

**Scalpel**  
OWNER'S MANUAL SUPPLEMENT  
**116378.PDF**

**cannondale** *feel it*





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

# Scalpel

## OWNER'S MANUAL SUPPLEMENT

### 116378.PDF

## CONTENTS

<b>INTRODUCTION - GENERAL SAFETY INFORMATION .....</b>	<b>2</b>	<b>SYSTEM INTEGRATION CRANKSETS .....</b>	<b>14</b>
About This Supplement .....	2	Crankarm Removal .....	14
Special Manual Messages .....	2	Spindle Removal .....	14
Scalpel Intended Use .....	3	Bearing Inspection .....	14
Cross-Country/ Marathon Riding .....	3	Bearing Removal .....	15
Building Up A Frameset .....	3	Circlip and Bearing Installation .....	16
<b>TECHNICAL INFORMATION .....</b>	<b>4</b>	Spindle & Crankarm Installation .....	23
Scalpel Front Triangle .....	4	<b>MAINTENANCE .....</b>	<b>20</b>
Chainstays .....	5	Item Schedule .....	20
Head Tube .....	8	About Cleaning .....	21
MAXIMUM FORK LENGTH .....	5	Tightening Torques .....	21
Sag .....	8	<b>REAR SHOCK LINK .....</b>	<b>22</b>
Selecting Rear Shocks .....	8	<b>COMPOSITE SEAT STAY .....</b>	<b>24</b>
Mounting Rear Shocks .....	9	<b>REAR DERAILLEUR HANGER .....</b>	<b>26</b>
Brakes .....	10	<b>GEOMETRY .....</b>	<b>27</b>
Chain Rings .....	10	<b>SPECIFICATIONS .....</b>	<b>28</b>
Front Derailleur .....	10	<b>REPLACEMENT PARTS .....</b>	<b>29</b>
Chain Height .....	10	<b>OWNER NOTES .....</b>	<b>30-32</b>
Tire Selection .....	10		
Line/Cable Frame Protection .....	11		
Housing Guides and Cable Stops .....	12		
Bottom Bracket Cable Guide .....	12		
Right Chainstay Protector .....	14		

*Please note that the specifications and information in this manual is subject to change for product improvement without notice. For the latest product information, go to <http://www.cannondale.com/bikes/tech/>.*

## INTRODUCTION - GENERAL SAFETY INFORMATION

### About This Supplement

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

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.

Go to: <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.

#### \* \* Important \* \*

This manual may include procedures beyond the scope of general mechanical aptitude. Special tools, skills, and knowledge may be required.

If you have any doubt about your ability to properly inspect, adjust, or service your bicycle, do not attempt to perform the work described; please take it to a Cannondale Dealer.

### Special Manual Messages

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



The Safety Alert Symbol means: "ATTENTION....BECOME ALERT, YOUR SAFETY IS INVOLVED."

#### WARNING

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

WARN000

#### 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.

CAUT000

#### NOTE:

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

## Scalpel Intended Use

Cross-Country/Marathon Riding: Our Scalpel model bikes and framesets are made for cross-country riding and racing. Scalpels are not made for use in extreme forms of jumping/riding such as hardcore mountain, Freeriding, Downhill, North Shore, Dirt Jumping, Hucking etc.

Cross-country riding ranges from mild to aggressive riding over intermediate terrain hilly with small obstacles like roots, rocks, loose surfaces and hard pack and depressions). There are no sick drops, jumps or launches (wooden structures, dirt embankments) requiring long suspension travel or heavy duty components. Cross-country/marathon equipment (tires, shocks, frames, drive trains) 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.

## Building Up A Frameset

Consult with your Cannondale Dealer and the component manufacturers and frankly discuss your riding style, ability, weight, and interest in and patience for maintenance.

Generally speaking, lighter weight components have shorter lives. In selecting lightweight components you are making a trade-off, favoring the higher performance that comes with less weight over longevity. If you choose more lightweight components you must inspect them more frequently. If you are a heavier rider or have a rough, abusive or "go for it" riding style, buy heavy duty components.

Make sure the components chosen are compatible with your bike and intended for your weight and riding style.

Read and follow the component manufacturers warnings and instructions.



### WARNING

Using your bicycle improperly is hazardous.

WARN001

## TECHNICAL

### Scalpel Front Triangle

The Scalpel's front triangle is hand-welded, heat-treated 6061-T6 aluminum, and features the Power Pyramid down tube. The Power Pyramid simultaneously increases in diameter and decreases in wall thickness throughout its length. As a result, the down tube has a weight-saving thinner wall and a super-rigid, oversized profile at the bottom bracket shell to resist pedaling forces. At its upper end, the Power Pyramid has a slimmer diameter for compatibility with the head tube and a beefier wall for added strength.

The Scalpel also boasts easy portability, with an open, uncluttered front triangle that places all of the suspension components aft of the seat tube. And for enhanced stand-over clearance, the Scalpel's top tube has a downward bend just forward of the saddle - a feature that we fittingly call the Crotch Notch.



Figure 1

#### Scalpel Frame Identification

- |                           |                                 |
|---------------------------|---------------------------------|
| 1. Top Tube               | 5. EPO Chainstay (carbon fiber) |
| 2. Down Tube              | 6. Seatstay (composite)         |
| 3. Seat Tube              | 7. Head Tube                    |
| 4. Rear Shock "Frog" Link | 8. Rear Shock                   |

## Carbon Fiber Chain Stays

The carbon fiber chain stays deliver 2.7 inches of rear wheel travel. The chain stays' unique shape and the careful orientation of their fibers during fabrication force the stays to bend at a precise point midway along their length. (As opposed to other designs with flexing chain stays, where the stays bend throughout their length.) By isolating the point at which the stays bend - in reality, the pivot point around which the swingarm rotates - our engineers are able to dictate the performance characteristics of the rear suspension.

Before the chain stays ever bend upward, though, they are bent downward. Pre-loading the Scalpel's rear shock also pre-loads the chain stays, bending them downward at the pivot so the suspension is extended an additional 1" at the rear dropouts. The natural inclination of the stays to spring back to their resting (unloaded) state functions as an integral negative spring that dramatically enhances small bump response.

Pre-loading the stays also moves the rear wheel's axle to a level just below the Scalpel's mid-stay pivot. The result is that, through the first part of its travel, the rear wheel is able to move back out of the way of impacts as it also moves upward. In the latter part of the travel the pivot is below the rear axle, eliminating chain growth, pedal feedback and bobbing.

As the swingarm goes through its travel, the suspension also morphs from using the chain stays' decreasing negative spring (for plush initial response) to using the rear shock's ramping, positive air spring for progressive response toward the end of its travel (to prevent harsh bottoming out).



**Figure 2**  
**Chainstay Pivot Area**

## Head Tube

The head tube accepts Cannondale HeadShok System Integration™ headsets (shown), and OnePointFive 1.5 (38.1mm) headsets.

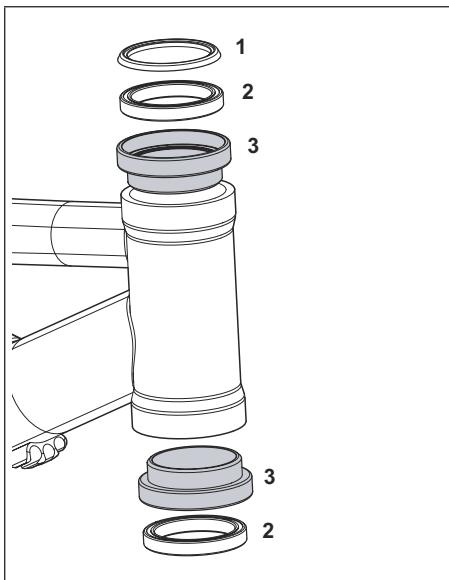


Figure 3

SI Head tube Headshok Headset

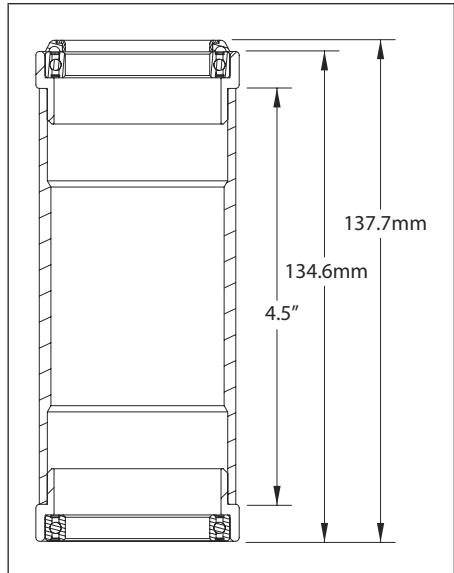


Figure 4  
SI Head tube

## Parts Identification

1. SI Upper Bearing Seal
2. SI Bearing
3. SI Bearing Cup

## MAXIMUM FORK LENGTH

Your Cannondale bike frame was designed and tested to a specific MAXIMUM FORK LENGTH. See below. Installing a fork with a MAXIMUM FORK LENGTH that is longer than specified for the frame, can overload the frame causing it to fail and break suddenly while riding. A rider can be severely injured or killed as a result.

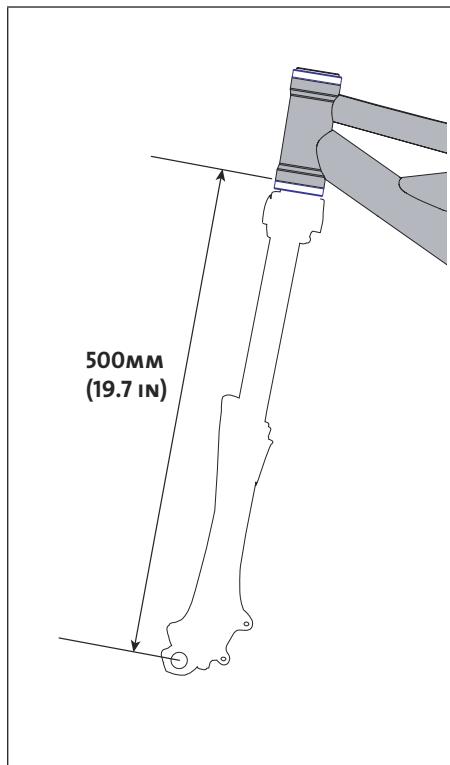


Figure 5

### MAXIMUM FORK LENGTH

#### How MAXIMUM FORK LENGTH is measured:

- THE FORK MUST BE INSTALLED and FULLY EXTENDED.
- MEASURE THE DISTANCE FROM BOTTOM OF FRAME HEAD TUBE TO CENTER LINE of WHEEL AXLE. Do not measure from bottom of headset bearing cups or head tube adapters if any.



#### WARNING

**DO NOT INSTALL FORKS WITH A MAXIMUM FORK LENGTH LONGER THAN THE SPECIFICATION FOR YOUR FRAME.** A longer fork can overload the frame causing it to fail (break) while riding. You can be severely injured, paralyzed or killed in an accident.

#### To find this important specification you can:

1. Consult the Owner's Manual Supplement for your bike.
2. Ask your Cannondale Dealer.
3. Visit our website Tech Center at <http://www.cannondale.com/bikes/tech/> or call us at 1-800-BIKE-USA.

WARN002

## Sag

Recommended Sag for Scalpel	25% of shock travel
--------------------------------	------------------------

Sag is the distance the bike suspension compresses with a rider (wearing all appropriate gear) mounted in a normal riding position (seated, hands on handlebar and feet on the pedals) on flat ground.

The recommended sag for your bike is intended to maximize the bike's suspension travel and it is usually specified as a percentage (%) of the fork or shock's total travel. See the "Specifications" section in this manual.

Maintaining the recommended sag in both the front and rear suspension helps assure that the fork and shock travel operates normally without the excessive top-out or bottom-out that can lead to difficult handling or damage.

## CAUTION

Please read the fork/shock manufacturer's owner's manual or the instructions provided before attempting any set-up or adjustment.

CAUT001

Small adjustments to sag are performed by adjusting preload of the shock or fork. This is done by adding or removing spring shims, adjusting the installed length of the spring with a preload adjusting ring, or with air springs, changing air pressure settings.

Larger adjustments to sag are require changing the installed springs in the fork or shock. Changing the spring may be a simple task or very complex depending on the design of the fork or shock. In general: increasing preload decreases sag, decreasing preload increases sag.

Finding a suitable sag setting within the suspension fork or rear shock range is a matter of personal preference taking body weight and how you ride into consideration.

## Selecting Rear Shocks



### WARNING

**SELECT ONLY COMPATIBLE SHOCK/ FORKS FOR YOUR BIKE. DO NOT MODIFY YOUR BIKE IN ANY WAY TO MOUNT ONE. HAVE YOUR SHOCK OR FORK INSTALLED BY A PROFESSIONAL BIKE MECHANIC**

- Riding with the wrong rear shock can damage the frame. You could have a serious accident. Make sure that the total travel, eyelet-to-eyelet length, and stroke length of the rear shock you select meets the specifications listed in this manual.
- When selecting different shocks or forks for your bike, make sure that the shock or fork you select is compatible with your bike's design and how you will use your bike.

WARN003

## Parts Identification (Figure 6)

1. Upper Shock Bolt
2. Washer,12.5ODx6.5IDx1.6MMTHKSS
3. Nut (Nylock)
4. Lower Shock Bolt (M6x1.0x45mm, SHCS)
5. Lock Nut (Nyloc)

## Mounting Rear Shocks

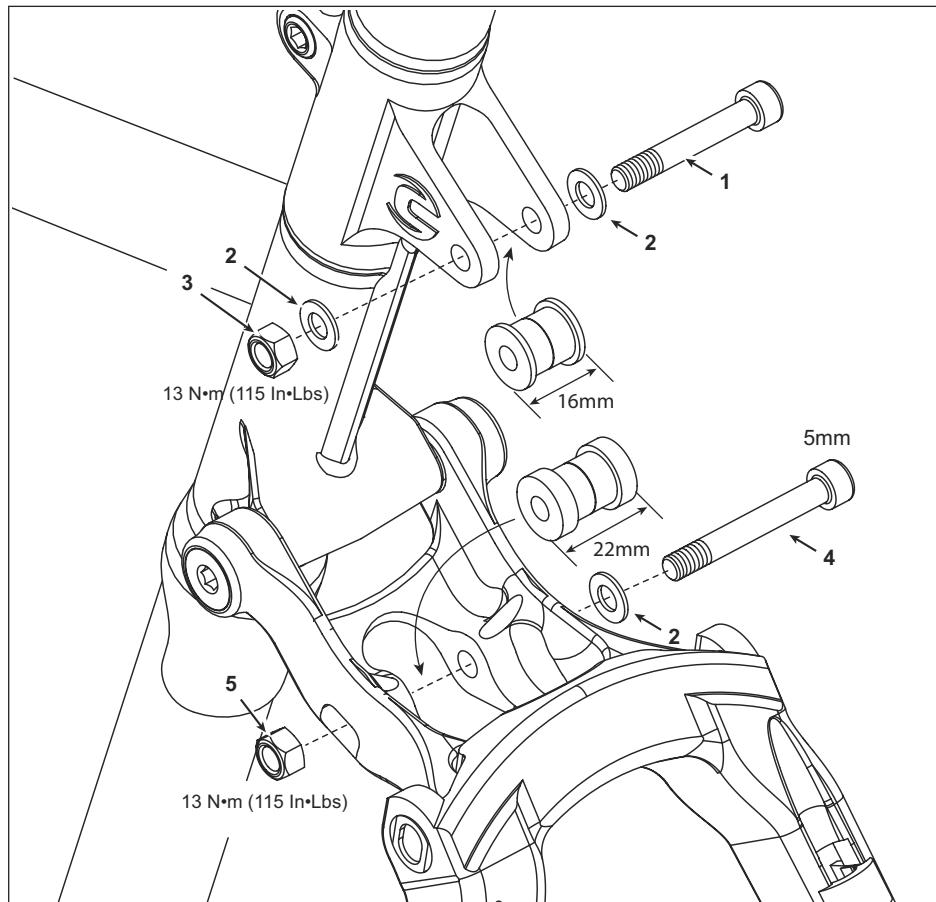


Figure 6

Scalpel Rear Shock Mounting

## Brakes

All Scalpels are built using the International Standard brake mounts. Use 6" rotors only.

## Chainrings

Cannondale designed the Scalpel around a drivetrain that uses a 44-tooth chainring as the outer ring. Other rings may work but are not recommended. The use of a 42-tooth chainring will complicate the setup of the front derailleur. Additionally, the use of a 46-tooth chainring may damage the right chainstay.

## Front Derailleur

The front derailleur position on the Scalpel is a little different than what's customary. The angle of the cage should be run with the rear slightly inboard. The height of the front derailleur should be such that the lower edge of the cage sits 1.5 to 2.0mm above the chainstay. This will prevent any damage to the chainstay or the front derailleur during suspension compression. Note that this may position the front derailleur higher than you normally might set it.

Scalpel frames are designed with either traditional bottom brackets or ones from Hollowgram. Cranksets are not interchangeable between the two frame types and can not be adapted. See "sdhgshgdjsd" blah in this manual.

See crank set instruction of manu.

## Chain Height

In the work stand or on the shop floor, you will notice that when the chain is in certain gear ratios, the chain will sag and rest on the chainstay. When the chain stays are preloaded (the suspension sagged-in), this distance will change. With proper air pressure in the rear suspension and forward pressure on the pedals, the chain will then run above, not on, the chainstay. As the bike moves through its travel, the chain will continue to rise above the chainstay. This movement is instrumental to the EPO suspension design.

The chain height will not be a concern except in one gear ratio. When the chain is in the inner chain ring and small cog (cross-chained) the chain may rub the chainstay. This is not a recommended gear ratio due to the unnecessary stress it puts on a chain. Because the Scalpel is a high performance race bike, riders should not cross-chain. To paraphrase one frame engineer: "You wouldn't drive your Porsche around town at 20 mph in fifth gear—it's inefficient." So too, is cross-chaining.

## Tire Selection

When selecting replacement tires, be sure that the properly installed and inflated tire does not contact any part of the swingarm, frame, or fork and throughout full suspension travel. The U.S. Consumer Product Safety Commission (CPSC) requires at least 1/16" (1.6 mm) tire clearance from any part of the bike. Allowing for lateral rim flex and for untrue (wobbly) rims will likely mean choosing a rear tire that provides even more clearance than the CPSC recommends. Your choice of a new front tire should be made only after considering the clearance guidelines contained in your front suspension fork owner's manual. If your manual contains no such guidelines, or if don't have a manual, consider that Rock Shox requires at least 1/4" (5 mm) clearance between the tire and the fork crown or bridge when the fork is completely compressed. Be aware that completely compressing the fork may involve removing the spring stack, letting the air out of the fork, or both.



## WARNING

### SELECT PROPERLY SIZED/ FITTED TIRES FOR YOUR BIKE

Mounting the wrong size tires on your bike can increase the chances that you will have an accident where you can be severely injured, paralyzed, or killed. If the tires touch the frame or fork when riding, you can lose control of your bike. If the a moving tire is stopped because it touches the frame or fork, you can be thrown off the bike. You can be severely injured or killed.

Do not mount oversized tires, ones that rub or touch the frame, ones that result in too little clearance with the frame, or ones that can touch the frame or fork when the suspension is fully compressed or when riding.

Take care that the tires you select are compatible with your bike's frame design. Also, be sure to follow the manufacturer's recommendations of your front fork and rear shocks.

Ask your Cannondale Dealer for the right tires for your bike and its particular components!

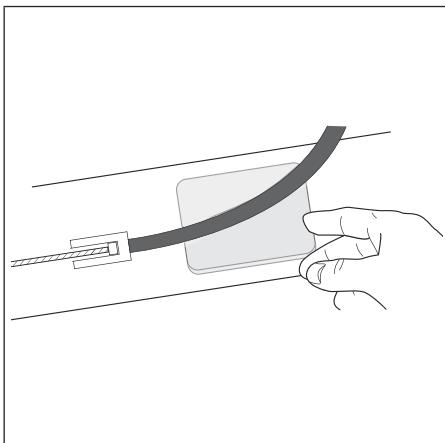
WARN004

## Line and Cable Frame Protection

Normal line and cable movement against the frame can wear away painted finishes and decals. Overtime, cable rubbing can wear into the frame itself causing very serious frame damage.

Check over your bike after your first few rides. Apply a clear adhesive guard material in areas where rubbing is found.

When applied correctly, clear guards are good protection for your bike.



**Figure 7**

### Typical Location for Guard Material

#### To apply the guard material (included with your bike):

1. Clean the frame with a mild detergent and wipe dry with a clean towel. Do not use solvents or harsh chemicals to clean the frame. OPTIONAL: Trim the adhesive guard material to the shape required.
2. Remove the backing and position the guard under the cable/ line.
3. Rub the guard firmly against the frame with your fingers to fix it in place.
4. Periodically, recheck the guards and other areas of the frame as you continue to ride. Replace the guards if they wear out.

*PLEASE NOTE: Damage to your bike caused by cable rubbing is not a condition covered under your*

warranty. Also, adhesive frame guards are not a fix for incorrectly installed or routed cables or lines. If you find that applied guards are wearing out very quickly, consult with your Cannondale Dealer about the routing on your bike.

## Housing Guides and Cable Stops

Lines and cables are routed through frame guides using cable stops (1) and /or cable thru guides (2).

Periodically, you should check to make sure the stops and guides are in good condition and seated properly in the frame guides.

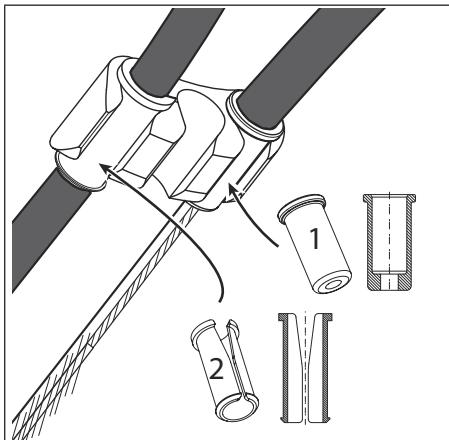


Figure 8

### Cable Stop and Housing Guide

For stops, make sure the stop is seated securely in the frame guide and the housing is fixed within the stop.

For guides, make sure they slide completely into the frame guide and rotate the open side (a) so it faces inward. Have replacements installed if any are damaged or missing.

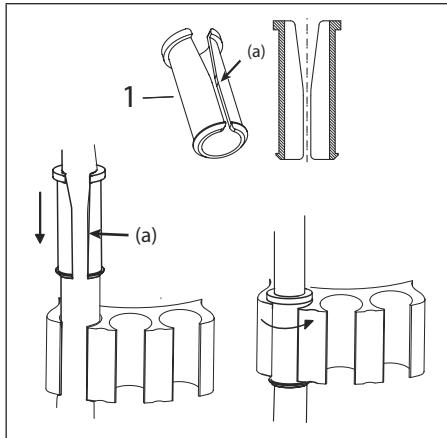


Figure 9

## Bottom Bracket Cable Guide

This snap in rear derailleur cable guide is mounted on the lower bottom bracket shell. Replacements are available.

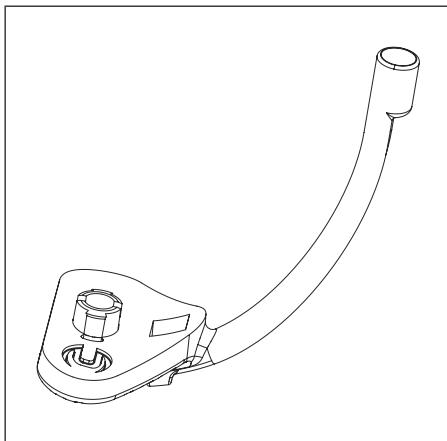


Figure 10

### Right Chainstay Protector

The clear adhesive chainstay protector must be in place at all times. This protector prevent direct chain contact with the chainstay. It is very important to have this chainstay protector in place and in good condition always. DO NOT RIDE WITHOUT IT.

If the chainstay protector becomes worn or damaged, have it replaced. Cannondale will have kits available as needed to replace these protectors.

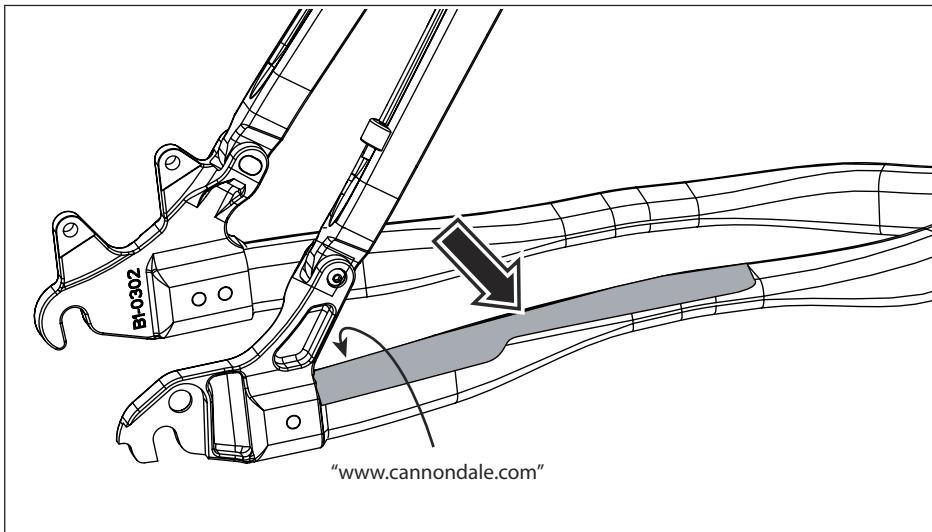


Figure 11

Chainstay Protector Location



#### WARNING

**DO NOT RIDE YOUR SCALPEL IF YOU SEE ANY SIGN OF DAMAGE, SUCH AS BROKEN, SPLINTERED, OR DELAMINATED THERMOPLASTIC CARBON FIBER.**

A delamination or break in the adhesive bond between the bottom bracket or dropouts and the carbon fiber chain stays may be present if the seam has turned white. You should also periodically inspect the aluminum part of the frame for cracks. If you have any questions, contact your Cannondale retailer, or contact Cannondale directly. Continuing to ride a damaged frame increases the chances of frame failure, with the possibility of injury or death of the rider.

WARN005

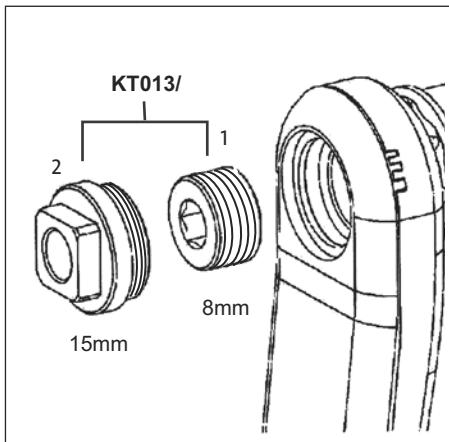
## SYSTEM INTEGRATION (SI)

### CRANKSET INFO

#### Crankarm Removal

Use Cannondale tool - KT013/. Be sure to clean and grease the threads of the spindle, crankarm, and tool parts before removing.

1. Remove the crankarm fixing bolt (turn counter-clockwise) and the washer from the crankarm. Be sure to insert the 8mm wrench completely into the fixing bolt before attempting to loosen it. And, take care not to lose the steel washer under the bolt head.
2. Grease the threads of the tool stud (1) and install it through the crankarm and into the bottom bracket spindle. Screw it into the spindle until the top of the stud is flush with the top of the spindle.
3. Next, apply grease to the threads of the tool body (2) and exposed face of the tool stud. Install the body into the crankarm completely and tighten it snug with a 15mm open end wrench.



**Figure 12**

#### SI Crankarm Removal Tools

4. Insert a 8mm hex wrench through the tool body and into the stud. Hold the body and turn the wrench counter-clockwise until the

crankarm can be removed from the spindle.

5. Repeat steps 1-4 for the other crankarm.

#### Spindle Removal

1. Remove the crankarms.
2. Remove the wave washer, shims, spacer bearing shield and seal from the drive side (right) spindle end.
3. Remove the spindle from the non-drive side (left).

#### Bearing Inspection

The inner bearing races of both bearings should rotate smoothly and quietly with only the force of your finger. It should not move side-to-side.

The rotation should not stick or feel gritty.

There should not be any play detected in the inner race and the bearing should not be free to slide in the bottom bracket shell.

The bearings are a press fit and if they move in the shell, this is an indication of damage to either the bearings or bottom bracket shell.

NOTE: Loose bearings can be a cause of "creaking."

## Bearing Removal

The two bottom brackets bearings are a sealed type. Mountain bike bottom bracket assemblies have an added seal mated to the bearing shield. However, should the bearing suffer damage due to wear or contamination, they can be replaced easily using Cannondale service tool - KT011.

### CAUTION

*Following removal, install new bearings. The two circlips in the bottom bracket shell can be left in place. Should they need to be removed, use a flat blade screwdriver. Starting at the hooked end, lift the circlip out of the internal groove in the bottom bracket shell.*

CAUT002

1. Remove the drive side (right) crankarm. It is not necessary to remove the left side crankarm arm.
2. Remove the wave washer, shims, 12mm spacer and the bearing shield and seal from the bottom bracket spindle. See "Crankarm Removal."
3. Reove the spindle by withdrawing from the from the non-drive side (left). To free it from the bearing gently tap it on the drive side with a rubber mallet.
4. Locate the special tool (KT011) on the inside inner race of the bearing.

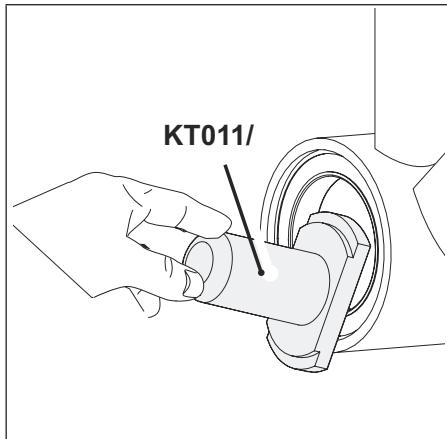


Figure 13

### SI Bearing Removal Tool

5. From the other side, locate a punch or drift on the back of the tool and drive out the bearing. Repeat for the other bearing. See Fig. 2B.

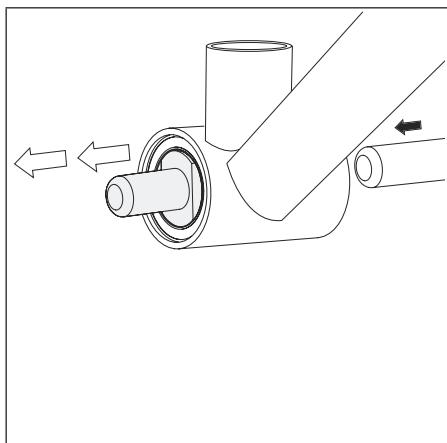


Figure 14

### Driving Out SI Bearing

*NOTE: Now would be a good time to remove, clean, and re-grease the circlip groove and circlips. Doing this will help prevent "creaking."*

## Circlips and Bearing Installation

### CAUTION

DO NOT FACE, MILL OR MACHINE THE BOTTOM BRACKET SHELL FOR ANY REASON. Doing so can result in serious damage and possibly a ruined bike frame.

CAUT002

Take the following steps only:

1. Always thoroughly clean the inside surface of the BB shell with a dry shop towel.
2. Inspect the circlip grooves (a) and the machined bearing seats (b) on both sides of the bottom bracket. And, carefully inspect the BB (outer and inner surfaces) and frame welds for evidence of fatigue cracking or damage.
3. Apply a thin film of bearing grease to the BB circlip groove. Install the flat end (a) of the circlip into the groove first, then moving clockwise, push the clip into the groove until it is fully seated in the groove. Install the other circlip the same way.
4. Apply a light coating of grease to the bearings seals (to inhibit moisture penetration). Lightly grease entire inside surface of the bottom bracket.

6. Install the drive side bearing first. Use the tool arrangements for each bearing side shown in Figure 18. Press the bearing until they bottoms against the circlip.s Remove the tools and press.

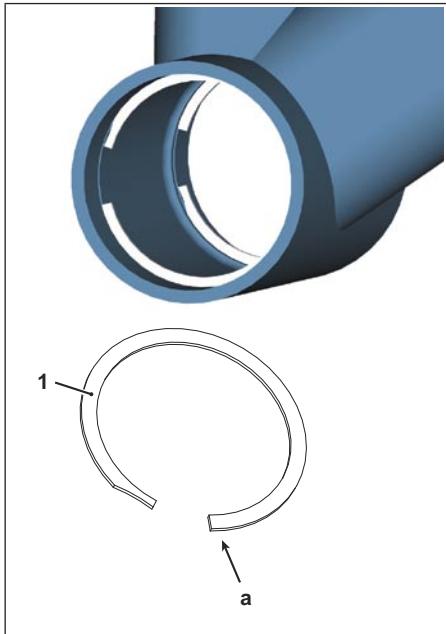


Figure 15

BB Circlip



### WARNING

WEAR HAND AND EYE PROTECTION Circlips may have sharp edges that can cut your fingers. A circlip can cause serious eye injury if it springs out of your hands or the work unexpectedly.

WARN006

## Spindle and Crankarm Installation

The following steps describe how to install the spindle, crankarms and other parts after the circlips and bearing are installed into the bottom bracket shell.

### CAUTION

Clean and inspect all parts. All parts must be free of corrosion and damage, and replace new as necessary. Be sure to grease all mating surfaces well before assembly and installation into the bottom bracket.

CAUT002

See Figure 17.

1. Slide a bearing shield (1) onto the spindle (2) with the flat side (a) facing the left splines (b).
2. Apply grease to spindle (2) at areas indicated "Gr". If you are working on a mountain bike, install the rubber seal (3) onto greased bearing seal.
3. Next, insert the assembly into non-drive (left) side of the bottom bracket.
4. On the drive side (right), apply a coating of grease to the bearing. Install the bearing seal and bearing shield with the flat side facing out.
5. Install 12mm spacer, shims, and wave washer.

*NOTE: Please note that the total number of shims required depends on the compression of the wave washer. The correct number when the wave washer is compressed but not flatten by the properly tightened fixing bolt. The best indication of the right number is the condition of the wave washer "compressed but not flattened."*

6. Grease the spindle crankarm fixing bolt threads and splines. Be sure to grease the underside of the bolt head, and the steel washer.
7. Use the left crankarm to hold the spindle and tighten the drive side (right) crankarm fixing bolt to the specified torque.

8. Visually check the compression of the wave washer; the wave washer (3) should be compressed nearly flat (0.3-0.5mm of compression left is ideal).

If you can easily fit the edge of a 0.5mm shim into the wave, then add another shim. If the wave washer has more than 1mm of compression left then the spindle could move from side-to-side and creak.

You should be able to see the waves of the wave washer when you rotate the cranks. This means that the bearings are preloaded by the wave washer alone without being overloaded by the force of the crank bolt.

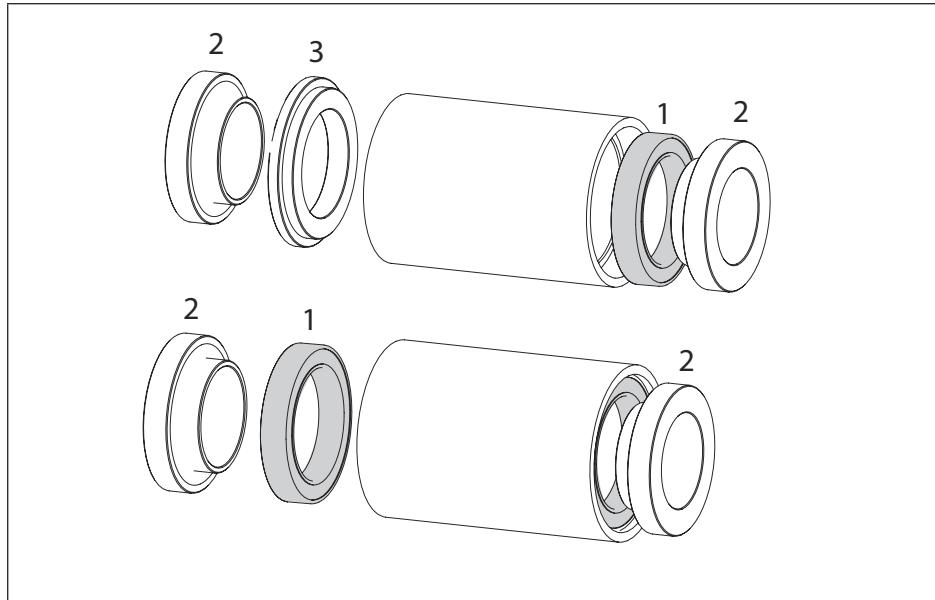
9. With the correct number of shims and right crankarm installed, proceed by greasing the left (non-drive) side bottom bracket splines, install the left crank (13) opposed 180° degrees (opposite) the right arm. Once more, grease the fixing bolt threads, the underside of the bolt head, and the steel washer install into the crankarm and tighten to the specified torque.

## Crankarm Installation

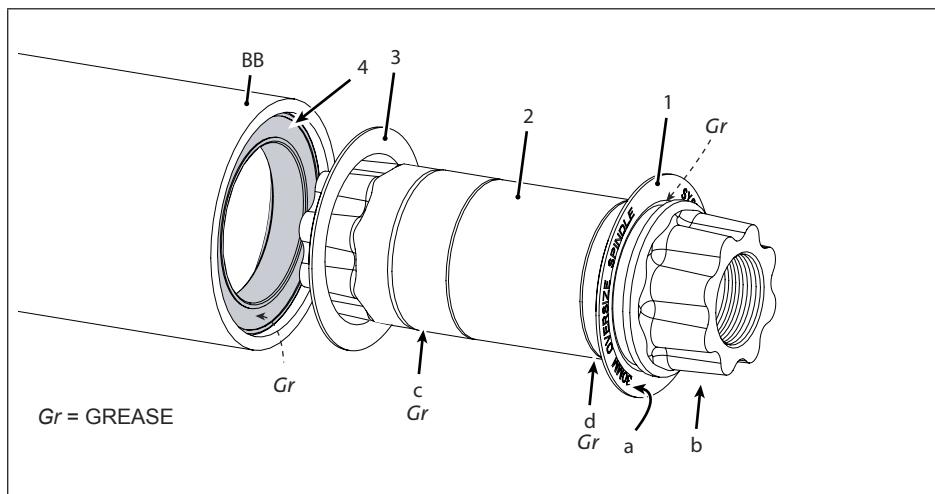
Before reinstalling alloy crankarms be sure to thoroughly clean and thoroughly grease the following:

**Both crankarm sockets.**

**Spindle, fixing bolt threads, fixing bolt steel washer and axle splines.**

**Figure 16****Arrangement of SI Bearing Drivers**Cannondale tool **KT010/** items 2,3

Headset cup bearing press with 1" adapters. such as Park Tool HHP-2 (Bearing Cup Press)).

**Figure 17****Installing the SI Spindle Into Bottom Bracket**

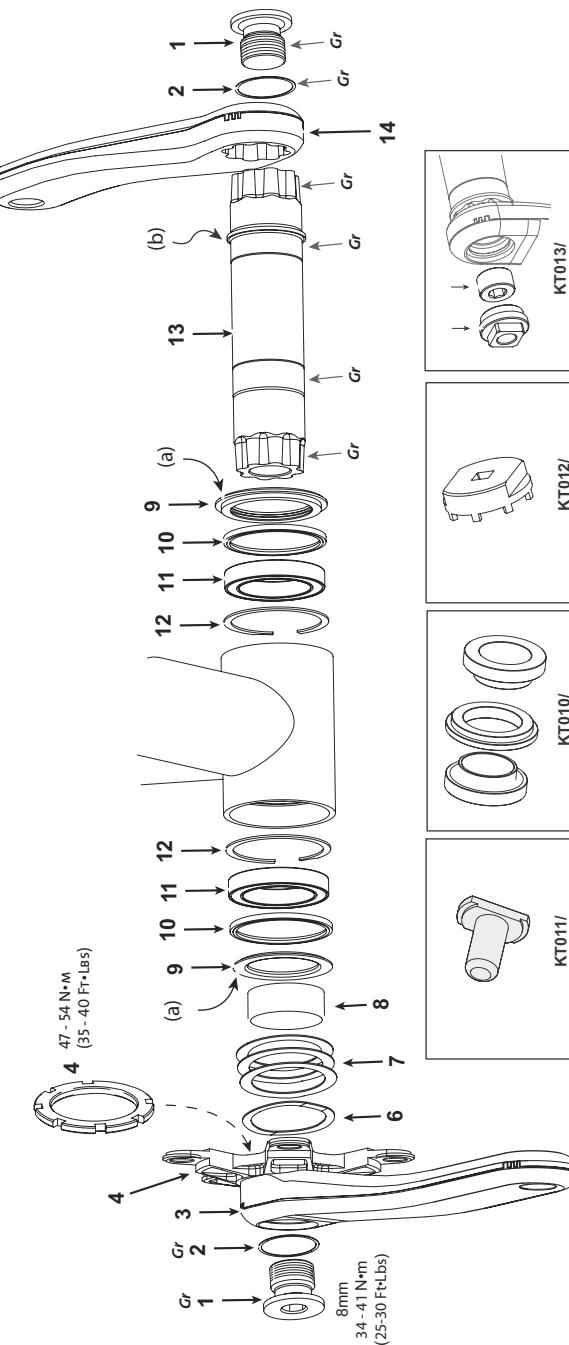


Figure 18

**SI Crankset Assembly Order**

1. Fixing Bolt
2. Steel Washer
3. Drive Side (right) Crankarm
4. Spider
5. Lockring
6. Wave Washer
7. Shims
8. Spacer
9. Shield
10. Seal
11. Bearing
12. Circlip
13. Spindle
14. Left Crankarm
15. Steel Washer
16. Fixing Bolt

## MAINTENANCE

The following table includes supplemental maintenance items for your bike. Please consult your *Cannondale Bicycle Owner's Manual* for more information on basic bike maintenance. And, so you may create a complete maintenance program best suited to you and your riding style, please talk to your Cannondale Dealer. Also, remember to follow the maintenance recommendations given by the component manufacturers for the various non-Cannondale parts of your bike.

### Item Schedule

WHAT TO DO	HOW OFTEN	You/ Professional
Check lines/ cables for rubbing, install guard material.	Before and After 1st Rides	You
Clean and visually inspect entire bike frame/swingarm for cracks or damage	Before and After Each Ride	You
<b>CARBON CHAIN STAYS:</b> Clean and visually inspect the chain stays for deep scratches, cracks, dents, splintering, delamination or excessive wear. <b>Do not ride if damaged.</b> <b>REPLACE THE CHAINSTAY PROTECTOR AS NEEDED</b>	Every 10 hours	You or Professional
Check condition/ attachment of cable stops and housing guides.	Every 10 hours	You
<b>REAR SHOCK LINK ASSEMBLY:</b> Check for tightness and damage. Hold the mainframe of the bike stationary and try to move the rear wheel from left to right. Any unnecessary movement or creaking is a sign of a loose or damaged pivot.	Every 15 hours	You or Professional
Disassemble, clean and inspect all parts, replace as needed, and reassemble. Pay particular attention to the 2 white washers between the seat tube and "frog link" as well as the 8 teflon bushings locate at the top and bottom of the seat stay.	Every 50	Professional Only



### WARNING

**ANY PART OF A POORLY MAINTAINED BIKE CAN BREAK OR MALFUNCTION. AND, THAT CAN LEAD TO AN ACCIDENT WHERE YOU CAN BE KILLED, SEVERELY INJURED OR PARALYZED.**

Please ask your Cannondale Dealer to help you develop a complete maintenance program, a program which includes a list of the parts on your bike for YOU to check regularly.

Frequent checks are necessary to identify the problems that can lead to an accident.

WARN007

## About Cleaning

When cleaning your bike , use only a mild soap and water solution. A clean water and a common dish washing liquid will work best.

Be sure to cover adjustment knobs and air filter (if equipped) with a clean plastic bag secured temporarily with a rubber band or masking tape.

Before wiping away dirt, use an ordinary water hose to gently 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.

CAUT017

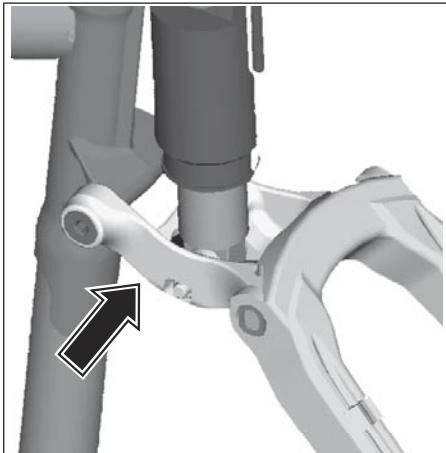
## Tightening Torques

Component-specific values (for crank bolts, rotor bolts, do not appear below because they will vary based on the spec-level of the bike; please consult the manufacturer of the component in question for the correct torque value.

Item	Loctite #	N•m	In•Lbs
Upper/ Lower Shock Mounting Bolts		13.0	115.0
T-Nut Screws	242	2.25	20.0
Shock Link Pivot Bolts	242	13.0	115.0
Seat Post Clamp Bolt		Consult seat post specification	

## REAR SHOCK LINK

The rear shock link is also known as the "Frog Link" due to the frog-like appearance of the part.



**Figure 19**

**Rear Shock Link Assembly**

The small parts are considered wear items and will require periodic inspection renewal depending on use and conditions.

### Teflon Washers

Inspect and replace Teflon washers (4) often. Worn or damaged washers can result in excessive play detected in the seatstay assembly.

### Pivot Bearings

The link pivot bearings (2) should be greased regularly using a high-quality bike bearing grease. Take care to not contaminate the bearings during installation of the bolts.

### Flange Bushings

The flange bushings (8) are Teflon coated. DO not lubricated them. Bushings are press fit. They should be inspected often and replaced when necessary. To remove, carefully locate a punch between the two halves and drive out.

### CAUTION

**DO NOT PRESSURE WASH** - Dirt and water can be forced into the link bearings which will result in rapid damage.

Grease ONLY pivot bolts. Lubricants on flange bushings can collect dirt and grit (contaminants) resulting in damage and accelerated wear of the parts. Always install clean and dry.

CAUT004

### Parts Identification (Figure 20)

1. Link
2. Bearing
3. Pivot Bolt
4. Washer (Teflon,.551x.394x.04)
5. Shock Bolt (M6x1.0x45mm, SHCS)
6. Washer,12.5ODx6.5IDx1.6MMTHKSS
7. Lock Nut (Nyloc)
8. Flanged Bushing (Flanged,6mmIDx5.5mmL)

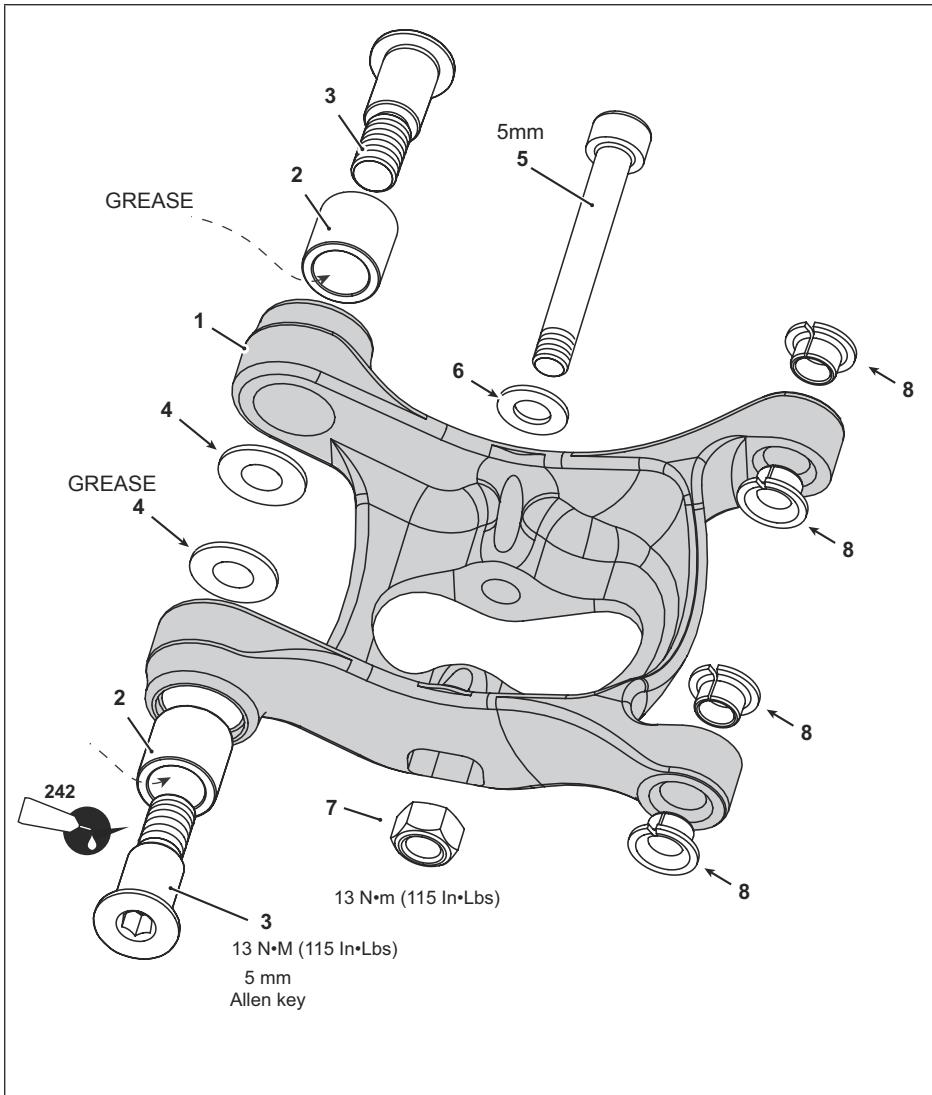


Figure 20

Scalpel Frog Link Parts

## **COMPOSITE SEATSTAY**

The small parts are considered wear items and will require periodic renewal depending on use and conditions.

### **Composite Seat Stay**

The seat stay (1) is a thermoplastic composite material. As part of your Pre-Ride Inspection , you should make sure it is attached securely to the both the "Frog Link" and chainstay dropout mounts. Check the seat stay itself for signs of damage and have it replaced new when damage is found.

### **T-Nuts**

The four T-nuts (2) are Teflon coated and should not be lubricated. If any creaking or noise is detected either the T-nuts or seatstay bushing may be damaged.

### **Flange Bushings**

The flange bushings (3) are Teflon coated. Do not lubricated them. Bushings are press fit. They should be inspected often and replaced when necessary. To remove, carefully locate a punch between the two halves and drive out.

The seatstay inserts (7) are bonded in place during manufacture and are non-removable.

### **T-Nut Screws**

The T-nut screws (4) should be checked for tightness periodically. Loose screws can result in play detected in the seatstay. When installing the screws, be sure to apply Loctite #242 to the threads and tighten to 2.25 N·m (20.0 In·Lbs).

**TIP:** Use a allen key with a ball end to tighten.

### **Seat Stay Cable Routing**

On the right side of the seat stay, insert the housing guides (6) into the holder from the underside. Then, route the housing through the guides. When inserting the guide, be sure to insert the small end of the guide seatstay .

### **CAUTION**

Do not apply grease or other lubricants to the T-nuts. Grease or lubricants can collect dirt and grit (contaminants) resulting in damage and accelerated wear of the parts.

Always install the parts clean and dry.

**DO NOT OVER-TIGHTEN** - Over-tightening T-nuts screws will result in damage to the flange bushings.

CAUT002

### **Parts Identification (Figure 21)**

1. Composite Seat Stay
2. T-Nut
3. Flanged Bushing (Flanged,6mmIDx5.5mmL)
4. Screw (M4x.7x8mmSOC HEADCAP,SS)
5. Washer (SS,.162IDx.308O)
6. Cable Through Guide
7. Bonded Insert (Do not remove)

See "Replacement Parts" in this manual for Cannondale replacement kit/small parts availability.

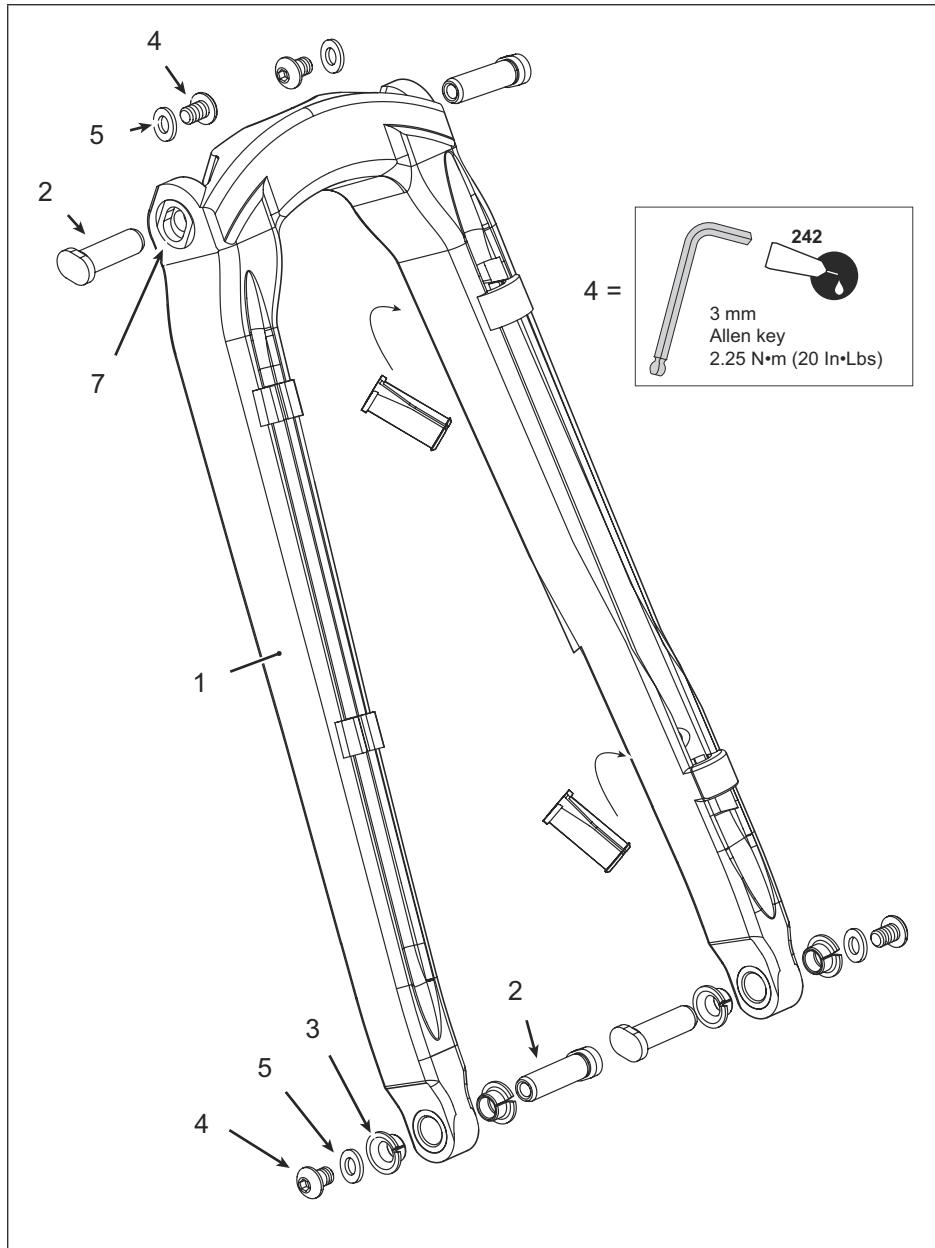
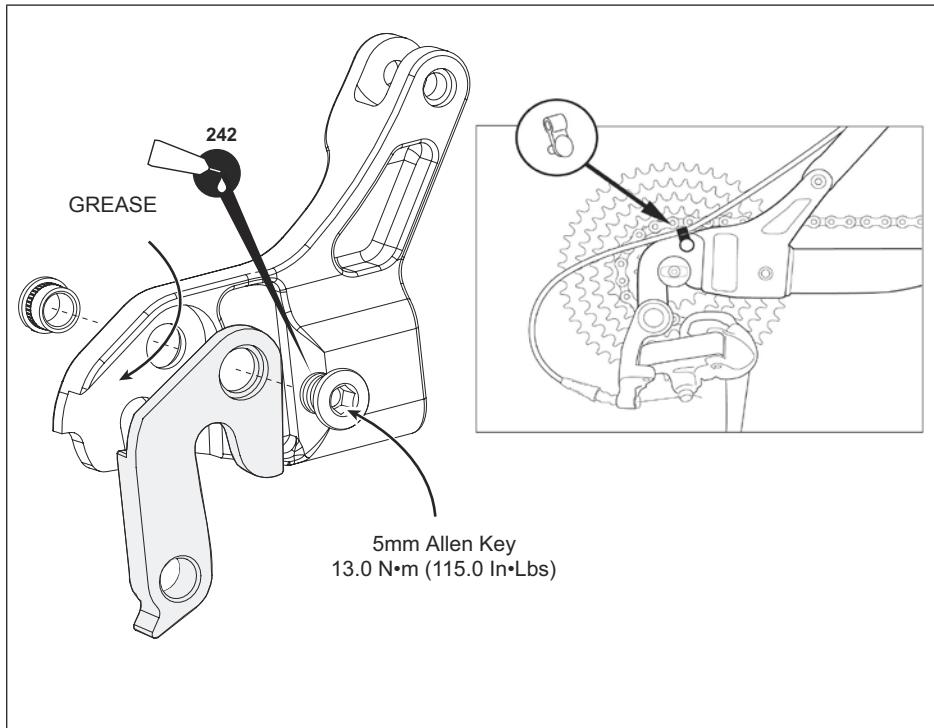


Figure 21  
Scalpel Composite Seat Stay Parts

## REAR DERAILLEUR HANGER

When installing replacements, be sure to thoroughly clean and inspect the dropout for any damage. Do not install a replacement hanger onto a damaged dropout.



**Figure 22**

### Scalpel Derailleur Hanger

Before installing the new replacement:

Apply a light film of bike grease between the hanger and dropout to minimize any noise or "creaking" that might result from very slight movement between the dropout and hanger during movement of the derailleur.

Tighten hanger nuts to specified torque.

Be sure to check alignment of derailleur following remounting.

Be sure to readjust wheel quick release so it is very tight.

## GEOMETRY

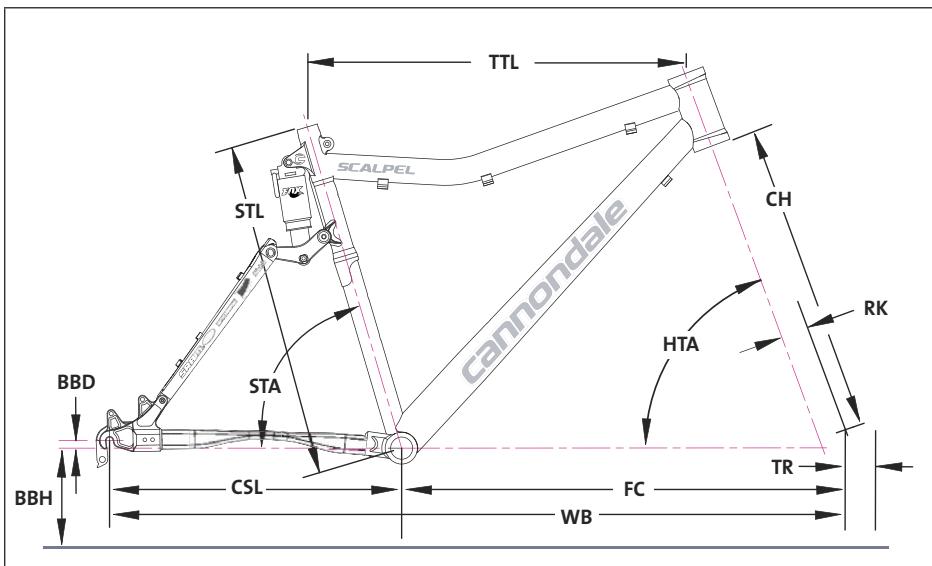


Figure 23

### SCALPEL SI AND SCALPEL

Scalpel Team Replica Scalpel 3000, Scalpel 2000, Scalpel 900

SIZE	SMALL	MEDIUM	LARGE	X-LARGE
<b>STL</b> Seat Tube Length (cm/in)	47.0/18.5	47.0/18.5	55.9/22.0	55.9/22.0
<b>TTH</b> Top Tube Horizontal (cm/in)	55.9/22.0	59.7/23.5	63.5/25.0	64.8/25.5
<b>TTA</b> Top Tube Actual (cm/in)	53.2/20.9	55.8/22.0	59.0/23.2	62.8/24.7
<b>HTA</b> Head Tube Angle (degree)	70°	★	★	★
<b>STA</b> Seat Tube Angle (degree)	73.5°	★	★	★
<b>SO</b> Standover at Top Tube Midpoint (cm/in)	71.4/28.1	73.7/29.0	77.0/30.3	79.2/31.2
<b>WB</b> Wheel Base (cm/in)	106.2/41.8	110.0/43.3	113.0/44.5	115.6/45.5
<b>FC</b> Front Center Distance (cm/in)	63.5	67.1/26.4	70.8/27.9	72.6/28.6
<b>BBH</b> Bottom Bracket Height (cm/in)	31.8/12.5	★	★	★
<b>BBD</b> Bottom Bracket Drop (cm/in)	1.1/0.44	★	★	★
<b>CSL</b> Chainstay Length (cm/in)	43.4/17.1	★	★	★
Fork Crown Height (cm/in)	55.9/22.0	★	★	★
<b>RK</b> Fork Rake (cm/in)	4.6/1.8	★	★	★
<b>TR</b> Fork Trail (cm/in)	5.8/2.3	★	★	★
Rear Travel (cm/in)	6.75/2.66	★	★	★
Shock Eye-to-Eye (cm/in)	14.0/5.5	★	★	★
Shock Stroke (cm/in)	25.4/1.0	★	★	★
Recommended Sag	25%			

\* All dimensions given with suspension fully extended..

**SPECIFICATIONS**

ITEM	SPECIFICATION	
Model	SCALPEL	SCALPEL SI
Frame material	6061-T6, TIG WELDED, ALUMINUM ALLOY	
Sizes	S,M,L,XL	
Recommended Sag	25%	
Maximum tire width	2.1 IN	
Head tube	HEADSHOK, ONEPOINTFIVE	
Head tube height	114 MM (4.5 IN)	
Maximum fork length	500 MM (19.7)	
Seat post diameter	27.2 MM (1.07 IN)	
Rear shock mounting bolt diameter	6 MM (.23 IN)	
Rear shock bushing width upper	16 MM (.63 IN)	
Rear shock bushing width lower	22 MM (.87 IN)	
Rear shock eyelet-to-eyelet length	5.5"	
Rear wheel travel	67 MM, 2.7 IN	
Rear shock stroke length	1"	
Rear shock leverage ratio	2.7:1	
Front derailleur	31.8 MM BOTTOM PULL, TRADITIONAL SWING	
Bottom bracket shell (width, thread type)	68 MM, ENGLISH	SI HOLLOWGRAM
Chain Line	47.5 MM	
Dropout Spacing	135 MM	
Rear hub spacing	135 MM	
Rear axle	QUICK RELEASE	
Rear brake mount	INTERNATIONAL STANDARD, 6" ONLY	

## REPLACEMENT PARTS (KITS)

CANNONDALE KIT NO.	DESCRIPTION
KF051/	Kit, Derailleur Hanger - Gemini/Prophet/All Mtn/Xcross Disc/Forged Dropout Scalpel
KF069/	Kit, Seat Stay, Composite, Scalpel; new lighter version w/ hware; compatible with all Scalpel frames
KF035/	Seat stay Rebuild Kit 4 T-Bolts, 8 bushings, 4 washers, and 4 T-Nut Screws
KF070/	Kit,Link Frog,Scalpel--new lighter version w/ hware; compatible with all Scalpel frames
KF043/	Kit, Rebuild HW - Links; every part to rebuild the rear suspension pivot assembly
KF044/	Kit, Shock Mnt. HW-Upper; bolts and hardware to secure shock to frame
KF056/	Kit, Screws/washers,10 - Scalpel; 3mm which screw into the T-Nuts on seatstay
KF068/	Kit, Washers-Teflon, Pivot Link (10); fits between leading link and seat node, Scalpels take 2
KF045/	Kit, Seat Binder-Scalpel
KF046/	Kit, Ch.Stay.Prot.-Scalpel; chainstay protector
KF014/	Kit, Cable Stop Inserts-2
KF086/	Kit, Guides, Hydr.Brake.,10pcs
KF085/	Kit, Guides, BB Cable,Single
KF012/	Kit, Rivnuts, Bag of 5
KT010/	SI Bearing Install Tool Set
KT011/	SI Bearing Removal Tool
KT012/	SI Lock Ring Tool
KT013/	SI Crankarm Extract Tool Set
TBD	Scalpel Chainstay Protector

**OWNER NOTES**

You can use a table like this to record maintenance history, service, or set up information about your bike.

Date	Work Performed







## **Our Mission Statement Is:**

“To create innovative, quality products that inspire cyclists around the world.”

## **Our Values Statements Are:**

1. We strive to exceed the expectations of our consumers, retailers, and business partners.
2. We believe our people drive our success.
3. We work together as one global team.
4. We act with respect, responsibility and integrity.
5. We continue to improve.

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