READ THIS MANUAL CAREFULLY!
It contains important safety information.
Keep it for future reference.

LEFTY SPEED

DLR2 & SL

Owner's Manual Supplement

120025.PDF

CONTENTS

Please note that the specifications and information in this manual are subject to change for product improvement. For the latest product information, go to http://www.cannondale.com/tech/.

About This Supplement

Cannondale Owner's Manual Supplements provide important model specific safety, maintenance, and technical information. They are not replacements for your Cannondale Bicycle Owner's Manual.

This supplement may be one of several for your bike. Be sure to obtain and read all of them.

If you need a manual or supplement, or have a question about your bike, please contact your Cannondale Dealer immediately, or call us at one of the telephone numbers listed on the back cover of this manual.

You can download Adobe Acrobat PDF versions of any Cannondale Owner's Manuals or Supplements from our website: http://www.cannondale.com/bikes/tech.

- This manual is not a comprehensive safety or service manual for your bike.
- This manual does not include assembly instructions for your bike.
- All Cannondale bikes must be completely assembled and inspected for proper operation by a Cannondale Dealer before delivery to the owner.

⚠ WARNING

This document may include procedures beyond the scope of general mechanical aptitude.

Special tools, skills, and knowledge may be required. Improper mechanical work increases the risk of an accident. Any bicycle accident has risk of serious injury, paralysis or death. To minimize risk we strongly recommend that owners always have mechanical work done by an authorized Cannondale retailer.

Safety Messages

In this manual, information which affects your safety is emphasized in the following ways:

⚠ WARNING

A WARNING indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.

CAUTION

A CAUTION Indicates a potentially hazardous situation which, if not avoided, can result in serious damage to the product. The matters described under CAUTION may, if not avoided, lead to personal injury, or results depending on the situation and degree of damage. Important matters are described in CAUTION (as well as WARNING), so be sure to observe them.

A NOTE provides helpful information or tips intended to make the information presented clearer.

Intended Use

INTENDED for cross-country riding and racing which ranges from mild to agressive over intermediate terrain (e.g., hilly with small obstacles like roots, rocks, loose surfaces and hard pack and depressions). In XC riding, there are no large "sick drop" or drop offs, jumps or launches (wooden structures, dirt embankments) requiring long suspension travel or heavy duty components. Cross-country forks are light-weight, favoring nimble speed over brute force. Suspension travel is relatively short since the bike is intended to move quickly on the ground and not spend time in the air landing hard and hammering through things.

NOT INTENDED for use in extreme forms of jumping/riding such as hardcore mountain, Freeriding, Downhill, North Shore, Dirt Jumping, Hucking etc.

⚠ WARNING

USING YOUR LEFTY IMPROPERLY IS HAZARDOUS.

Warning Label

Located on the lower leg of the Lefty. Do not remove it. If it is missing or damaged, you can obtain a free replacement from Cannondale.

Bike Suspension And Your Skills And Abilities

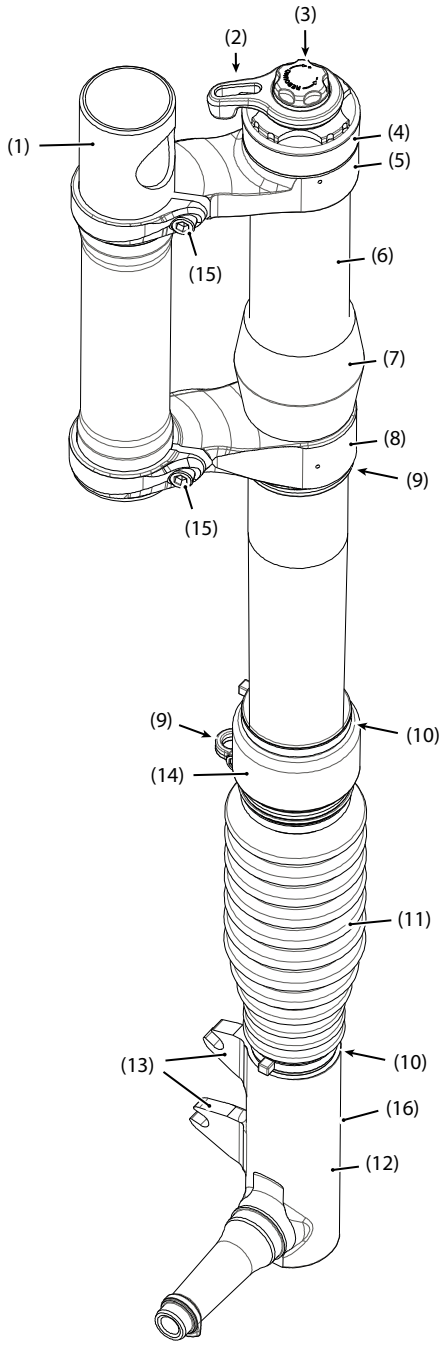
⚠ WARNING

YOU COULD HAVE A BAD ACCIDENT IF YOUR SKILL IS NOT UP TO HANDLING A SUSPENSION SYSTEM.
Suspension systems (front fork, rear shocks) can increase the handling and stability of most bicycles. If you lack the skills and experience necessary to ride at higher speeds and maneuver over difficult terrain at the greatly increased performance level, you can ride faster than your abilities. You can lose control of the bike in these conditions and crash. Anytime you lose control of the bike, especially at high speed and in advanced terrain, you risk severe injury or death in a crash.

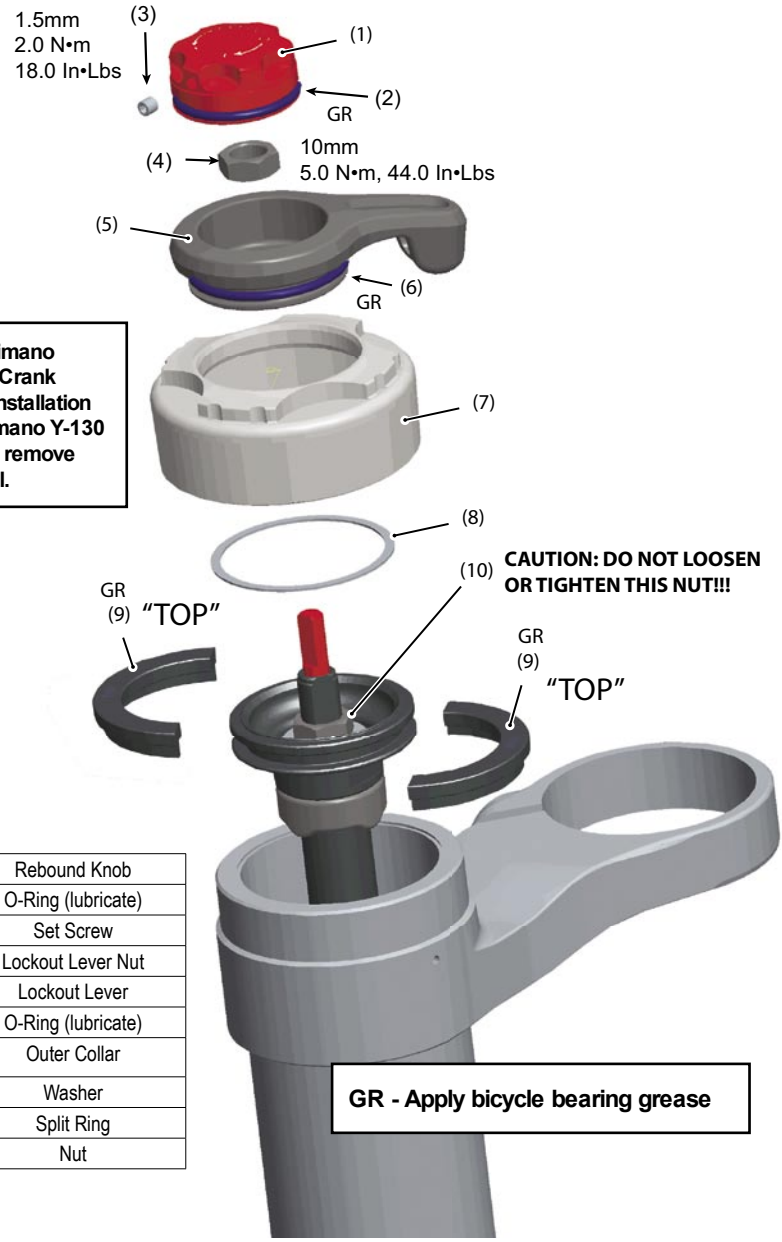
- Ride at reduced speeds.
- Learn the performance characteristics of your bike and suspension components before trying any downhill or very fast biking.
- Ride within your skills and abilities.
- Take a bicycle training course.

FORK OVERVIEW
DLR2 AND DLR SL

1 Steerer Tube
2 Lockout Lever
3 Rebound Knob
4 Outer Collar
5 Upper Clamp
6 Outer Tube
7 Bumper
8 Lower Clamp
9 Cable Guide
10 Zip Tie
11 Boot
12 Spindle
13 Brake Mounts (6" IS Standard)
14 Air Filter Assembly
15 Clamp Bolts
16 WARNING Label



DLR2 AND DLR SL REBOUND & LOCKOUT ASSEMBLY



1	Rebound Knob
2	O-Ring (lubricate)
3	Set Screw
4	Lockout Lever Nut
5	Lockout Lever
6	O-Ring (lubricate)
7	Outer Collar
8	Washer
9	Split Ring
10	Nut

FRONT WHEEL

REMOVAL

1. Place bike in a work stand with front wheel off the ground.
2. Loosen the brake caliper mounting bolts.

3 Tilt the lower caliper bolt out of the boss so the caliper is up out of the way of the disc. Snug up on the upper bolt to hold caliper in place.

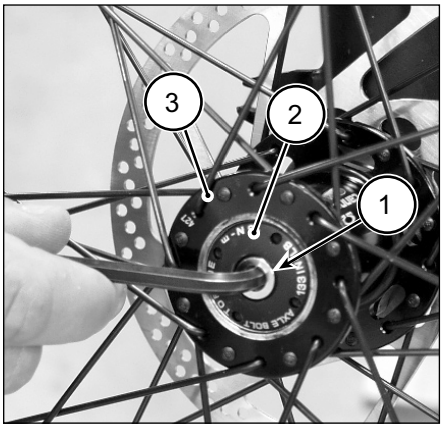
Note brake alignment shims between Lefty brake bosses and the caliper.

4. Turn hub bolt (1) counter-clockwise to remove the hub from the spindle.

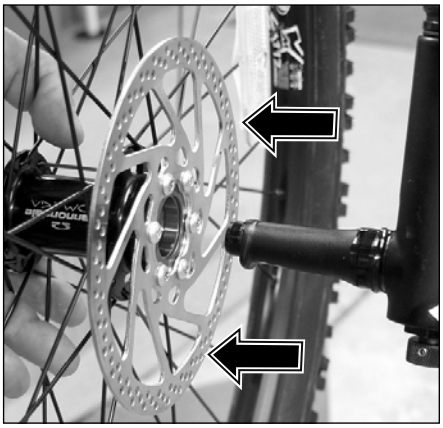
NOTE: As the bolt is turned counter-clockwise, it will begin to back against the hub cap bolt (2) causing the hub (3) to be drawn out and off the spindle bearing seats. Since the hub bolt is actually retained inside the hub body by the hub cap, the bolt will remain in the hub when the wheel is removed. There is no need to remove that cap from the hub. See the exploded view on page 8.

CAUTION

Make sure the axle bolt is completely loose before attempting to remove the wheel from the spindle.



5. Carefully slide the wheel off of the spindle carefully.



CAUTION

1. Cover the opening of a removed hub/ wheel with a clean towel to prevent contamination.
2. Protect spindle when wheel removed. A fall or drop to the ground can destroy or damage the spindle.

INSTALLATION

1. Inspect the inside of the wheel hub for contamination and and the condition of the hub seal. Take corrective action if necessary.

   Wipe all parts clean with a dry shop towel and apply a high-quality bike grease to:

   I.D. of the larger hub cartridge bearing .

   Both spindle bearing lands .

   Spindle axle bolt threads.

WARNING

Do not contaminate brake caliper, pads, or rotor with grease.

2. Slide the wheel straight onto the spindle so, the larger hub bearing starts to position on it spindle seat. At this point, the axle bolt threads can correctly engage the threaded spindle if the wheel is held on straight.

NOTE:

Install the front wheel by positioning the bike horizontally with the spindle facing up. Then place the hub straight down onto the spindle, and tighten the axle bolt.

3. **When the axle bolt threads engage the spindle, turn the bolt clockwise with finger force slowly to allow the hub bearings to slide onto the spindle bearing seats.**

   Once the hub has been drawn onto the hub completely, and proper threading is evident, use torque wrench to tighten to final 15.0 N•m (133.0 In•Lbs).

4. Reinstall the brake caliper. Tighten bolts to 78.0 In•Lbf (9.0 N•m.)

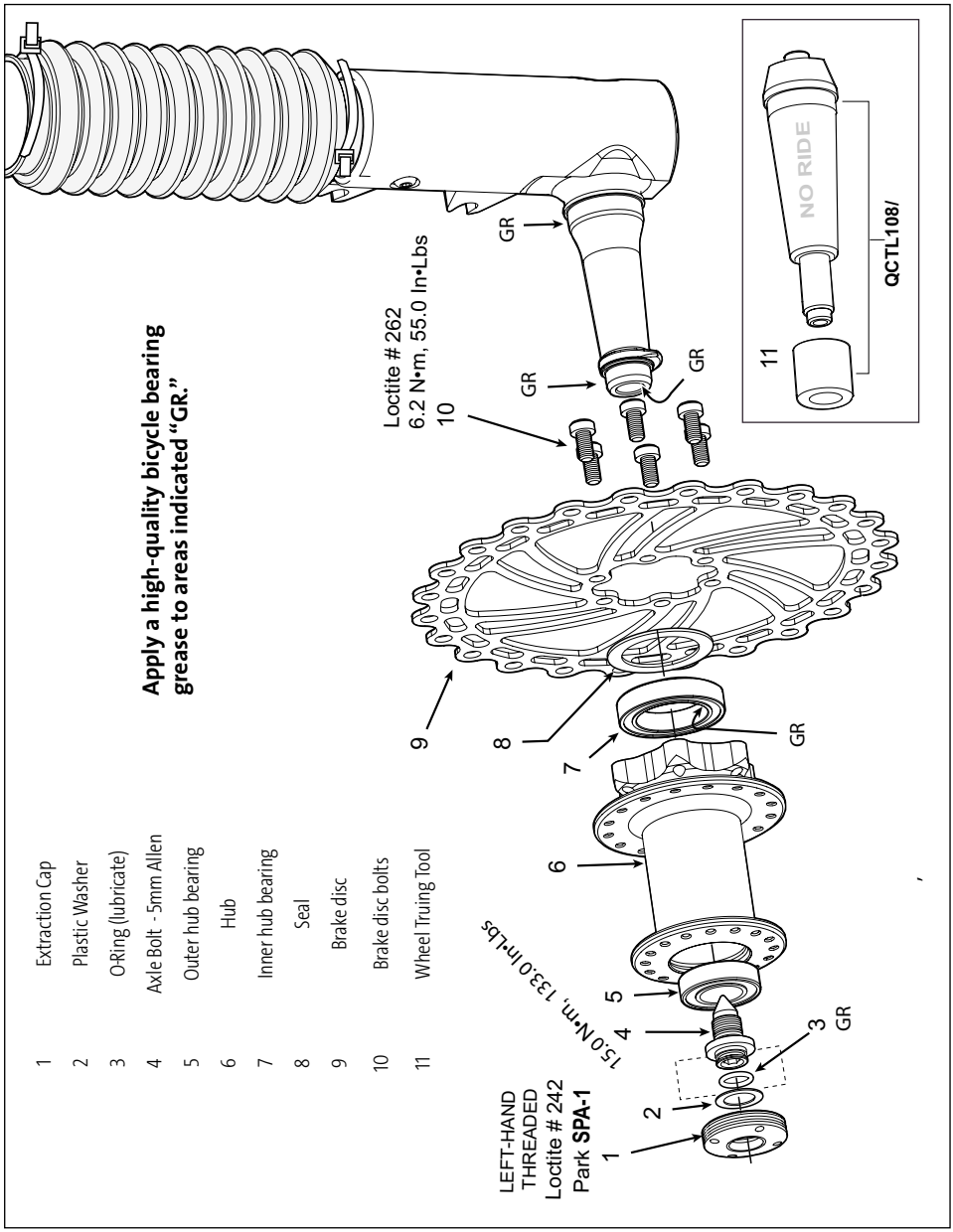
CAUTION

LOCATE DISC BETWEEN THE PADS. Replace shims that are in use, be sure the shims are positioned between the caliper (adapter if any) and inner face of the fork mounts not under the head of the caliper bolts.

USE ONLY 16 MM (Cannondale kit # LEFTYBOLTS. Longer bolts can result in contact with the brake rotor causing severe damage. Check clearance between the bolt tips and rotor after remounting the caliper.

5. Spin the wheel to make sure it spins freely. Be sure to test the brakes for proper operation before riding.

WHEEL HUB

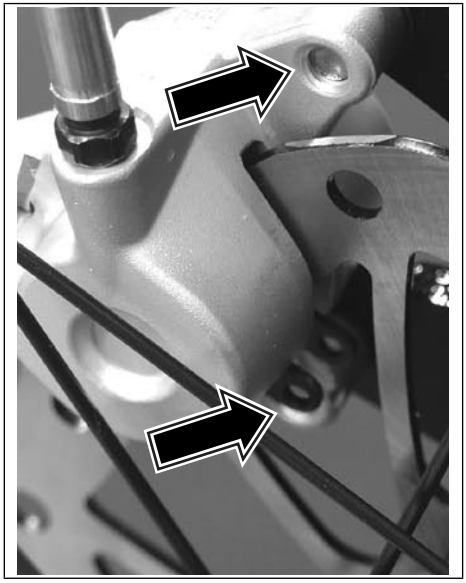

1 Extraction Cap
2 Plastic Washer
3 ORing (lubricate)
4 Axle Bolt - 5mm Allen
5 Outer hub bearing
6 Hub
7 Inner hub bearing
8 Seal
9 Brake disc
10 Brake disc bolts
11 Wheel Truing Tool
Apply a high-quality bicycle bearing grease to areas indicated "GR."
LEFT-HAND THREADED
Loctite # 242
Park SPA-1
15.0 N•m, 133.0 In•Lbs
Loctite # 262
6.2 N•m, 55.0 In•Lbs
GR
NO RIDE
QCTL108/

FRONT BRAKE

⚠ WARNING

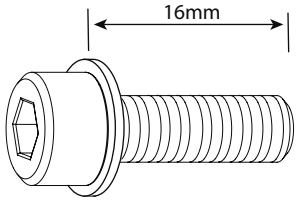
DO NOT RIDE WITHOUT A PROPERLY MOUNTED, ADJUSTED, AND FUNCTIONING FRONT BRAKE SYSTEM.
Why? In addition to providing speed control, the front brake system on your Lefty (disc/caliper) acts as an integral secondary wheel retention system. If the system is missing or improperly installed, or if the wheel hub axle bolt should loosen, the front wheel could slide off the spindle end.

When mounting IS compatible brake systems:
Follow manufacturer's instructions when mounting the brake caliper to the spindle brake bosses. Do not modify the fork in any way.
PLEASE ASK YOUR CANNONDALE DEALER FOR HELP WHEN INSTALLING COMPATIBLE FRONT BRAKE SYSTEMS.



This photo shows the area where incorrect bolts will interfere with disc rotation possibly causing severe damage. Correct bolts are shown above.
In addition to checking to make sure the bolt ends do not protrude, you must ensure proper thread engagement.

Mount the front brake caliper using the 16 mm bolts of Cannondale kit LEFTYBOLTS. See next figure.



Make sure the brake disc can not make contact with the fork boot. A rotating brake disc can wear through the boot allowing contaminants into the fork.

ADJUSTMENTS

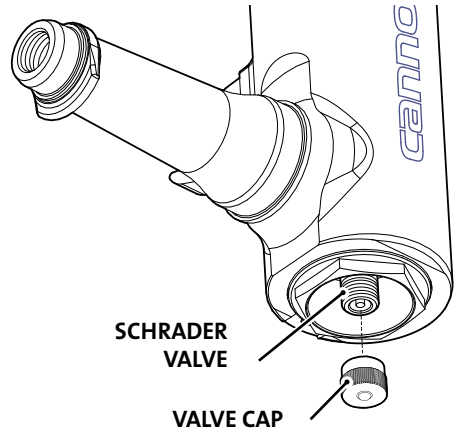
Suggested Air Pressure

To set pressure, remove the valve cap at the bottom of the fork. Set the pressure according to rider weight. Use a bicycle suspension pump. Consult the table below. Stay within the pressure limits.

At the bottom of the fork:

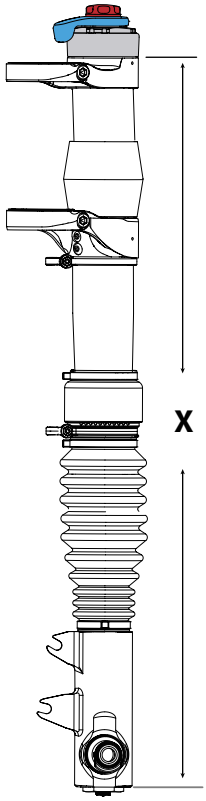
Pressure Limits
MIN. - 50 psi
MAX. - 225 psi

CAUTION
Clean the valve and pump end before attaching a pump. Pumping in dirt can quickly ruin the fork. Stay within the pressure limits



NEG. SPRG.	RIDER WT. (lbs)	CARBON SL RUSH	CARBON SL SCALPEL	DLR2 RUSH	DLR2 SCALPEL
	120	80	85	85	90
	130	85	90	90	95
	140	90	95	100	105
	150	100	105	105	110
	160	105	110	110	115
	170	110	115	120	125
	180	120	125	125	130
	190	125	130	135	140
	200	130	135	140	145
	210	135	140	145	150
	220	145	150	155	160

This table lists approximate air pressure values. It is important after setting the air pressure to add or release pressure to set the sag. See next page



How To Setup Sag

1. Set air pressure according to rider weight.
2. With the help of a second person, seat the rider on the
   saddle with feet on pedals and hands on the handlebar
   Measure distance X.
3. To find Sag calculate:

   656mm - X = Sag(mm)

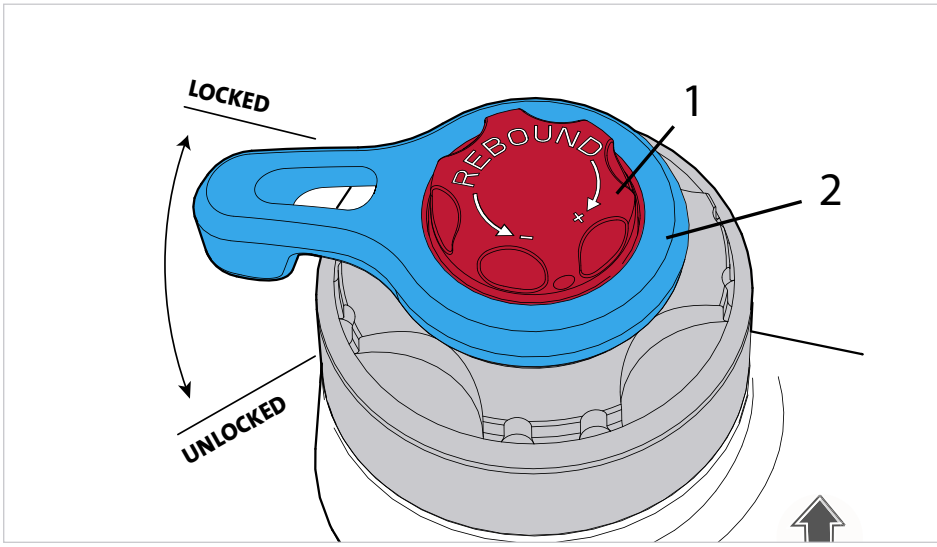
XC	20-30%	22-33mm
TR	25-35%	27-38mm

Add air to decrease sag.

Release air to increase sag.

Special Note:
The damping cartridge negative spring of both Lefty DLR2 and CARBON SL forks is specific to the rider weight. See table below. If you find that you set the air pressure much higher or lower than suggested, we recommend the corresponding negative spring for best performance. ***Ask your Cannondale Dealer about negative spring kits for your fork.***

RIDER WT. (Lbs)	FORK SIZE	BIKE SIZE	NEG. SPRG COLOR	CANNONDALE KIT	
				CARBON SL	DLR 2
to 145	SOFT	PT/SM	GREEN	KT025/GRN	KF200/GRN
145-175	STANDARD	MD	BLUE	KT025/BLU	KF200/BLU
175-195	FIRM	LG	RED	KT025/RED	KF200/RED
195+	X-FIRM	XL	BLACK	KT025/BLK	KF200/BLK



Rebound Adjuster - 1

The red rebound adjuster at the top of the fork controls the speed at which the fork extends following compression.

CARBON SL	DLR2
10 clicks	14 clicks

To adjust rebound:
Turn the adjuster clockwise in the direction marked "+" to increase the damping which slows the rebound speed.

Turn the adjuster counter-lockwise in the direction marked "-" to decrease the damping which increases the rebound speed.

Lockout Lever - 2

The Lockout Lever turns fork travel "on" and "off." Be sure to rotate the lever completely to either position until it stops. Do not force the lever past the stops.

Lever Position	
LOCKED	Travel “off" - Fork locked in fully extended position.
UNLOCKED	Travel "on" - Fork is unlocked and travel is active

Suspension Tuning Tips

Condition:	Possible Solutions:
Not using full travel, feels harsh, poor cornering traction	Lower air pressure; softer compression damping; lighter negative spring; damper revalve
Bottoms out, soft throughout travel, excessive sag	Increase air pressure or stiffer coil springs; firmer compression damping; revalve
Harsh over large bumps, but good over small ones	Softer compression damping; lower air pressure or softer coil springs; revalve
Harsh over small bumps but uses full travel	Lower air pressure or softer coil springs; softer compression damping; reduce spring preload; decrease bump threshold; firmer negative spring; revalve
Fork dives under braking	ncrease air pressure or stiffer coil springs; firmer compression damping; increase SPV pressure; decrease SPV volume; revlave
Harsh on repeated bumps, packs down, feels like less travel, poor traction in corners	Faster rebound damping; increase air pressure or stiffer coil springs
Rebounds too quickly after bumps, poor traction in corners	Slower rebound damping; lower air pressure or softer coil springs
Fork tops out harshly	Lower air pressure; slower rebound; firmer negative spring; bearing reset

MAINTENANCE SCHEDULE

Fork maintenance is important to your safety and longtime performance of the fork. The following table is intended as a guide to establishing a schedule appropriate to your riding style and conditions.

WHAT TO DO?	NORMAL	RACE
	(In Hours)	
Clean fork and visually inspect for damage. Check the fork externally for any sign of damage (e.g., bent fork, cracks, fluid leaks, tears, deep scratches, loose parts).	BEFORE AND AFTER EVERY RIDE	
Check and adjust air pressure.		
Check the fork function. Make sure it operates normally and all adjustments are normal. See Fork Problems next page		
Inspect the fork boot. Check damage (e.g., cuts, holes, rips, rub marks, and loose attachment).		
Check tightening torque of the fasteners and bolts listed in Tightening Torques in this manual.		
Grease telescope.	50	25
Needle bearing reset*	25	25
Clean air filter	25	10
Damping cartridge oil and seal change*	100	25
Inspect, Replace Bumper	AS NEEDED	
PROFESSIONAL SERVICE* Annually, or when problems are indicated you must have your Lefty fork serviced through a Cannondale Dealer or an Authorized Headshok Service Center. Your fork should be disassembled by a suspension professional and evaluated for interal and external part wear and damaged parts replaced with new ones. It should also include any work described in technical bulletins or product recalls.	ANNUAL (Minimum)	

Our "Factory Tech Room," (in the USA) provides professional services through Cannondale dealers for Headshok suspension forks . Please ask your dealer about the service programs available for your model fork.

FORK PROBLEMS

The following are conditions that can indicate a serious fork problem: If you find one, don't ride the fork. Have the fork inspected by your Cannondale Dealer and any problems corrected first.`

1. Any unusual "klunking" or knocking noises
2. A change in fork travel.
3. An over-extended or compressed boot
4. Changes in the way the fork has been working
5. Loss of adjustments features, air or oil loss.
6. Crash or impact damage (deep scratches, gouges, dents, or bending).

⚠ WARNING

DO NOT RIDE ON A DAMAGED FORK. Stop riding a damaged fork immediately. YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED RIDING ON A BROKEN OR POORLY MAINTAINED FORK. Please ask your Cannondale Dealer to help you develop a complete maintenance program. Frequent checks are necessary to identify the problems that can lead to an accident.

Cleaning

USE ONLY A MILD SOAP AND WATER SOLUTION. Clean water and a common dish washing liquid will work best.

COVER SENSITIVE AREAS WITH A CLEAN PLASTIC BAG. Secured temporarily with a rubber band or masking tape, a bag can prevent water damage to various bike components (bearings, seals, fork / shock adjustment features).

SPRAY OFF BEFORE WIPING. To preserve the appearance of paint, finish, and decals, use a low pressure water hose to first spray off heavy soils and dirt.

CAUTION

DO NOT POWER WASH OR SPRAY WATER UNDER HIGH PRESSURE TO CLEAN. Power washing will force contaminants into parts where they will promote corrosion, immediately damage, or result in accelerated wear.

DO NOT USE COMPRESSED AIR TO DRY.

DO NOT USE ABRASIVE OR HARSH CHEMICAL CLEANER/SOLVENTS which can damage the finish or attack and destroy both the outside and internal parts.

When rinsing, avoid directing the spray directly at shock/fork adjusters or bearings.

IMPORTANT INFORMATION ABOUT RIDING IN WET, VERY HUMID, OR COASTAL CONDITIONS

The Cannondale Headshok needle bearing system uses precise components such as bearings and races that are made of high strength steel. These components require proper maintenance before and after riding in severely wet conditions.

PRE-RIDE CHECKS

The following service and checks are recommended above and beyond typical scheduled maintenance if riding in severely wet conditions.

1. Inspect fork boot for rips and tears.
2. Inspect and renew grease under fork boot.
3. Clean, dry, and oil breather filter element.
4. Ensure zip-ties and band clamps are properly tightened (replace as needed)

POST-RIDE CHECKS

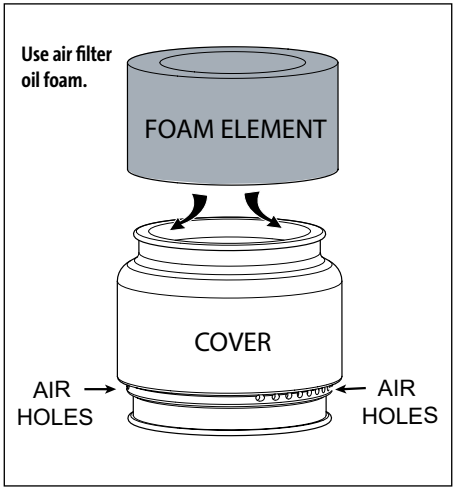
The following service and checks are recommended above and beyond typical scheduled maintenance after riding in severely wet conditions.

1. Inspect and renew grease under fork boot – wipe dry if water is present.
2. Inspect fork boot for rips and tears if water is present in boot.
3. Clean, dry, and oil breather filter element.
4. Ensure zip-ties and band clamps are properly tightened (replace as needed).

IF THE FORK BECOMES SUBMERGED, PERFORM THE CHECKS IMMEDIATELY.

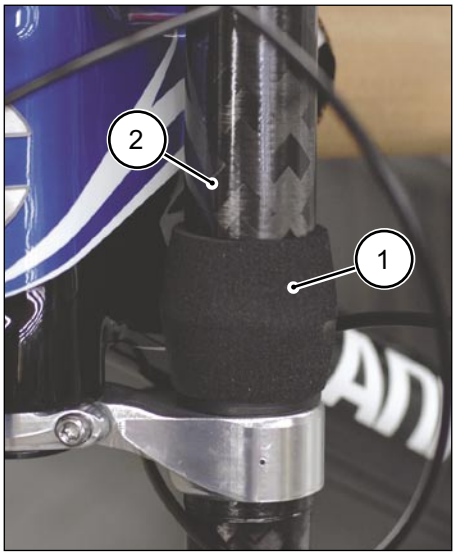
Air Filter

The air filter assembly is located over two holes in the outer tube. Air passes in and out of the ports as the fork moves.
The air filter assembly stops the passage of dirt and water which would damage the internal fork components.
The small holes (a) at the base of the air filter cover should remain open.
The foam filter element (1) should be cleaned and re-oiled frequently.
The small holes at the base of the filter cover should be positioned to the sides of the and not to the front or back of the bicycle to minimize the chance dirt thrown by the wheels will plug the holes.
Clean the foam air filter element with warm soapy water, allow to dry completely, and reapply a high-quality foam air filter oil before reinstallation. Be sure to massage the oil into the foam. A foam element without the oil is ineffective.



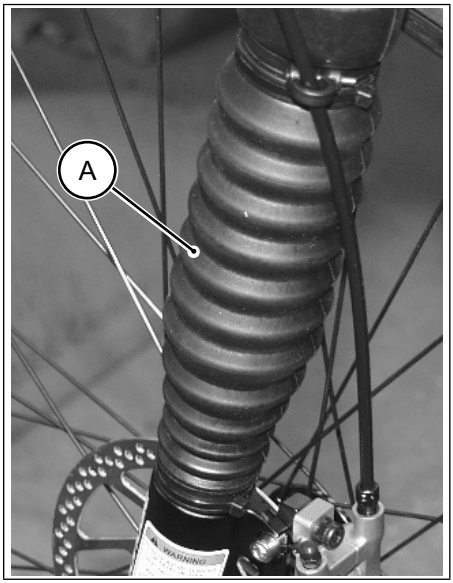
Frame Bumper

The frame bumper (1) located on the outer tube (2) between the clamp cushions the frame from contact with the fork. Replace it with a new one if it ever becomes damaged, torn, or missing.



Fork Boot

The fork boot protects the internal parts (inner tube, races, lubricant, needle bearings, and other internal parts) from contamination and damage. It is a barrier to water, dirt, dust, mud, or grit encountered while riding. If the boot is loose or damaged; dirt, water, dust, salt spray or other contaminants will quickly ruin the fork.



Checks

1. Check the boot for damage, cracking, splits, or tears. Be sure to check in the folds of the boot. Check for any cables or lines rubbing the boot.
2. Check the attachment of the boot at the top and bottom. The upper and lower boot lips should be fitted over the lower collar and fork lip. NO PART OF THE FORK INNER TUBE (lower leg) SHOULD BE EXPOSED.
3. Replace the zip ties and band clamps .

Always tighten the zip ties and clamps securely. Replacement boots, zip ties, and cable clamps are available through a Cannondale Dealer.

If you find boot damage, the area under the boot should be professionally inspected for contamination or damage. The damaged boot must be replaced with a new one. Do not try to fix it.

WARNING

CHECK THE BOOT BEFORE EACH RIDE.
DON'T RIDE IF IT IS DAMAGED.
REPLACE IT WHEN YOU FIND DAMAGE.

Cleaning and Re-greasing The Telescope Under the Boot

The fork inner tube and inner bearing races, parts of the telescopic fork assembly are located behind the fork boot.
Wiping off old grease with a dry shop towel and re-apply a fresh heavy coating of grease helps assure that ,races and needle bearings remain well lubricated.
Any clean high-quality bicycle bearing grease selected for riding temperatures and environment can be used. We assemble forks at our factory using Royal Purple Ultra Performance Grease NLGI #2 (ISO 46 BASE).

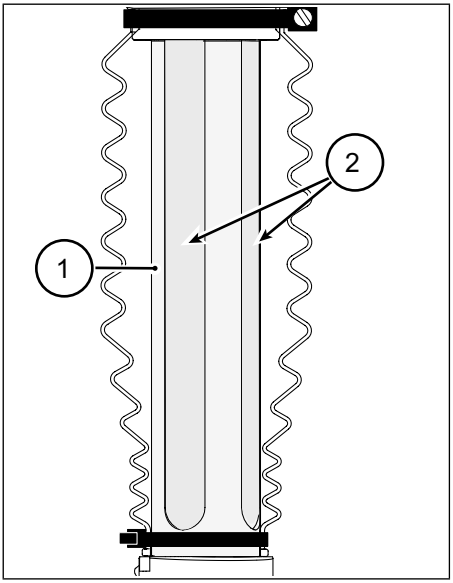
1. Remove the front wheel.
2. Release all fork air pressure.
3. Carefully cut the upper and lower zip ties securing the fork boot. Some forks may have an screw type band clamp securing the upper portion of the boot. If this is the case, loosen the clamp.
4. Lift the unsecured boot up to expose the inner tube (1).

5. Wipe away any old grease with a clean lint-free shop towel. Cycle the fork and repeat.

CAUTION

Do not use solvents or spray chemicals to clean. Protect the exposed fork from contaminants. Work in a clean area.

6. Visually inspect the inner tube (1) and inner races (2) a for any signs of corrosion or damage. Some very light wear to the inner races is normal, however, they are worn-out if any scratches or grooves are evident. If heavy corrosion is present they must be replaced. If ridges can be felt by the tip of a rolling ball point pen over the race, the races should be replaced. If damage is found, the damaged parts must be replaced new before the fork is ridden.

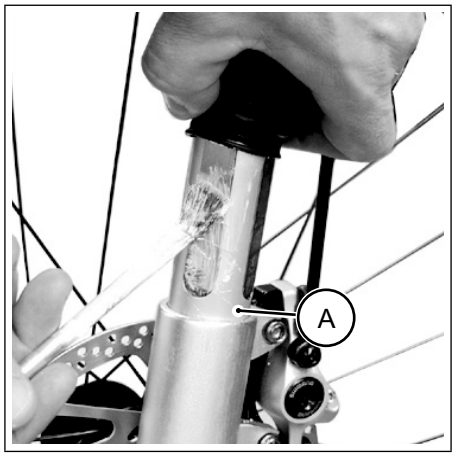


7. Use a stiff nylon brush to apply a high-quality bicycle grease onto the inner tube and bearing races. Cycle the fork and carefully re-apply grease. Cycling moves the new grease inside the fork onto the outer tube races and bearing cages. Its OK to leave a good coating under the boot.

Avoid applying grease to the area (A) just under the boot/zip tie.

Also, do not contaminate the brake disc with grease.

Wipe it off the inner tube and inner boot to ensure that boot does not slide up when zip tie is re secured.



7. When you are finished, inspect the condition of the boot. Make sure it is undamaged. Replace it if it is. Re secure the boot and reassembly the fork.

⚠ WARNING

NEVER RIDE YOUR LEFTY IF THE INNER TUBE, BEARING RACES, OR BEARINGS ARE CORRODED, RUSTED, OR CRACKS ARE PRESENT.

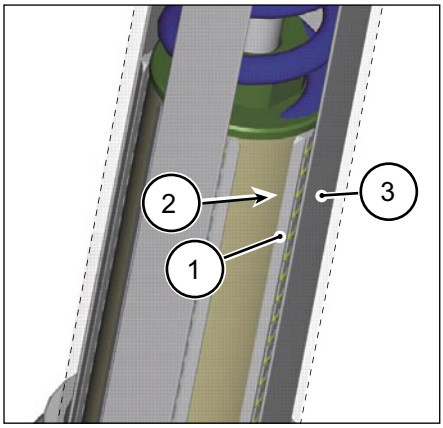
Needle Bearing Migration Reset

NOTE: Ideally, reset the bearings after 25 hours of normal riding or 10 hours of hard riding/racing to maintain optimum fork performance.

We recommend that the needle bearing reset procedure should be performed by a professional mechanic.

Explanation

Inside the fork the four needle bearing cages (1) move independently up and down between each inner (2) and outer race pair (3). This bearing arrangement provides numerous advantages to fork performance but requires simple periodic maintenance to ensure proper alignment.



Bearing Migration

If a cage or cages shifts out of alignment up or down in relation to the others it is said to have “migrated.” This migrated condition will limit travel.

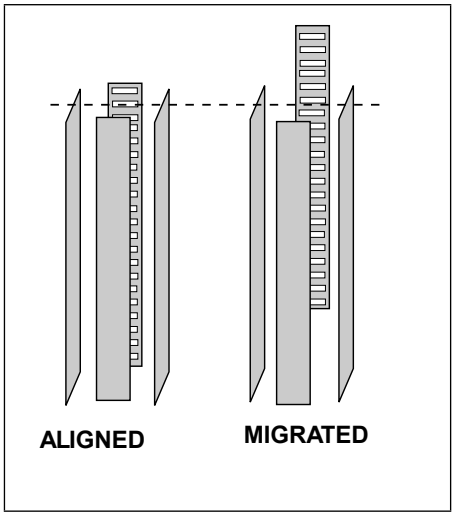
Needle bearing migration is normal and expected. However, if the fork is ridden in this state for extended periods, the fork can be damaged.

Evidence of migration is:

1 An unusual "top out" noise .If an unusual noise is heard, the extended fork length should be measured to confirm the condition.

2. The fork’s maximum extended length is reduced.

If migration re-occurs frequently (immediately after resetting), the cause could be damage present in the inner or outer races, ,bearings/cages or other fork parts. Inspection and replacement of damage parts will be required to correct a persistent problem with bearing migration.



Resetting Migrated Needle Bearings

1. Place the bike in a work stand. Release all the air pressure through the Schrader valve.

2. Remove the rebound knob and lockout lever. Remove the outer cap with the Shimano bottom bracket tool TL-FC32. See page 5.

3. Compress the telescope and remove the two split rings from the top cap..

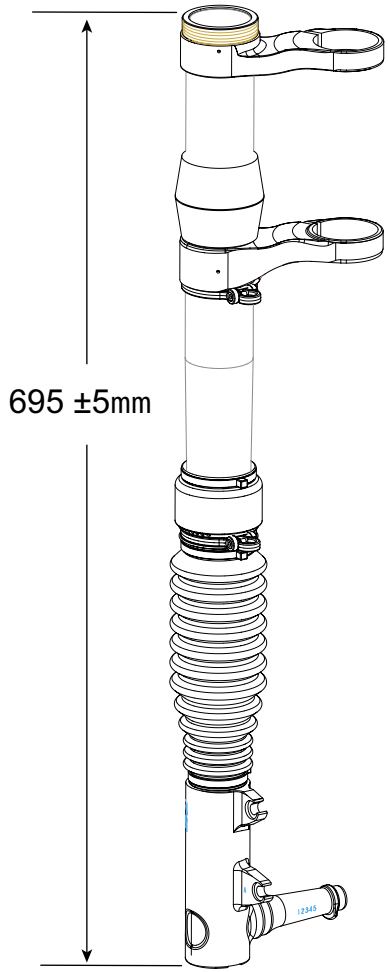
4. Fully extend the fork, and measure from top edge of outer tube to bottom edge of spindle. See right. If the length is out of specification do the following:

   Firmly extend the telescope until it stops (tip - listen for the knocking at full extension to change from a hollow sound to a solid sound - this indicates full extension has been achieved). Do this several times using only moderate force, extend the lower fork leg using a pumping action.

   After, you have performed this action several times, re-measure.

CAUTION

If fork is out range following reset attempt, it may be damaged internally. The fork should be disassembled and inspected by a professional mechanic before it is ridden.



The Rebound,Lockout Assembly and Split rings is removed.

All air is released

Telescope is extended fully.

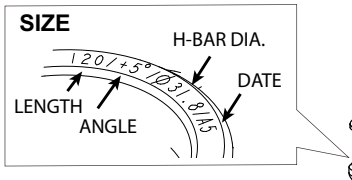
XC3 SI STEM-STEERER

Installation

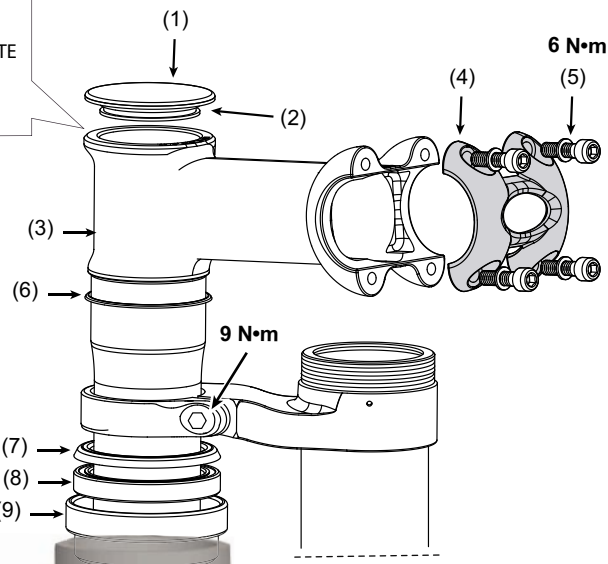
1. Make sure both the upper and lower Lefty clamp bolts are loose.
2. Make sure the headset parts are assembled as shown (next page).
3. Position the Lefty clamps onto the headtube as shown.
4. Insert Cannondale specific tool KT020/ through the bottom clamp, into the head tube, and out the upper clamp.
5. Make sure the plastic ring (6) is on the stem. Insert the bottom of the stem-steerer onto the top of the tool.
6. Remove the cap (1) from the top of the steerer. Use a rubber mallet to drive the stem-steerer into the head tube until it stops. Return the cap (1).
7. Clean and apply grease to the steerer bolt threads and install into the bottom of the stem-steerer. Align handlebar and tighten the bolt to 9 N•m.
8.. Tighten the upper and lower clamp bolts to 9 N•m.

Removal

1 Loosen upper and lower clamp bolts.
2. Remove steerer bolt (10).
3. Insert the small end of KT020/ into the bottom of the stem-steerer and drive the stem-steerer up out of the head tube.

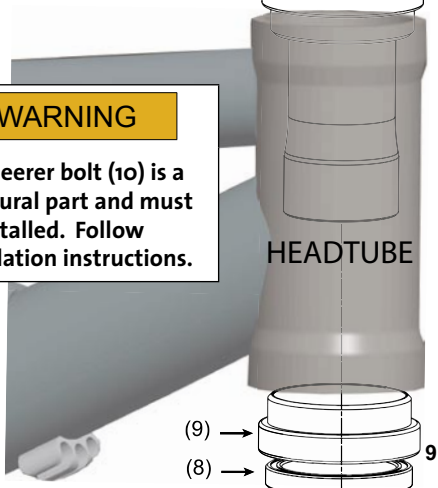


1	Cap
2	O-Ring (lubricate)
3	Stem
4	Handlebar clamp
5	Clamp boltsr
6	Plastic ring
7	Seal
8	Upper Bearing
9	Bearing cup
10	Steerer bolt



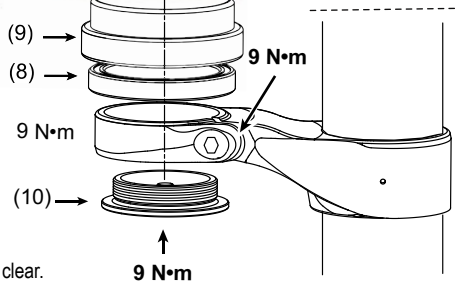
WARNING

The steerer bolt (10) is a structural part and must be installed. Follow installation instructions.



Notes:

1. **Ensure that the plastic ring (6) is on the stem before inserting into head tube.**
2. **When you tighten or loosen the steerer bolt (10), be sure to loosen the lower clamp bolt and insert the 5mm Allen key completely to avoid stripping the steerer bolt.**
3. **The XC3 SI stem is only compatibile with Carbon and Bonded Alloy Lefties.**



Keep the drain hole in (10) clear.

SUSPENSION GLOSSARY

Damping - The process of dissipating energy and slowing down the suspension motion. Damping absorbs the force of a bump or landing. Damping is usually done with oil, but can be done with air and friction as well.

Spring - The part of a suspension fork or shock that holds the rider/bike up. Springs can be metal coils (steel or titanium) or high pressure air.

Compression - The process of squeezing together. The front and rear suspension compress when hitting a bump, landing off a jump, or braking for corners. Compression can refer to the spring or damping (compression damping).

Rebound - The process of extending back from a compressed state. The front and rear suspension rebound after being compressed from a bump or jump landing. Rebound can refer to the spring or damping (rebound damping).

Low Speed (compression or rebound) - Low speed damping references the speed at which the fork/damper travels through its stroke. It does NOT refer to the speed at which the rider is moving. Low speed bumps are typically round in shape or smooth actions like jump landings and pedal bob. In the case of rebound, it mostly refers to rebound speed caused by smaller bumps where the fork does not get fully compressed.

High Speed (compression or rebound) - High speed damping references the speed at which the fork/damper travels through its stroke. It does NOT refer to the speed at which the rider is moving. High speed bumps are typically square in shape or harsh terrain like sharp-edged rocks that may cause pinch flats. In the case of rebound, it mostly refers to rebound speed caused by larger bumps where the fork gets fully compressed.

Bottom Out - When the front or rear suspension fully compresses to absorb a bump or jump landing. A hard stop is usually felt at bottom out.

Top Out - When the front or rear suspension fully extends after absorbing a bump or jump landing. A soft stop is usually felt at top out. The fork and shock are typically topped out without a rider on the bike.

Compression Adjuster - Used to adjust the front or rear compression damping setting.

Rebound Adjuster - Used to adjust the front and rear rebound setting

Sag - Refers to how much the front and rear suspension compress when a rider sits on the bike. Sag is measured as a percentage of suspension travel. Typical sag values are: 20-30% for XC riding and 25-35% for Trail/ Freeride.

Preload - Refers to how much initial compression is applied to a spring. In the case of an air spring, preload is achieved by increasing the air pressure. You use preload to adjust the sag. More preload decreases the sag. Less preload increases the sag.

Spring Rate - Refers to the strength of a spring. A spring with a higher rate is stiffer, a lower rate softer.

Diving - When a suspension fork compresses and causes the pitch of the bicycle drop. Mostly occurs when braking.

Revalve - Revalving is the process of changing the internal compression and rebound shims to change the flow of oil through passages in the forks and shock. A suspension specialist should revalve your bike's suspension.

REPLACEMENT PARTS (KITS)

ORDER	LEFTY		DESCRIPTION
	DLR2	DLR SL	
Upper Fork Parts			
KF210/	●		DLR2 Lockout lever w/retaining nut
KF206/	●		Upper collar alloy telescope
KF207/	●		Upper collar carbon telescope
HD016/	●	●	Steerer tube carbon Lefty
HD215/	●	●	Frame bumper
QSMSEAL/	●	●	Upper Headshok bearing seal
QHDST/EBO	●	●	Headshok headset cups Qty 2, w/ Headshok bearing Qty 1
HD169/	●	●	Headshok headset bearings Qty 2
KF211/	●	●	Rebound knob with set screw and O-ring
KF205/	●	●	Split rings Qty 2
KT031/		●	Lockout lever w/retaqining nut
KT027/		●	Upper collar
Lower Fork Parts			
KF208/	●		Kit, Collar, Lower,Alloy
KF209/	●		Kit, Collar, Lower,Carbon,clip+bushing
KF212/	●		Schrader cap assembly (cap, O-ring, Schrader valve, valve cap)
HD208/	●		Kit, Outer Race Clip-Lefty / 5
QC681/	●		Upper fork clamp alloy
QC682/	●		Lower fork clamp alloy
KF257/	●		Inner Leg w/spindle DLR2
HD175/BLK	●	●	Kit, Zip Ties, Black / 50
HD185/BLK	●	●	Kit, Zip Ties, Double Head /10
HD209/BLK	●	●	Air filter assembly (filter element and cover)
QC678/	●	●	Fork Boot
HD210/	●	●	Steer tube upper plug
KT029/		●	Inner Leg w/spindle DLR SL
KT028/		●	Schrader cap assembly (cap, O-ring, Schrader valve, valve cap)
KF209/		●	Lower collar, carbon telescope Clip+Bushing
Headshok Service Tools			
KT020/	●	●	Steerer Installation/Remioval Tool "The Ernie" for installing steerers
HDTL146/	●	●	Castle Tool for removing and installing damping cartridge into telescope
HD187/	●	●	1/2" Shaft clamp for clamping damping cartridge shaft
HDTL168/	●	●	Bullet tool for installing oil caps into damping cartridge

For an up to date list of kits available for your bike, please visit our Tech Center at : http://www.cannondale.com/tech/

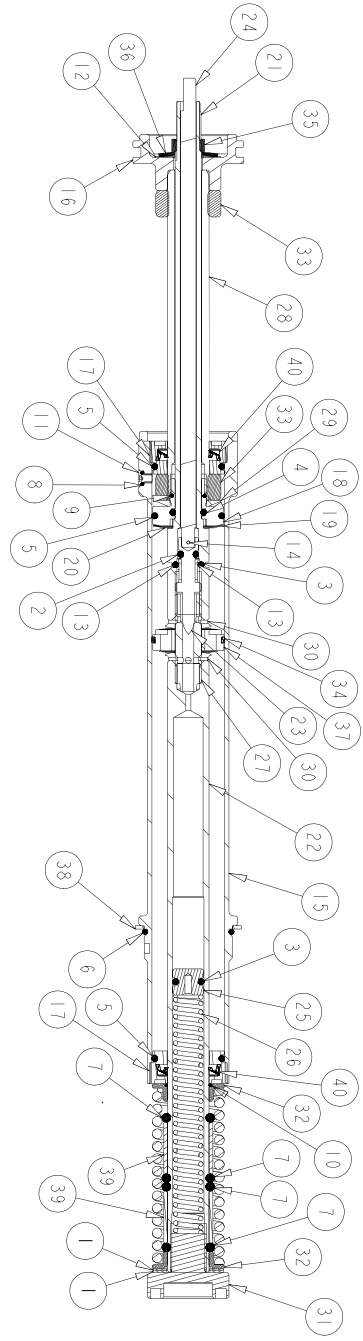
ORDER	LEFTY		DESCRIPTION
	DLR2	DLR SL	
Damping Cartridge Parts			
KF200/BLK	●		Negative spring X-FIRM
KF200/BLU	●		Negative spring STANDARD
KF200/GRN	●		Negative Spring, SOFT
KF200/RED	●		Negative spring FIRM
KF201/BLK	●		Complete damping cartridge w/ X-FIRM negative spring
KF201/BLU	●		Complete damping cartridge w/ STANDARD negative spring
KF201/GRN	●		Complete damping cartridge w/ SOFT negative spring
KF201/RED	●		Complete damping cartridge w/ FIRM negative spring
KF202/	●		Seal Kit DLR2
KF204/	●		Revalving kit (shims) DLR2
KF268/	●		DLR2 Damping cartridge oil cylinder w/ relief cut
KF213/	●	●	Air piston
HD226/	●	●	Damping cartridge oil, Golden Spectro 85/150 Qt.
KF272/	●	●	Pressure compensator spring
KT026/GRN		●	Complete damping cartridge w/ SOFT negative spring
KT026/BLU		●	Complete damping cartridge w/ STANDARD negative spring
KT026/RED		●	Complete damping cartridge w/ FIRM negative spring
KT026/BLK		●	Complete damping cartridge w/ X-FIRM negative spring
KT025/GRN		●	Negative spring SOFT
KT025/BLU		●	Negative spring STANDARD
KT025/RED		●	Negative spring FIRM
KT025/BLK		●	Negative spring X-FIRM
KT024/		●	Seal kit DLR SL
KT030/		●	Revalving kit (shims) DLR SL

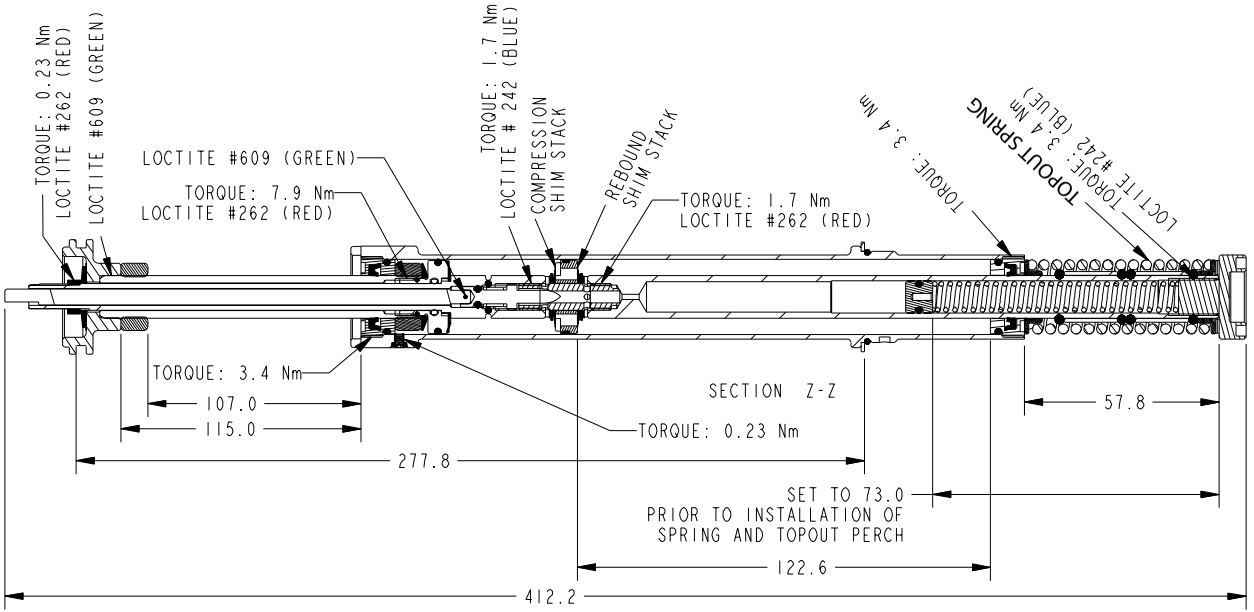
Needle Bearings & Races			
HD161/	●	●	Needle Bearings Qty 4
HDR2L/020	●		Kit, Race-Inner: 10.197"-259.0mmx.020-.51mm (4)
HDR2L/021	●		Kit, Race-Inner: 10.197"-259.0mmx.021"-.53mm (4)
HDR2L/022	●		Kit, Race-Inner: 10.197"-259.0mmx.022"-.56mm (4)
HDR2L/023	●		Kit, Race-Inner: 10.197"-259.0mmx.023"-.58mm (4)
HDR2L/024	●		Kit, Race-Inner: 10.197"-259.0mmx.024"-.61mm (4)
HDR2L/025	●		Kit, Race-Inner: 10.197"-259.0mmx.025"-.635mm (4)
HDR2N/024	●		Kit,Race-Outer:8.110"-206mmx.024"-.61mm (4)
HDR1G/024		●	Kit,Race-Outer:7.480" x .024"
HDR2P/020		●	Kit,Race-Inner:7.520" x .020"
HDR2P/021		●	Kit,Race-Inner:7.520" x .021"
HDR2P/022		●	Kit,Race-Inner:7.520" x .022"
HDR2P/023		●	Kit,Race-Inner:7.520" x .023"
HD208/		●	Kit,Outer Race Clip,5
KF119/		●	Kit,Race Clip,Metric

	ORDER	DESCRIPTION			
		H-Bar dia. (mm)	Stem Rise°	Stem Length (mm)	Color
XC3 Stem-Steerer	QSD090-5318/BBQ	31.8	- 5	90	BBQ
	QSD100-5318/BBQ	31.8	- 5	100	BBQ
	QSD120-5318/BBQ	31.8	- 5	120	BBQ
	QSD09005318/BBQ	31.8	5	90	BBQ
	QSD10005318/BBQ	31.8	5	100	BBQ
	QSD12005318/BBQ	31.8	5	120	BBQ
	QSD09020318/BBQ	31.8	20	90	BBQ
	QSD10020318/BBQ	31.8	20	100	BBQ
	QSD12020318/BBQ	31.8	20	120	BBQ
XC3 Stem	QSC11020318/BBQ	31.8	20	110	BBQ
	QSC13020318/BBQ	31.8	20	130	BBQ
	QSC09020318/BBQ	31.8	20	90	BBQ
	QSC08005318/BBQ	31.8	5	80	BBQ
	QSC10005318/BBQ	31.8	5	100	BBQ
	QSC12005318/BBQ	31.8	5	120	BBQ
	QSC14005318/BBQ	31.8	5	140	BBQ
	QSC09005318/BBQ	31.8	5	90	BBQ
	QSC11005318/BBQ	31.8	5	110	BBQ
	QSC12020318/BBQ	31.8	20	120	BBQ
	QSC11020254/BBQ	25.4	0	110	BBQ
	QSC13020254/BBQ	25.4	0	130	BBQ
	QSC09020254/BBQ	25.4	0	90	BBQ
	QSC08005254/BBQ	25.4	5	80	BBQ
	QSC10005254/BBQ	25.4	5	100	BBQ
	QSC12005254/BBQ	25.4	5	120	BBQ
	QSC14005254/BBQ	25.4	5	140	BBQ
	QSC09005254/BBQ	25.4	5	90	BBQ
	QSC11005254/BBQ	25.4	5	110	BBQ
	QSC12020254/BBQ	25.4	5	120	BBQ
Holey Stem	QSC10035254/BBQ	25.4	35	100	BBQ
	QSC12035254/BBQ	25.4	35	120	BBQ
	QSC13035254/BBQ	25.4	35	130	BBQ
	QSC08035254/BBQ	25.4	35	80	BBQ

DLR2 DAMPER

40	2	1/2" U-CUP
39	2	DLR 110 TOPOUT SPRING SPACER
38	1	DLR 110 OIL CYLINDER WASHER
37	1	DLR 110 MAIN PISTON
36	1	DLR 110 CONICAL SPRING WASHER
35	1	DLR 110 SHAFT PRELOAD NUT
34	1	PISTON RING PM
33	2	DLR 110 BUMPER
32	2	DLR 110 TOPOUT TOPHAT
31	1	DLR 110 TOPOUT PERCH
30	2	DLR 110 PISTON SPACER
29	1	DLR 110 TOPOUT COLLAR
28	1	DLR 110 UPPER SHAFT
27	1	DLR 110 PISTON CONNECT
26	1	DLR PRESSURE COMP SPRING
25	1	PRESSURE COMP PISTON
24	1	DLR 110 TUNING SHAFT
23	1	DLR 110 REBOUND NEEDLE
22	1	DLR 110 LOWER SHAFT
21	1	DLR 110 THRU SHAFT
20	1	DLR 110 PRELOAD SHIM
19	1	DLR 110 LOCKOUT SHIM
18	1	DLR 110 LOCKOUT PISTON
17	2	DLR 110 OIL CAP
16	1	DLR 110 OUTER CAP
15	1	DLR 110 OIL CYLINDER
14	1	DOWEL PIN M1 X 5
13	2	CHROME STEEL BALL 3mm
12	1	DAMPER SHIM 8 X 20 X 0.102
11	1	SOCKET FLAT HEAD SCREW M2.5 X 4
10	1	O-RING 9.00 ID X 1.00 W
9	1	O-RING 9.00 ID X 1.00 W
8	1	O-RING 2.00 ID X 1.00 W
7	4	2-111 O-RING 10.77 ID 2.62 W
6	1	2-018 O-RING 18.77 ID X 1.78 W
5	3	2-018 O-RING 18.77 ID X 1.78 W
4	1	2-011 O-RING 7.56 ID X 1.78 W
3	2	2-010 O-RING 6.07 ID X 1.78 W
2	1	2-006 O-RING 2.90 ID X 1.78 W
1	2	TOPOUT SPRING THRUST WASHER
ITEM	QTY	DESCRIPTION





COMPRESSION SHIM STACK									
SIZE	8X14X0.102	8X16X0.102	8X18X0.102	8X14X0.152	8X16X0.152	8X18X0.152	8X14X0.203	8X16X0.203	8X18X0.203
SOFT			1		1				
STANDARD			1	1	1				
FIRM					1	1	1		
X-FIRM	2	1		1		1			
REBOUND SHIM STACK									
SIZE	8X14X0.102	8X16X0.102	8X18X0.102	8X14X0.152	8X16X0.152	8X18X0.152	8X14X0.203	8X16X0.203	8X18X0.203
SOFT	1	1	1						
STANDARD	1	1				1			
FIRM				1	1	1			
X-FIRM				1	1	2			

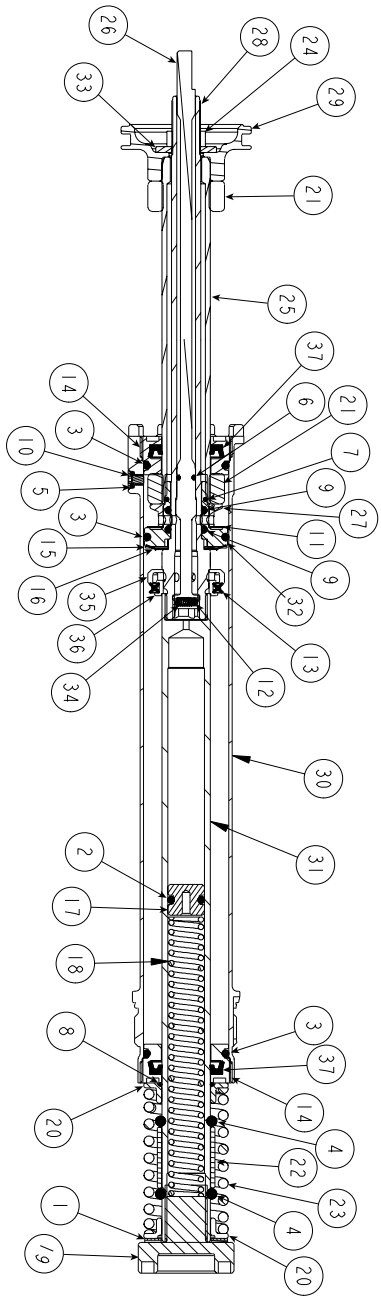
ASSEMBLY NOTES:
1. NLGI 2 synthetic grease is to be applied to all seals, grooves, surfaces and glands.
2. See size table for shim stack and topout spring specifications.

TOPOUT SPRING		
SIZE	COLOR	
SOFT	GREEN	
STANDARD	BLUE	
FIRM	RED	
X-FIRM	BLACK	

SL DAMPER

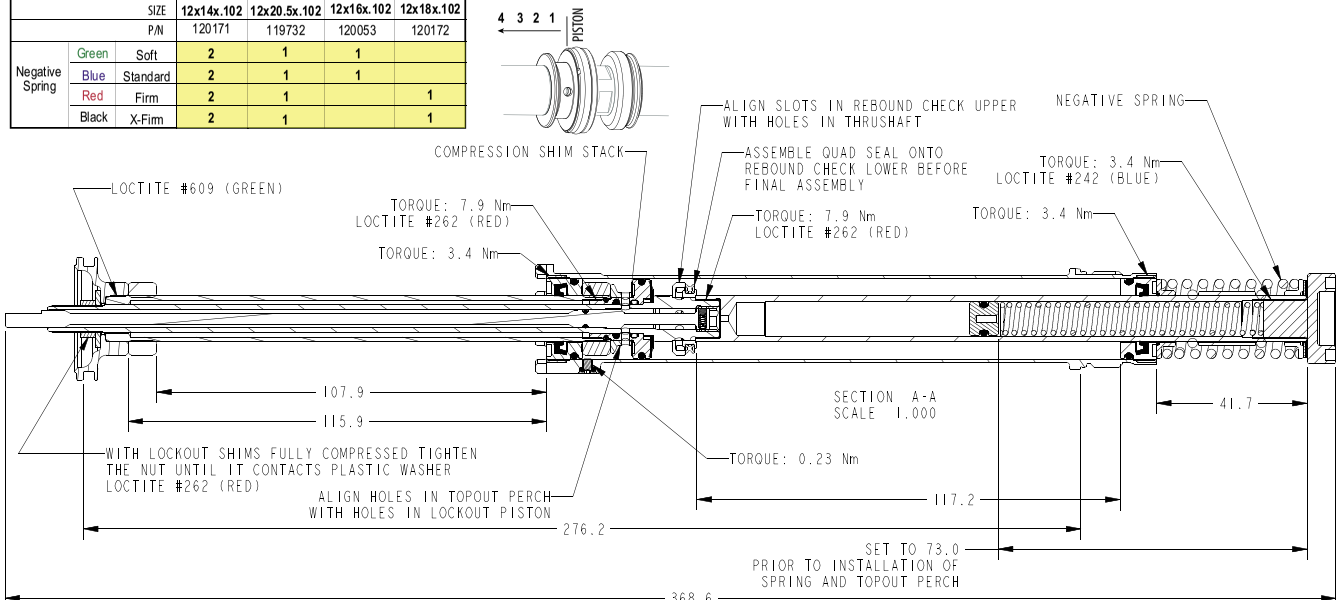
ITEM	QTY		DESCRIPTION
1	2		TOP OUT SPRING THRUST WASHER
2	1		2-010 O-RING 6.07 ID X 1.78 W
3	3		2-018 O-RING 18.77 ID X 1.78 W
4	2		2-111 O-RING 10.77 ID X 2.62 W
5	1		O-RING 2.00 ID X 1.00 W
6	1		O-RING 3.00 ID X 1.00
7	1		O-RING 9.00 ID X 1.00 W
8	1		O-RING 9.00 ID X 1.00 W
9	2		O-RING 8.00 ID X 1.50 W
10	1		SFHS M2 5X4
11		SEE COMPRESSION SHIM STACK CHART	
12	1		DETENT BALL M2
13	1		113 QUAD RING 13.94 ID X 2.62 W
14	2		OIL CAP
15	1		LOCKOUT SHIM
16	1		PRELOAD SHIM
17	1		PRESSURE COMP PISTON
18	1		PRESSURE COMP SPRING
19	1		TOPOUT PERCH
20	2		TOPOUT TOPHAT
22	1		TOPOUT SPRING SPACER
23	1	See Chart	DLR NEG SPRING
24	1		SHAFT PRELOAD NUT M75
25	1		DLR UPPER SHAFT SL
26	1		DLR TUNING SHAFT SL
27	1		DLR TOPOUT BUMPER PERCH
28	1		DLR THRUSHAFT SL
29	1		DLR OUTER CAP SL
30	1		DLR OIL CYLINDER SL
31	1		DLR LOWER SHAFT SL
32	1		DLR LOCKOUT PISTON SL
33	1		LOCKOUT WASHER
34	1		DLR 100 DETENT SPRING SL
35	1		DLR QUAD CHECK UPPER SL
36	1		DLR QUAD CHECK LOWER SL
37	2		UCUP 5X75

NEGATIVE SPRINGS			
SIZE	COLOR	RATE	
SOFT	GREEN	6.4N/mm	
STANDARD	BLUE	8.6N/mm	
FIRM	RED	10.7N/mm	
X-FIRM	BLACK	13.2N/mm	



COMPRESSION SHIM STACK ORDER

			1	2	3	4
		SIZE	12x14x.102	12x20.5x.102	12x16x.102	12x18x.102
		P/N	120171	119732	120053	120172
Negative Spring	Green	Soft	2	1	1	
	Blue	Standard	2	1	1	
	Red	Firm	2	1		1
	Black	X-Firm	2	1		1



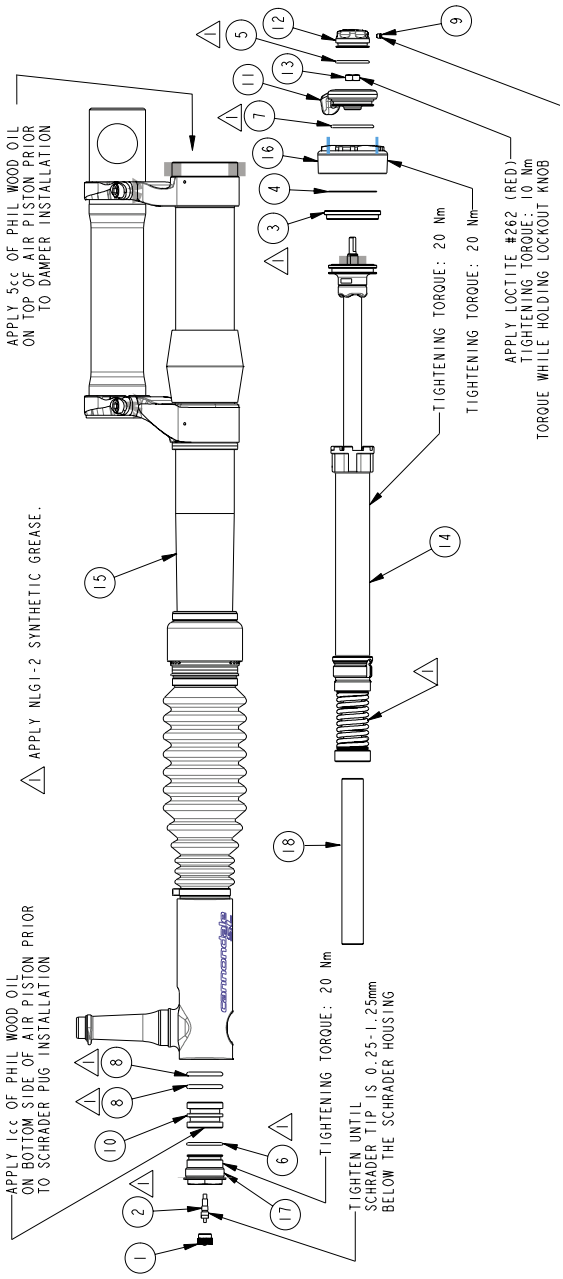
ASSEMBLY NOTES:

1. APPLY NLGI-2 SYNTHETIC GREASE TO ALL O-RINGS, SEAL GROOVES, SURFACES AND GLANDS.
2. SEE SIZE TABLE FOR SHIM STACK AND NEGATIVE SPRING SPECIFICATIONS.
3. REFERENCE DRAWING 1020355 FOR DAMPER SHIMS.

TELESCOPE PARTS

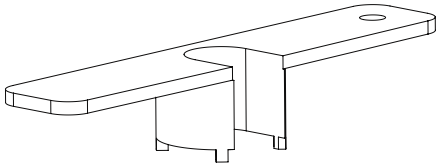
WARNING

HIGH PRESSURE HAZARD – Do not attempt to service a pressurized fork. You can severely injured or killed by pressurized (forcefully) ejected fork parts. Release all air pressure before performing any work.

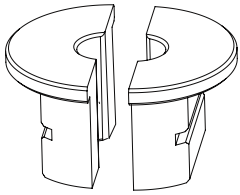


ITEM	QTY	DESCRIPTION
1	1	SCHRADER CAP
2	1	SCHRADER CORE
3	2	SPLIT LOCATING RING
4	1	TOP CAP SEAL PLASTIC
5	1	2-019 O-RING 20.35 ID X 1.78 W
6	1	2-020 O-RING 21.95 ID X 1.78 W
7	1	2-020 O-RING 21.95 ID X 1.78 W
8	2	2-117 O-RING 20.29 ID X 2.62 W
9	1	SHSS M3X3
10	1	DLR 110 AIR PISTON
11	1	DLR 110 LOCKOUT KNOB
12	1	DLR 110 REBOUND KNOB
13	1	DLR 110 SHAFT PRELOAD NUT M75
14	1	07 DLR 110 DAMPER
15	1	07 CARBON LEFTY TELESCOPE
16	1	07 UPPER COLLAR CARBON
17	1	07 DLR 110 SCHRADER CAP
18	1	07 DLR 110 AIR PISTON SPACER

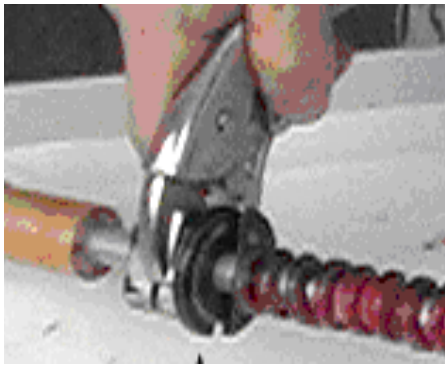
CANNONDALE SERVICE TOOLS

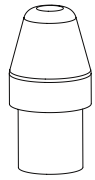


HDTL146/ - Castle Tool

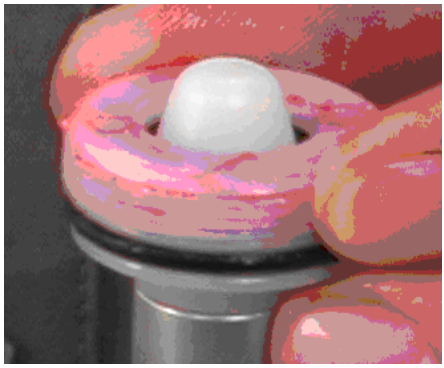


HD187/ - 1/2 in Shaft Clamps





HDTL168/ - Bullet Tool



OWNER NOTES

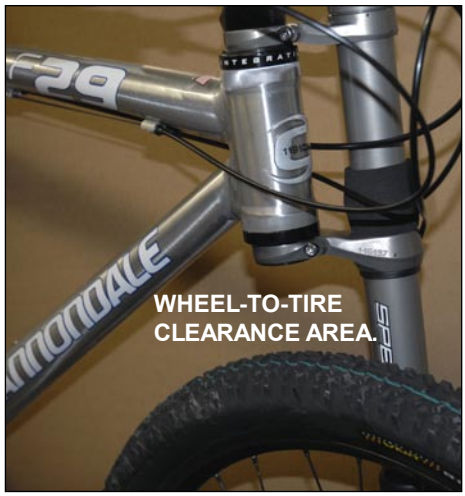
Record maintenance history, service, or set up information .

DATE	WORK PERFORMED

29 INCH WHEEL COMPATIBILITY

Travel reduction parts are factory installed into Lefties adapted for use with 29" inch wheels. The travel reduction parts limit the travel to 80mm. Lefties that have travel reduction parts installed are identified with the compatibility label illustrated below left.

Travel reduction parts limit telescope travel necessary to prevent wheel interference with the frame. See below right.



WARNING

LEFTY 80MM TRAVEL REDUCTION IS REQUIRED TO MAINTAIN THE WHEEL-TO-FRAME CLEARANCE NEEDED FOR 29 INCH WHEELS. Lefties with travel reduction factory installed are indentifed with a compatibilty label on the lower fork. If the frame contacts the rotating wheel while riding, the tire can be stopped suddenly. This can throw you off the bicycle or cause you to loose control and crash.

Do not install a 110mm travel lefty onto a bicycle frame designed for 29 inch wheels. If you have any questions, please ask your Cannondale Dealer for help.

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IN AN ACCIDENT IF YOU IGNORE THIS WARNING.