



READ THIS SUPPLEMENT AND YOUR CANNONDALE BICYCLE OWNER'S MANUAL CAREFULLY! Both contain important safety information. Keep both for future reference.

SYNAPSE CARBON

Owner's Manual Supplement

123952.PDF



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_center/

SAFETY INFORMATION

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 supplement 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.

WARNING

IMPORTANT COMPOSITES MESSAGE

Your bike is made from composite materials also known as "carbon fiber."

All riders must understand a fundamental reality of composites. Composite materials constructed of carbon fibers are strong and light, but when crashed or overloaded, carbon fibers do not bend, they break.

For your safety, as you own and use the bike, you must follow proper service, maintenance, and inspection of all the composites (frame, stem, fork, handlebar, seat post, etc.) Ask your Cannondale Dealer for help.

We urge you to read PART II, Section D. "Inspect For Safety" in your *Cannondale Bicycle Owner's Manual* BEFORE you ride.

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

Intended Use

The intended use of your bike or frameset is
CONDITION 1 / HIGH PERFORMANCE ROAD.



CONDITION 1 / HIGH-PERFORMANCE ROAD bikes and framesets are designed for riding on a paved surface where the tires do not lose ground contact. They are not intended to be ridden off-road, cyclocross, or touring with racks or panniers.

Material use is optimized to deliver both light weight and specific performance. You must understand that (1) these types of bikes are intended to give an aggressive racer or competitive cyclist a performance advantage over a relatively short product life, (2) a less aggressive rider will enjoy longer frame life, (3) you are choosing light weight (shorter frame life) over more frame weight and a longer frame life, (4) you are choosing light weight over more dent resistant or rugged frames that weigh more. All frames that are very light need frequent inspection for cracks that would indicate that the frame is worn out from fatigue. These frames are likely to be damaged or broken in a crash. They are not designed to take abuse or be a rugged workhorse.

WARNING

UNDERSTAND YOUR BIKE AND ITS INTENDED USE. CHOOSING THE WRONG BICYCLE FOR YOUR PURPOSE CAN BE HAZARDOUS. USING YOUR BIKE THE WRONG WAY IS DANGEROUS.

Industry usage Conditions 1 - 5 are generalized and evolving. Consult your Cannondale Dealer about how you intend to use your bike.

Please read your *Cannondale Bicycle Owner's Manual* for more information about Intended Use and Conditions 1-5.

Maximum Weight Limit

RIDER lbs / kg	LUGGAGE * lbs / kg	TOTAL lbs / kg
275 / 125	10 / 4.5	285 / 129

* Seat Bag /Handlebar Bag Only

Building Up A Frameset

Before building up a frameset, consult with your Cannondale Dealer and the component manufacturers, and discuss your riding style, ability, weight, and interest in and patience for maintenance.

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

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.

Read and follow the component manufacturers warnings and instructions.

Protect From Extreme Temperatures

- Protect your carbon bike from extreme temperatures when storing or transporting it.
- Allow your bike to cool off or warm up before you ride
- Do not store your bike in places where the temperature will exceed 66.5C° (150°F). For example, do not leave your bike lying flat in a black pickup truck bed in the desert sun or under the glass of a hatchback auto.

Bike Stands

The clamping jaws of an ordinary bike stand can generate a crushing force strong enough to seriously damage and ruin your bike frame.

CAUTION

Never place your bike in a bike stand by clamping the frame.

Place your bike in a stand by extending the seat post and positioning the stand clamp on the extended seat post. Don't extend beyond the MINIMUM INSERT line marked on the seat post.

Since your carbon seat post can also be damaged by clamping force, adjust the stand clamp for the minimum clamping force needed to secure the bike.

Inspection & Crash Damage of Carbon Frames

WARNING

AFTER A CRASH OR IMPACT:

Inspect frame carefully for damage (See PART II, Section D. Inspect For Safety in your Cannondale Bicycle Owner's Manual.)

Do not ride your bike if you see any sign of damage, such as broken, splintered, or delaminated carbon fiber.

ANY OF THE FOLLOWING MAY INDICATE A DELAMINATION OR DAMAGE:

An unusual or strange feel to the frame

Carbon which has a soft feel or altered shape

Creaking or other unexplained noises,

Visible cracks, a white or milky color present in carbon fiber section

Continuing to ride a damaged frame increases the chances of frame failure, with the possibility of injury or death of the rider.

Repainting Or Refinishing

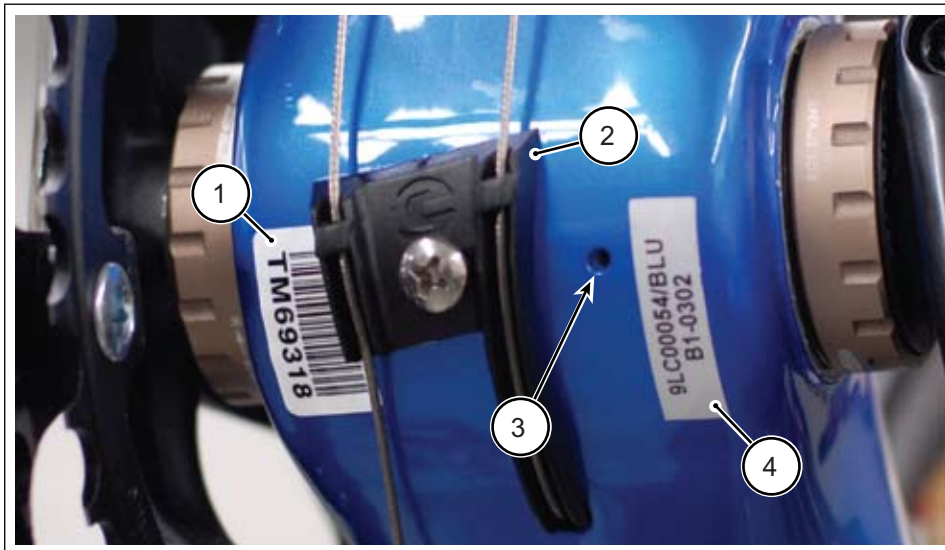
You should not paint over the existing finish, refinish or repaint your bike. The carbon fiber composites making up the frame are held together by some extremely strong bonding chemicals. However, these bonds can be attacked or weakened by paint stripping or refinishing chemicals.

WARNING

Repainting, painting over, retouching, or refinishing your frame or fork can result in severe damage leading to an accident. You can be severely injured, paralyzed or killed.

Refinishing chemicals : Solvents, and strippers can attack, weaken, or destroy the important composite chemical bonds holding your frame together.

Using abrasives or sanding the frame/fork structure, original paint, decals, or coatings through the use of mechanical actions such as plastic or glass bead blasting or other abrasive methods such as sanding or scraping can remove frame material or weaken it.



SERIAL NUMBER

The serial number (1) printed and permanently affixed barcode label. Use this serial number for warranty registration and theft recovery. See your *Cannondale Bicycle Owner's Manual* for more information on warranty registration.

BOTTOM BRACKET GUIDE

The cable guide (2) is mounted on the lower bottom bracket. Replacements are available through a Cannondale Dealer. The kit # is **KF363/**.

VENT

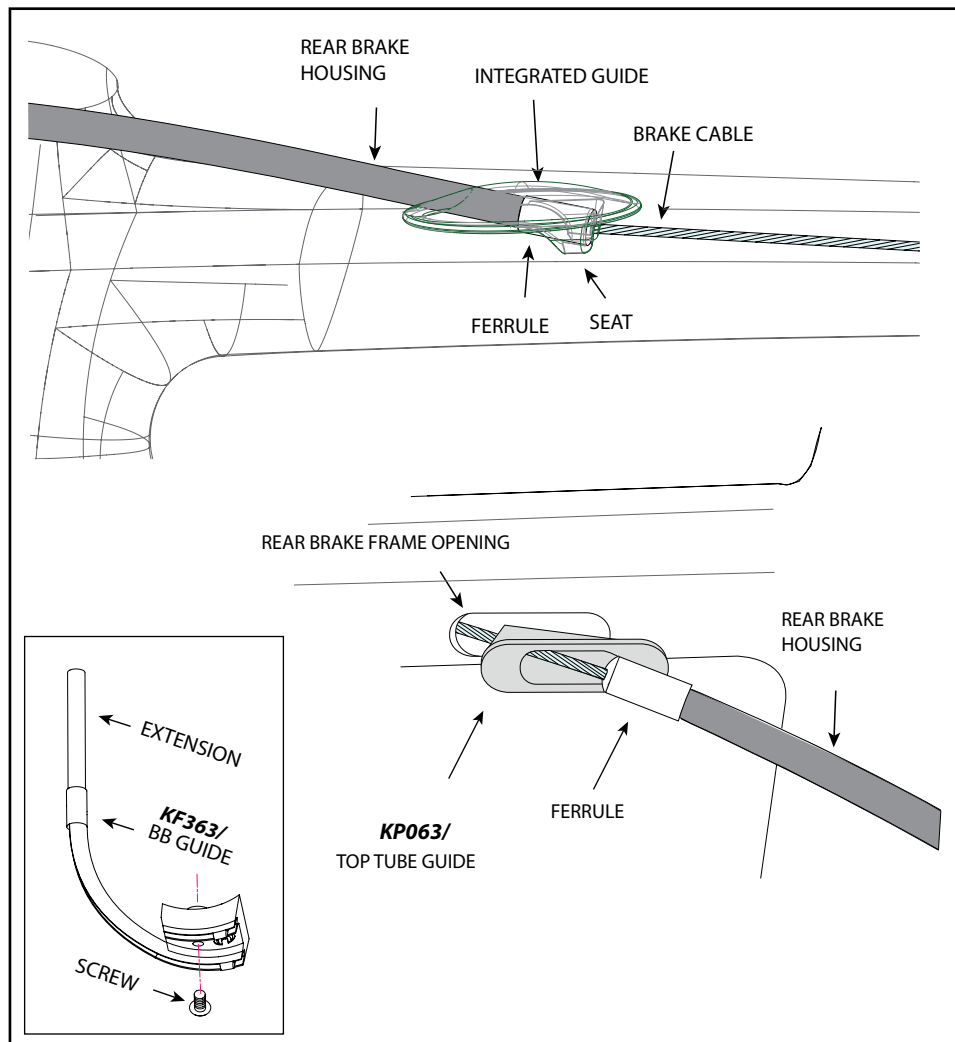
Keep the small vent hole (3) in the bottom of the bottom bracket shell clear of any dirt so that any water can drain out. Water can enter into frame tubes through washing, condensation, wet rides, or rain. It penetrates or can be sprayed in through water bottle bosses, seat tube, head tube and seat post openings. Water will not chemically harm your bike. If it freezes, the ice expansion can burst or crack the frame making it unsafe to ride. This damage is NOT covered under your warranty.

After wet rides, remove seat post, invert bike to drain any water.

CABLE ROUTING

The top tube guide is removable so that brake cable may be routed inside the tube. The guide is secured in the tube opening by the installed brake cable tension. Make sure the guide is seated properly in the top tube opening when installing and connecting the rear brake.

Be sure to use ferrules on housing ends. When installing cables, make sure ferrule is seated inside frame opening correctly.

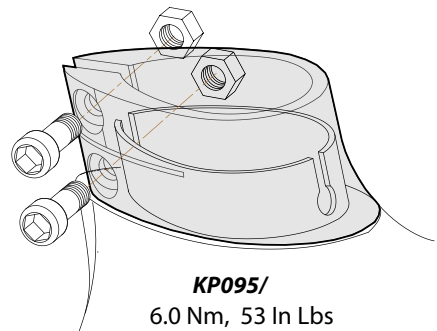


SEAT POST

Seat Tube/Binder Preparation

Burrs or sharp edges of the seat tube insert opening can scratch the seat post. Before inserting the seat post into the frame, do the following:

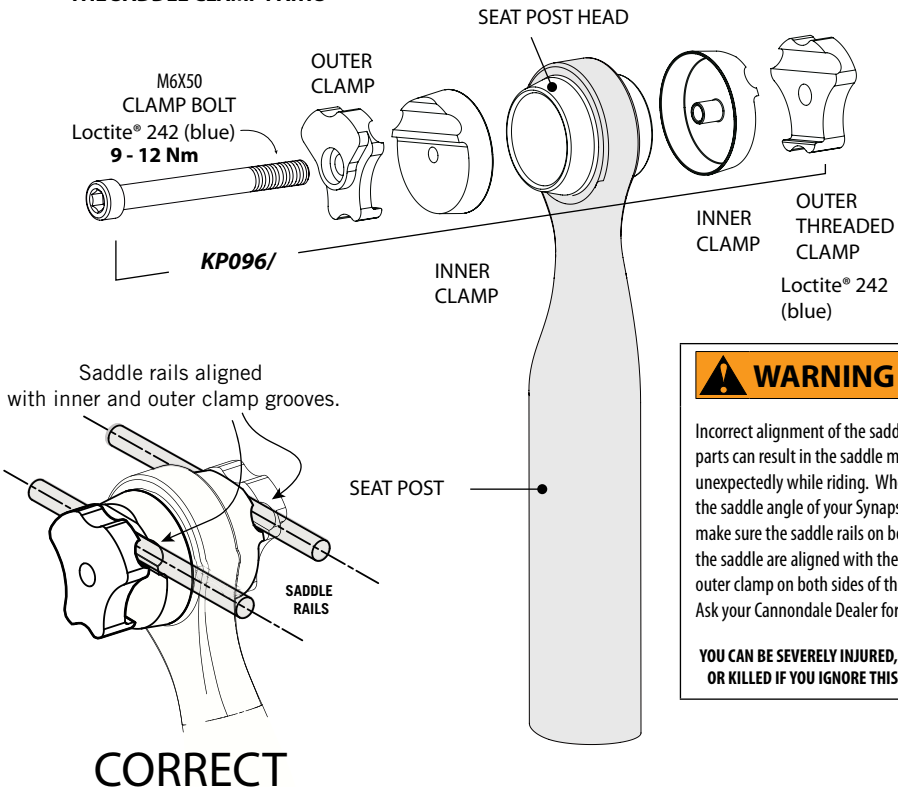
1. Remove the seat binder exposing the seat tube insert.
2. Lightly round the opening of the insert using 240 grit or lighter sand paper.
3. Apply carbon gel into the opening of the seat tube. Carbon gel has been included in the parts boxes of 2009 Synapse Carbon. It is also available by ordering Cannondale kit **KF115/**.
4. To improve clamping force, lightly grease the outside surface of the seat tube insert before reinstalling the seat binder.
5. Reinstall the seat binder.
6. Before inserting the seat post, apply carbon gel to the seat post.
7. Use a torque wrench to tighten the seat binder bolts to 6 Nm.



Saddle Clamp Assembly

1. Apply Loctite® 242 (blue) to the clamp bolt threads.
 2. Make sure the seat post head is clean and dry. Do not apply grease.
- NOTE:** The saddle head is bonded in place. Do not attempt to remove or adjust it.
3. Assemble the parts as shown above.
 4. Install the saddle so that the saddle rails locate in the slots between the inner and outer clamps.
 5. Use a torque wrench to tighten the seat saddle clamp 9 - 12 Nm.

**DO NOT APPLY GREASE TO
THE SADDLE CLAMP PARTS**



WARNING

Incorrect alignment of the saddle clamp parts can result in the saddle moving unexpectedly while riding. When adjusting the saddle angle of your Synapse Carbon, make sure the saddle rails on both sides of the saddle are aligned with the inner and outer clamp on both sides of the saddle. Ask your Cannondale Dealer for assistance.

**YOU CAN BE SEVERELY INJURED, PARALYZED,
OR KILLED IF YOU IGNORE THIS WARNING.**

Cutting the Seat Post

Depending on the frame size of your Synapse Carbon, the seat post may require cutting to a shorter length. This must be performed by a professional bike mechanic. The Synapse Carbon frame has seat post depth in the seat tube that varies with the frame size. Small frame sizes can accept between 110-130mm. Larger frame sizes can accept between 110-150mm.

To maximize saddle height adjustment range as well as maintain the necessary minimum insert depth of 80mm of any seat post, the seat post must be fitted (cut) to the frame.

To cut the seat post

1. Insert an uncut post into the seat tube. Insert it until it stops inside the frame. It should slide in easily. Do not force it into the seat tube. This is the maximum distance inside the seat tube the post will insert.
2. Determine the maximum desired adjustment range of the saddle that maintains the required 80mm of seat post inside the seat tube.
3. Remove the excess section from the end of the seat post. You should use a cutting guide such as Park Tool SG-7 and a carbon specific saw blade. See Figure 2. You should also lightly sand the cut post to round and smooth the cut.
4. Re-mark the MINIMUM INSERT line 80mm up from the bottom of the cut seat post. Mark the seat post without scoring, scratching or otherwise damaging the surface of the seat post. Use a thin decal (automotive pin striping) or a paint marker.

NOTE: U.S. Consumer Product Safety Commission (CPSC) bicycle regulations require minimum seat post insertion be marked on the seat post.

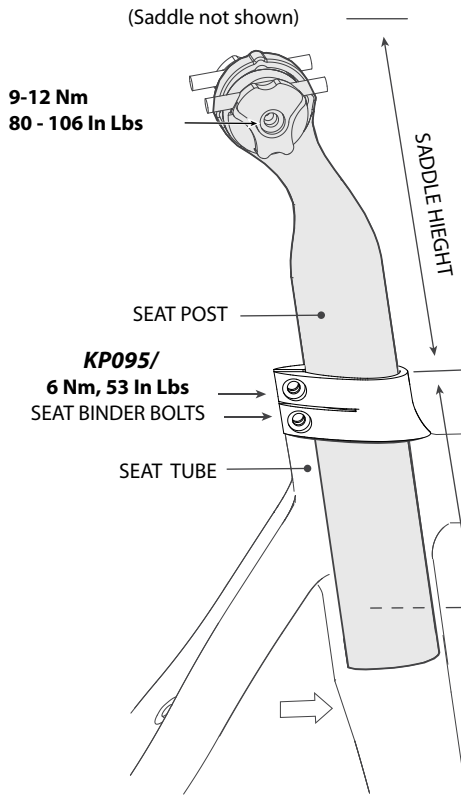
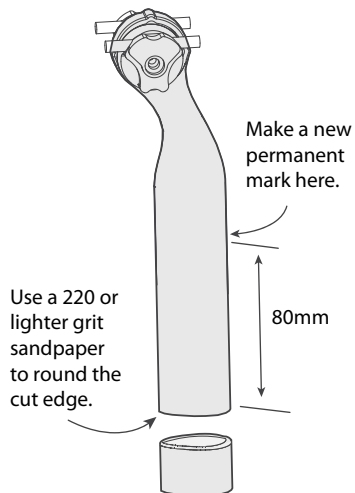
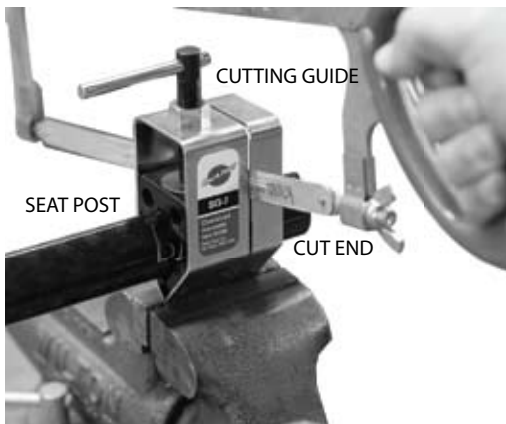
WARNING

If the seat post requires cutting, have it done by a professional bike mechanic with experience cutting high-performance carbon components.

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

More Information on Carbon Seat Posts

For more information about carbon fiber seat posts, see also "APPENDIX D. Care and Maintenance of Carbon Fiber Seat Posts" in your [Cannondale Bicycle Owner's Manual](#).



Apply the supplied carbon gel (Cannondale **KF115**) before installing the seat post.
Tighten bolts uniformly.

SI BOTTOM BRACKET

Compatibility

The BB shell is compatible with the BB30 Standard. See <http://www.bb30standard.com/> For information see *SI Cranksets Owner's Manual Supplement*. See <http://www.cannondale.com/tech/>.

Bearings

Shell bearings are sealed cartridge type and do not require lubrication. Inspect bearing condition annually (at a minimum) and anytime the crankset assembly is disassembled or serviced. The bearings are a press fit within the shell. Old bearings should not be reinstalled if removed. Replace both bearings at the same time.

Replacements circlips (**QC616**) are available if the circlips become damaged. The circlips can be lifted from the BB groove (inset) by lifting the hooked end with a thin blade screwdriver.

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.

SI Tools

KT011/ is a bearing removal tool. **KT010**/ is a set of bearing installation tools to be used with a standard headset press. **KT013**/ a two piece tool set required for removing the crankarms SI Hollowgram alloy cranksets. For information see *SI Cranksets Owner's Manual Supplement*. See <http://www.cannondale.com/tech/>.

Cannondale BB30 Standard Bicycle Frames

Certain Cannondale bicycle frames are manufactured using the BB30 standard. See <http://www.bb30standard.com/>. It may be possible to convert a BB30 frame for use with standard English/68mm or 73mm bottom bracket cranksets using the appropriate Cannondale frame adapter. Other adapters, ones not specifically approved for use by Cannondale may void your warranty.

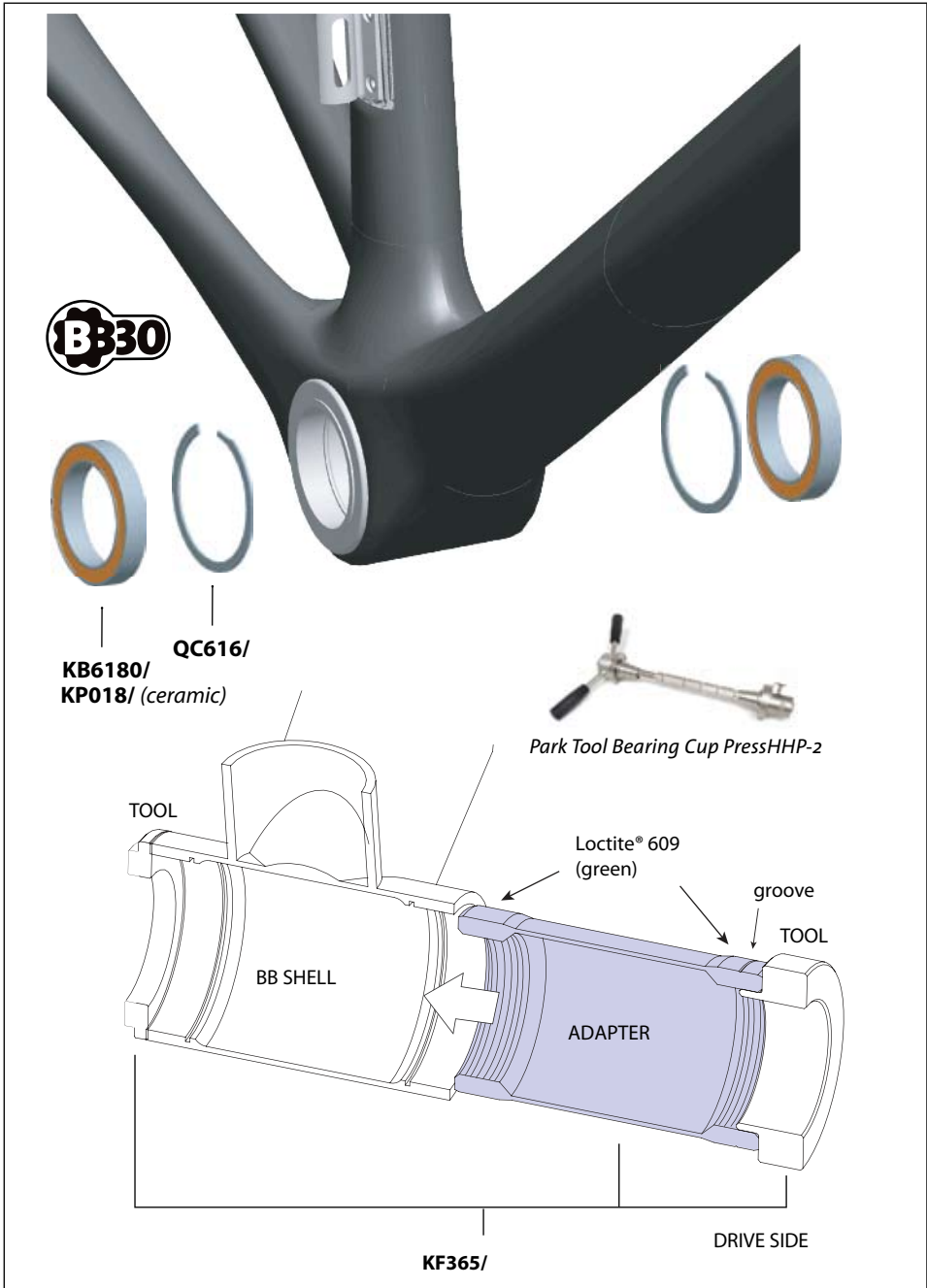


WARNING

SERIOUS FRAME DAMAGE CAN OCCUR IF YOU ATTEMPT TO REMOVE A BB30 ADAPTER FROM A CARBON FIBER FRAME. The bottom bracket shell of certain Cannondale bicycles are constructed of carbon fiber (composite). If a BB30-to-Standard English adapter has been installed, **IT MUST NOT BE REMOVED.**

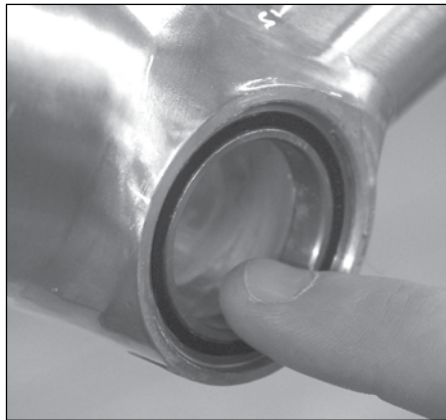
All Adapters must be installed by a professional bike mechanic. No adapter should be used as a frame repair part. Adapters should only be used in undamaged frames in good condition. Improper installation or removal can result in damage and void applicable frame warranty.

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



Bearing Inspection

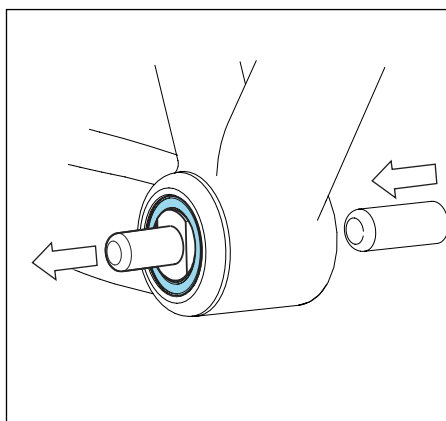
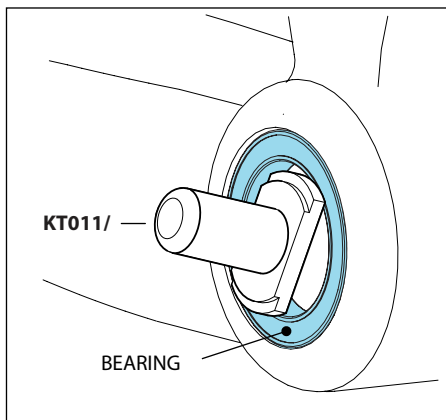
1. Remove the crankarms and spindle from the bottom bracket shell.
2. Rotate the inner bearing race of both bearings; rotation should be smooth and quiet. No bearing play or movement inside the shell. If the bearing is damaged, replace both bearings with new ones.



Bearing Removal

Frequent or routine renewal of undamaged bearings is not recommended. Repeated removal and reinstallation can damage the inside BB shell surfaces resulting in poor bearing fit.

1. To remove the bearings, position Cannondale tool **KT011/** behind the bearing so that the tool ridges are seated on the bearing.
2. Insert a driver (punch or drift) from the opposite side. Locate it on the back of the tool and use light tapping to drive the bearing from the shell.



Bearing Installation

1. Clean the inside and outside surfaces of the bottom bracket shell.
2. Apply a high-quality bicycle bearing grease to the inside surface of the shell.
3. Install the square end 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. With a headset press, and tool **KT010/** install the bearings into the shell as shown. Press the bearing until it is seated against the circlip.
5. To finish, apply a light coating of a high-quality bicycle bearing grease to both sides of each bearing to help repel moisture.

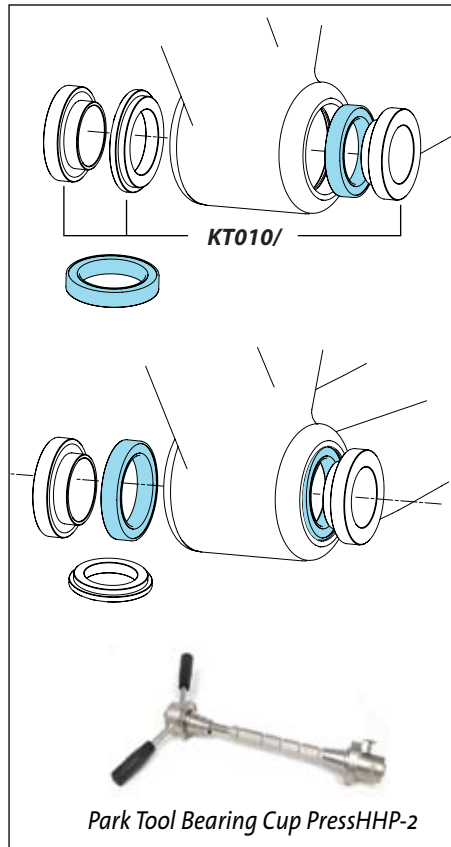
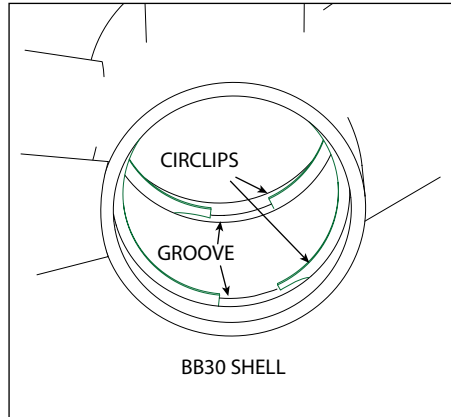
NOTE: Circlip removal is unnecessary for bearing replacement unless the circlip is damaged. damage is present. A damaged circlip can be removed by using a small thin-blade screw driver to lift the hooked end up out of the groove and then pushing the circlip out counter-clockwise.

WARNING

SHARP EDGES. Circlips can have sharp edges. Wear hand protection.

CAUTION

Do not face, mill or machine the BB30 bottom bracket shell .



SI COMPRESSION ASSEMBLY

The cylindrical shape of the TOP CAP fits snugly within the carbon steering tube inside diameter (I.D.), supporting the steerer from the clamping force of the stem. It must fit snugly inside the I.D. of the steerer.

How to install the assembly

1. Assemble the fork, headset, spacers, and stem. Make sure that the stem bolts are loose.
2. Set up the compression assembly. "READY TO INSERT" above. The length should be about 48mm as shown above. You can do this by unthreading the top cap from the expander and then threading it back on about 6-7 turns. The expanding parts should not be expanded.
3. Insert the SI compression assembly into the fork steerer. It should slide in snugly; the TOP CAP closely fitting the steerer inside diameter.
4. Insert a 5mm Allen key through the access hole in the TOP CAP and into the EXPANDER BOLT. Tighten the expander by turning clockwise to 6.8Nm, 5 ftLbs.
5. To set bearing preload, insert a 6mm allen key into the hex shape in the TOP CAP itself. Turn the entire TOP CAP clockwise to increase preload. Turn counter-clockwise to decrease preload.
6. When the headset preload is correct, align handlebar and tighten the stem fork clamp bolts to the torque specified for the stem. Consult the stem since torque values are often marked on the stem, or consult the manufacturer's instructions.

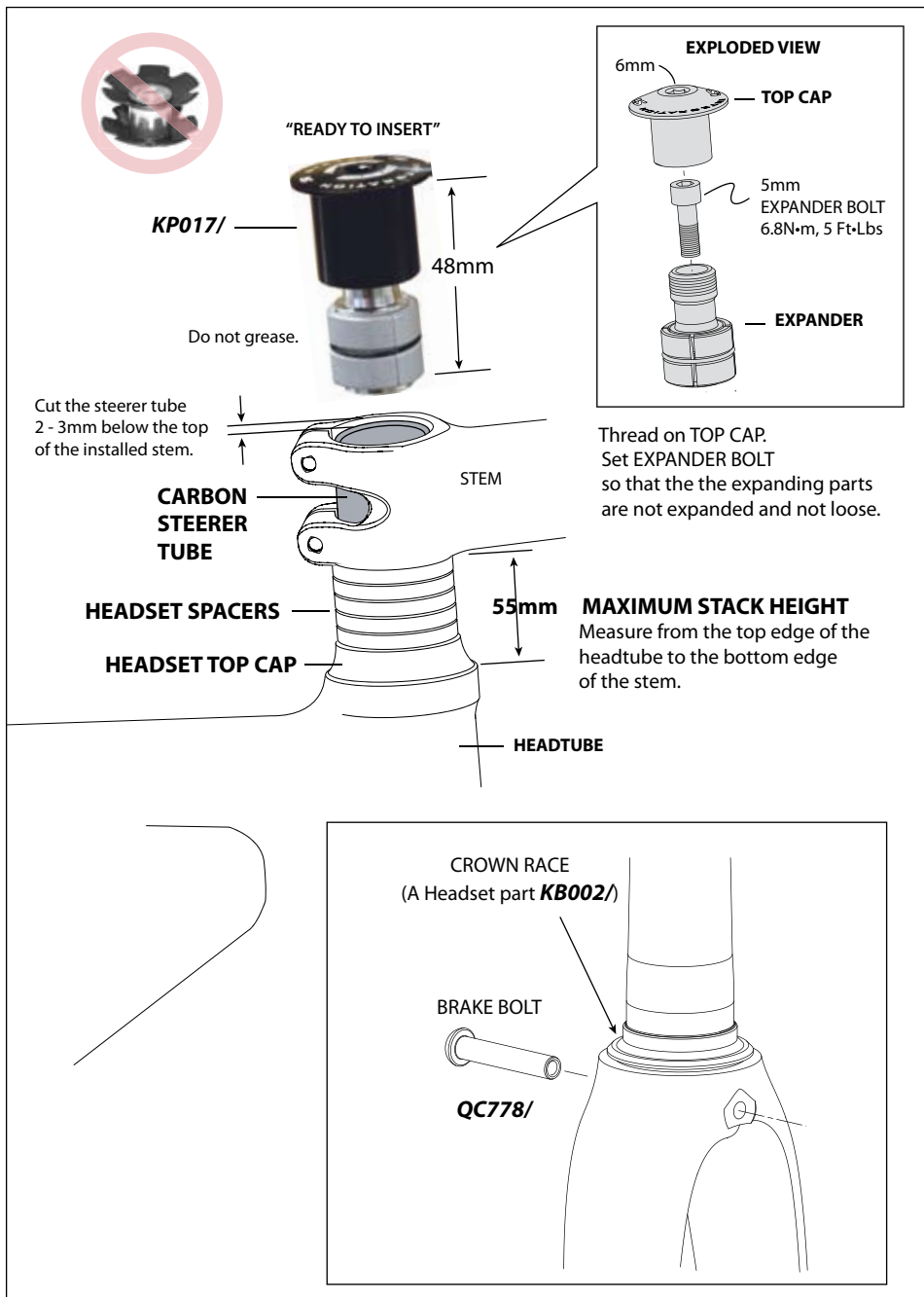
**WARNING**

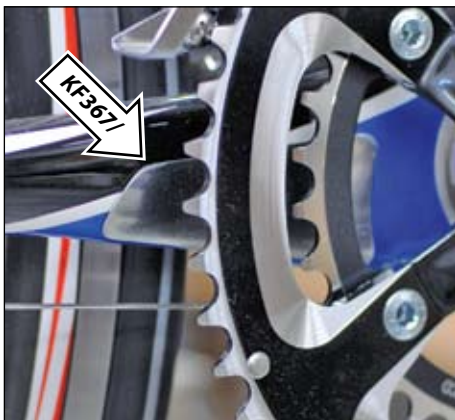
USE ONLY ORIGINAL EQUIPMENT CANNONDALE SI COMPRESSION ASSEMBLY. Do not replace it with a star nut or use any other compression or expanding wedge assembly.

DO NOT INSTALL HEADSET SPACERS ON TOP OF THE STEM. Installing spacers above the stem will raise the TOP CAP inside the steerer removing necessary support for the steerer tube wall. When stem bolts are tightened, the steerer tube can be damaged.

PLACE HEADSET SPACERS ONLY BETWEEN THE HEADTUBE AND THE BOTTOM OF THE STEM.

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IF YOUR IGNORE THESE WARNINGS.





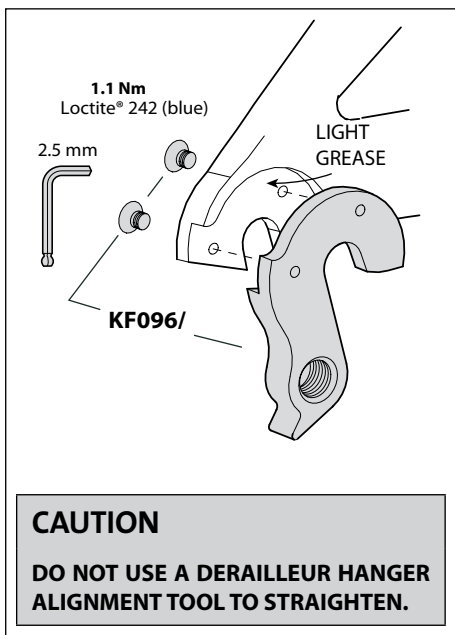
CHAINSTAY PROTECTION

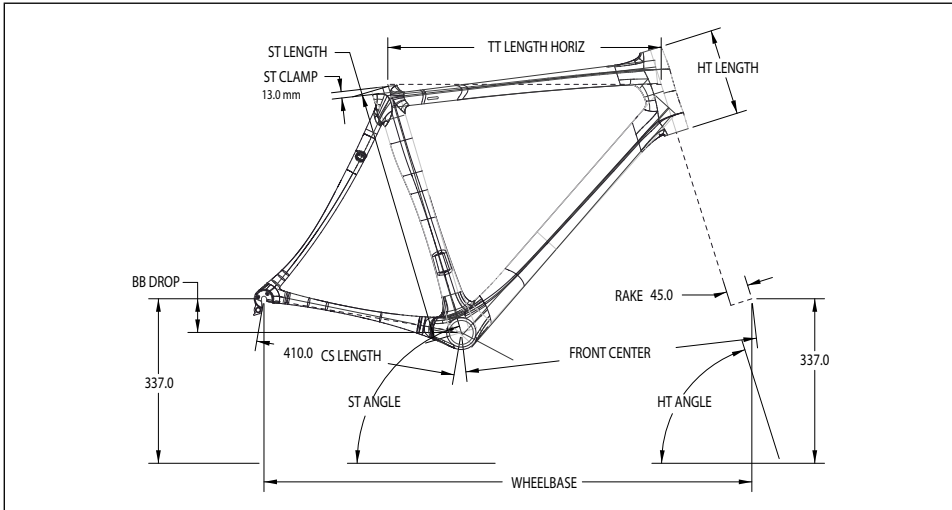
The chainstay plate (**KF367/**) located on the right chainstay just behind the chain rings, protects the chainstay from damage in the event the chain is dropped from the chain ring. Contact your Cannondale Dealer for a replacement if it becomes missing or damaged. The clear chainstay protector (above right) provides limited protection against frame or finish damage caused by the chain. Replacement protectors are available through a Cannondale Dealer.

REAR DERAILLEUR HANGER

Before re- installing (same or new): Clean dropout and inspect carefully for any cracks or damage. Clean surfaces and apply a light film of bike grease to the dropout to minimize any noise or "creaking" that might result from very slight movement between the dropout and hanger during movement of the derailleur. Apply grease and Loctite® carefully. Do not contaminate the male or female bolt threads with grease which would cause the Loctite® to be ineffective.

Check derailleur adjustment after replacement. Readjust wheel quick release so it is very tight. See PART I Section 4. A in your Cannondale Bicycle Owner's Manual.





GEOMETRY AND SPECIFICATION

SIZE (cm)	ST LENGTH (cm)	TT LENGTH HORIZ (cm)	HT ANGLE	ST ANGLE	BB DROP (cm)	HT LENGTH (cm)	FRONT CENTER (cm)	WHEELBASE (cm)
48	436	510	71°	74.5°	72	130	565.8	964.8
51	466	525	72°	74°	72	145	570.7	969.8
54	496	540	72°	74°	69	165	587.3	987.4
56	526	560	72.5°	73.5°	69	180	599.1	99.3
58	546	580	73°	73°	67	200	610.3	1011.1
61	576	600	73°	72.5°	67	220	624.9	1025.8
Feminine								
44	396	500	70.5°	76°	72	125	567.5	966.5
48	436	510	71°	74.5°	72	130	565.8	964.8
51	466	525	72°	74°	72	145	570.7	969.8
54	506	535	72.5°	74°	72	160	578	977.1
HEADSET			Campy style bearings: 41.8mm OD w/ 45° chamfers			MAXIMUM WEIGHT LIMIT		
SEAT POST DIA.			Synapse Carbon specific			RIDER	LUGGAGE	TOTAL
SEAT BINDER			BINDER CLAMP MAX TORQUE: 6 Nm SADDLE CLAMP TORQUE: 9-12 Nm			275 lbs / 125 kg	10 lbs / 4.5 kg	285 lbs / 129 kg
DROPOUT SPACING			FRONT	100mm	* Seat Bag /Handlebar Bag Only			
			REAR	130mm				
FRONT DERAILLEUR TYPE			BRAZE ON					
BOTTOM BRACKET			BB30			INTENDED USE		
			68mm English (w/ adapter)			CONDITION 1		

REPLACEMENT PARTS

ORDER	FRAME	
KF363/	BB CABLE GUIDE w/fixing bolt	
KF055/	INLINE ADJUSTER (QTY 2)	
KF367/	CHAINSTAY PLATE	
KF115/	SEAT POST GEL	
KF096/	REAR DERAILLUER HANGER	
KP063/	BRAKE GUIDE SLICE AERO	

SEATPOST			
KP095/	SEATBINDER	KP096/	SEAT POST SADDLE CLAMP
	5 mm Setback		25 mm Setback
KP101/5MM	WHT: 9RCS AND 9RWC 3,4,5,6 44-51 ALL COLORS	KP101/25MM	WHT: 9RCS AND 9RWC 3,4,5,6 54-61 ALL COLORS
KP102/5MM	WHT-SHORT: TEST RIDE 150MM LENGTH	KP102/25MM	WHT-SHORT: TEST RIDE 150MM LENGTH

ORDER	HEADSET & FORK PARTS	
KB002/	KIT,HEADSET,SI CRB W/15 TC	
QC778/	BRAKE BOLT(35mm)	
KP017/	SI COMPRESSION ASSY 23.6ID	
ORDER	SI BB30	
QC616/	SI CIRCLIPS (QTY 2)	
KB6810/	SI BEARINGS (QTY 2)	
KP018/	SI CERAMIC BEARINGS (QTY 2)	
QC615/	SI BEARING SHIELD (QTY 2)	
KP023/	SI BEARING SHIELD SL (QTY 2)	
QC612/	SPINDLE-SI ROAD	
QC617/	SI SHIMS (QTY 5)	
QC618/	SI WAVE WASHER	
KT010/	SI BEARING PRESS TOOL (USED WITH HEADSET PRESS)	
KT011/	SI BEARING REMOVAL TOOL	
KT012/	SI LOCKRING TOOL	
KT013/	SI HOLLOWGRAM CRANKARM EXTRACTION TOOL	
KF365/	SIBB/68 ADP:INSTALL	
QC787/	EXTRACT CAP TOOL FOR SI CARBON CRANKSETS	
KP009/	ADAPTER,SIBB TO 68MM TAP	

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