DVO SUSPENSION



Version 3.0

TOPAZ FULL SERVICE GUIDE

⚠ WARNING!

Failure to comply with these warnings and instructions may cause SERIOUS INJURY, DEATH, or DAMAGE TO YOUR PRODUCT.

Be sure to read this manual carefully before using your DVO suspension. Throughout this manual, reference is made that “an accident” could occur. Any accident may cause damage to the product, SERIOUS INJURY, OR DEATH.

These instructions contain important information about the correct installation, guidelines for set-up, service and maintenance of your suspension. Nevertheless, please be informed that special knowledge and tools are essential to install, service and to maintain DVO Suspension. Common mechanical knowledge may not be sufficient to repair, service or maintain your suspension. Therefore we strongly recommend getting your suspension installed, serviced and/or maintained by a trained and qualified bicycle mechanic. Improper installation, service or maintenance can result in an accident.

Forks and rear shocks contain fluids and air under extreme pressure. DO NOT attempt to disassemble any portion of a DVO Suspension product unless instructed to do so by a DVO Suspension authorized technician.

Only use genuine DVO Suspension replacement parts. Modification, improper service, or the use of aftermarket replacement or spare parts may result in an accident and VOIDS the warranty of your product.

DVO Suspension forks and rear shocks are designed for the usage by a single rider only.

DO NOT use DVO Suspension products on any powered vehicle that is not a pedal-assist Class-1 or Class-3 e Bike.

Always be equipped with proper safety gear. This includes a properly fitted and fastened helmet. According to your riding style you should use additional safety protection. Make sure your equipment is in flawless condition.

Make sure you select the correct fork and rear shock according to your frame manufacturer specification. Installing suspension that does not match the geometry of your frame could result in a failure of the suspension itself and void the suspension warranty. Installing a fork or rear shock not designed for your frame will change the geometry and handling of your bike. Learn how to ride and train your skills. Know your limits and never ride beyond those.

Study all other manuals provided with your bicycle and make yourself familiar with all components mounted to your bike.

PRE-RIDE SAFETY CHECK

1. DO NOT ride your bicycle if any one of the following test criteria is not passed! Riding your bike without eliminating any defect or carrying out the necessary adjustments can result in an accident, SERIOUS INJURY OR DEATH.

2. Do you notice any cracks, dents, bent, or tarnished parts of your suspension fork or shock, or any other part of your bicycle? If so, please contact a trained and qualified bicycle mechanic to check your fork, shock, seat post, saddle, and complete bike.

3. Do you notice any oil leaking from your fork and/or shock? If so, please consult a trained and qualified bicycle mechanic to check your suspension and bike before riding.

4. Make sure your wheel is attached and centered properly in order to avoid any contact with the suspension fork or brake system.

5. Make sure your axle system is secure. There should be no play between the hub and fork lower.

6. Make sure your brakes are properly installed, adjusted, and work properly. This also applies to every other part of your bike like handlebars, pedals, cranks arms, seat post, saddle, etc.

7. Check the cable length and routing of your braking components. Make sure they do not interfere with your steering actions or full compression and extension of your suspension.

8. Check your shock hardware and ensure there is no play between the shock and mounting surfaces. Ensure your shock hardware is tightened to the bike manufacturer’s recommend torque before riding.

Service Overview

This manual will guide you step by step performing a full service to your Topaz shock. Please follow each instruction carefully to achieve the best and safest results.

*Always wear your safety gear while working on suspension products. We care about you, make sure you wear your safety glasses and protective gloves while servicing DVO Suspension Products.

⚠ WARNING!

ALWAYS WEAR SAFTY GEAR!

Tools Needed For Service

1. Valve Core Remover
2. Valve Puller
3. Oil Drain Pan
4. Bleed Syringe
5. 24mm crows-foot Wrench
6. Needle-nose Pliers
7. Flathead Screwdriver
8. Flathead Screwdriver
9. Vice
10. 12.7mm shaft clamps
11. Pick
12. Shock Pump
13. 2mm, 3mm, 4mm Allen Key
14. Torque wrench
15. Seal bullet

Supplies Needed For Service

1. Rebuild Kit part #223-9008
2. Safety Glasses
3. Clean, Lint Free Rag
4. Suspension Cleaner or Alcohol
5. Loctite 263 RED
6. Loctite 243 BLUE
7. 2.5 wt oil. No Maxima
8. Slickoleum Grease

Recommended Service Interval

• Full Service .....100 Hours of Ride Time

Contents

Damper Rebuild . . . . . Page 6-27

Damper Bleed . . . . . Page 28

Air Can Service . . . . . Page 29-33

Rebuild Kit Contents . . . . . Page 34

Lube & Torque Specs

Lubricant	Brand	Wt.	Notes
Shock oil	DVO, Motul, Motorex, Silkoline, R.S.P.	2.5	Do NOT use Rock Shox or Maxima powersports suspension fluids under any circumstances. Permanent seal damage will occur.
Grease	Slickoleum, Slick Honey	-	

Product	Oil / Grease	Volume	Type (Wt.)
Topaz 2 / Topaz (Gen 3)	Damper	80 cc	2.5
	Slickoleum, Slick Honey	N/A	2.5

Product	Part	Torque	Notes
Topaz 2 / Topaz (Gen 3)	Bleed screw	.3 N.m	N/A
	Sealhead	27 N.m	N/A
	Housing to body	25 N.m	N/A
	Piston seat	8 N.m	LocVte 263 Red
	Piston nut	7 N.m	LocVte 243 Blue
	Damper shaY to upper assembly	10 N.m	LocVte 263 Red
	Compression loader cover	3 N.m	N/A
	Compression lever set screw	.06 N.m	LocVte 243 Blue
	Rebound adjust knob set screw	.6 N.m	LocVte 243 Blue
	Rebound assembly set screw	.6 N.m	LocVte 243 Blue
	Comp adjust pin set screw(s)	N/A	LocVte 243 Blue
	Main air valve sleeve	.6 N.m	LocVte 243 Blue
	Valve core	.3 N.m	N/A

The data contained in this document supersedes any and all previous lubrication, torque, and thread coat specifications. Failure to follow these specifications will void the product warranty and may lead to serious injury or death.

Damper Disassembly

1.

Remove the air cap. Depress the valve to release the air pressure.

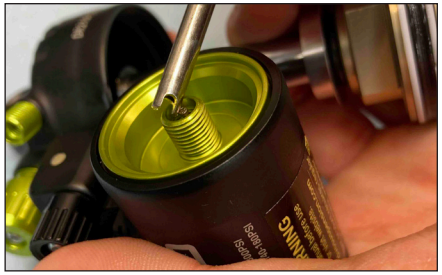
⚠ WARNING!

EYE HAZARD




2.

Release the air from the bladder.



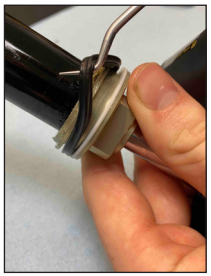
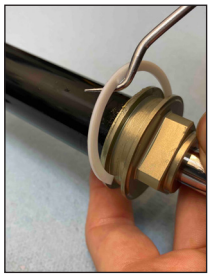
3.

Firmly grasp the upper eyelet of the shock with one hand, and twist the entire air canister counter-clockwise to un-thread it from the body and set aside.



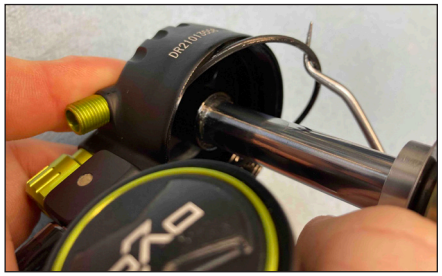

4.

Remove the bushings and main seal from the sealhead.

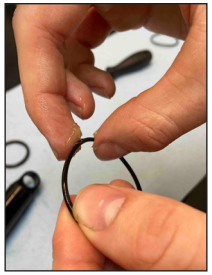
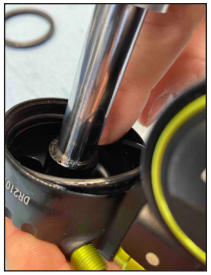
5.

Remove the o-ring located above the threads of the housing and thoroughly clean the housing with suspension cleaner.



6.

Apply a thin layer of grease to the new o-ring and install it in the housing.

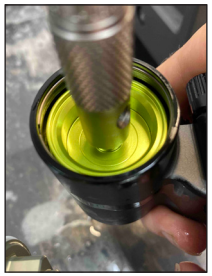
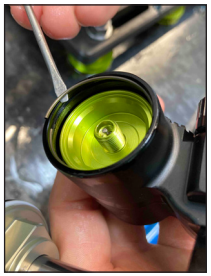
7.

Use the 24mm wrench to un-thread the sealhead from the damper body. Separate the sealhead and damper body and drain the oil into a catch pan.




8.

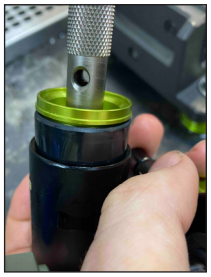
Install a valve puller onto the valve. Push downward on the valve puller to lower the bladder. Use a flat head screwdriver to remove the retaining clip.

Damper Rebuild

9.

Remove the bladder from the reservoir.



10. Prime Damper
(for PRO damper, proceed to step 17)

Using a 2mm allen wrench, remove the compression knob fixing bolt.



11.

Remove the LSC knob and o-ring, followed by the green HSC knob.





12.

Carefully remove the two bearings, followed by the springs. It's often easiest to use a pick or small allen wrench to remove the springs. Be careful not to misplace the bearings and springs.)



13.

Using an 18mm open-end or crows-foot wrench, loosen the compression unit from the housing. Unthread the unit and set aside.

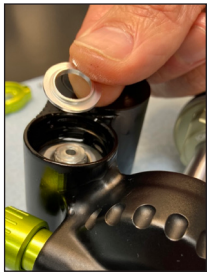




14.

Remove the spring, and then the centering washer.





15.

Gently grasp the nut of the compression unit with needle nose pliers, and lift the assembly out.





16.

Dry and inspect the parts and proceed to step 19.



Damper Rebuild (continued)

17.

Loosen the comp loader cover using a 4mm allen wrench, then remove the loader using pliers and set aside.



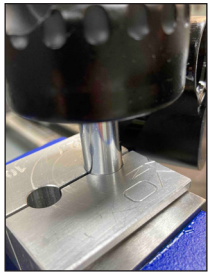

18

Remove and replace the o-ring on compression loader cap and set aside.



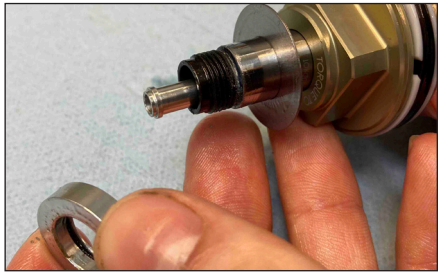

19.

Clamp the damper shaft in 12.7mm shaft clamps as shown then un-thread the housing from the damper shaft.



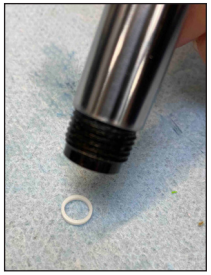

20.

Remove the metal washer and o-ring.



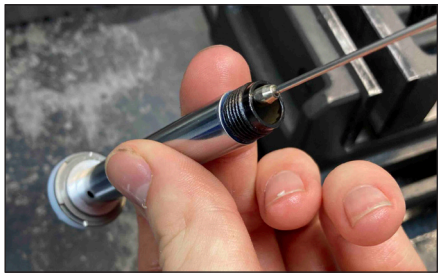
21.

Remove the sealhead. This may be difficult, but remove the white washer from the inside of the shaft. To make it easier, you can spray a suspension cleaner inside the shaft to push the washer out.

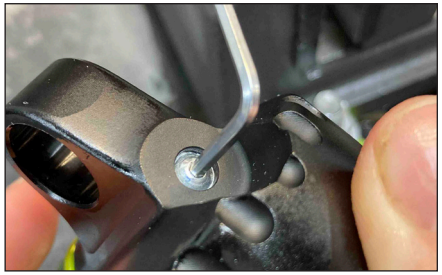
22.

Use a suspension cleaner to clean the inside of the damper shaft.



23.

Use a 2mm allen key to remove the rebound adjuster set screw.



24.

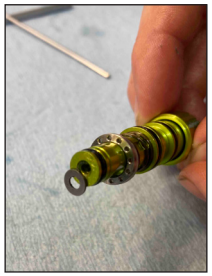
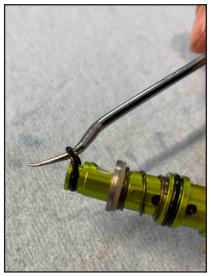
Remove the rebound adjuster unit.



Damper Rebuild (continued)

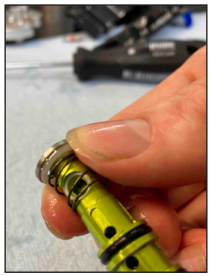
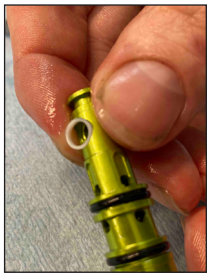
25.

Remove the metal washer and lower o-ring.

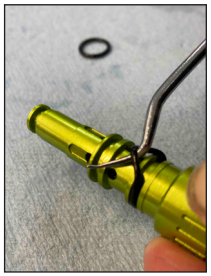
26.

Remove the pressure spring and washers.

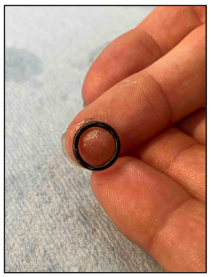
27.

Remove the upper and middle o-rings.

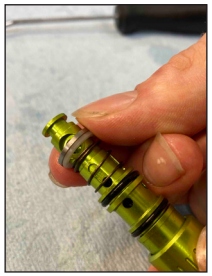
28.

Get your new o-rings for your rebound adjuster and apply a thin layer of grease to them. Install the upper o-ring.



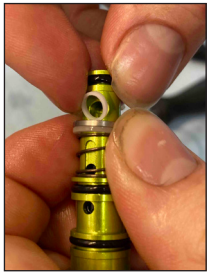
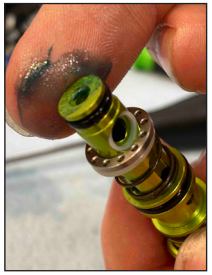

29.

Install the middle and lower o-rings. Then install the pressure spring and washers.




30.

Install the new white washer. The grease will hold it in place. Apply a small amount of grease to the tip of the rebound adjuster.

31.

Install the metal washer, the grease will hold it in place. Slide the rebound adjuster back into the housing.




32.

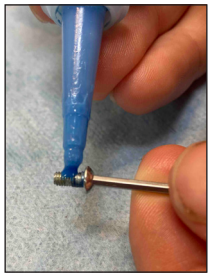
Double check to make sure the holes line up and are pointing straight up inside the housing.



Damper Rebuild (continued)

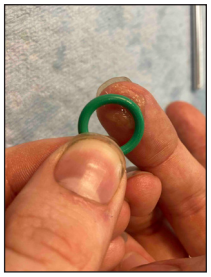
33.

Apply a small amount of blue loctite to the threads of the rebound adjuster set screw. Then re-install the set screw and tighten to 0.6Nm.



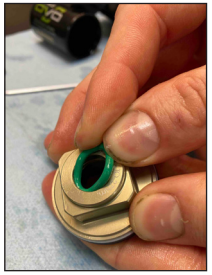
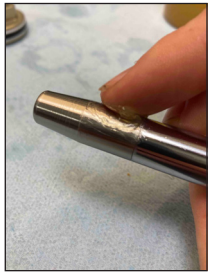

34.

Apply a thin layer of grease to the new sealhead o-ring. Install the new o-ring, then apply a thin layer of grease to the new main seal.
NOTE: your main seal may appear different from the blue seal at right. The function is the same.

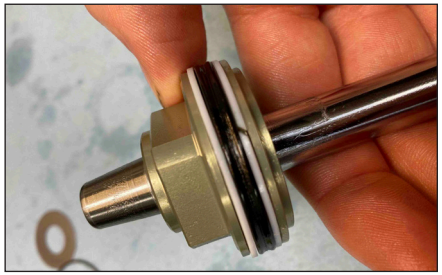
35.

Install the main seal. Make sure both of the new seals are sitting flush with no gaps. Install seal bullet on damper shaft and apply a light coat of grease to the seal bullet and damper shaft.

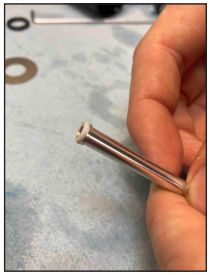
36.

Slide the sealhead back onto the shaft in the direction shown. Then remove the seal bullet.



37.

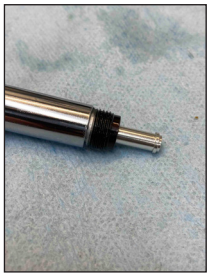
Apply a small amount of grease to the tip of the rebound needle. Then put the white washer on top. The grease will hold it in place.

38.

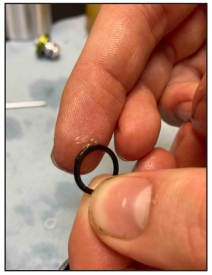
Install the rebound needle in the direction shown.

Remove the small o-ring located in the center of the housing.



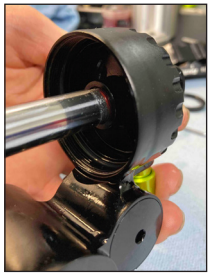

39.

Apply grease to the new o-ring and place it back in the groove.




40.

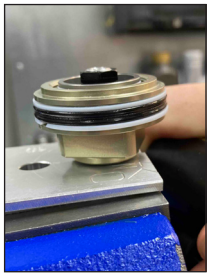
Apply a thin layer of red loctite to the threads of the damper shaft. Thread the shaft into the housing.

Damper Rebuild (continued)

41.

Clamp the damper shaft in the 12.7mm clamps and torque to 10Nm.



42.
For PRO service, please jump to step 68

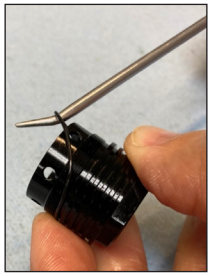
Press the HSC/LSC adjuster out of the housing





43.

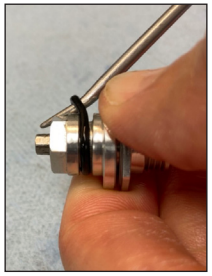
Remove the o-ring from the housing. Remove the o-ring from the piston.

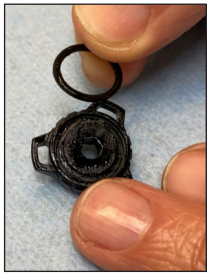




44.

Remove the o-ring from the compression adjuster. Remove the o-ring from the LSC knob.





45.

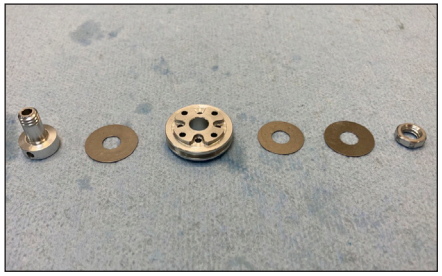
Using a 3mm allen wrench and a 9mm socket or open wrench, loosen the piston nut. Remove the piston nut.





46.

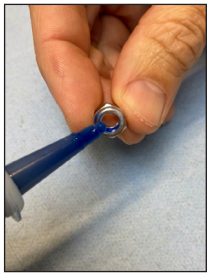
Clean and inspect the piston group.



47.

Begin reassembly in the reverse order, ensuring the piston orientation is as shown. Apply Loctite 243 Blue to the piston nut and alloy to cure.





48.

Using a 3mm allen wrench, and a 9mm wrench or socket, torque the piston nut to 3N.m and set aside.



Damper Rebuild (continued)

49.

Use 10mm and 9mm wrenches and disassemble the LSC assembly.



50.

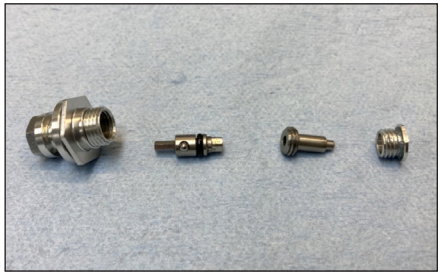
With the nut removed, gently press the inner shaft from the housing, taking care to not misplace the bearing.





51.

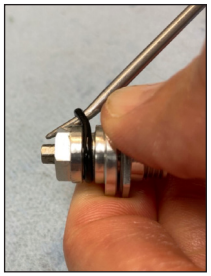
Lay the parts out for cleaning and inspection.



52.

Remove and replace the o-rings.





53.

Apply a light coat of grease to the assembly including o-ring, and place bearing on spring. Slide the assembly onto the hex shaft.

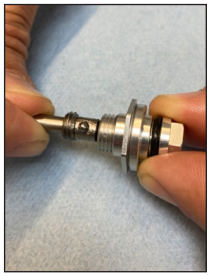




54.

The two pieces should sit together as shown. Insert the unit into the main assembly.

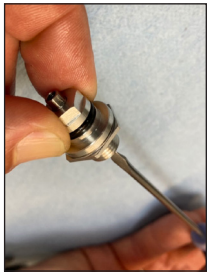




55.

Gently press the bearing down and slide the shaft until the threads make contact. Use a small flathead screwdriver to turn and tighten the shaft in the assembly.





56.

Apply Loctite 243 Blue to the threads of the LSC needle cap and allow to fully cure. Thread the collard nut into the assembly.

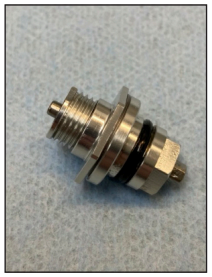




Damper Rebuild (continued)

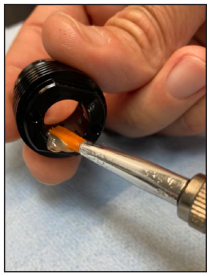
57.

Make sure the LSC needle cap is completely seated. Tighten using a 9mm wrench and an 10mm socket and torque to 3Nm.



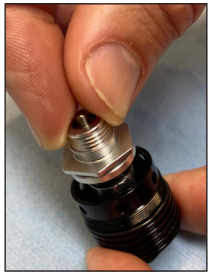

58.

Apply a light coat of grease the compression unit and to the inside lip of the compression cap where the adjustment rotation occurs.

59.

Guide the HSC/LSC unit into the compression cap, ensuring that the hex nut lines up with the internal hex recess.



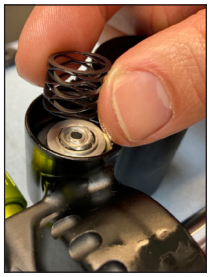

60.

Apply a coat of grease to the piston o-ring surface. Press the piston group into the housing (it can be helpful to slightly angle the piston group).




61.

Place the spring centering washer over the piston group as shown, making sure the raised lip is facing up. Next place and center the spring in place.

62.

Remove and replace the o-rings on the compression cap, and apply a light coat of grease.




63.

Insert the compression cap assembly into the housing, and start thread engagement by hand. Once threads are engaged, tighten to 5N.m using an 18mm crows-foot wrench.




64.

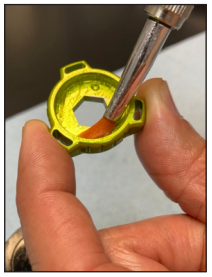
Insert the detent springs back into the cap. Apply a light coat of grease to the tops of the springs and holes, and place the bearings on top of the springs. The grease will hold the bearings in place.




Damper Rebuild (continued)

65.

Apply a coat of grease to the underside of the green HSC knob and press onto the HSC hex.





66.

Apply a light coat of grease to the bottom of the LSC knob and o-ring.



67.

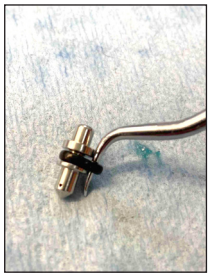
Apply Loctite 243 Blue to the compression knob bolt and allow to fully cure. After the thread lock has cured, reinstall the bolt using a 2mm allen wrench and torque to 1NMm. **The PRIME compression service is complete; please move to step 76 to complete your Topaz service.**





68.

Replace the o-ring on the compression needle and place it back into the loader. The pointed end of the needle goes in first.





69.

Place a 3mm allen key into the end nut of the compression loader and push the needle out.



70.

Remove and replace the upper and lower o-rings on the loader.





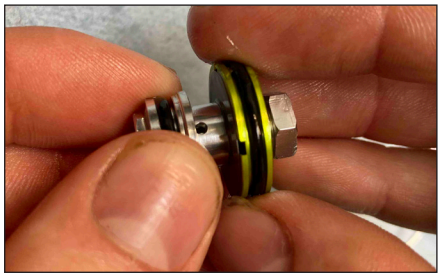
71.

Apply a generous amount of grease to the end of the loader as shown. Make sure the needle is flush with the bottom of the loader before reinstalling.



72.

Apply a thin layer of grease to the o-rings on the loader and the inside of the reservoir.



Damper Rebuild (continued)

73.

Re-install the compression loader into the reservoir.



74.

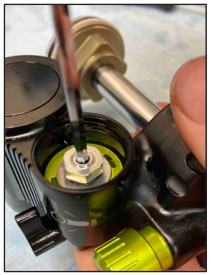
Move the compression switch to the open position as shown.



75.

Insert a 3mm allen key into the compression loader and push downward. You should feel a “click”.

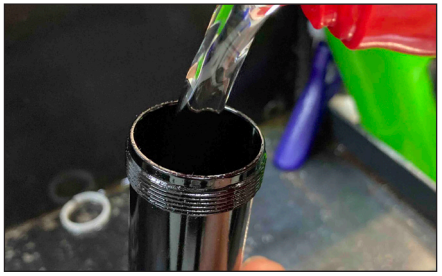
Reinstall the loader cover and tighten with a 4mm allen wrench to 3Nm





76.

Fill the damper body to the top with 2.5wt suspension oil.76



77.

Place the sealhead back on the damper body and thread on. Some oil will drain out as you thread it on.

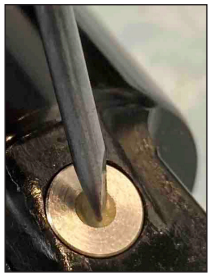
Using an 24mm crows-foot wrench, tighten to 27Nm

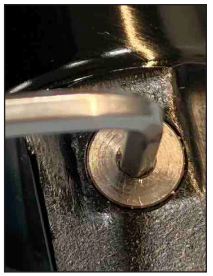




78.

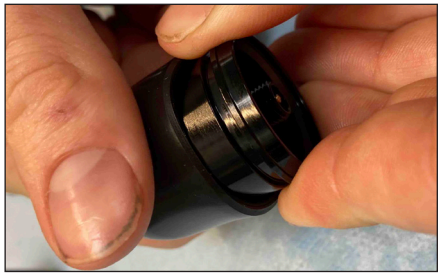
Invert the shock so the bleed screw is at the highest point. Use the small pick to remove the filling on the bleed screw. Then use a 2mm allen key to remove the screw.





79.

Slide bladder onto bladder cap.



80.

Fill the bladder reservoir with 2.5wt oil.

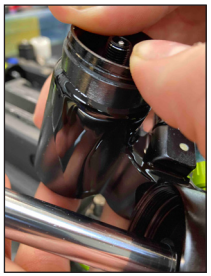




Damper Rebuild (continued)

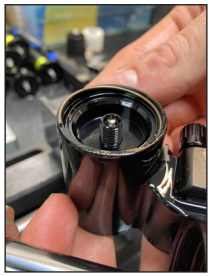
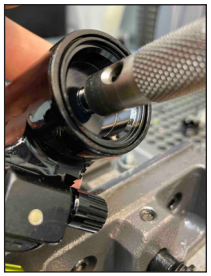
81.

Install the bladder and press downward to lower it into the reservoir. Oil will drain over the edge and out of the bleed port.



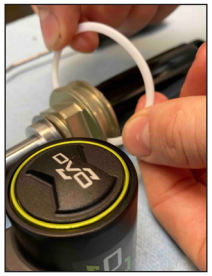

82.

Install the bladder retainer clip. Thread on the valve puller and pull the bladder up so it rests against the retainer clip.

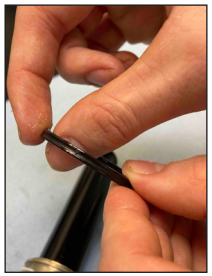
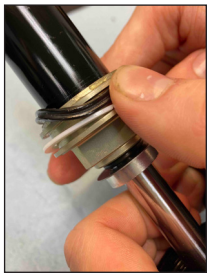
83.

Slightly stretch the new white bushing as shown and install it on the sealhead.



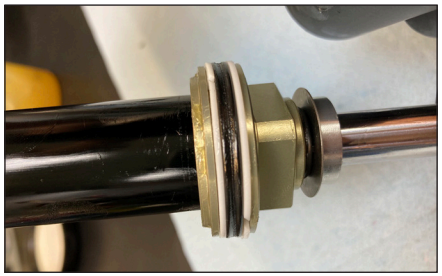

84.

Apply a thin layer of grease to the new main seal and install it on the sealhead.

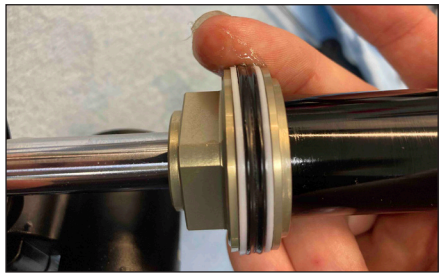
85.

Slightly stretch the second white bushing and install it above the main seal.



86.

Apply a thin layer of grease to the main seal and bushings.



Damper Bleed

87.

Thread on bleed syringe and fill syringe with oil. Ensure the oil level never drops below 10cc's. This will ensure no air gets re-introduced into the system.



88.

Slightly tilt the shock so the bleed valve is at the highest point. Begin to cycle the shock through the stroke to remove any air bubbles.



89.

Once you have cycled the shock repeatedly, ensuring that all air bubbles are out of the shock, remove the bleed syringe. Replace the 0-ring on bleed screw and re-install the bleed screw with a 2mm allen key.





Air Can Service

90.

Remove the o-ring below the outer air sleeve. Then remove the air sleeve.





91.

Remove the lower and middle o-ring from the body.





92.

Remove the upper o-ring from the body. Then remove the dust seal.





93.

Remove the main seal and white bushing from the body.

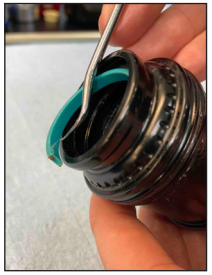




Air Can Service (continued)

94.

Remove the blue glide ring as shown.

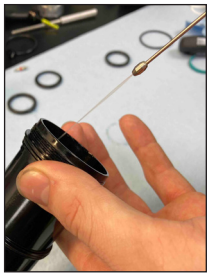




95.

Get your rebuild kit, part#223-9008. Clean the inside of the shock body with suspension clean. Make sure it is free of any dirt or debris.





96.

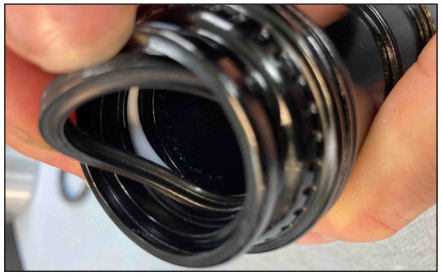
Slightly stretch the bushing as shown. Place the new bushing back onto the groove.





97.

Apply a thin layer of grease to the new main seal. Install your new seal into the body.



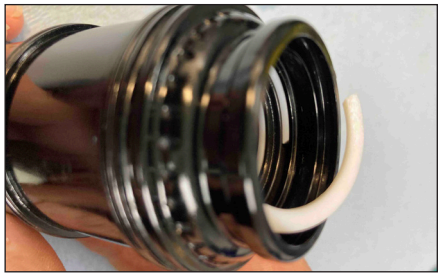
98.

Make sure the main seal is sitting flush with no gaps. Get the second white bushing and slightly stretch it as shown.



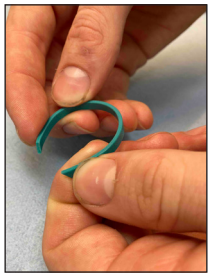
99.

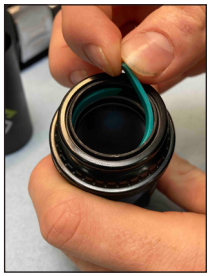
Install the second bushing above the main seal.



100.

Pre-curve and lightly grease the new blue glide ring, then install above white bushing.





101.

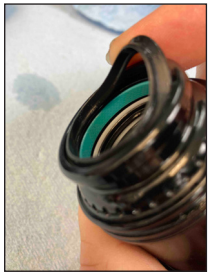
This image demonstrates correct installation with no gaps.



Air Can Service (continued)

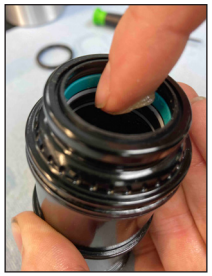
102.

Apply a thin layer of grease to the new dust seal. Install the new dust seal above the second bushing.

103.

Apply a thin layer of grease to the new seals and bushings. Then remove the bumper. Depending on the disassembly, the bumper may be on the shaft or inside the air can.




104.

Apply a thin layer of grease to the inside of the air sleeve and the three o-rings.



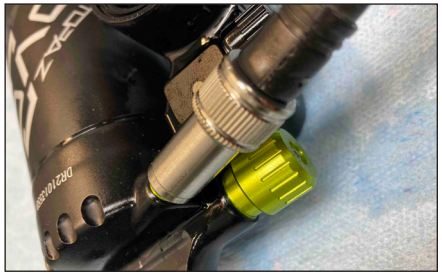

105.

Slide the air sleeve onto the body. Be cautious not to damage the three o-rings. Install the o-ring back in the groove below the air sleeve.




106.

Reinstall shock on bike, or affix to a hand-dyno and begin to add air to the main chamber. Be sure to cycle the shock several times as you gradually increase air pressure.



107.

Fill bladder to desired starting pressure. Be sure that the bladder always has between 140-180psi. Do not exceed 180psi.

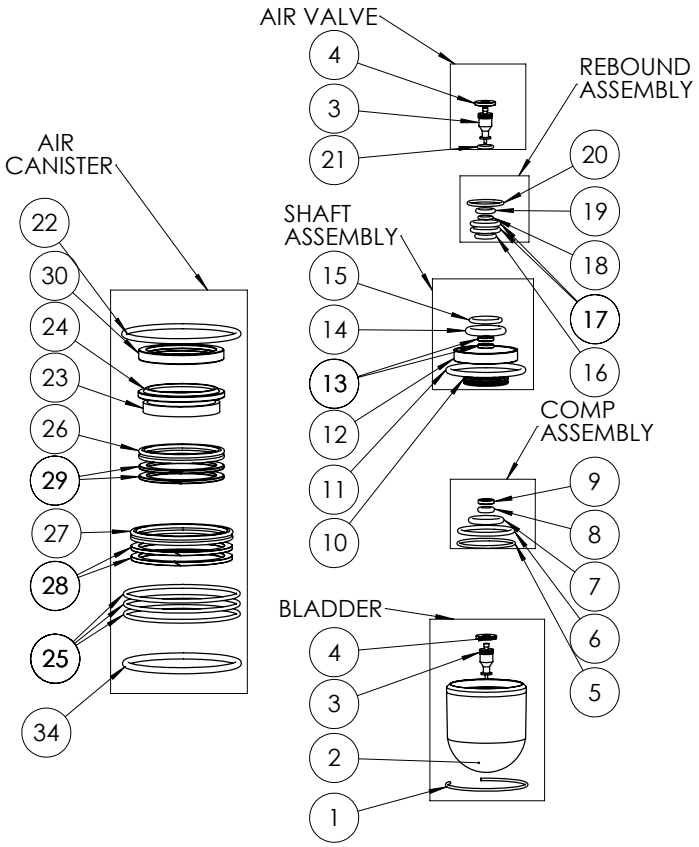


108.

Wipe down your shock to remove excess oil, reinstall air caps, and reinstall on your bike according to the frame manufacturer's specifications, and you're good to go!



Rebuild Kit Contents



ITEM NO.	DESCRIPTION	QTY.
1	BLADDER AIR PLUG CLIP	1
2	BLADDER	1
3	VALVE CORE	2
4	AIR CAP VALVE WASHER	2
5	COMPRESSION CAP O-RING	1
6	PISTON O-RING	1
7	COMPRESSION BASE O-RING	1
8	COMPRESSION NEEDLE O-RING	1
9	COMPRESSION NEEDLE SEAT	1
10	DAMPER ENDCAP SHAFT X-RING	1
11	DAMPER ENDCAP O-RING	1
12	PISTON GLIDE RING	1
13	INNER SHAFT SEAL WASHER	2
14	BOTTOM OUT O-RING	1
15	SHAFT TO HOUSING O-RING	1
16	REBOUND HOUSING LOWER O-RING	1
17	REBOUND HOUSING O-RING	2
18	REBOUND NEEDLE O-RING	1
19	REBOUND NEEDLE O-RING	1
20	REB KNOB TO REB HOUSING O-RING	1
21	AIR VALVE POST O-RING	1
22	AIR CANNISTER TO HOUSING O-RING	1
23	AIR CANISTER GLIDE RING	1
24	AIR CANNISTER DUST SEAL	1
25	AIR SLEEVE O-RING	3
26	X-RING NEGATIVE SEAL	1
27	X-RING POSITIVE SEAL	1
28	SUPPORT RING POSITIVE SEAL	2
29	SUPPORT RING NEGATIVE SEAL	2
30	TOP OUT BUMPER	1
34	AIR SLEEVE FIXING O-RING	1

Contents of the rebuild kit subject to change without notice based on product changes or improvements.