DVO
DEVELOPED SUSPENSION



EMERALD DH
OWNER'S MANUAL

Congratulations!

Thank you for purchasing DVO Suspension for your mountain bike. DVO Suspension products are designed by riders for riders. It is very important to your safety that you follow the guidelines, instructions and set up information provided in this owner's manual or on our website www.dvosuspension.com

Register Your Product

Log on to www.dvosuspension.com and click Register. DVO Suspension wants you to achieve the highest level of performance out of your suspension. Let us know which products you have so we can keep you updated with the latest set up and tuning information.

Please visit our website for more detailed information and tuning videos

Emerald Overview



Fig.1

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 suspension fork. 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 fork. Nevertheless, please be informed that special knowledge and tools are essential to install, service and to maintain DVO Suspension forks. Common mechanical knowledge may not be sufficient to repair service or maintain your fork. Therefore we strongly recommend getting your fork installed, serviced and/or maintained by a trained and qualified bicycle mechanic. Improper installation, service or maintenance can result in an accident.

- Suspension forks 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 fork.

- DVO Suspension forks are designed for the usage by a single rider only. DO NOT use DVO Suspension products on any motorized bicycle, motorized vehicle or tandem bicycles.

- 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 according to your frame, size and your riding style. Installing a fork that does not match the geometry of your frame could result in a failure of the fork itself and void the forks warranty. Installing a suspension fork 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.

- Please note that DVO Suspension forks do not come with the proper reflectors for on road riding. If you intend on riding on public roads or bicycle lanes your dealer should mount the required reflectors to your fork.

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

INTENDED USE

WARNING!

DVO Emerald DH fork is designed for Downhill use ONLY. Any other use of the suspension could result in fork failure and an accident.

BEFORE EACH RIDE

WARNING!

- 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 even death.
- Do you notice any cracks, dents, bent or tarnished parts of your suspension fork or any other part of your bicycle? If so, please contact a trained and qualified bicycle mechanic to check your fork and/or complete bike.
- Can you notice any oil leaking out of your fork? Check hidden areas like behind the fork guard under the crown and main seals. If so, please consult a trained and qualified bicycle mechanic to check your fork or bike.
- Make sure your wheels are perfectly centered in order to avoid any contact with suspension fork or brake system.
- With the through axle system, make sure that all the fixing bolts are tightened with the appropriate torque values. See Torque Table under Maintenance.
- Compress your fork with your body weight. If it feels too soft, inflate to the proper pressure to achieve accurate SAG, inflate until you have ensured it is within the proper values. Please also refer to chapter “SETTING SAG.
- Make sure your brakes are properly installed/ adjusted and work appropriately. This also applies to every other part of your bike like handlebars, pedals, crank arms, seat post, saddle, etc.
- Check the cable length and routing of your components. Make sure they do not interfere with your steering actions or full compression and extension of your fork.

FORK INSTALLATION

WARNING!

DVO Suspension strongly recommends that your fork be installed by a trained and qualified bicycle mechanic. Special knowledge and tools are essential to properly install DVO Suspension forks. Common mechanical knowledge may not be sufficient to install a DVO Suspension fork. If you intend on installing the fork by yourself, the whole job needs to be inspected by a trained and qualified bicycle mechanic. Please note, that improperly installed forks are extremely dangerous and cause damage to the product, serious injury or even death.

INSTALLATION INSTRUCTIONS

WARNING!

All DVO Suspension forks come with a threadless steer tube. Do not add a thread to it! DVO Suspension fork steer tubes are for one-time press fit only which cannot be removed. Do not try to replace the steer tube with a threaded steer tube. This will void the warranty of your fork and result in a failure of the product or cause serious injuries or even death to the rider.

Note! All fixing bolts have to be tightened with the proper fastening torque stated by the manufacturers.

1. Remove front brake from fork and existing fork from your bicycle. Afterwards remove the headset crown race from the fork.

2. Using a headset race installer, install the headset crown race on new steer tube making sure it's firmly against the fork crown. For fitment information see dvosuspension.com/tech

3. Remove top and bottom clamps from fork assembly to ensure proper mounting. Install the lower fork clamp on to the bike with all the headset parts included and a minimum 3mm spacer on the top of the headset. Now install upper crown ensuring headset operates smoothly and is just snug. Mark steer tube just above the top of the upper crown (*only if using a direct mount stem otherwise you must also install the stem before marking the steer tube*). Remove clamps from bike and cut steer tube. You can also use the following formula for steer tube length:

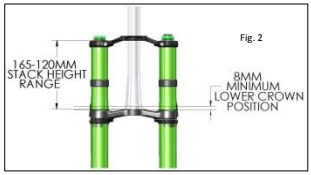
   Frame head tube + headset stack height+ 3mm + top clamp(12mm)

WARNING!

Minimum total stack height = 120mm and a maximum total stack height = 165mm

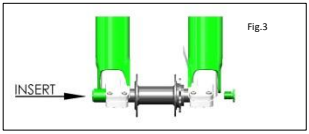
4. Install the lower fork clamp on to the bike with all head set parts and a minimum 3mm spacer on top of the headset, then the upper fork clamp.

5. Install remainder of fork assembly ensuring that the upper legs are tightened to the lower clamp at or within 8mm of the step in the upper tube. The upper legs must be the same on both sides. Tighten lower clamp bolts to the appropriate torque value of 7 N.m / 62 in.lbf



Do not tighten any of the upper clamp bolts until Step # 8

6. Install front wheel back on your bike. Insert the axle into the right drop-out / non-disc brake side then tighten axle bolt to the appropriate torque value of 7 N.m / 62 in.lbf. Leave drop-out pinch bolts loose until step #9.



7. Install the front brake according to the manufacturer's instructions and fasten brake line to guard. Make sure you adjust the brake pads properly. Ensure that brake line length is the appropriate length to not effect steering or compression and extension of fork.

8. **Remove bike from stand. With the front brake on, lightly rock the fork back and forth to ensure the headset preload is at the** appropriate torque value. Now tighten the upper fork clamp bolts to the appropriate torque value of 7 N.m / 62 in.lbf.

9. Holding the front brake, using your body weight compress your fork. Do this a few times to allow the fork legs to self-align on the axle. Now tighten the drop-out / axle bolts down to the appropriate torque value of 7 N.m / 62 in.lbf.

TIRE CLEARANCE

DVO Suspension forks are designed around both 26" and 27.5" tires; make sure you have the correct wheel size for your fork model. Each tire and manufacturer has a different outer diameter (tire width and height). Therefore the clearance between your tire and fork needs to be checked to make sure it does not come in contact with any part of the fork.

WARNING!

Inadequate tire clearance will result in an accident, personal injury or death.

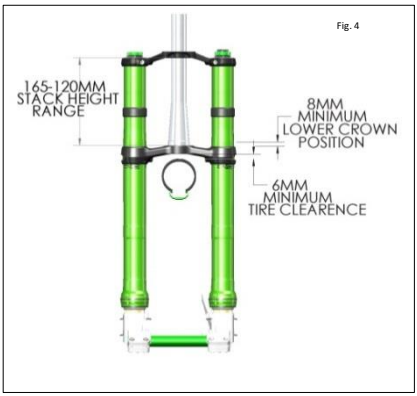
Tire Clearance Test:

1. Release all air from your fork.

2. Compress your fork completely

3. Measure the distance between the top of the tire and the bottom of the crown. **Make sure this gap is NO LESS than 6mm!** Exceeding maximum tire size will cause the tire to jam against the bottom of the crown when the fork is fully compressed.

4. Inflate the fork again.



Keep in mind that if you are using a mudguard the clearance can be even more limited. Repeat the "Tire Clearance Test" again to make sure the gap is big enough. Every time you are going to change your tires you have to repeat the test.

SETTING SAG

SAG is the amount your fork compresses under your body weight (don't forget to include your riding gear), also referred to as Rider Weight. Since this is a Downhill specific fork, measure SAG by mounting your bike with your riding gear on, standing up and in the ready position. The ready position is basically, knees and elbows slightly bent, bars weighted but body weight on your feet. Every rider has a different riding weight and ready position based on rider height and style.

1. During initial SAG set-up ensure that the SAG ADJUST / PRELOAD knob is turned all the way counterclockwise. This is a secondary setting and should not be used when setting your initial SAG.
2. Refer to the recommended SAG settings chart below. To ensure the proper function of your fork and to deliver optimum performance of it, setting proper SAG is the only way to find the right air pressure for your fork.

TRAVEL	SAG in %	SAG in MM
203mm	20 - 25%	40.6mm - 50.75mm
	25 - 30%	50.75mm - 60.9mm
	30 - 35%	60.9mm - 71.05mm

Air Pressure Chart					
Air Pressure Range 60-100psi					
Rider Weight	140-160lbs	160-180lbs	180-200lbs	200-220lbs	220lbs +
Air Pressure	60-65psi	65-75psi	75-85psi	85-95psi	90-100psi
OTT (Clockwise Turns)	1-3	3-6	6-9	9-12	12-15

FORK CONTROLS and ADJUSTMENTS

AIR SPRING

The DVO Suspension Emerald DH is an air sprung fork. Increasing air pressure will create a stiffer feeling fork. Decreasing air pressure will create a softer feeling fork. Please refer to the air pressure guide and SAG setting to achieve the most optimum air pressure setting for your riding style

OFF THE TOP SENSITIVITY

The Off-The-Top (OTT) feature is an exclusive DVO Suspension design that allows the rider to adjust the initial feeling of the suspension. Typically, a stiffer feeling fork (high air pressure) will have poor or no small bump compliance. With OTT, a stiff set-up (high air pressure) can also have amazing small bump sensitivity. This is accomplished by externally increasing or decreasing the preload on the negative springs. Increasing the OTT will make the fork more sensitive (softer) at the beginning stroke. Decreasing the OTT will make the fork less sensitive (firmer). The OTT feature will not change the end stroke of your fork. Clockwise = Softer Counterclockwise = Stiffer

LOW SPEED COMPRESSION

Low speed compression controls the influence of the rider's weight and the bikes attitude under slower suspension movement regardless of riders speed. This is accomplished by turning a needle in or out of a port located in the base valve. Please visit our web site for more details and tuning information.

HIGH SPEED COMPRESSION

High Speed Compression controls the damping force under higher suspension movements regardless of the riders speed. This is accomplished by turning a knob to increase or decrease preload on a pressure spring on a shim stack located in the base valve. Please visit our website for more details and tuning information.

REBOUND

Rebound controls the speed at which the fork extends after compression. Turn the knob clock-wise for SLOWER rebound and counter clock-wise for FASTER rebound. Rebound damping control is relative to the amount of air pressure used. Higher air pressure requires more rebound damping and a lower air pressure will require less rebound damping so please adjust accordingly. Please visit our web site for more details and tuning information.

MAINTENANCE



WARNING!

Failure to properly maintain your fork will result in an accident, personal injury or death.

We recommend all DVO Suspension service should be performed by a qualified bicycle mechanic. Service information and instructions can be obtained at www.dvosuspension.com or by contacting your local DVO Suspension dealer or distributor.

The Emerald contains nearly 400cc's of oil (damper side: 330cc's) (air side: 50cc's). Oil is the heart of the system, other companies reduce oil volumes to keep the overall weight to a minimum, that's like cutting off your leg to run faster. Oil is used as a damping element, a lubricant, and helps keep everything running cool. Due to the Emerald's generous use of oil, reliability, durability and performance is greatly enhanced but please change your oil regularly for optimum performance.

Recommended Maintenance Schedule	
Maintenance	Interval
Clean Stanchion Tubes	Every ride
Check Air Pressure	Every ride
Inspect Stanchion Tube for Scratches	Every ride
Check Torque Settings	25 hours
Service Air Spring	100 hours
Service Damper Unit	100 hours

Recommended Max Torque Specifications	
Part	Torque Specification
Top Crown	7 N.m / 62 in.lbf
Lower Crown	7 N.m / 62 in.lbf
Drop Out Bolts	7 N.m / 62 in.lbf
Axle	7 N.m / 62in.lbf
Air Top Cap Assembly	30 N.m / 265 in.lbf
Rebound Top Cap Assembly	30 N.m / 265 in.lbf
Bottom loader	30 N.m / 265 in.lbf
Air End Cap	30 N.m / 265 in.lbf
CTA Bolts (8)	3.6 N.m / 32 in.lbf

Oil Volume	
Damper Unit	330cc
Upper Leg Air Side	50cc
Air Chamber	5cc

Service Kits	
Item	Part Number
Seal Kits	1419015
CTA Mounting Hardware	1419016
Air Piston Kit	1419017

Tuning Kits	
Item	Part Number
Bottom Loader	1419020
Shim Kits	1419021

LIMITED TWO (2) YEAR WARRANTY

If any component of your DVO Suspension product is found to be defective in materials or workmanship within the term of this Limited Two Year Warranty (the "Agreement"), the defective component will be repaired or replaced, at the option of DVO Suspension free of charge, within thirty (30) days after receipt of the Suspension product by an authorized DVO Suspension dealer, freight prepaid, together with the original retail invoice or other evidence of the date of purchase.

NOT COVERED: This warranty does not cover damage resulting from accidents, alteration, neglect, misuse, abuse, or improper use, lack of reasonable or proper maintenance, improper assembly, repairs improperly performed or replacement parts or accessories not conforming to DVO Suspension's specifications, modifications not recommended or approved in writing by DVO Suspension activities such as acrobatics, stunt jumping, ramp riding, racing, commercial use, and / or normal wear or deterioration occasioned by the use of the product. Items subject to normal wear or deterioration include but are not limited to oil, dust seals, oil seals, and bushings. In addition, this warranty is void in the event that the forks are used with any rental bicycles, unless DVO Suspension provided prior approval in writing for such use. This warranty also does not include any expenses related to the transportation of the DVO Suspension product to or from an authorized DVO Suspension dealer, labor costs to remove the DVO Suspension product from the bicycle, or compensation for inconvenience or loss of use while the DVO Suspension product is being repaired. This warranty will be automatically void if serial number of the DVO Suspension product is altered, erased, defaced or otherwise subject to any tampering.

PURCHASER. This warranty is made by DVO Suspension with only the original purchaser of the DVO Suspension product and does not extend to any third parties. The rights of the original purchaser under this warranty may not be assigned.

TERM. The term of this warranty shall commence on the date of purchase and shall continue for a period of two (2) years from the date of the original purchase.

PROCEDURE. In event of a defect covered by this warranty, the purchaser should contact an authorized DVO Suspension dealer or a DVO Suspension Service Centre.

ENTIRE AGREEMENT. This warranty supersedes any and all oral or express warranties, statements or undertakings that may previously have been made, and contains the entire agreement between the parties with respect to the warranty of this DVO Suspension product. Any and all warranties not contained in this warranty are specifically excluded.

DAMAGES. Except as expressly provided by this warranty, DVO Suspension **SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ASSOCIATED WITH THE USE OF THE DVO SUSPENSION PRODUCT OR A CLAIM UNDER THIS AGREEMENT, WHETHER THE CLAIM IS BASED ON CONTRACT, TORT OR OTHERWISE.** The foregoing statements of warranty are exclusive and lieu of all other remedies. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you.

DISCLAIMER. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ALL IMPLIED WARRANTIES ARISING FROM A COURSE OF DEALING, USAGE OF TRADE, BY STATUTE OR OTHERWISE, IS HEREBY STRICTLY LIMITED TO THE TERM OF THIS WRITTEN WARRANTY. This Agreement shall be the sole and exclusive remedy available to the purchaser with respect to this purchase. In the event of any alleged breach of any warranty or any legal action brought by the purchaser based on alleged negligence or other tortious conduct by DVO Suspension the purchaser's sole and exclusive remedy will be repair or replacement of defective materials as stated above. No dealer and no other agent or employee of DVO Suspension is authorized to modify, extend or enlarge this warranty.

WARNING. Always install, repair and use your DVO Suspension product in strict compliance with it's owner's manual.

OTHER RIGHTS. This warranty gives you the specific legal rights, and you have also other rights which vary from state to state (USA only).

APPLICABLE LAW. Any disputes arising out of this agreement or the use of this DVO Suspension product will be governed by the laws of the country of United States and will be decided by the Courts of California.


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