THE BREAK-IN PERIOD

Your Curnutt will break-in properly in about 10 hours of 'normal' riding. This means that, much like a new motor, the contact-moving surfaces of the shock will 'seat' better if they are allowed to move throughout their entire range or stroke, without introducing them to undue or violent spikes of energy (as in landing from jumps). Once your shock has broken-in, you will be able to much more accurately feel what the shock is doing with more or less air pressure in the secondary air chamber (Bottoming Control). Adjusting air pressure during the break-in period will be confusing at best. That being said, if your shock repeatedly bottoms over normal trail terrain during break-in, it is appropriate to introduce more air pressure to compensate - 5 psi at a time. Additionally, it should be remembered that proper break-in requires the shock to cycle through its entire stroke or travel. If it appears that your shock is not using its entire stroke (too stiff) - over normal riding conditions - then reducing its air pressure would be an appropriate measure - BUT NEVER GO UNDER 50 PSI! Once your Curnutt AIR is broken-in. controlling bottoming with proper air pressure and the Ramping Dial will be more accurately achieved.

REBOUND DAMPING

Rebound Damping is your shock's ability and speed to get back into its neutral position (sag setting) to accept another compression or bump. Rebound damping is sometimes more correctly referred to as rebound speed, and is controlled by the red knob found at the back of your shock. The knob has an 'S' for Slow and an 'F' for Fast etched into the shock body. The knob has a range of 5 full turns. Turning the knob all the way 'in' - clockwise - is the slowest setting. From this 'seated' position, turning the knob 'out' - counterclockwise - 5 complete turns will put you at the fastest rebound setting. Dialing your rebound to a medium setting (2 ½ turns from seated) is a good way to start. From there you can test different settings (1/2 turn at a time) over the same set of obstacles. Please note that, by design, Curnutt shocks rebound progressively more slowly than standard shocks as they reach the end of the rebound stroke (neutral sag setting). So, in the first ½ of the stroke rebound will be faster, and in the last ½ of the stroke the rebound will progressively slower. This feature – impossible for standard shocks – makes your ride incredibly smooth and mostly free from pedaling interruptions.

Your appropriate rebound speed setting is dependent on two variables: 1) the contour of the terrain, and 2) the speed with which you ride over this terrain. The faster you ride over obstacles, the faster your rebound will have to be. If you find your rear wheel bouncing, you should slow your rebound, as your shock is expanding back to its neutral position too fast. If you find

GENERAL SETUP

CAUTION! YOU WILL DAMAGE YOUR FRAME AND SHOCK IF YOU DO NOT CORRECTLY SET UP AND MAINTAIN YOUR REAR SHOCK AND SUSPENSION.

SHOCK AIR PRESSURE WARNING

If you bottom out your shock on a regular basis, you are undersprung or have too little air pressure in your shock, and will damage your frame and shock. Bottoming your shock on a consistent basis is considered by Foes to be improper care of your bicycle frame and shock, and will void the warranty for both, and all other warranties. If you bottom your shock consistently, STOP!... and first check to make certain you have proper air pressure in your shock. (It is vitally important to check the air pressure on the Curnutt XTD AIR Shock EVERY TIME YOU RIDE.) If you have proper air pressure, and your shock bottoms or behaves unlike it has previously, then it may have a problem. At this point it is extremely important to not ride the bicycle, and make plans to get the shock to a Foes technician to have it checked out.

FOES SPECS FOR BUILDING

FOES FRAME SPECS FOR BUILDING

- Bottom Bracket Width: 68mm shell
- Bottom Bracket Axle Length: determined by crank choice
- Seat Post Diameter: 31.6mm
- Head Tube Diameter: 1 1/8" Zero stack headset only
- Fork Type/Length: The PLS 2:1 was designed around, and works best with a 4" or 3" single crown fork. NO DUAL CROWN FORKS! Use of Dual Crown Forks on the PLS 2:1 will void all warranties!
- Front Derailleur: 34.9mm Top Pull traditional style
- Rear Hub Spacing: 135mm Quick Release Hub
- Disc Brake: comes equipped with 'I.S. Frame Standard' mount

A WORD ABOUT FORK CHOICE

The Foes PLS 2:1 is a full suspension frameset! It has 3.5" of rear travel, and was designed as a XC bicycle. The Foes PLS 2:1 is not, by any means, a freeride, jumping, or stunt riding frame. It is made for XC rides that, at one point or another, require the full amount of travel of the shock and fork. It is designed around a single crown fork that will balance the front and rear of the bicycle - suspension-wise and geometry-wise. Therefore, a 4" single-crown fork works well with this frame. Going to a 5" travel fork will compromise the geometry of the frameset, making it under-steer and less responsive. $\frac{3}{3}$

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A FINAL WORD

Foes and Curnutt make the finest and toughest framesets and suspensions in the world, capable of standing up to the fastest pro riders and the most brutal courses in competition. But, what our frames don't hold up to is... ignorance, neglect and abuse. Many of the frames, shocks and forks returned to Foes for "Warranty" issues are clearly problems due to ignorance of the important information contained in this instruction manual (and a little common sense).

Therefore, it is vitally important that you read this manual thoroughly, follow its instructions, ride your bicycle as was intended, maintain and respect your Foes frameset, and ask for help from our technical department when questions arise. Following these guidelines will allow you to get the most performance and longevity from your Foes and Curnutt products.

WHAT FOES WILL DO UNDER THE WARRANTY

Foes will repair or replace any part that is determined by Foes to be covered by this warranty. This limited warranty is made ONLY to the original owner and is not transferable. All claims must be made through an Authorized Foes Dealer, and must be accompanied by the original bill of sale or proof of purchase that identifies the bicycle frame by serial number. The original owner is responsible for this and any and all labor and transportation charges associated with the warrantied repair or replacement of parts, even if Foes determines that it is under warranty.

WHAT IF YOUR FRAME IS NOT COVERED

If the warranty claim on your Foes frame is determined to be invalid, Foes Racing will offer a replacement frame/swingarm/part of at least equal value at a reduced price. This transaction will be offered only through an Authorized Foes Dealer, and under the following conditions: the frame has been registered with Foes Racing; the Frame is the property of the original purchaser; the owner provides a valid sales receipt. This crash replacement is only available to the original owner, and, for a time period of three years from the original purchase date. The replacement frame must be assembled by an Authorized Foes Dealer to maintain the Foes warranty. All freight charges associated with the crash replacement are the responsibility of the original owner.

FOES FRAMES SHOULD BE INSPECTED PERIODICALLY BY A FOES DEALER

We cannot stress enough that building-up a pro-level frame is not an endeavor recommended for home mechanics. Special tools and skills accumulated over time are needed to accomplish this successfully, and your dealer can answer 99% of all the questions related to the complete build of a high-end frameset. Due to this fact, this manual covers only the most elemental information.

USEFUL PRODUCT LIFE

Every Foes Frameset has a useful product life. The length of this product life will vary with the construction and materials of the frame or fork, the maintenance and care the frame and fork receives over its useful product life, and the type and amount of use the frame or fork is subject to. Users in competitive events, trick riding, jumping, ramp jumping, aggressive riding, riding on severe terrain, riding in severe climate or weather, ...continued

riding with heavy loads, commercial activities, and other types of nonstandard use can dramatically shorten the useful life of the Foes Frame or Fork. Any one or a combination of these factors and conditions may result in an unpredictable failure of a Foes Frame or Fork that would not be covered by warranty. ALL FOES FRAMES, FORKS, AND SHOCKS SHOULD BE PERIODICALLY CHECKED BY A RETAIL OUTLET OR A FOES DEALER for indicators of stress and/or potential failure, including cracks, deformation, corrosion, paint peeling, dents, and any other indicators of potential problems. These are important safety checks, and may be very important to help prevent accidents, bodily injury to the rider, and a shortened life of the Foes frameset or fork. THIS IS AN INTEGRATED AND FINAL STATEMENT OF THE FOES LIMITED WARRANTY. FOES DOES NOT AUTHORIZE OR ALLOW ANYONE. INCLUDING FOES DEALERS OR RETAIL BICYCLE OUTLETS, TO EXTEND ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED. FOR FOES. NO OTHER REPRESENTATION. AND NO STATE-MENT FROM ANYONE BUT FOES, INCLUDING A DEMONSTRATION OF ANY KIND BY ANYONE SHALL CREATE ANY WARRANTY REGARDING THIS FRAME OR FORK. ALL OF THE REMEDIES AVAILABLE TO THE ORIGINAL OWNER ARE STATED HEREIN. IT IS AGREED THAT FOES LIABILITY UNDER THIS LIMITED WARRANTY SHALL BE NO GREATER THAN THE ORIGINAL PURCHASE PRICE AND IN NO EVENT SHALL FOES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAM-AGES.

DISCLAIMER

All other remedies, obligations, liabilities, rights, or warranties, expressed or implied, arising from law or otherwise including, but not limited to, any claimed implied warranty of merchantability, any claimed implied warranty arising from course of performance, course of dealing or usage of trade, and any claimed implied warranty of fitness, are disclaimed by Foes and waived by the original owner. Some states, jurisdictions, countries, and provinces do not allow some or all of the limitations set herein or the exclusion or limitation of incidental or consequential damages. If any provision is found enforceable, only that provision shall be stricken and all others shall apply. This limited warranty does not provide the original owner with certain legal rights and recourse, and the original owner may possess other rights or recourse, depending on the state, jurisdiction, country or province.

WARNING: BICYCLE RIDING MAY BE HAZARDOUS TO YOUR HEALTH, AND EVEN FATAL! ALWAYS WEAR A HELMET AND PROPER PROTECTIVE CLOTHING.

that your rear suspension is too harsh, it may be that your rear wheel is not rebounding back into its neutral position fast enough for the next consecutive bump. This is called 'packing', and it forces the shock to remain in, or near, the compressed or 'packed' position, un-ready for the next obstacle. The correct setting is the 'fastest' one that allows the rear wheel to neither bounce, nor pack. Your correct rebound setting will become obvious by testing various settings over the same set of obstacles at nearly identical speeds.

ADJUSTING THE HEAD ANGLE

The head angle may be very easily adjusted to suit the rider's individual preference, or course or trail demands. Lengthening the shock, eye-to-eye, will steepen the head angle for precise steering and tight technical trail. Shortening the shock, eye-to-eye, will slacken the head angle for faster terrain. The length of the shock may be adjusted merely by loosening the jam nut and turning the whole shock body (reference: as you stand over the bike)... to the right, or clockwise, to lengthen... to the left, or counterclockwise, to shorten. Range of Adjustment: the shock may be shortened till there are few, if any, rod-end threads (red) showing; it may be lengthened till the linkage gets close to, but does not touch, the seat tube. **Don't forget to tighten the jam nut when finished.**

CURNUTT SHOCKS

All Curnutt AIR XTD Shocks are built by hand under the supervision of Curnutt Racing Shocks, Inc. Each shock is tested and checked for problems before it leaves the Foes factory. There is no reason for any shock to not perform correctly, once you have read and followed the instructions within this manual. Curnutt Shocks have a one year warranty against manufacturer's defects and materials. Shocks in question for warranty status will be determined by Foes at the time of inspection.

GOOD RIDER BICYCLE MAINTENANCE

1) Keep your bike clean. Riding a dirty bike will cause all of your bearings, bushings, contact points, finish, shock shaft and seal head area, and every other moving part to wear much faster than if they were cleaned regularly. Keeping your bike clean will also give you that satisfied feeling of taking care of your investment in a high quality hand-crafted frame. Foes recommends first rinsing loose dust and mud with hose water, taking care not to blast water into areas that water could damage over time by lack of evaporation quickly, like, pivots, bushings, bearings and shock parts, as well as the components installed on your frame, like bottom brackets, head sets, gear sets and the like. Wash the bicycle with a mild dilution of detergent and a soft cloth. Rinse again, taking care not to force water into those areas mentioned. Dry with a towel. A light coating of a light lubricant, like WD-40, can help displace water from areas that are hard to reach. However, it is important to note that these light lubricants can actually wash away oil and grease used to lubricate the bicycle, and render brakes inoperable. If you use a light lubricant, use it only to displace water, and keep it away from brake pads and rotors.

- 2) Keep your bike lubricated. After cleaning your bike, lubricate your chain and drive train with an appropriate lube.
- 3) Periodically check all of the bolts and fasteners on your bike. Do not overtighten anything, as this too will void your warranties just check and "snug" each fastener. Also, it is a good idea to check all of your frame's welds and tube junctions for cracks and any damage. Aluminum has a limited life inspect your frame in a well lit area, and inspect carefully especially after crashes.
- 4) Keep the shock shaft, and surrounding areas, clean of dirt, debris and crud wipe it off after every ride.

MINIMUM - MAXIMUM SEAT POST INSERTION

In addition to the minimum seat post insertion mark on most seat posts, you must follow the following recommendations for seat post insertion: a 31.6mm seat post must be inserted a minimum of 4" into the seat tube of the frame. Anything less than this will not be covered under warranty.

REPLACEABLE DERAILLEUR HANGERS

The 2009 Foes PLS 2:1 is equipped with a replaceable derailleur hanger. This part is installed as a safety feature, as well as a convenience to you, the owner. It is not uncommon for foreign objects, such as sticks, stones and other debris to bend your hanger. A bent hanger can occur from shifting hard under load, and/or transporting your bicycle. Foes derailleur hangers are designed to bend and break! This inherent design actually keeps more

IMPORTANT! Always re-cap your shock's Schraeder valve after adjusting the air pressure. Failure to do so will allow dirt to get into the opening of the valve and be blown into the internals of the shock the next time you adjust the air pressure - dirt will destroy the integrity of the seals and surfaces.

To adjust the spring rate and sag on the air shock, first roll the o-ring on the shock shaft all the way toward the seal head (back). Attach your pump's chuck to the rear Schraeder valve and lower the air pressure with the release button. Next, pump to 60 psi (a good starting place), and unscrew the chuck. Gently climb onto the bicycle with your gear (backpack, water, tools anything you would carry on your ride) without bumping up and down, and coast a few feet. Then, gently climb off. Measure how much the shock compressed – the distance between the o-ring and the seal head should be ½". If it is more than $\frac{1}{2}$, add some air pressure – 3 psi at a time, to start. Climb on the bike and re-test the sag. If the sag is less than ½" at 60 psi, then lower the pressure 3 psi at a time. Repeat this process until you have reached the proper sag - note the amount of air pressure to reach that sag with the gear you have on for your next ride. Foes recommends that you set the correct air pressure each time you ride, and once you know how much air pressure it takes to get the proper sag with your typical riding weight, you can simply adjust your shock to that pressure without checking your sag. Once you have broken-in your shock and you have a feel for what it does in various situations, you can adjust your air pressure to suit your needs.

BOTTOMING CONTROL

Once you are out on the trail or course, you may need to adjust your shock to resist bottoming. The air pressure in the secondary air chamber (front part of shock) is for course tuning, and the ramping dial is for fine tuning. It is quite proper for your shock to bottom once in awhile. However, if it is consistently bottoming, you will need to adjust the air pressure in this air chamber. The air pressure comes from the factory set at 65 psi, yet, may be adjusted safely between 50 and 100 psi. The best setting is the least amount of air pressure that allows the shock to resist bottoming on 99% of most obstacles.

A good rule of thumb is to leave the ramping dial adjusted 2 turns counter-clockwise from seated (mid-point – there are four complete turns of adjustment), and then adjust the pressure in the air chamber – more pressure to resist bottoming. Then, once you have your basic adjustment made, you may fine tune with the ramping dial. The dial, essentially, reduces the volume of air in your shock, effectively increasing the air pressure without using your pump. Turn the knob 'in' or clockwise to increase bottoming resistance, and 'out' to lessen it. When re-adjusting, if there is any doubt about where the dial is set, turn the knob clockwise until it stops (the seated position), and then back it out as necessary to a maximum of four counter-clockwise revolutions from seated. Do not force past 4 turns from seated – this can force the compensator actuator out of its pressed-in position, and will require a Foes Technician to press it back in9

CURNUTT AIR SHOCK SET-UP

Read all of the following instructions before making any adjustments! Congratulations on purchasing the finest rear shock ever produced in the mountain bike industry. The AIR XTD shock is the result of five years of testing by the Foes Mountain Bike Racing Team and Curnutt Shocks. The XTD's first full season of use at National and World Cup levels resulted in a NORBA National Champion and a Junior World Champion. Curnutt introduced "Position-Sensitive" or "Platform-Damped" technology to the bicycle industry, and this has sent a serious wake up call to the "big boys" in the bicycle suspension field. We highly recommend you take the time to fully read and perform the following set-up instructions.

CURNUTT WARRANTY

Foes Racing will not warranty or perform warranty service for shocks that have been ridden undersprung (too little air pressure in main chamber), ridden with excessive preload or air pressure, or what Foes deems to be rider error due to improper use or maintenance. Conversely, if you take care of your bike and perform routine maintenance and inspections of your frame, parts and accessories, and you happen to notice problems, like the shock bottoming out, and you stop riding before damage occurs to the frame or shock, then your warranty will remain intact. Riders who keep riding while their Curnutt Shocks are undersprung, bottoming out consistently, or overall, appear not to be in proper working condition, will not receive warranty status, upon inspection of the shock.

BASICS

The Curnutt AIR is an air sprung, fluid damped racing shock which works off of patented 'Piston Cavity' technology exclusive only to Foes framesets. These shocks work on, essentially, the same principles as the conventional coil spring Curnutts, yet, use air as the spring instead of metal. The use of air eliminates the need for different spring rates for different rider weights, and removes almost a pound of weight. Curnutt AIR shocks are also built around the Foes 2:1 rear leverage ratio platform, which allows for far lower air pressures than similar travel air shocks from other manufacturers. Lower air pressures (like lower spring rates on Curnutt coilover shocks) have the benefits of being able to valve the shock more for trail obstacles rather than the huge energies coming from the high spring rates themselves. This makes it easier on the CNC connectors, welds and the frame itself. Lower air pressures are easier to pump to on the trail, and allow for more accurate external adjustments to your shock.



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There are 3 main types of adjustments that you can make to your Curnutt AIR shock: Spring Rate and Sag (by air pressure through Schraeder valve – back end of shock), Bottoming Control and Stable Platform (by air pressure through Schraeder valve and turning ramping dial – at front end of shock), and Rebound Speed (by turning rebound dial – at back end of shock). Each of these adjustments will be covered below.

AIR PRESSURE AND SAG

The primary air chamber, whose schraeder valve is found in the back part of the shock, serves as the main spring for the Curnutt AIR. The correct spring rate, or air pressure, is determined by achieving ½" of sag, measured at the rear shock. Once you have your correct sag set, you are 90% set up for riding. The following describes the 'what' and 'whys' of sag and air pressure, and how to achieve the proper pressure.

Shock Sag, or just sag, is the amount the shock compresses under the static weight of the rider (and gear) and is described as the shock's 'neutral' or 'ready-for-bump' position. Sag allows your shock to absorb 'negative' forces, like pot holes, that extend the shock from the neutral position. Having the proper sag will enable your bike to absorb negative forces (potholes and drop outs) and positive forces (rocks, roots, landings, etc.). The recommended sag of the Curnutt AIR shock (2" stroke - 4" travel) is ½" (13mm), measured at the shock shaft.

As previously noted, the correct sag is determined by the air pressure in the primary air chamber. This primary air chamber serves as the spring for the shock, and the more pressure in this chamber, the heavier the spring rate for the shock. Heavier riders need heavier spring rates (higher air pressures) and lighter riders need lighter spring rates (lighter air pressures) to correctly damp their shock. Having the proper air pressure will determine the proper sag. For example, an air pressure of 60 psi may yield the proper sag of ½" for a 170 pound rider (your findings will most likely differ).

How to correctly pump your shock

First, acquire a pump designed specifically for shocks — do not use pumps designed for inflating tires. Thread the pump's chuck onto the shock's Schraeder valve until pressure registers on the gauge — do not over-tighten. Stroke the pump's handle until you have reached the desired air pressure. You may decrease the air pressure with the button release if needed. Unthread the pump crisply until the chuck breaks free, releasing a whoosh of air. This air is not from the shock, but released from the hose, and will not affect your final air pressure reading. The pressure you have in your shock is the final reading on the gauge before disconnecting the pump. IMPORTANT! Do not re-attach your pump to check the pressure, as it will be wrong. This is due to the some of the shock's air volume rushing into the pump's hose, making the reading inaccurate.

expensive damage to your swingarm from occurring. If these were stronger and more resistant to bending and breaking, there is a good chance that these forces would bypass the hangers and destroy the area of the frame attached to the hangers. Derailleur Hangers are available from your Foes Dealer for a nominal fee, and are not covered under any of the Foes warranties. It is a good idea to purchase a few extra hangers to prevent a breakage from interrupting your riding time. The part number for the derailleur hanger for the PLS 2:1 is HA04.

GENERAL SIZING GUIDELINES BY RIDER HEIGHT

Small – Riders up to 5'6" (168cm)

Medium - Riders 5'6" to 6' (168cm to 183cm)

Large - Riders 6' and up (183cm +)

FOES PLS 2:1 FRAME GEOMETRY

В Head Tube Length (inches) C Head Tube Angle (degrees) D Seat Tube Angle (degrees) E Bottom Bracket Height (inches) F Chainstay Length (inches) G Estimated Wheelbase (inches) Top Tube – Actual (inches) Н Top Tube - Effective (inches) Seatpost Diameter (mm) Rear Wheel Travel (inches)

Α	В	С	D	Е	F	G	Н	I	J	K
S 15.5	4.75	71±0.7	73.5	12.4	16.7	41.5	21.3	22	31.6	3.5
M 18	4.75	71±0.7	73.5	12.4	16.7	42.5	22.1	23	31.6	3.5
L 20.5	5.25	71±0.7	73.5	12.4	16.7	43.5	23.3	24	31.6	3.5

CURNUTT OPTIONS AND UPGRADES

Please note that the PLS 2:1 comes as a 3.5" travel frameset with the Curnutt AIR shock. The PLS frameset will accept the Curnutt AIR shock or the Curnutt Coilover XTD

However, this may only be achieved through purchasing a whole new shock, as the internals of the Curnutt AIR cannot be modified. Please see your authorized Foes dealer for all options and upgrades.







2:1 ProLite-XC

2012 Model Frameset



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CURNUTT SHOCKS



OWNERS MANUAL

It is your responsibility to read this manual to fully understand your warranty on this Foes frameset

LIMITED WARRANTY

LIMITED TWO YEAR WARRANTY ON FOES PLS 2:1 SUSPENSION FRAMES

Foes warrants the original owner that a new PLS 2:1 bicycle frame is free from defects in material and workmanship for a period of two years from the date of the original purchase by the original consumer. Curnutt Shocks are covered under warranty by Foes Racing for a period of one year from the date of purchase. This warranty covers manufacturers defects in materials and workmanship. Foes limited warranties do not apply to paint/finish or any other part attached to the bicycle. Including Forks, drive train, brakes, seat, seatpost, handlebar, stem or wheels. Paint/Finish and stickers are covered under a limited one year warranty if deemed defective. Wear and tear are not covered under this warranty. The original owner shall pay all labor and freight charges associated with the repair or replacement of all parts under Foes limited warranties. Even if something is covered under Foes warranties, Foes will not pay the freight costs to, or from, Foes Racing.

WHAT IS NOT COVERED

Failure due to accident, abuse, neglect, normal wear, improper assembly, improper fit, use of dual crown forks, poor maintenance, maintenance (including assembly) by other than an authorized Foes dealer, or use of parts inconsistent with the use originally intended for the bicycle as sold are not covered by this warranty. What is the originally intended use? Riding in a consistent, smooth manner in an approved location for bicycles. Riding in a manner other than this — jumping repeatedly, jumping to flat ground, improper maintenance, no or maintenance will void the warranty.

Foes warranties remain valid under normal riding conditions and care for each type of frame. Foes warranties will be immediately voided if Foes determines that the frameset/shock's integrity has been compromised by lack of regular care; or has been used for a type of riding other than what the frameset was intended; or the rider's weight/skill level is different than what the shock was built for; or the bicycle was not assembled by a authorized Foes bicycle dealer. If it is determined that the shock has been bottomed repeatedly, or the shock has repeatedly not been able to fully use all of its travel (either of which can be easily determined) due to any of many reasons (low air pressure; incorrect spring rate; damaged shock, etc.), the Foes Warranties on the frame and shock will be voided.

NOTES AND SET-UP

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