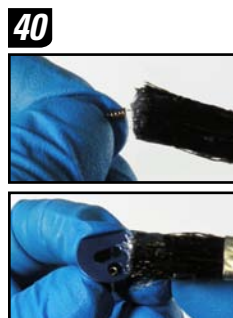


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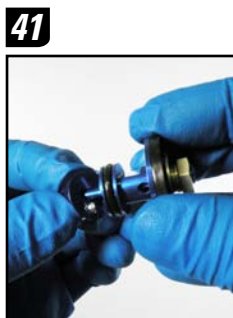
SERVICE INSTRUCTIONS (CONTINUED)

39. Use your fingers to thread the compression needle back into the Low Speed Compression valve assembly until it stops turning. Keep the compression needle in this position until after the reservoir has been installed and tightened.



40. Apply grease to the detent spring and insert it into the inner knob. Apply grease to the detent spring again and place the detent ball onto the spring.

41. Install the inner knob onto the compression needle and squeeze the Low Speed Compression valve assembly between your fingers.



42. Carefully insert the Low Speed Compression valve assembly into the shock body, inner knob first.
Use your finger to help guide the low speed compression valve assembly into place.

The Low Speed Compression valve assembly must seat flush with the top of the IFP reservoir. Do not damage the main o-ring during installation.

Turn the inner knob back and forth a couple of times. There should be a "click". If there isn't, remove the Low Speed Compression valve assembly, check that the parts are oriented correctly, reinstall, and re-check, until there is a click when turning the knob.



43. Hand thread the IFP reservoir onto the shock body until it is tight. Use a 31 mm flat wrench to tighten the reservoir to 11.3 N-m (100 in-lb).
There will be a small, visible gap between the reservoir and the shock body. This is ok.



**SHOCK BLEED & RE-ASSEMBLY PROCEDURES
(ROUTINE SERVICE)**

- 44. Clamp the shock by the body eyelet into the vise so that the shock body and Low Speed Compression adjuster are accessible.
- 45. **Kage RC only:** Turn the Low Speed Compression adjuster counter-clockwise until it stops.

44



45



- 46. Pour 3wt RockShox suspension fluid into the body until it is full. Fluid will begin to bleed into the IFP reservoir. Use the palm of your hand to tap downward on the top of the shock body repeatedly to forcefully move fluid into the reservoir. This will also assist in purging air bubbles from the system.

46



- 47. Once most (but not all) of the fluid from the body has moved to the reservoir, use the palm of your hand to tap downward on the top of the reservoir repeatedly to forcefully move fluid back into the shock body. This will further assist in purging air bubbles from the system.

47



Do not allow the fluid level in the body or reservoir to get low enough to allow more air into the system.

Continue this process of tapping on the tops of the body and the reservoir until no more bubbles emerge from either.

- 48. Once all of the air is purged from the system, install the IFP, flat side up, into the reservoir. Use your finger to cover the IFP bleed port and slowly push the IFP approximately 10 mm into the reservoir.

48



The IFP will contact a step in the reservoir during installation. Press firmly on the IFP to move it past the step until the IFP is approximately 10 mm into the reservoir.

- 49. Tap on the top of body to force fluid from the body into the reservoir and purge any air trapped under the IFP out of the IFP bleed port. Continue to tap on the top of the body until no more bubbles emerge from the IFP bleed port, then immediately use a T10 TORX® to install the bleed port screw into the bleed port and turn it until the IFP begins to spin.

49



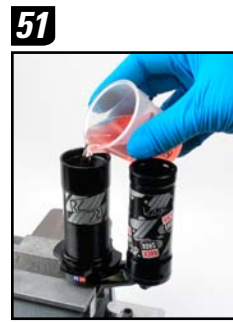
A dab of grease on the tip of the TORX will help keep the bleed screw in place while installing it.

SERVICE INSTRUCTIONS (CONTINUED)

50. Use the T10 TORX®, while inserted into the bleed screw, as a push rod to push the IFP down into the IFP reservoir until it stops at the bottom of the IFP reservoir.



51. Pour additional fluid into the shock body until it is approximately 3 mm from the top.



52. Wrap a clean rag around the shock body.



53. Seat the seal head against the piston on the shaft assembly. Place the piston into the fluid on top of the shock body at a 45 degree angle. Rotate the shaft/piston assembly 2-3 times to fill any cavities in the piston assembly with fluid. Continue to rotate the shaft assembly as you align it vertically, then gently insert the assembly into the shock body. This process minimizes trapped air during the assembly process.



54. Hold the shaft assembly by the seal head and **slowly** thread the seal head onto the shock with your fingers. Trapped air and fluid should escape through the notches in the seal head threads. **Do not push on the shaft or shaft eyelet. This will displace more oil than is necessary at this time.**



Perform this step slowly, allowing fluid and air to escape through the notches.

55. Continue to thread the seal head down until the seal head o-ring contacts the shock body. Use the 24 mm pin spanner tool to tighten the seal head to 33.9 N·m (300 in-lb).

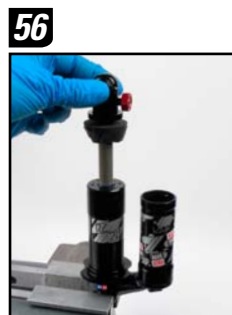


Firmly hold the 24 mm pin spanner in place with one hand while tightening with the other.

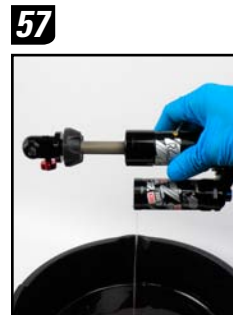
The torque wrench should be attached at a 90° angle to the 24 mm pin spanner tool in order to obtain an accurate torque reading.



56. Rotate the shaft eyelet and shaft to align the shaft eyelet with the body eyelet.



57. Remove the shock from the vise and pour out any remaining fluid in the IFP reservoir, above the IFP. Use a clean rag to wipe any residual fluid from inside the reservoir.



Failure to remove this excess fluid will reduce the IFP volume, causing poor shock performance and limiting shock travel.



SERVICE INSTRUCTIONS (CONTINUED)

58. Clamp the shock back into the vise at the body eyelet.
59. Apply a small amount of grease to the reservoir cap o-ring. Push the IFP reservoir cap into the reservoir until the retaining ring groove is visible.
60. Push the retaining ring into the groove until it is completely seated.
61. Use a Schrader valve tool to install a new Schrader valve into the reservoir cap.
62. Thread the pump and Vivid Pump Adapter into the IFP reservoir cap. Pull up on the pump to seat the reservoir cap against the retaining ring.
63. Use the pump to pressurize the IFP chamber to:
Kage R - 230 psi
Kage RC - 200 psi

Once you have pressurized the shock, remove the Vivid Pump Adapter from the air fill port BEFORE removing it from the shock pump. Separating the pump from the adapter first will allow all of the air to escape from the shock.

64. Use a T10 TORX® to install the fill cap into the IFP reservoir cap.

58



59



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61



62



63



64



SERVICE INSTRUCTIONS (CONTINUED)

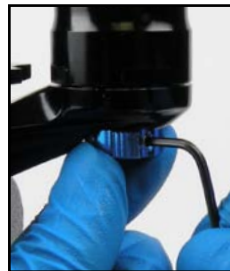
65. Spray the entire shock with isopropyl alcohol and wipe it with a clean rag.

65



66. **Kage RC only:** Use a 2 mm hex to re-install the Low Speed Compression knob.

66



67. Install the coil spring, spring retainer, and shock mounting hardware (see the **Mounting Hardware And Bushing Service** section). Adjust the spring preload collar until the coil spring is secure on the shock.

67



68. Refer to the rebound and damper settings that you wrote down for your shock at the beginning of the service. Set each adjuster to the recorded number of clicks/turns.

This concludes the service for your shock.

www.sram.com

WORLD HEADQUARTERS

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