SystemSix

Owner's manual supplement

⚠ WARNING READ THIS SUPPLEMENT AND YOUR CANNONDALE BICYCLE OWNER'S MANUAL.

Both contain important safety information. Keep both for future reference.

cannondale

Explicit Definitions

In this supplement, particularly important information is presented in the following ways:

⚠ WARNING

Indicates a hazardous situation which, if not avoided, **may** result in death or serious injury.

NOTICE

Indicates special precautions that must be taken to avoid damage.

Cannondale Supplements

This manual is a "supplement" to your ***Cannondale Bicycle Owner's Manual***.

This supplement provides additional and important model specific safety, maintenance, and technical information. It may be one of several important manuals/supplements for your bike; obtain and read all of them.

Please contact your Authorized Cannondale Dealer immediately if you need a manual or supplement, or have a question about your bike. You may also contact us using the appropriate country/region/location information. See **Contacting Cannondale** in this supplement.

You can download Adobe Acrobat PDF versions of any manual/supplement from our website:
http://www.cannondale.com

⚠ 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.

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Your Authorized Cannondale Dealer

To make sure your bike is serviced and maintained correctly, and that you protect applicable warranties, please coordinate all service and maintenance through your Authorized Cannondale Dealer.

NOTICE

Unauthorized service, maintenance, or repair parts can result in serious damage and void your warranty.

Contacting Cannondale

Cannondale USA
Cycling Sports Group, Inc.
1 Cannondale Way, Wilton CT, 06897, USA
1-800-726-BIKE (2453)

Cycling Sports Group Europe B.V
Mail: Postbus 5100
Visits: Hanzepoort 27
7570 GC, OLDENZAAL, Netherlands
Tel: +41 61 551 14 80
Fax:+31 54 151 42 40

SAFETY INFORMATION

Important Composites Message

⚠ WARNING

Your bike (frame and components) 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.

Inspection & Crash Damage Of Carbon Frames/Forks

⚠ 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.)

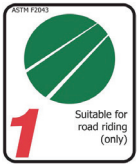
Do not ride your bike if you see any sign of damage, such as broken, splintered, or delaminated carbon fiber.

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.

Intended Use



The intended use of all models is ASTM CONDITION 1, High-Performance Road.

⚠ WARNING

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

YOU CAN BE YOU SERIOUSLY INJURED, PARALYZED OR KILLED IF YOU IGNORE WARNINGS.

Disc Brakes on Road Bikes

⚠ WARNING

Relative to conventional rim brakes, disc brakes are less affected by water, do not wear or heat the rims and therefore are more consistent. Disc brakes also may be more powerful.

To minimize risk of injury or accidents:

· Understand that road bikes have a relatively small tire contact patch (part of the tire that touches the road). In order to apply the brakes safely and effectively, you may need more or less braking force in different situations. You need to take into account various road and weather conditions that can affect traction.

· Disc brakes are excellent, but not some kind of magic. Take some time riding your new disc brake road bike in lower risk circumstances to get used to the feel and performance of the disc brakes and tires.

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

Tightening Torques

Correct tightening torque for the fasteners (bolts, screws, nuts) on your bicycle is very important to your safety. Correct tightening torque for the fasteners is also important for the durability and performance of your bicycle. We urge you to have your dealer correctly torque all fasteners using a torque wrench. If you decide to torque fasteners yourself always use a torque wrench.

Find Tightening Torque Information :

The wide range of bicycle models and components used means that a listing of tightening torque would be out of date by the time it was published. Many fasteners should be installed with a thread locking adhesive such as Loctite®®.

To determine correct tightening torque and any adhesive application for a fastener we ask you to check:

- Many components are marked. On-product marking is becoming common.
- Torque specs in the component manufacturers instructions shipped with your bicycle.
- Torque specs listed on the websites of component manufacturers.
- With your dealer. Dealers have access to current data and have experience with correct torque for most fasteners.

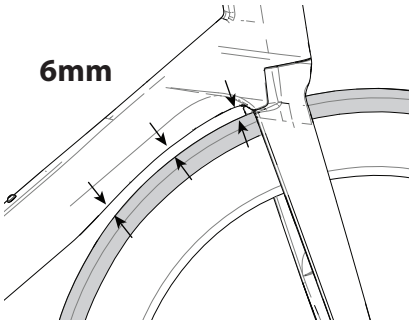
The following symbols are used in this manual:

Symbol	Name	Description
	NGLI-2 synthetic grease	Apply NGLI-2 synthetic grease.
	Carbon gel	Apply carbon gel (friction paste) ***KF115/***
	Medium-strength removable thread lock	Apply Loctite® 242 (blue) or equivalent.
	Low-strength thread lock	Apply Loctite® 222 (purple) or equivalent.

Tire-to-Frame Clearance

WARNING

THE MINIMUM TIRE-TO-FRAME CLEARANCE MUST BE MAINTAINED.



If tire clearance is less than minimum specified, the rotating tire could come into contact with the frame causing the wheel to stop suddenly. This can throw a rider off the bicycle or result in a loss of control and crash. Frame damage due to tire rubbing frame can also happen. Not covered by the limited warranty.

To measure clearance:

1. Inflate tire to maximum air pressure as indicated on the tire sidewall.
2. Measure the space between the tire and frame. Take measurement along the full length of possible interference. See arrows.
3. If the measured clearance is less than specified, the tire is not compatible and must not be used.

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

Trainers

If you ride a trainer that requires removal of the front wheel and clamps the fork dropouts: Be sure your fork quick release is tight! Relative movement will wear parts, weaken and damage your bike.

If you ride a trainer that holds the bike up by clamping the rear quick release between two cones: Take off the lightweight quick release that came with your bike. Substitute a heavy, classic all steel quick release and clamp it tight! Relative movement will wear parts, weaken and damage your bike. Note that many modern quick releases will not fit the clamping cones in this kind of trainer because their shapes are incompatible.

For thru axles, make sure you follow the trainer manufacturer instructions for the use of any required adapters.

Be particularly cautious with a carbon frame or fork. Carbon is relatively soft, not abrasion resistant. If there is any relative movement, carbon will wear quickly.

If you ride a trainer a lot, consider using an old bike: Corrosion from sweat will take its toll. Weight is irrelevant. Save wear on your expensive components.

Ask you dealer for help with trainers, the right one and the correct way to use it.

NOTICE

TRAINERS - Improperly mounting a bike in a trainer, or using one that is not compatible with your particular bike frame can cause serious damage.

WATER BOTTLES - An impact, crash, or loose bottle cage can result in damage to your frame.

This kind of damage is not covered by the Cannondale Limited Warranty.

Water Bottles

Side impacts to a water bottle or cage can result in damage to threaded inserts due to the leverage on a very small area. In a crash, certainly the last thing you should be worried about is saving the threaded inserts in your frame. However, when you are storing or transporting your bike, take steps to prevent situations where a water bottle may be hit or bumped by a strong force that would cause damage. Remove bottle and cage when you are packing your bike for travel.

Periodically check the attachment of the bottle cage; tighten the cage bolts if necessary. Don't ride with a loose bottle cage. Riding with loose cage bolts can produce a rocking motion or vibration of the attached cage. A loose cage will damage the insert and possibly lead to the inserts to pull out.
It may be possible to repair a loose insert, or install another insert only if the frame is undamaged. Replacement requires the use of a special tool. If you notice damage to the threaded insert, please ask your Cannondale Dealer for help.

Building Up A Frame Set

Before building up a frame set, 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.

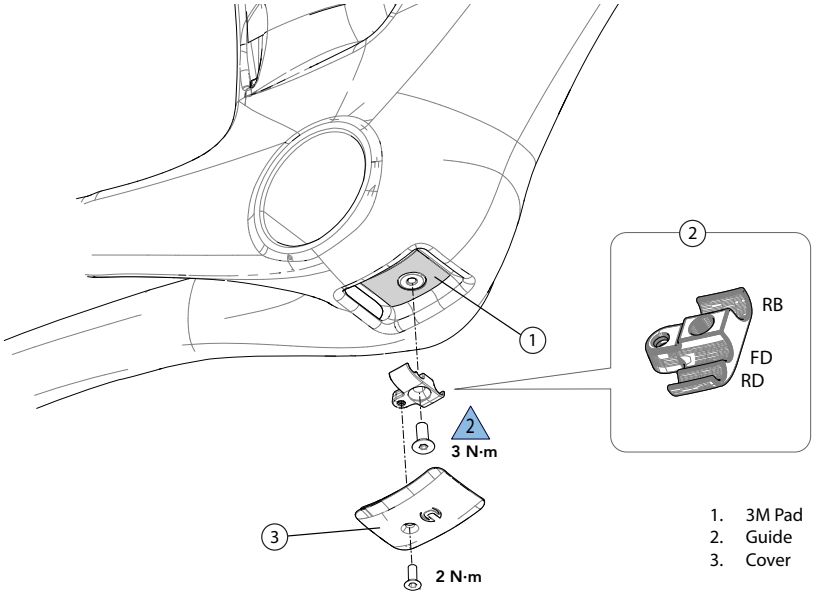
Read and follow the component manufacturers warnings and instructions.

TECHNICAL INFORMATION

Frame Specification

Item	Specification
Frame	142mm, 700c
Head Tube	UPR: 1 -1/8", LWR: 1-1/4"
Headset	Integrated, 1-1/8" - 1-1/4"
Bottom Bracket: Type/ Width	PF30 / 73mm
Front Derailleur	Brazed-on, Down-Pull
Seat Post: Dia./Binder	KNØT Seatpost, Internal Wedge
⚠ Tire Size/ Max. Tire Width	700C x 30mm (as measured)
Front Tire Min. Clearance	6mm (See page 4)
⚠ Min. Seat Post Insert	65mm
Rear Brake: Mount Type/Dia.	Flat Mount, 140/160mm
Rear Brake: Fixing Bolt Length	Shimano 38.0mm / Converter 38.1mm
Axles: Type/Length	Speed Release, Double Lead, M12x1.0 , FR: 100 x12mm, 119mm Length, RR: 142 x12mm, 165mm Length,
⚠ Intended Use:	ASTM CONDITION 1, High-Performance Road
⚠ Max. Weight Limit: Total (rider+all equipment):	(285lbs / 129Kg)

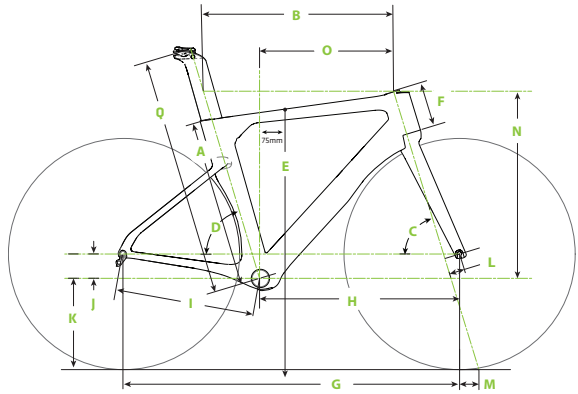
Bottom Bracket Cable Guide



1. 3M Pad
2. Guide
3. Cover

Geometry

A Seat Tube Length
B Top Tube Horizontal
C Head Tube Angle
D Seat Tube Angle
E Standover
F Head Tube Length
G Wheelbase
H Front Center
I Chain Stay Length
J Bottom Bracket Drop
K Bottom Bracket Height
L Fork Rake
M Trail
N Stack
O Reach

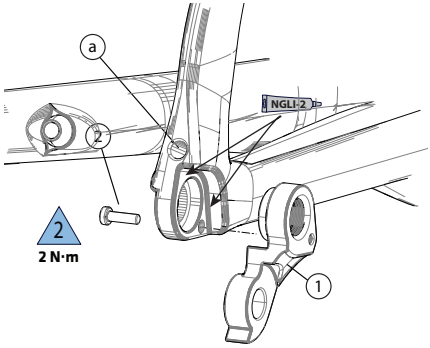


Dimensions = centimeter

cm	**47**	**51**	**54**	**56**	**58**	**60**	**62**
A	38.5	43.3	48.2	53	55.3	57.7	60
B	51.4	52.9	54.4	56	57.6	59.2	60.9
C	71.2°	*	73.0°	*	*	*	*
D	74.5°	74.1°	73.7°	73.3°	72.9°	72.5°	72.1°
E	68	72.3	76.2	79.8	82.1	84.3	86.3
F	8.8	11.4	12.8	14.9	17.2	19.3	21.4
G	97.4	98.9	97.5	98.7	100	101.2	102.4
H	58.2	59.5	58.1	59.3	60.5	61.7	62.9
I	40.5	*	*	*	*	*	*
J	7.9	7.4	7.2	*	6.9	*	*
K	26.1	26.6	26.9	*	27.1	*	*
L	5.5	*	4.5	*	*	*	*
M	5.8	*	5.7	*	*	*	*
N	50.0	52.0	54.0	56.0	58.0	60.0	62.0
O	37.5	38.1	38.6	39.2	39.8	40.3	40.9

All Specifications subject to change without notice.
* Indicates same.

Rear Derailleur Mount



1. RD Hanger
2. Screw

a. Frame cable/wire exit

To replace:

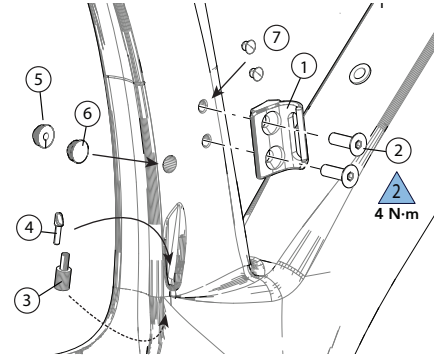
Remove the rear axle.

Remove the mounting screws and remove the old hanger from the dropout. Clean the area around the dropout and inspect the frame carefully for any cracks or damage. If you find damage have the frame inspected by your Cannondale Dealer .

If the dropout is un-damaged, apply a light film of grease between the frame and mount. This will help minimize any noise or "creaking" that might result from very slight movement between the dropout and hanger during movement of the derailleur.

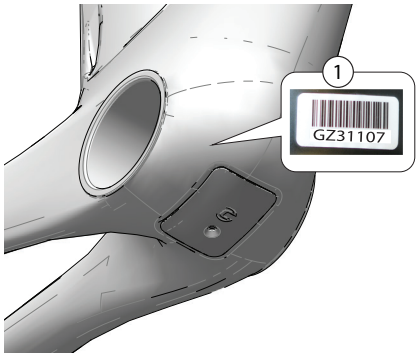
Slide the new hanger onto the dropout. Apply Loctite® 242 (or medium strnegth thread lock) to the screw threads and tighten to the specified torque.

Front Derailleur Mount



1. FD Mount
2. Screws
3. FD Cable Stop
4. FD Cable Plug
5. Grommet, wire
6. FD ST Plug
7. Plugs

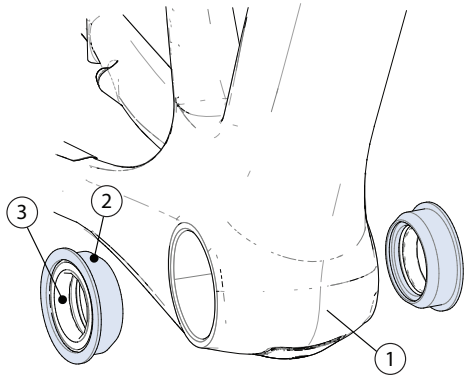
Serial Number

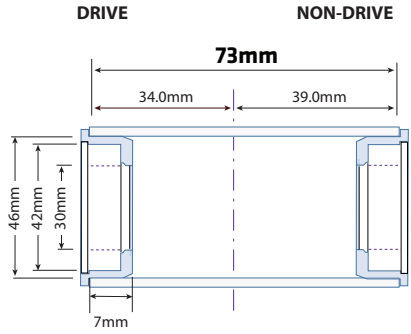


The serial number is located on the bottom bracket. It is a 7-character barcode (1). Use this serial number to register your bike.

To register your bike: go to the **Product Registration** section of our website at www.cannondale.com

Bottom Bracket - BB30A, 73mm (PressFit)





Maintenance

In general, you should inspect the condition of the bearings annually (at a minimum) or anytime the crankset assembly is disassembled, serviced, or if a problem is indicated.

To inspect, when the crankset is removed, rotate the inner bearing race of both bearings; rotation should be smooth, and quiet. Execesssive play, roughness or corrossion indicates a damaged bearing.

Removal

To avoid serious damage to the frame, it is important to remove bearing systems very carefully using proper tools indicated by the manufacture's service instructions. Make sure the bearings (cup or adapter parts) are driven out squarely and evenly from inside the shell! Do not pry components from shell.

Replacement

PressFit BB30 bearings are not removable from the adapters or cup systems that are pressed into the frame bottom bracket shell. Therefore, damaged bearings must be removed and replaced as new entire sets. Before installing any new bearing units into the shell, thoroughly clean the inside surface of the bottom bracket shell with a clean dry shop towel. Also, make sure both bearing units and the BB shell surfaces are clean and dry. Do not apply grease to either.

Follow the manufacturer's instruction for assembly and installation of the bearing system. Use a headset press such as Park Tool HHP-2. See http://www.parktool.com/product/bearing-cup-press-HHP-2. Select appropriate press and adapters to ensure that force is only applied to the cup and not the bearing inside. Press until both cup flanges are mated to the BB shell edge.

NOTICE

Consult with your Cannondale Dealer on the quality and compatibilty of any proposed replacement component. Make sure the PressFit BB30 system is intended for use with with a 46 mm I.D. BB shell. Confirm actual part dimensions with a micrometer.

Do not over-tighten PF30 cup assembly, doing so can result in damaging frame structure.

Do not use chemical solvents to clean. Do not remove frame material or use surfacing tools on bottom bracket shell.

Frame damage, caused by improper components, component installation or removal is not covered by your warranty.

Seat Post

Maintenance

Periodically, remove the seat post and the clamp assembly to clean, inspect for damage and renew the application of grease and carbon gel.

Removal

To remove the seat post, use a 4mm hex key to turn the wedge bolt counter-clockwise to loosen it. When bolt is loose simply lift the seat post up out of the seat tube. Then lift out the seat binder assembly out of the frame socket.

Installation

Before inserting the seat post into the frame, use a clean shop towel to wipe out any residual carbon gel paste from the inside the seat tube. Do not use any spray cleaners or solvents. Apply fresh carbon friction gel to the seat post and place a little bit inside the seat tube. Clean the wedge assembly and lightly grease the parts. Insert the loosened asembly into the frame, then carefully insert the seat post into the frame.

Set the saddle height, and tighten the clamp bolt to the specified torque with a torque wrench.

Insert Limit & Sizing a Seat Post

The minimum insert depth the seat post must be inserted into the frame is 65mm. This length is marked by a line on the seat post.

The total length of seat post that may be inserted will vary with the frame size and should be checked in each frame. A large size frame will accomodate more seat post length than a small size frame.

To check the depth, carefully slide a seat post into the frame until it stops; then lift it up 5mm.

Be sure to replicate the angled cut on the seat post if its length is changed. See illustatration.

NOTICE

A seat post should not be bottomed out inside the frame at any time. Have your Cannondale Dealer size the seat post appropriately.

If the seat post must be cut, use a cutting guide and a carbon saw blade. Lightly sand the edges of the cut seat tube with light sandpaper. Re-mark the minimum insert line on the post.

BE SURE TO REMOVE ANY INSTALLED BATTERY BEFORE CUTTING A SEAT POST.

⚠ WARNING

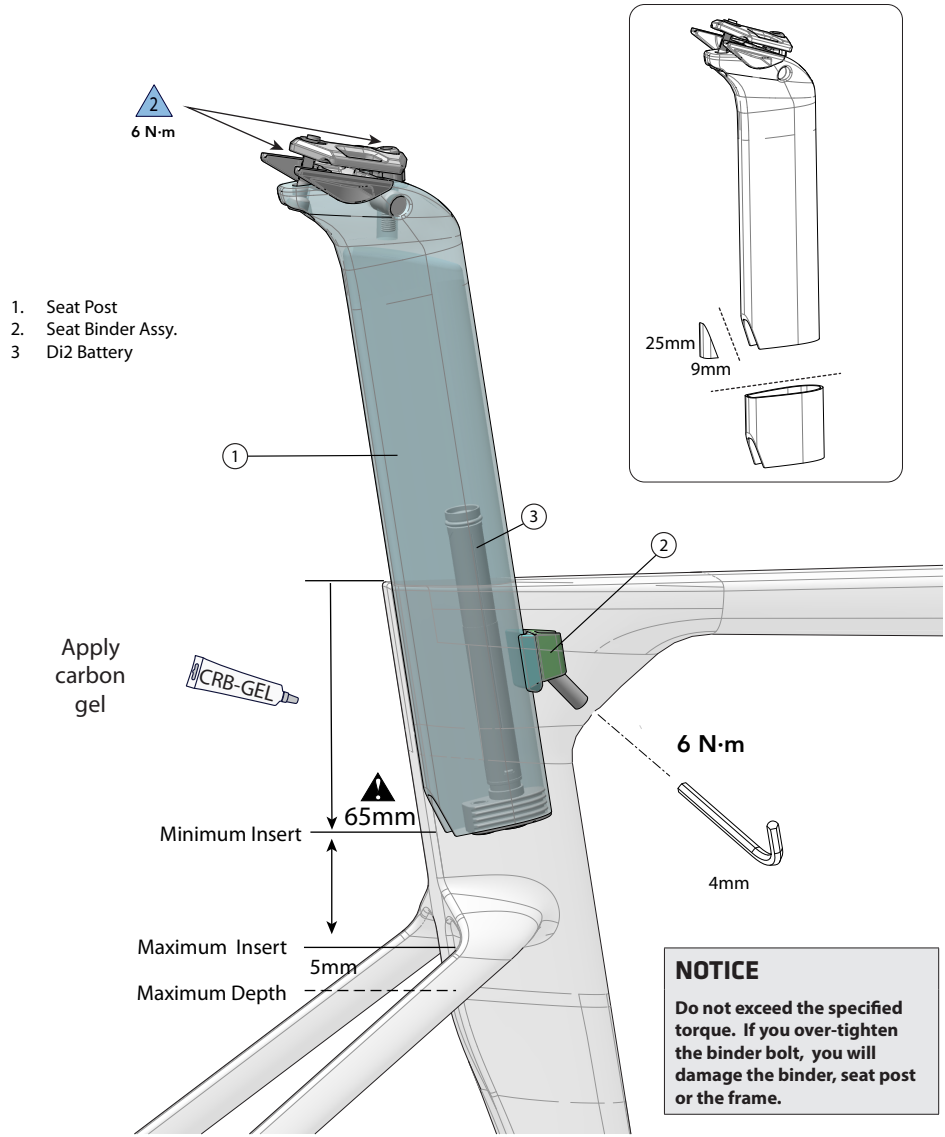
THE SEAT POST MUST ONLY BE CUT BY A PROFESSIONAL BIKE MECHANIC. Incorrectly cutting the seat post can result in damage leading to an accident.

Adjustment

1. Insert 4mm hex through the underside seat tube opening as shown.
2. Loosen the binder screw sufficient to move the seat post up or down.
3. Set the seat post position.
4. Tighten the binder screw to the specified torque.

To remove binder:

1. Loosen the binder with a 4 hex key and lift out the seat post.
2. Remove the binder assembly through the seat tube opening.



NOTICE

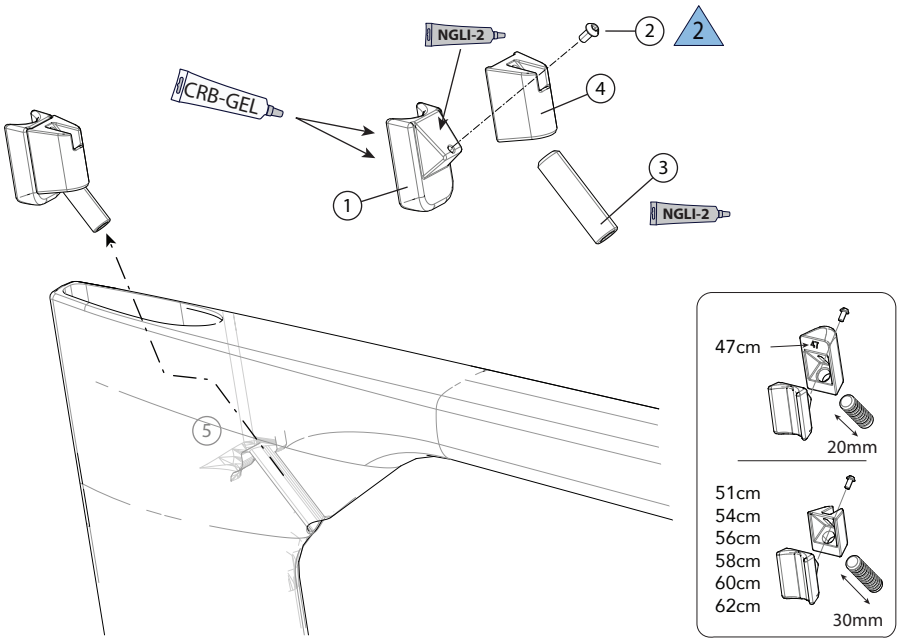
Do not exceed the specified torque. If you over-tighten the binder bolt, you will damage the binder, seat post or the frame.

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

Suggested Tools:

Park Tool CSB-1

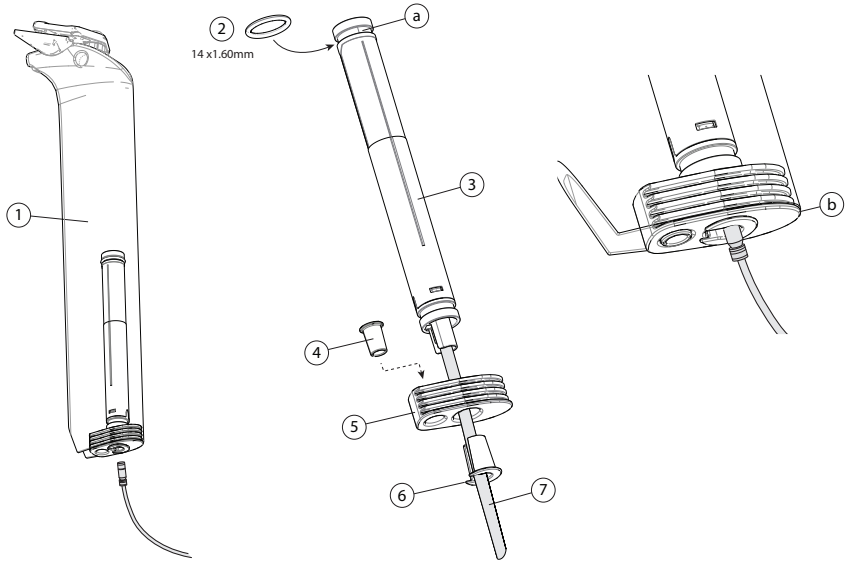
Seat Binder Assembly



Periodically, to maintain the seat binder assembly, it is recommended to:

1. Remove the seat post.
2. Remove the binder assembly from the frame pocket (5).
3. Disassemble the binder parts. Clean the binder parts to remove any old grease and carbon gel/ friction paste. Use only acetone or isopropyl alcohol and clean shop towel to clean. See also WARNING, next page.
4. Apply light grease only to the wedge (1) surface shown above. **Don't grease the wedge surface that faces the seat post.** Reassemble the wedges. Apply Loctite® 242 to the retaining screw (2) threads. Tighten the retaining screw lightly, then back it off one half of a turn so that the wedge parts slide freely.
5. Apply grease to the binder screw (3) and thread 2-3 turns into the wedge (4).
6. Clean the frame pocket and the inside of the seat tube. Use acetone or isopropyl alcohol. Wipe with a dry shop towel. Insert the binder assembly into the frame pocket.
7. Return the assembly into the frame pocket.
8. Install the seat post.

Seat Post - Shimano Di2 Battery



Installation

The Shimano Di2 battery unit is retained inside the lower seat post with the expansion plug assembly - Cannondale part number - ***K26149***. The kit includes items 2, 4, 5, 6, shown above.

To install the battery in the seat post:

1. Assemble O-ring (2) into battery groove (a).
2. Pass battery cable (7) through center hole in grommet (5).
3. Connect cable (7) end into battery (3).
4. Insert slotted battery retainer plug (6) onto cable (7) and press expander plug into grommet (5).
5. Slide grommet (5) onto battery (3).
6. Clean the inside opening of the seat post (1) end with a clean shop towel dampened with isopropyl alcohol.
7. Insert the battery/plug combination into the end of the seat post.

   Do not use any grease or lubricant on the plug or inside the seat post.

8. The fit should be snug and the plug lip (b) should contact the seat post end edge without distorting the outside of the seat post outer wall surface. Test by shaking the seat post up and down to simulate riding vibration.

   If the fit is secure, install the seat post. Remember to use carbon friction gel on the seat post and tighten with a torque wrench.

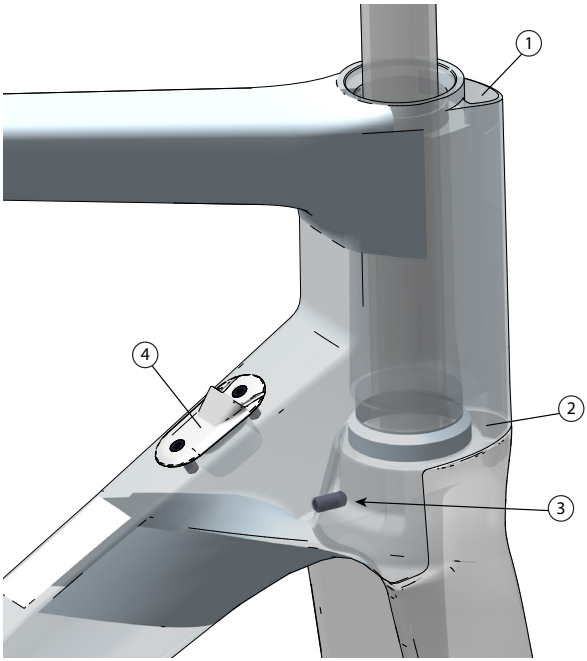
   Only if the fit is loose, remove the battery/grommet combination and insert the expander plug (4) into the grommet from the opposite side as shown.

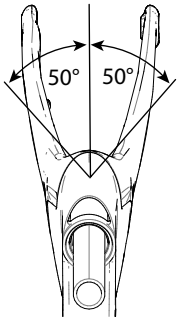
   The seat post should always be a slide fit into the frame and installation, adjustment, or removal should not be difficult.

⚠ WARNING

- Wear safety glasses and hand protection when performing any work.
- Acetone and isopropyl alcohol are flammable liquids. Handle carefully. Wipe up chemical spills immediately.

Headtube



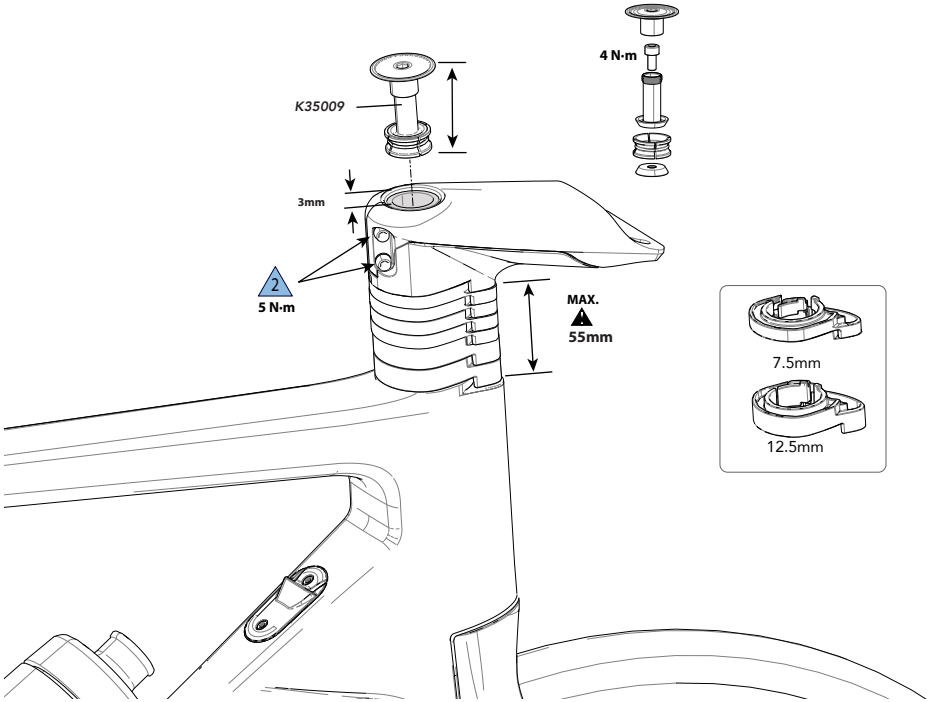


1. Head tube routing inlet
2. Fork brake hose inlet
3. Steering stop pin
4. Down tube cable port

NOTICE

To prevent damaging the brake hoses or Di2 wires, the steering stop pin (3) limits steering to 50 degrees left and 50 degrees right. This is more than enough steering for normal riding. This high-strength pin is permanently anchored in the frame. Overload (due to e.g. crash, etc.) may damage frame, fork or pin and is not covered by the limited warranty.

KNØT SystemStem



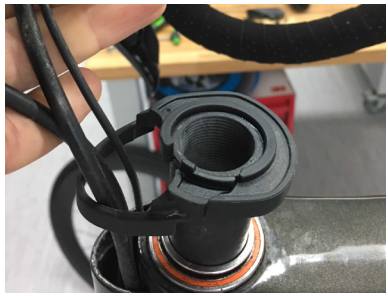
- The KNØT stem supports internal cable and wire routing.
- Assembly of spacers is explained on the following pages.
- Stem height may be set using combination of the 12.5mm and/or 7.5mm spacers.
- The Maximum Stack Height of the stem is 55mm. The example above depict 2x 12.5mm spacers and 4x 7.5mm spacers, resulting in 55mm.
- The KNØT stem is to be used only with the Cannondale SystemBar handlebar.
- Use only the Cannondale SI Compression plug ***K35009***.

KNØT Stem Spacers

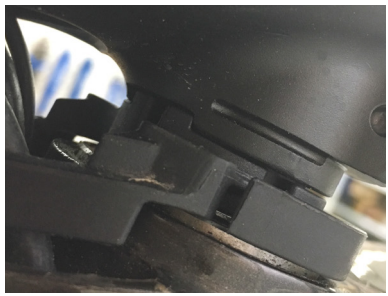
Spacers can be flexed open to allow spacer assembly / disassembly without disconnecting cables.

Bend spacer inwards to route cables through first slot, then route cables through the second slot.

Assemble spacer on steerer tube.



Spacers and stem have interlocking feature to ensure alignment.

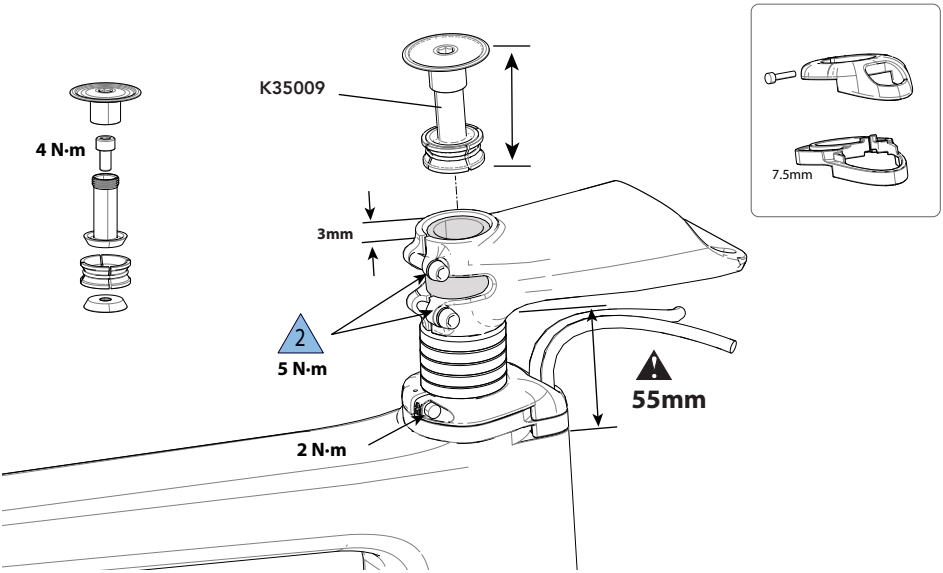


Hinge covers together and slide them over the stem body. Stem body and covers have interlocking features.

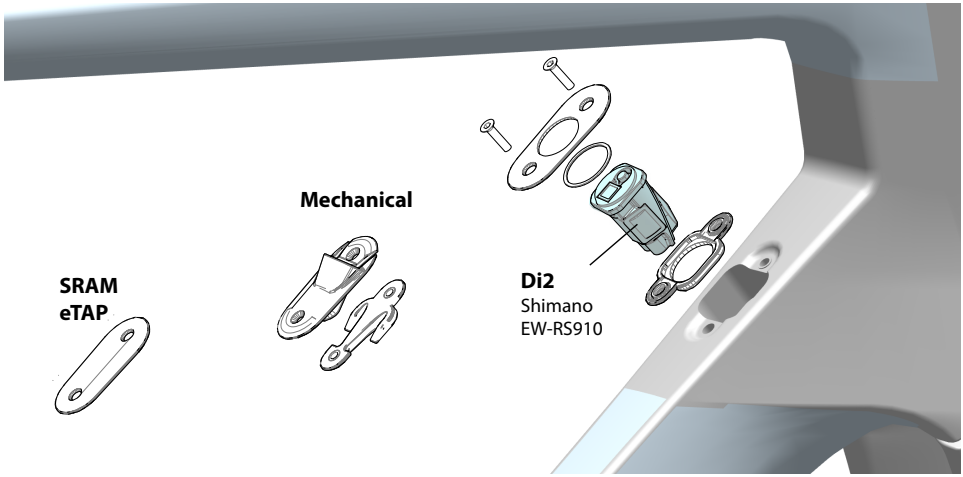
Close right stem cover first, then rotate left stem cover in place and close around the stem body

Assemble the stem covers with the M3 bolt (1Nm)

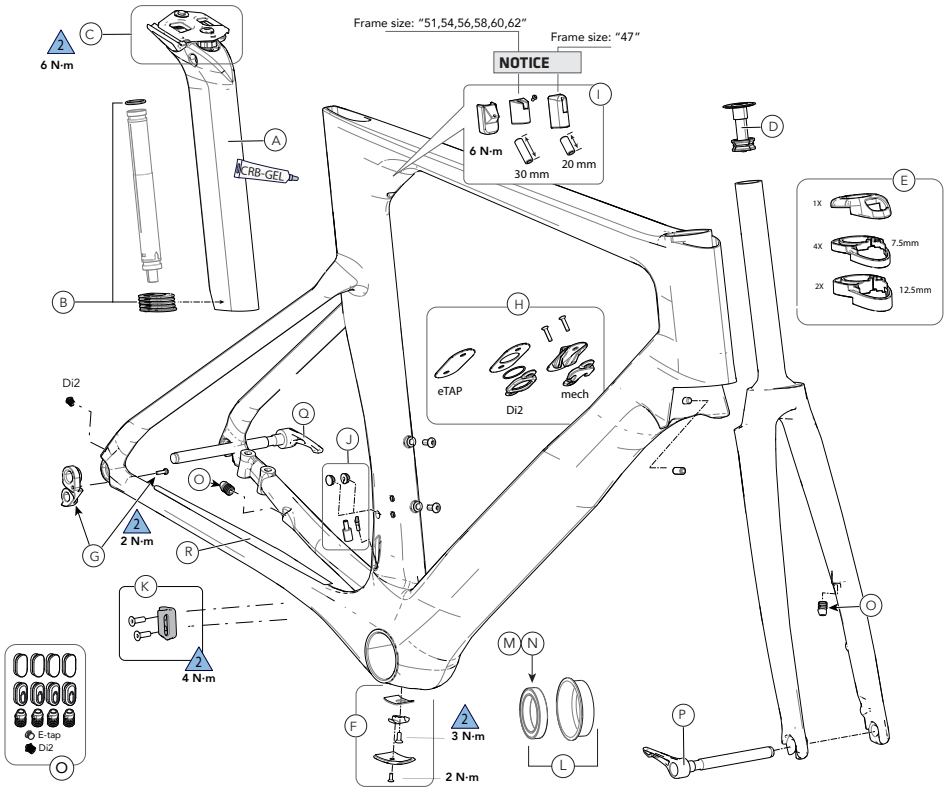
Conventional Stem



Downtube Port



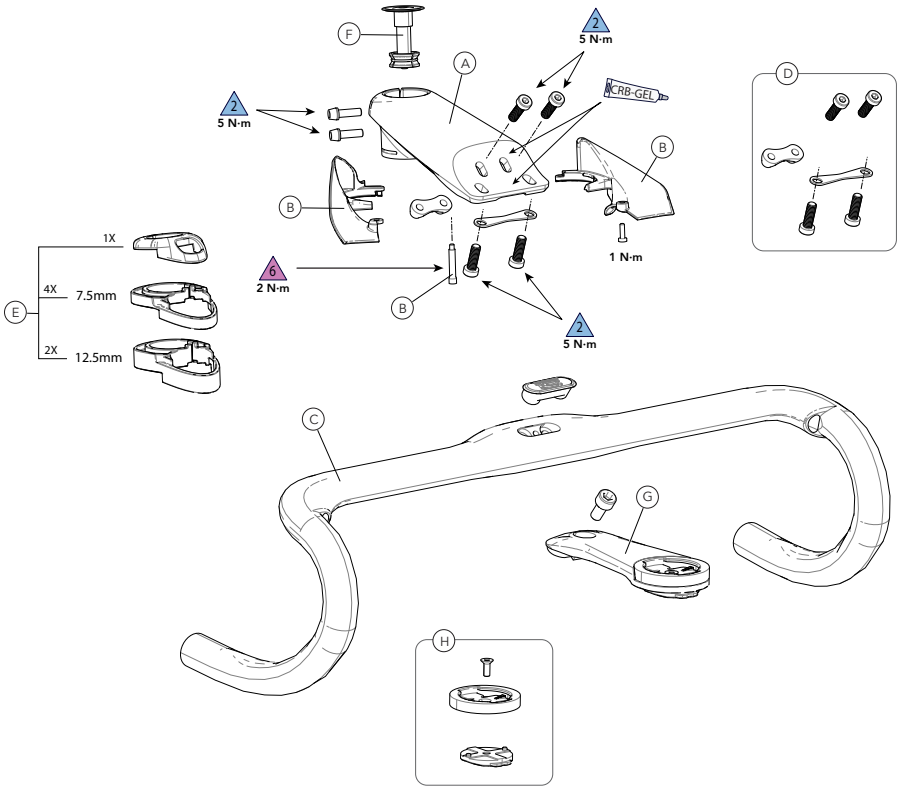
Replacement Parts - Frame/Fork



ID	Part Number	Description
A	K26129	KNØT System Seatpost 330mm
B	K26149	SystemSix Di2 Battery Mount
C	K34289	KNOT SystemSix Seatpost Clamp HDWE
-	K35039	Headset 1 1/8 to 1 1/4 with Split Ring
D	K35009	SL Compression Plug With Top Cap
E	K28009	SystemSix Stem Spacer Kit
F	K32019	SystemSix Bottom Bracket CBL Guide
G	K33009	Derailleur Hanger TA ST SS 070
H	K32009	SystemSix Downtube CBL Guide
I	K26139	KNØT System Aero Seat Binder

ID	Part Number	Description
J	K34069	SystemSix Front Derailleur Plugs
K	K33019	SystemSix Front Derailleur Mount
L	KP197/SRM	PF30 Bottom Bracket Cups And Bearings
M	KB6180/	BB30 Bearing x2 Blue
N	K22037	BB30 Bearing x24 Blue
O	K32048	Shift And Brake Grommets
P	K83019	Speed Release Thru Axle 100x12
Q	K83029	Speed Release TA 142x12 165mm
R	K34079	SystemSix Chainstay Protector

Replacement Parts - KNØT System



ID	Part Number	Description
A	CP2009U1080	SystemStem BK 80mm
	CP2009U1090	KNØT SystemStem BK 90mm
	CP2009U1010	KNØT SystemStem BK 100mm
	CP2009U1011	KNØT SystemStem BK 110mm
	CP2009U1012	KNØT SystemStem BK 120mm
B	CP2019U1080	KNØT SystemStem Cover BK 80mm
	CP2019U1090	KNØT SystemStem Cover BK 90mm
	CP2019U1010	KNØT SystemStem Cover BK 100mm
	CP2019U1011	KNØT SystemStem Cover BK 110mm
	CP2019U1012	KNØT SystemStem Cover BK 120mm

ID	Part Number	Description
C	CP2129U1038	KNØT SystemBar BK 380mm
	CP2129U1040	KNØT SystemBar BK 400mm
	CP21219U1042	KNØT SystemBar BK 420mm
	CP2129U1044	KNØT SystemBar BK 440mm
D	K28018	SystemBar Mounting Hardware
E	K28009	SystemSix Stem Spacer Kit
F	K35009	SL Compression Plug With Top Cap
G	K12018	SystemBar Computer and Light Mount
H	K12008	SystemBar Comp and Light Insert

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CANNONDALE USA
Cycling Sports Group, Inc.
1 Cannondale Way,
Wilton CT, 06897, USA
1-800-726-BIKE (2453)
www.cannondale.com

CANNONDALE EUROPE
Cycling Sports Group Europe, B.V.
Hanzepoort 27, 7570 GC, Oldenzaal,
Netherlands +41 61 4879380
servicedeskeurope@cyclingsportsgroup.com

CANNONDALE UK
Cycling Sports Group
Vantage Way, The Fulcrum,
Poole, Dorset, BH12 4NU
+44 (0)1202732288
sales@cyclingsportsgroup.co.uk

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