FILTHY MOTORSPORTS

King Off-Road Racing Shock Rebuild and Revalve Instructions

To order seals, shims, shock oil, and replacement parts
visit FilthyMotorsports.com/King or call 303-834-7895

Parts Needed For Shock Rebuild
1 x King Seal Kit
http://www.filthymotorsports.com/kingseals

Parts Needed for Shock Revalve
2 x Replacement Valving Shim Stacks
http://www.filthymotorsports.com/kingshims

Optional Parts
1x King Shock Oil
http://www.filthymotorsports.com/shockoil

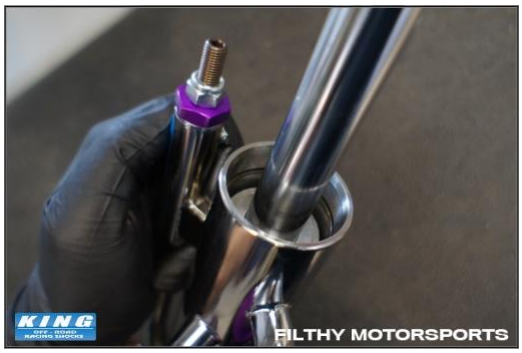
Required and Recommended Tools
- Small Allen Wrench Set
- Spanner Wrench (2" x 3/16" Pin)
- Dentist Pick or Small Screwdriver
- Adjustable Crescent Wrench
- Clean Bucket or Container
- Paper Towels or Clean Shop Rag
- Locite Thread Locker
- Small Dead Blow Hammer (Optional)
- Small Pliers (Optional)
- Bench Vice (Optional)

Step 1: Clean The Shock
Clean the shock completely using paper towels or a shop rag to remove any and all dust and dirt. Do not bleed the nitrogen pressure from the shock just yet.

Step 2: Loosen Set Screw
With the shock shaft fully extended, use an allen wrench to loosen the set screw in the lower wiper cap. Make sure the allen wrench is a good fit so as not to strip the screw. Unscrew it just a few turns.

Step 3: Loosen the Wiper Cap
Set the spanner wrench securely into the two indented holes on the wiper cap and using a medium amount of force turn the wiper cap counter-clockwise. A small tap with a dead blow hammer usually does the trick. Do not remove the wiper cap.

Note: Nothing in this rebuild process should require more than a small to medium amount of force and everything should come apart smoothly.

	**Step 4: Bleed the Nitrogen Pressure** Bleed the pressure from the reservoir or shock body on an emulsion shock through the Schrader valve using a small screwdriver or allen wrench. **Note:** The pressure is kept inside the shock through this step because it keeps the internal seal cap pressed against the snap ring to keep it from spinning freely while the wiper cap is loosened.
	**Step 5: Unscrew the Wiper Cap** Finish unscrewing the wiper cap and slide it up to the end of the shock shaft. **Step 6: Lower the Seal Cap** Press down firmly on the internal seal cap to push it down below the snap ring. **Tip:** If you move the shaft up and down a few times forcefully and then bleed the pressure in the reservoir again it will create a vacuum and suck the seal cap down on its own. This may take a few tries.
	**Step 7: Remove the Snap Ring** With a small screwdriver or dentist pick, carefully remove the snap ring and set it aside.
	**Step 8: Remove the Shock Shaft** Carefully pull on the shock shaft to remove it from the shock body. **Tip:** If you plan to reuse the shock oil, be extra careful because it is easy to lose a lot of oil in this step. It may also be helpful to bleed the reservoir again to release the vacuum pressure created by pulling out the shaft.

	**Step 9: Drain the Oil** Drain the oil from the shock into a clean container. **Bypass Shocks** - Make sure the bypass valves are open so the oil can drain from the bypass tubes. **Remote Reservoirs** - Lift the reservoir up to drain the oil from inside the reservoir and reservoir hose. **Piggyback Reservoirs** - Lean the shock body such that the oil can drain from the piggyback reservoir into the shock cylinder. Then turn the shock over and let the oil drain out. **Tip:** At this stage it is a good idea to inspect the oil for unusual debris or metal shavings and inspect the shock shaft and cylinder walls for scratches and damage.
	**Step 10: Remove the Piston Retaining Nut** Secure the lower rod end (bearing side) of the shaft assembly in a vice and protect it with a towel or rubber pad, then remove the piston retaining nut. **Tip:** Never clamp the shock shaft in a vice unless you have the proper shock shaft clamps. **Note:** The wear band on the piston is usually good for the life of the shock and rarely needs replacing.
	**Step 11: Remove the Piston and Shims** Carefully remove the shock piston, shims, and spacers and lay them out in order. If you are revalving your shocks, then this is the time to replace the existing shims with the new ones. Remember that compression shims go on the bottom and rebound shims go on the top, towards the nut. If you are not replacing any seals, then the seal cap and wiper cap should stay on the shock shaft.
	**Step 12: Replace Cap Seals (Optional)** If you are performing a shock rebuild, remove the seal cap, spacer, and wiper cap from the shock shaft. Remove the existing seals and o-ring carefully using a small screwdriver and/or small pliers. The new seals are a tight fit but will push in by hand without needing much force. Take your time to make sure they are fully seated correctly.

	**Step 13: Reassemble the Shock Shaft** Slide all of the shock shaft components back onto the shock shaft in the reverse order in which they were removed. Apply a small drop of Loctite (thread locker) to the shaft threads before tightening the piston retaining nut snugly. Set the shock shaft assembly aside for now.
	**Step 14: Remove Bypass Tube Valves (Optional)** Remove the bypass tube valves by unscrewing the larger of the two nuts. These nuts may be a little tight and may require some force so be careful not to damage them.
	**Step 15: Replace Bypass Valve O-Rings (Optional)** Using small pliers, carefully remove the bypass valve from inside the bypass tube. Replace the o-rings and then reinstall the valve and nut. **Tip:** Make sure that the valves remain open to allow air to bleed through them during the oil filling process coming up soon.
	**Step 16: Reservoir Rebuild (Optional)** Press down on the cap(s) to expose the snap ring(s) and remove using a small screwdriver, similar to steps 6 and 7, above. Apply a small amount of pressure to the Schrader valve to pop the caps and internal floating piston out from the reservoir cylinder. Replace the o-rings and then reassemble.
	**Step 17: Set the Reservoir IFP** Charge the reservoir with a small amount of pressure to push the internal floating piston to the bottom of the reservoir cylinder. Then, release the pressure from the reservoir so that it is empty.

Step 18: Fill the Shock Cylinder with Oil
While holding the shock cylinder upright, pour the shock oil into the cylinder until it reaches a point about one inch under the snap ring groove.

For **emulsion (non-reservoir) shocks** use these volumes instead:

2.0 x 6”	195 cc	2.5 x 6”	400 cc
2.0 x 8”	250 cc	2.5 x 8”	510 cc
2.0 x 10”	320 cc	2.5 x 10”	640 cc
2.0 x 12”	400 cc	2.5 x 12”	800 cc
2.0 x 14”	450 cc	2.5 x 14”	900 cc
2.0 x 16”	500 cc	2.5 x 16”	1,000 cc

Step 19: Cap and Flip the Shock Cylinder
Using your hand or any clean flat block (a hockey puck works well), cover the open end of the cylinder and turn it upside down and back a few times to release any trapped air bubbles.

Add shock oil as needed to bring the oil level back to around one inch below the snap ring groove.

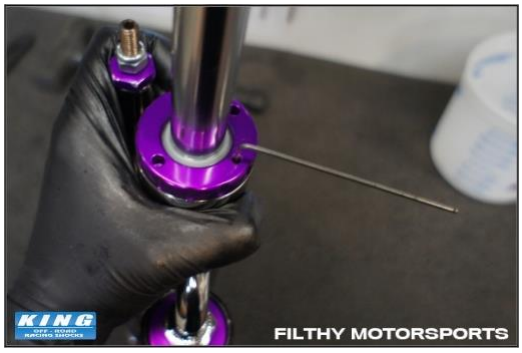
Step 20: Slowly Insert the Shock Shaft
Carefully place the shock shaft assembly into the shock cylinder until the entire piston is submerged. Move the shaft up and down slightly and let any remaining air bubbles work their way out.

Step 21: Set the Seal Cap
Slide the seal cap down to the top of the cylinder and settle it down onto the shock oil.

Push down on the seal cap with moderate force to move it down to just below the snap ring groove. Try and do this in one continuous push because this is how oil is forced into the reservoir.

Insert the snap ring into the groove.

Note: It is normal to lose a little shock oil here.

	**Step 22: Charge the Reservoir** Charge the reservoir with the desired about of Nitrogen (about 150 PSI) and then check for leaks. **Note:** Sometimes this pressure will push the main seal out of the seal cap. If this happens, carefully push in back into position.
	**Step 23: Screw on the Wiper Seal** Thread the wiper seal onto the now seated wiper cap and tighten securely using the spanner wrench. A few light taps with a dead blow hammer may help. **Tip:** Do not over tighten the wiper cap!
	**Step 24: Tighten the Set Screw** Tighten the set screw to secure the wiper cap. Wipe off any residual oil and cycle the shocks a few times by hand, it should move freely although with some resistance through the entire stroke. If you hear a lot of gurgling, then there is air in the cylinder and you will need to repeat steps 21-24. Small amounts of air are ok as they will eventually move their way through the reservoir and past the internal floating piston.

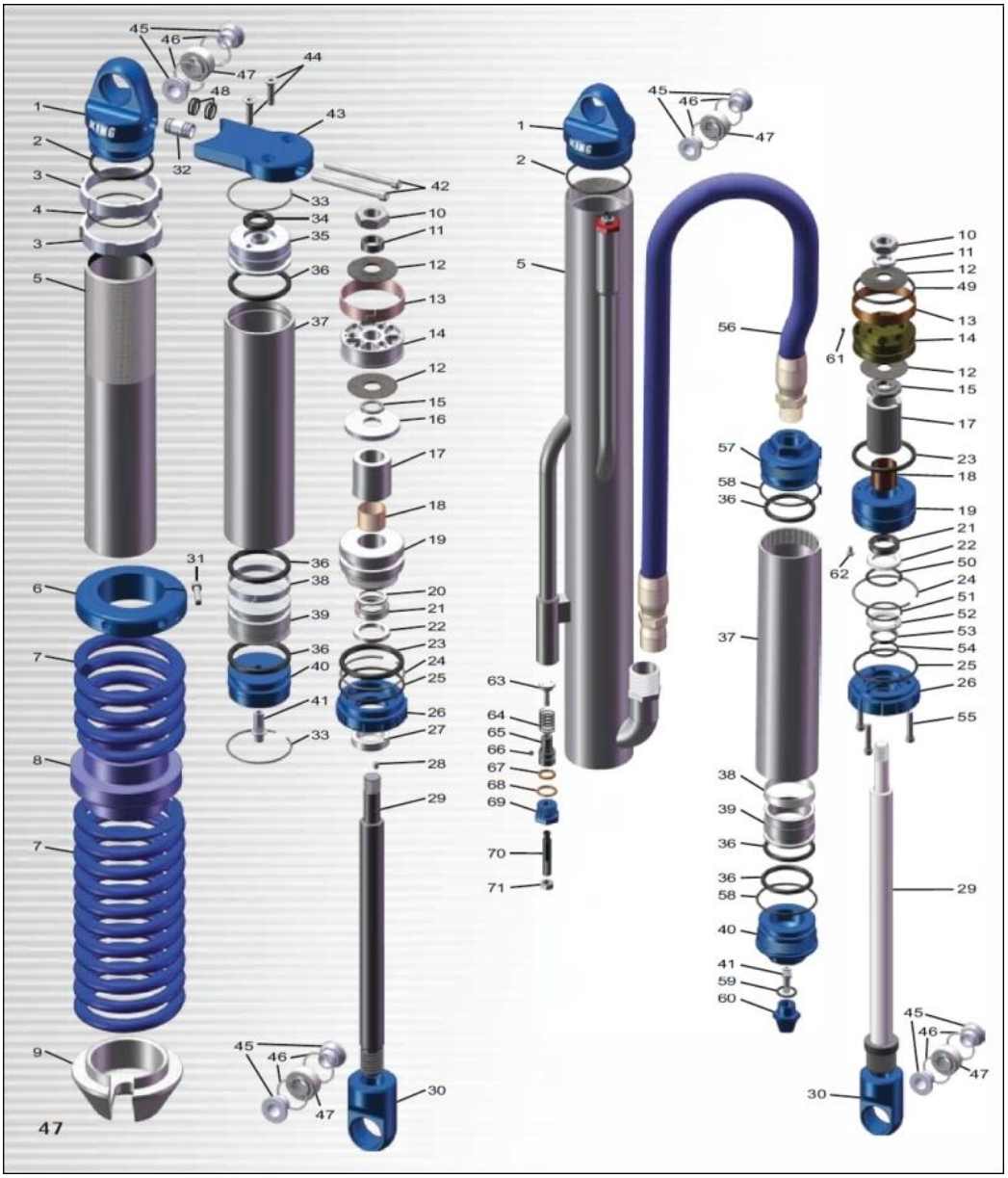
To order seals, shims, shock oil, and replacement parts visit FilthyMotorsports.com/King or call 303-834-7895

For help with shock valving and shim stacks go to: www.ShockTuning.com

This latest version of this manual is available on-line at: FilthyMotorsports.com/KingRebuild

(Version 1.1 - Last Revised 8/9/13)

King Off-Road Racing Shock Replacement Parts List



1 - Top Cap
2 - Top Cap O-Ring
3 - Secondary Nuts
4 - Secondary Nut O-Ring
5 - Shock Cylinder
6 - Coil Adjustment Nut
7 - Coil Spring
8 - Coil Slider
9 - Coil Plate
10 - Piston Retaining Nut
11 - Piston Retaining Washer
12 - Valve Shims
13 - Piston Wear Band
14 - Piston
15 - Base Washer
16 - Top Out Washer
17 - Shaft Spacer
18 - Shaft Guide / DU Bushing
19 - Seal Cap
20 - Shaft O-Ring
21 - Main Seal
22 - Main Seal Retainer
23 - Seal Cap O-Ring
24 - Shock Cylinder C-Clip
25 - Wiper Cap O-Ring
26 - Wiper Cap
27 - Wiper Seal
28 - Set Screw
29 - Shock Shaft
30 - Rod End
31 - Coil Adjustment Pinch Bolt
32 - Piggyback Mounting Sleeve
33 - Reservoir C-Clip
34 - Piggyback Adaptor O-Ring
35 - Piggyback Oil End Cap
36 - Reservoir O-Rings
37 - Reservoir Cylinder
38 - Res. Piston Wear Band
39 - Reservoir Piston
40 - Remote Res. Air End Cap
41 - Schrader Valve
42 - Piggyback Mounting Bolts
43 - Piggyback Mounting Plate
44 - Piggyback End Cap Bolts
45 - Spacer
46 - Bearing C-Clips
47 - Spherical Bearing
48 - Piggyback Sleeve O-Rings
49 - Piston O-Ring
50 - Main Seal C-Clip
51 - Wiper Seal C-Clip
52 - Wiper Seal Retainer
53 - Wiper Seal
54 - Wiper O-Ring
55 - Wiper Cap Bolts
56 - Remote Reservoir Hose
57 - Remote Res. Oil End Cap
58 - Reservoir End Cap O-Ring
59 - Schrader Valve Cap O-Ring
60 - Schrader Valve Cap
61 - Piston Bleed Screw
62 - Seal Cap Bleed Screw
63 - Bypass Valve
64 - Bypass Spring
65 - Bypass Valve Stop
66 - Bypass Valve Stop Set Screw
67 - Bypass Valve Stop O-Ring
68 - Bypass Adjusting Nut O-Ring
69 - Bypass Adjusting Nut
70 - Bypass Adjusting Screw
71 - Bypass Adjusting Jam Nut
72 - King Shock Oil