

knob has a range of 3 full turns. Turning the knob all the way 'in' – clockwise – is the slowest setting. From this 'seated' position, turning the knob 'out' – counterclockwise – 4 complete turns will put you at the fastest rebound setting. Dialing your rebound to a medium setting (2 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 slow. This feature – impossible for standard shocks – makes your ride incredibly smooth and mostly free from pedaling interruptions.

Your appropriate rebound speed setting is, basically, 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 that your rear suspension is still 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 - so speed up the setting. 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.

SPRING RATES

We develop "proper" spring rates and valving for your shocks from many factors - riding weight, type of riding, personal riding style, as well as testing information we develop over the course of the season. Therefore, Foes recommends that you ask our Curnutt shock technician for his recommendations on spring rates when you feel you need to change.

Since Curnutt valves its shocks for rider weights as well as spring rates, changing your spring rate may not be as simple as just changing your spring. You may have to have a Curnutt Technician change the valving for the different spring rate, also. Please call Foes for any spring rate changes to your shock - we can get you set up properly. Some spring changes, without a valving change, can be dangerous, as the rebound action can become uncontrolled, making riding over larger obstacle dangerous.

GENERAL SETUP

CAUTION! YOU WILL DAMAGE YOUR FRAME AND SHOCK IF YOU DO NOT CORRECTLY SET UP AND MAINTAIN YOUR REAR SHOCK. DO NOT OPERATE YOUR FRAMESET UNTIL READING AND UNDERSTANDING THIS MANUAL.

SHOCK AIR PRESSURE WARNING

It is imperative that you check your shock's air pressure to prevent bottoming before each ride. Allowing the shock to bottom repetitively stresses the shock, as well as the frame, and shortens the life of the frameset.

WARRANTY

Hydro has a 2 year limited Warranty from manufacturer's defects, and the Curnutt Shock has a 1 year limited warranty from manufacturer's defects. A detailed explanation is contained in the Foes/Curnutt Warranty addendum. Please read this addendum to fully understand the explanations and limitations of the Foes and Curnutt warranties. Please see the Fox Warranty Manual for a complete description of warranty and support of Foes owners with Fox Shocks.

FOES SPECS FOR BUILDING

FOES FRAME SPECS FOR BUILDING

- Bottom Bracket Width: 83mm shell
- Seat Post Diameter: 31.6mm
- Head Tube Diameter: 1.5"
- Fork Type/Length: The Hydro was designed around a 8.5" to 8" travel fork, single or dual crown
- Front Derailleur: None
- Rear Hub Spacing: 12mm through axle w/ 150mm hub spacing
- Disc Brake: The Hydro accepts a standard I.S. rear caliper mounted on the swingarm. Use of larger rotors requires the appropriate manufacturer-sized caliper adapter.
- Chain Guide System: ISCG05, Call Foes for options
- Rear Tire - Max Recommended Size: 2.5"

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. Anything less than this will not be covered under warranty. **Important: Do not insert seat post further than 7.5" - you may not get it back out!**

REPLACEABLE DERAILLEUR HANGERS

Foes Hydro 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 loads, crashes, branches, or transporting your bicycle. Foes derailleur hangers are designed to bend and break!

This inherent design actually keeps more 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 dropout area of the frame. 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 an extra hanger or two to prevent a breakage from interrupting your riding time. The part number for the derailleur hanger for the Hydro is HA01.

CURNUTT XTD COIL SHOCK SET-UP

Read all of the following instructions before making adjustments!

Congratulations on purchasing the finest rear shock ever produced for mountain bikes. Curnutt has introduced all new technologies to control damping in your new shock. Consequently, you should disregard all that you "know" about how shocks work when setting up your Hydro Curnutt's neither work, nor feel, like any other damper on the market and so it is particularly important to read this manual through thoroughly before riding or adjusting your Curnutt.

BASICS

The following sections devoted to shock set-up pertain to the *Coilover* only - please see the XTD AIR Shock Addendum if you have the Curnutt AIR. There are three main types of adjustments that you can make to your Curnutt, whether it is XTD Coil or Air: **Spring Preload, Bottoming Control** (and ancillary compression damping), **and Rebound Damping**. Again, these instructions pertain only to the XTD Coilover shock - Please refer the Curnutt Air Shock Addendum for tuning the AIR Shock.

setting, or, 2 turns from seated. Here's how to get there: Turn the dial 'in' clockwise till it stops - this is the 'seated' position. Now, turn the dial 'out' counterclockwise 2 full turns. You are now in the 'middle' position, and have two turns of adjustment - either way! If there is any doubt where your adjustment is set, **START OVER** and 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.

VERY IMPORTANT! DO NOT TURN THE RAMPING KNOB 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 IN, POSSIBLY LEADING TO A NON-WARRANTIED REBUILD OF THE SHOCK.

If, at your present air pressure, you are happy with the overall ride and sensitivity, but are never using all of the travel, turn the Ramping Adjustment Knob counter-clockwise 1/2 turn at a time. This will allow the XTD to use more of the stroke. If you are bottoming out, turn the Ramping Adjustment Knob clockwise 1/2 turn at a time to stiffen the last part of the shock's stroke. If you are bottoming consistently when the Ramping Knob is seated, then introduce more air pressure using your hand pump - 5 psi at a time. Then, re-test. You will have to do some air pressure-ramping adjustment tests to get a feel for the optimum adjustments for both.

Higher air pressures will result in improved pedaling efficiency (anti-bob). Don't mistake this for stiction! – it is supposed to ignore small bump or rider input. This is what makes 'anti-bob' or 'stable platform' possible.

EXCEEDING 100 PSI COULD RESULT IN SHOCK FAILURE... DON'T DO IT!!!

Once you find an acceptable setting, never think this is the final adjustment. Some courses/terrain have more pedaling sections (higher pressure), some may have 'chatter' bumps (lower pressure), and some may have excessive big 'hits' and landings (higher pressure and more Ramp). Consider the Curnutt XTD Shock and adjustments a tool easily customized to meet your course needs.

REBOUND DAMPING - XTD

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 bottom of your shock. The knob has an 'S' for Slow and an 'F' for Fast etched into its face. The

SPRING RATE - RIDER WEIGHT CHART

HYDRO spring Rate in lbs	Rider Weight with Gear in lbs
200	120 - 140
250	140 - 150
300	150 - 170
350	170 - 190
400	190 - 210

While the shock is fully extended, loosen the preload adjuster ring until it no longer touches the spring. Tighten until the preload adjuster first touches the spring. Using a felt tip marker, like a Sharpie, put a mark on the spring, and another on the shock body next to the first. This will help you determine exactly when one full turn of the preload adjuster has been made. If less than one full turn of the preload adjuster is used to obtain the proper length of sag (1") the spring rate is too heavy, and the next softer spring rate should be used. If more than four full turns are needed to achieve the proper sag, the spring rate is too light, and the next firmer spring rate should be used. Never use more than five full turns of preload. Riding with the improper spring - either too firm or too light - can encourage stress cracks and in some cases, frame failure. *DON'T DO IT!*

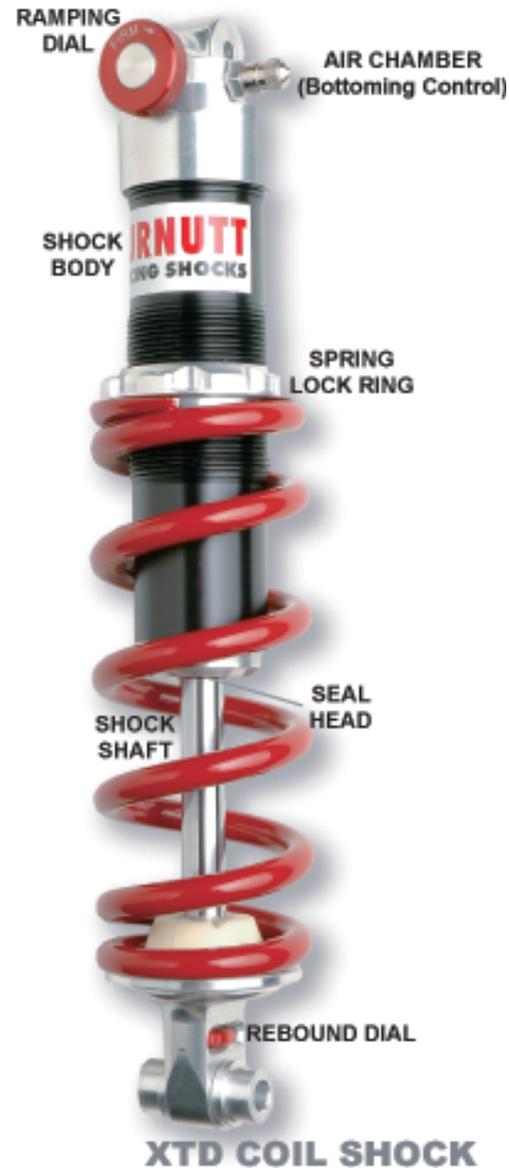
BOTTOMING CONTROL

Since your Curnutt was actually built, valved, sprung and pre-loaded according to your specific rider weight, skill level and type of riding you mostly enjoy, your Curnutt shock is about 95% tuned to you right from the factory. The other 5% will be the Bottoming Control, and tuning your Rebound Damping. This section will speak to Bottoming Control and the air pressure that affects it. Rebound Damping will be addressed in a following section. Your Curnutt XTD Shock is a true fluid-damped, coil-over shock which, uniquely, uses air pressure to control bottoming (as well as reduce fluid foaming). The range of air pressure needed inside your Curnutt XTD is between 65 and 100 psi. This means, between these minimum and maximum pressures lies an ideal setting for the control of bottoming the rear suspension over a given terrain. As said initially, your shock's compression damping is mostly set for you at the factory, yet, adjusting the air pressure will tune your shock's ability to resist bottoming – an important feature for the life and longevity of your Curnutt Shock and Foes Frame. **Do not exceed 100 psi or run the shock with less than 50 psi!**

HOW TO CORRECTLY PUMP YOUR SHOCK

To get the correct pressure in your shock it is important to follow some guidelines. Thread the pump's connector onto the Schraeder valve on the shock. Pump to the desired pressure. Quickly unthread the connector from the Schraeder valve until the connector breaks free. The pressure you have in your shock is the one you pumped to. At this point do not re-attach the pump to check your setting, as it will be inaccurate. This is due to some of the shock's air rushing into the pump's hose, making the reading wildly incorrect.

CURNUTT SHOCKS 2:1 Hydro



**XTD
COILOVER**

BOTTOMING RESISTANCE - COARSE TUNING

Compression Damping is your shock's ability to absorb the bumps and obstacles found on your ride or race, and is mostly set at the factory to your specs. Optimum compression damping includes your shock being able to use all of its travel (8") over the entire range of obstacles and terrain found on a typical ride - yet, not bottom repetitively! Once you have broken-in your bicycle, it is normal for your Curnutt to bottom once in a while on the course - this will not damage your shock. However, the repeated bottoming of your shock during a ride is indicative of too light of a spring rate or too little air pressure in the bottom-out chamber, and will eventually damage the shock's seal head and lead to other maladies, such as the coil-binding of your spring and the transmission of unwanted energies through your frame, increasing the likelihood of stress cracks. Therefore, it is very important to maintain the optimum air pressure inside your shock before each and every ride.

Assuming that your shock has the correct spring rate and sag, controlling bottoming of your XTD rear suspension is achieved by air pressure in your shock. But, before you adjust this, it is best to adjust the fine tuning Ramping Knob to its middle adjustment (2 turns 'out'). Please read the next section, XTD BOTTOMING CONTROL - FINE TUNING now, to do this, and then return to this next paragraph...

Too little air pressure and your shock will bottom too easily. Too much air pressure and your rear suspension will not bottom, but it can become harsh and stiff. This is because, as well as controlling resistance to bottoming (the last one-fourth of your shock's travel), air pressure can also affect damping in the first three-fourths of the shock's travel, effectively reducing small bump compliance if used too much. That is, as you increase your air pressure to control bottoming, this will stiffen the shock over the entire stroke, to some degree. The point is... there are diminishing returns when you increase air pressure to control bottoming, and these returns result in shock stiffness. The best air pressure is the least amount that will yield consistent bottoming resistance. Foes recommends an initial setting of 65 psi, yet, your optimum setting for each course or trail will avail itself only by riding and testing different pressures over the same terrain. NEVER GO UNDER THE 50 PSI!

XTD BOTTOMING CONTROL - FINE TUNING

Once you have your 'optimum' air pressure introduced, you may fine tune your bottoming control using your XTD Ramping Dial (see picture on page 5). There are four full turns of adjustment but is best to start in its middle

Spring Preload, or just preload, is the amount of squish adjusted into your shock's spring via the adjuster/lock ring found on the top part of the spring. Preload, in turn, controls the amount of rear wheel 'sag' that your bicycle has at the neutral or 'ready for bump' position. Sag allows your shock to absorb negative forces, like pot holes and jumping, that extend the shock - not just the positive forces that compress the shock. Having the proper sag will enable your shock to be ready to absorb these negative and positive forces found on the trail with aplomb. Your Preload comes set according to your specs from the factory. However, once you have gone through the break-in period and you have some experience with adjusting the other settings (Bottoming Control and Rebound), it is normal for riders to test using more or less preload (sag).

SETTING TOTAL SAG

Sag can be measured at the rear wheel's axle or at the shock. These instructions approach this measurement at the shock. Your XTD Shock should have 7/8" of shock stroke sag when the rider's full weight with gear is at rest on the bicycle. The best way to do this is to have someone check the total length of your shock, eye to eye, while you are feet on the pedals and balanced on the bike on level ground. You can use a nearby wall to assist you in your balancing... but don't lean or bounce - this will give a false measurement. Next (or first), measure the length of your shock at rest without the rider. The difference of these two measurements is your sag.

To adjust the sag you must adjust the spring's preload. This is done by turning the spring Preload Ring. To get more sag turn the ring counter-clockwise (this will extend the spring). To get less sag turn the ring clockwise (this will compress the spring). Only through spending the time testing and re-testing will you get proficient at sag setting and determining what setting works best for YOU. Foes recommends that you do not touch your sag until you are very familiar with how your rear suspension works and feels. After some familiarity with it, Sag can be checked when the rider weight with gear, or the technicality of the terrain, changes over 5%. *Warning... If you find that you are using more and more preload (or fine or coarse ramp adjustment) to prevent bottoming, your Curnutt may need to be serviced.*

DETERMINING PROPER SPRING RATE

Proper spring rate is the one that allows you to make adjustments in Damping and Rebound to achieve effective overall bump compliance and bottoming control described in this manual. If your rear suspension is not behaving the way this manual describes, you may contact our suspension techs to procure advice. To test for the proper spring rate follow these steps:

FOES
RACING



HYDRO

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CURNUTT SHOCKS

OWNERS MANUAL

*Do not operate your Foes Frameset
or Curnutt Shock until you have
fully read this manual*

Hydro