

Moterra NEO

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.

Safety Messages

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.

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.

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.

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

Contacting Cannondale

Cannondale USA

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1 Cannondale Way, Wilton CT, 06897, USA
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International Distributors

Consult our website to identify the appropriate Cannondale Dealer for your region.

CONTENTS

Safety Information	2-5
Technical Information	6-19
Replacement Parts.....	20

Your 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.

GENERAL EBIKE SAFETY INFORMATION

Intended Use

This model is equipped with an electric pedal assist drive system. It is not a moped or motorcycle. In EU countries, it is known legally as an "EPAC" cycle or Electrically Powered Assisted Cycle.

The drive assist system consists of a drive unit, a battery, a computer control, and various electronic components (harness wires, sensors, and switches). This model bike does share components common with pedal-only bikes.

It is important to know that when the assist system is turned ON, the drive unit engages to provide power only while you are pedaling. The amount of power provided by the drive unit depends on your pedaling force and the assistance mode/level you set with the handlebar control unit. At anytime, if you stop pedaling, the drive assist will dis-engage. In all modes/levels, the drive assist system power reduces progressively and cuts off as the bike reaches the maximum allowable speed. The drive-assist re-engages when speed drops below the maximum allowable speed as long as the pedals are turning.

Whenever the drive assist system is turned OFF, You can pedal the bike normally. The drive system will not engage.

WARNING

UNDERSTAND YOUR BIKE , DRIVE SYSTEM AND THE INTENDED USE OF BOTH. USING YOUR BIKE THE WRONG WAY IS DANGEROUS.

See "Specifications" in this manual for the Intended Use of your specific model.

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

DRIVE SYSTEM: You must follow the manufacturer's instruction for intended use or limitation.

Compliance/Regulation

WARNING

MAXIMUM ALLOWABLE ASSIST SPEED:
The drive assist system is limited to a maximum continuous power rating as indicated in "Specifications."

YOU MUST FOLLOW ALL LOCAL LAWS:
It is your responsibility to identify and follow all local laws and regulations (including fitting your bike with additional equipment) necessary to comply with your state and local laws.

Ask your local Cannondale Dealer for more information about operating an electrically assisted pedal bicycle in your area.

Drive System

WARNING

MANUFACTURER'S INSTRUCTIONS - In addition to this supplement, you must read and follow the manufacturer's instructions for all components of the drive assist system :

Drive Unit	Battery
Display/Control Unit	Charger

These instructions contain correct operation, service and maintenance information. Drive system instructions can be also be found at www.cannondale.com.

Operation

WARNING

IMPORTANCE OF PRACTICE & RIDER TRAINING - Before you ride this bike, practice riding in a safe area free from hazards. Take time to learn to bike's controls and performance. Practice the controls and gain the experience necessary to avoid the many hazards you will encounter while riding.

DO NOT RIDE "HANDS-OFF" - Keep your hands on the handlebars when riding the bike. If you remove your hands from the handlebar while riding, you can lose control of the bicycle and crash.

CHANGING THE ASSISTANCE LEVEL WHILE RIDING - Changing the drive assistance level while riding will increase or decrease the acceleration of the bike. You should anticipate this change in speed and react appropriately depending on the riding conditions. (such as on slippery trails, tight turns, or unstable or uneven surfaces). Set assistance level to "ECO" (lowest assist) or "OFF" before descending technical trails, (e.g. tight downhill switchbacks)."

WHEN NOT RIDING - TURN THE DRIVE SYSTEM OFF and REMOVE THE BATTERY, KEY, AND CONTROL UNIT AND STORE ALL IN A SECURE AREA TO PREVENT UNAUTHORIZED USE. Remove the battery and key when the bike is parked for long periods.

DO NOT ALLOW CHILDREN TO OPERATE EBIKE. Follow any state or local laws for any minimum age restrictions for eBikes.

ONLY TURN THE DRIVE SYSTEM ON WHEN YOU ARE SEATED WITH YOUR HANDS ON THE HANDLEBAR READY TO RIDE.

EBIKES ARE HEAVIER THAN ORDINARY MOUNTAIN BIKES. This bike has wide bars, and with wide tires without an integrated kickstand to hold it parked upright. Always park the bike in a suitable safe area away from children, cars or animals that may come into contact with it.

WEAR A HELMET AND ALL OTHER PROTECTIVE GEAR (GLOVES, PADS, AND CYCLING SHOES).

Servicing

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 Dealer.

Modification

WARNING

DO NOT MODIFY THIS BICYCLE/DRIVE SYSTEM/ IN ANY WAY FOR ANY REASON.

Doing so can result in severe damage, faulty or dangerous operating conditions, or violation of local laws.

Dealers and owners MUST NOT change, alter, or modify in any way the original components of the bicycle or drive assist system and the specified sizing of the attached gear ratios (front/rear chain rings).

Specifically attempts to "hot-rod" or "improve" the speed of the bike are dangerous to the rider.

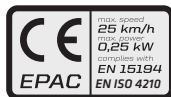
Use only specified CANNONDALE and manufacturer drive assist service and replacement parts.

No Child Seats or Trailers

WARNING

Child seats and trailers or racks can not be used and are not allowed to be used with your Cannondale e-bike.

Labeling



This bike complies with EN 15194,
EN ISO 4210 - Electrically Power Assisted Cycles (EPAC).

IDENTIFICATION



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



Record YOUR Serial Number here:

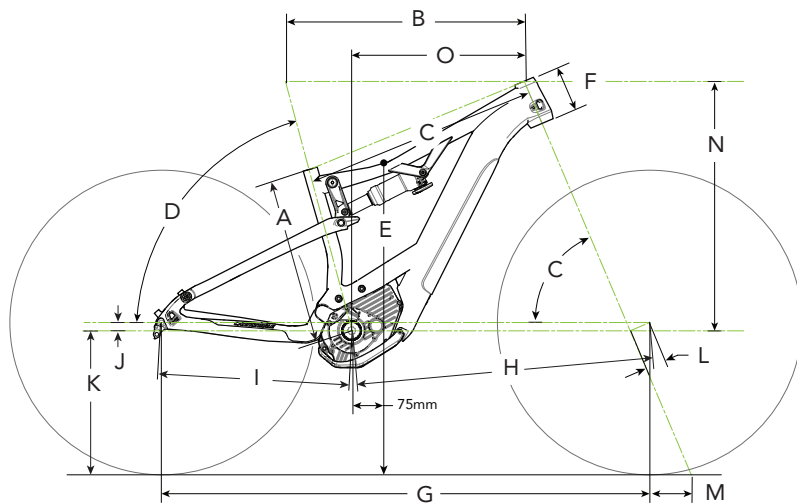
- | | |
|-----------------------------|--------------------------|
| 1. Drive Unit | 6. Front Chain Ring |
| 2. Battery | 7. Battery Key Lock |
| 3. Drive Control Unit | 8. Bike Serial Number/ID |
| 4. Speed Sensor (left side) | |
| 5. Rear Cassette | |

TECHNICAL INFORMATION

Frame Specification

Item	Specification
Drive System	Bosch Performance CX
Battery	Bosch Powertube 500Wh
Drive-Assist Owners Manual	https://www.bosch-ebike.com
Maximum Speed (drive assist)	25 kph / 20 mph
Keys (replacement)	www.abus.com
Rear Travel	130 mm
Head Tube	UPR: 1-1/8 in LWR: 1-1/2 in
Headset	Integrated, 1-1/8 in - 1-1/2 in
Bottom Bracket: Type/ Width	Bosch Drive Unit
Front Derailleur	N/A
Seat Post: Dia./Binder	31.6 mm / 34.9 mm
▲ Min. Seat Post Insert	100 mm
▲ Tire Size x Max. Width	27.5 in x 2.8 in (measured)
▲ Max. Fork Length:	541 mm
Rear Shock: Eye-To-Eye / Stroke / Bushing Width	210 × 50 mm
Recommended Sag:	15 mm
Chain Guide	Cannondale Chain Guide
Brakes: Mount Type / Min/Max Rotor Dia.	RR: Post Mount /180 mm / 200 mm (SRAM), 203 mm (Shimano)
Axles: Type / Length	RR: Syntace TA / 157 × 12 mm
▲ Intended Use:	ASTM CONDITION 4, All-Mountain
▲ Max. Weight Limit: Total (rider+all equipment):	330 lbs / 150 kg

Geometry



Dimensions = centimeter/inch

Size	S	M	L	XL	
A	Seat Tube Length	41.0/16.1	44.0/17.3	47.0/18.5	51.5/20.3
B	Top Tube Horizontal	58.7/23.1	61.4/24.2	63.8/25.1	66.6/26.2
C	Top Tube Actual	52.2/20.6	55.2/21.7	57.8/22.8	61.2/24.1
D	Head Tube Angle	66.0°	*	*	*
E	Seat Tube Angle Effective	75.0°	*	*	*
E'	Seat Tube Angle Actual	67.0°	*	*	*
F	Standover	73.9/29.1	74.9/29.5	75.5/29.7	77.8/30.6
G	Head Tube Length	10.0/3.9	11.0/4.3	12.0/4.7	13.0/5.1
H	Wheelbase	118.4/46.6	122.1/48.1	124.7/49.1	127.6/50.3
I	Front Center	73.5/28.9	77.2/30.4	79.7/31.4	82.7/32.6
J	Chain Stay Length	45.0/17.7	*	*	*
K	Bottom Bracket Drop	1.0/0.4	1.8/0.7	*	*
L	Bottom Bracket Height	35.1/13.8	36.2/14.2	*	*
M	Fork Rake	4.4/1.7	5.1/2.0	*	*
N	Trail	11.3/4.4	11.3/4.5	*	*
O	Stack	58.5/23.0	61.9/24.4	62.9/24.7	63.8/25.1
P	Reach	43.0/16.9	44.8/17.6	47.0/18.5	49.5/19.5

* - Indicates same.

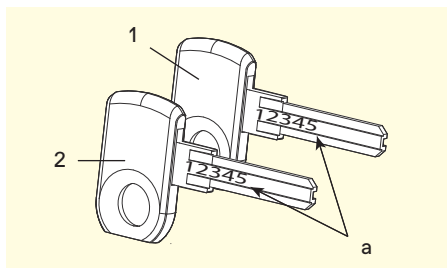
All Specifications subject to change without notice.

Keys

Keys are used to secure the wheel and battery lock mechanism. The drive system, may be activated by this same key. Please consult the drive system owner/operator manuals to determine.

Please record the key serial number for future use and key replacement.

If your keys are ever lost or stolen, or you would like additional spares, please contact the key manufacturer indicated in the "Frame Specifications" in this manual.



- 1. Main Key
- 2. Spare Key
- a. Serial Number

NOTICE

Don't ride with key in battery lock. Always remove the key from the lock after using it. Keys may be stolen or break off accidentally in the lock. Keep your spare key in a safe place.

Please Note:

After lots of rides and washing, the battery lock can become dry and difficult to use. To maintain, whenever you lubricate your bike chain, place a few drops of chain oil on the key insert the key and operate the lock, then remove and wipe the key clean.

Record YOUR Key Serial Number here:

Battery Charging Port

The battery charging port is located on the left side of the bicycle at the top of the down tube.

The charging port enables the battery to be charged while installed in the bicycle.

To connect to the charger cable to the port connector:

1. First, familiarize yourself with the safety information for charging provided by the drive system manufacturer. And, of course, the battery must be installed and in good condition to accept a charge.
2. Place the bike and charger in a secure area where both will remain undisturbed while the battery is charged.
3. Lift up the battery port cover. See Figure 1.
4. Attach the charger cable. See Figure 2 & 3.

Follow the manufacturer's charging instructions for the duration of charging.

5. Disconnect charger cable from the port connector and replace cover. See Figure 4

Make sure cover is seated fully into the frame opening.

6. Disconnect the charger from its source of power.

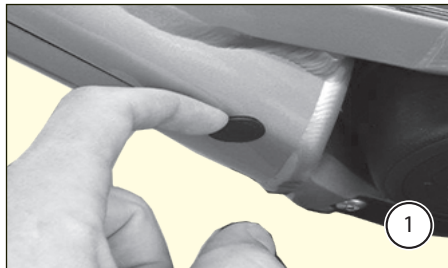


Powertube Battery

The drive system battery is housed within the bicycle downtube. The battery can be charged via the charge port or removed for charging.

To remove the battery:

1. On the left side of the bicycle, on the lower end of the downtube, lift the lip of the key cover and remove the key cover from the frame key hole. The cover is tethered; do not try to pull it off the frame. See Figures 1 & 2.

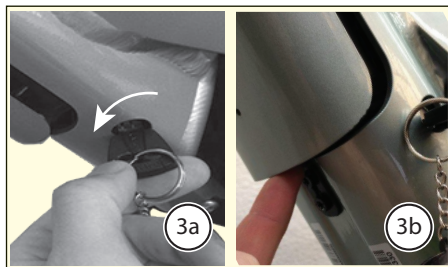


2. Insert the key into the battery lock and turn the key counter-clockwise to unlock the battery latch. Figure 3a.



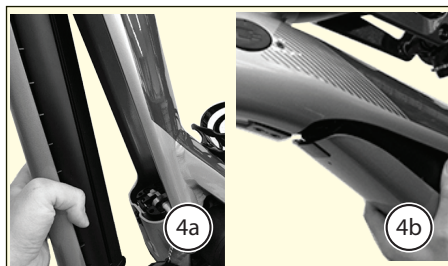
Push the latch, which releases the battery out of the battery catch. Figure 3b.

3. Slightly tilt and lower the released lower end of the battery away from the frame. Figure 4a.



And disengage from the the upper battery latch. Figure 4b.

4. The battery and attached frame cover is now out of the frame and can be charged by connect the battery to the drive system charger.



To install the battery:

1. Align the top of the battery with the upper frame bracket and insert the battery (cover) attached) into the frame opening. See Figure 5.
2. Tilt the lower end of the battery into the lower battery latch until it engages the lock mechanism. See Figure 6..
3. Hold in the battery cover and turn the key clockwise to engage the battery latch and lock it. See Figure 7.
4. Remove the key from the lock and replace the key cover seal. See Figure 8.

Make sure the lip of the seal is fitted completely around the edge of frame key frame hole. See Figure 8.



Shock Link

- | | |
|-------------------|--------------------|
| 1. Top Tube Pivot | 7. Shock Bolt |
| 2. Pivot Nut | 8. Seat Stay Axle |
| 3. Bearing | 9. Shim |
| 4. Spacer | 10. Pinch Bolts |
| 5. Link | a. gap (seat stay) |
| 6. Shock Bolt | b. slot (shim) |

Service Tool - KP169/

Service Tool Cannondale KP169/ is a multi-function tool set used to remove and install the axle (8) and shim (9).

The kit also includes bearing driver needed to replace the link and swingarm bearings. It is available from a Cannondale Dealer.

Composite Link Bearing, Install

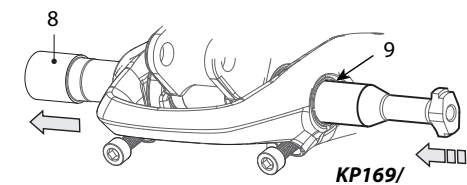
1. Clean outer race of all bearings and link bearing bores with denatured alcohol and clean cloth to remove any oil or contamination.
2. Apply a thin bead of Loctite 435 adhesive * around inside of a bearings bore near the outer edge of the bore.
4. Insert a bearing into the bore with adhesive and ensure it is fully seated on the lip (a) in the bore.
5. Ensure bearing is fully seated in bore.
6. Repeat steps 3-5 for the remaining 3 bearings.
7. Confirm that all 4 bearings are fully seated in each bore.
8. After 45 seconds the adhesive will cure enough for handling.
9. Wait a 5 minutes before installing link in frame.

Shock Link, Remove

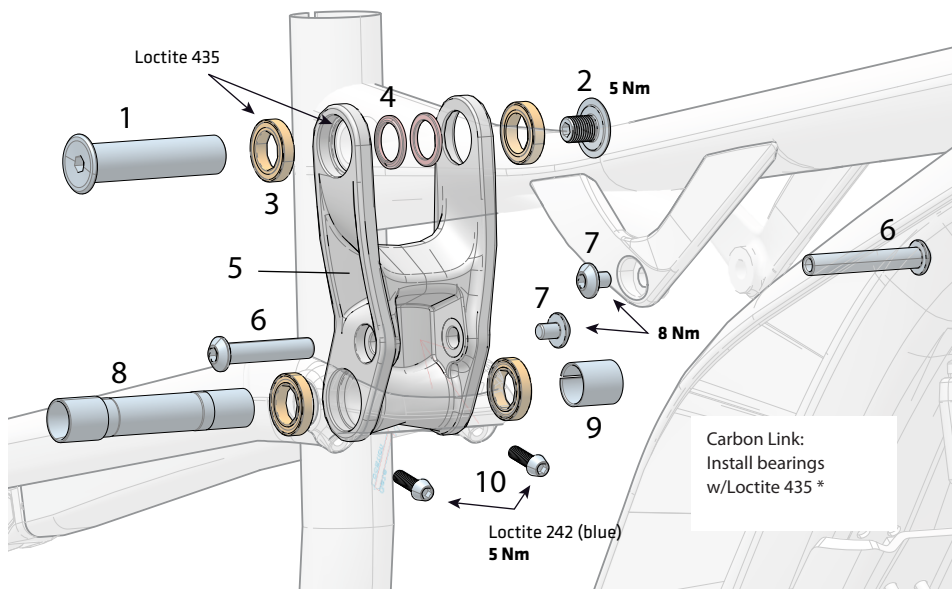
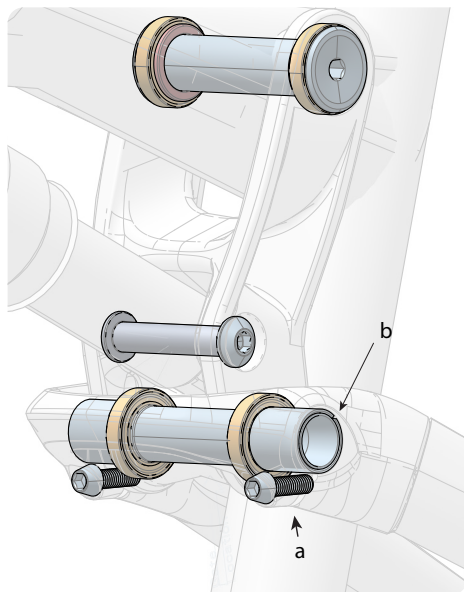
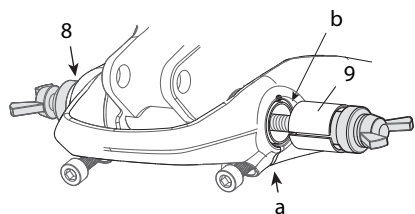
1. Place the bike in a work stand. Make sure the wheel / swing arm is supported.
2. Remove the rear shock bolts and disconnect the shock from the link.
3. Remove the pinch bolts (10) and clean old thread locking agent from the threads.
4. Insert the driver tool **KP169/** (as shown) into of the seat stay axle (8).
5. Drive out the axle by tapping on the tool with a small rubber mallet.
6. Loosen and remove the pivot nut (2) and remove the top tube pivot (1).
7. Remove the link and the spacers (4).

Shock Link, Install

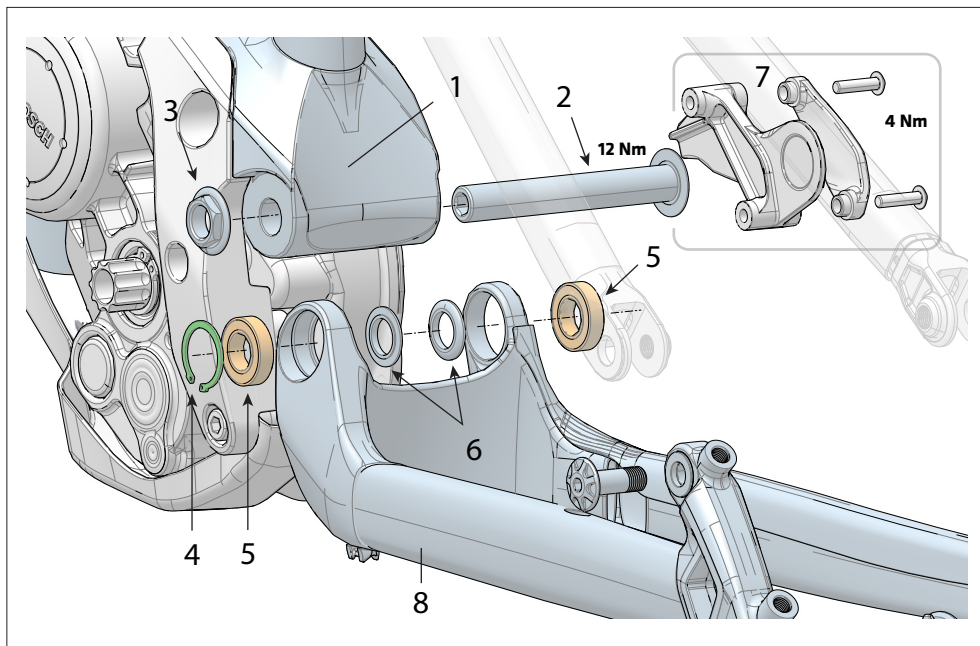
1. Clean all parts with a dry lint-free shop towel.
2. Locate the spacers with the small ends into the link bearings.
3. Align and insert the top tube pivot . Tighten the pivot nut to the specified torque.
4. Align and insert the seat stay pivot with the larger end on the drive side. Insert the shim (9) over the axle end and position the slot (b) opposite the clamp gap (a).
5. Re-apply Loctite 242 (blue) to the pinch bolt threads and tighten to specified torque.



KP169/



* <http://tds.henkel.com/tds5/search.asp?t=435>



Main Pivot

1. Frame Pivot
2. Main Pivot Axle
3. Main Pivot Nut
4. Ring Clip
5. Bearing
6. Spacer
7. Chain Guide Assy.
8. Swing Arm

The main pivot assembly connects the swingarm to the frame. Its should be inspected periodically by a Cannondale Dealer to make sure all the parts are good condition.

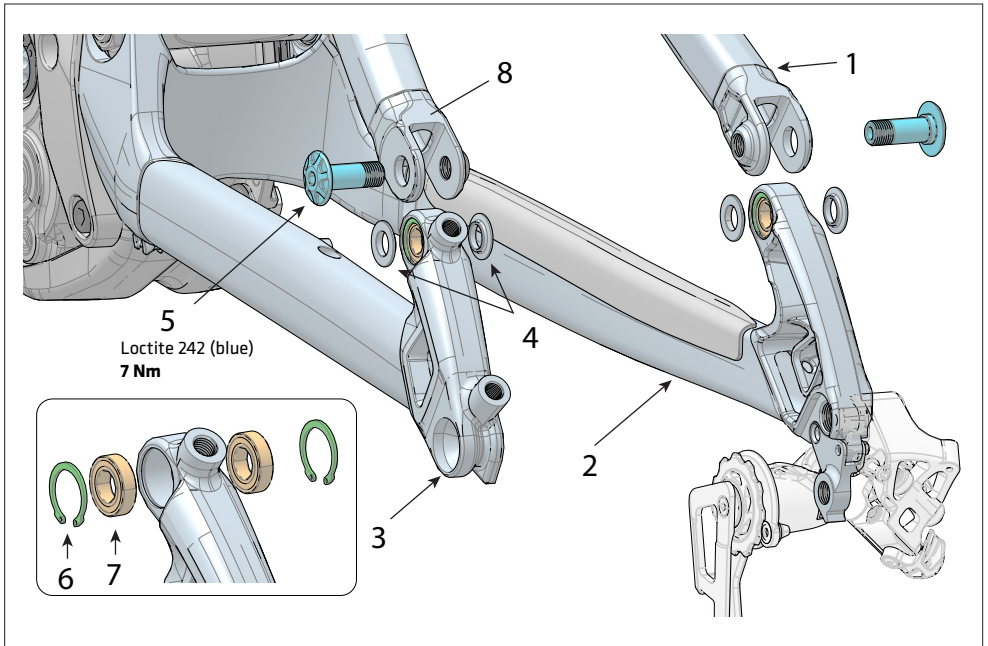
Service of worn or damaged parts in this assembly should be performed by a Cannondale Dealer.

As shown, a significant degree of disassembly is required.

The main pivot bearings (5) should be renewed periodically to ensure best performance, or if they become damaged during use. An indication of damage would be excessive play or loose feel of the swing arm connection.

Use Cannondale tool KP169/ bearing drivers to install and remove the bearings.

The non-drive side bearing (5) is retained by a ring clip (4).



Dropout

1. Seat Stay
2. Swing Arm
3. Dropout (left)
4. Spacer
5. Pivot Axle
6. Ring Clip
7. Bearing
8. Seat stay end

The dropout bearings (7) should be renewed periodically to ensure best performance, or if they become damaged during use. An indication of damage would be excessive play or loose feel of the seat stay dropout connection.

The bearings (see inset) can be inspected without removing them. With the pivots removed, rotate the installed bearings. The bearings should be free of corrosion, fixed firmly in the dropout and rotate smoothly without a gritty or loose feel.

It is best practice to renew all the parts ring clips (6), bearings (7), pivots (5) and spacers (4) with new ones when service is required. The bearing pairs in each dropout are retained by two ring clips which are seated in a groove.

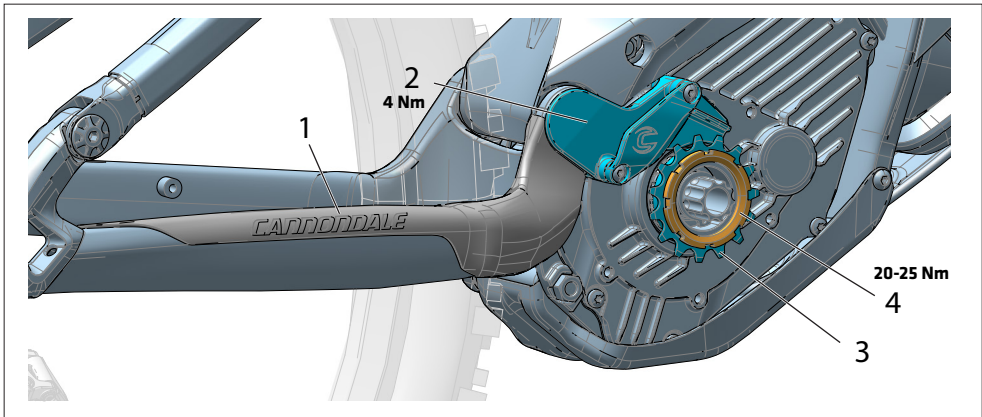
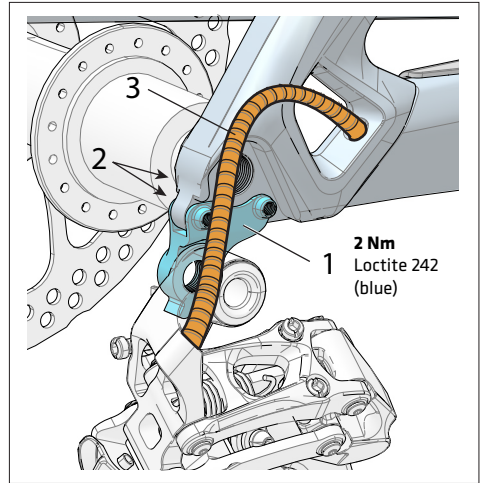
The small end of the spacers (4) fit into the bearings before connection of the seat stay ends (8).

Rear Derailleur Hanger

1. RD Hanger
2. Screws
3. Housing Guide

Anytime the RD Hanger is replaced due to damage or a crash, clean the dropout and also check for any damage.

The flexible housing guide (3) is an added part enclosing the internally routed RD housing/cable. It spans the housing section between the chain stay opening the connection to the rear derailleur. The guide is necessary to best shifting performance. Be sure to replace it if it is removed when servicing the rear derailleur.



Chain Stay Protector / Chain Guide / Front Chain Ring

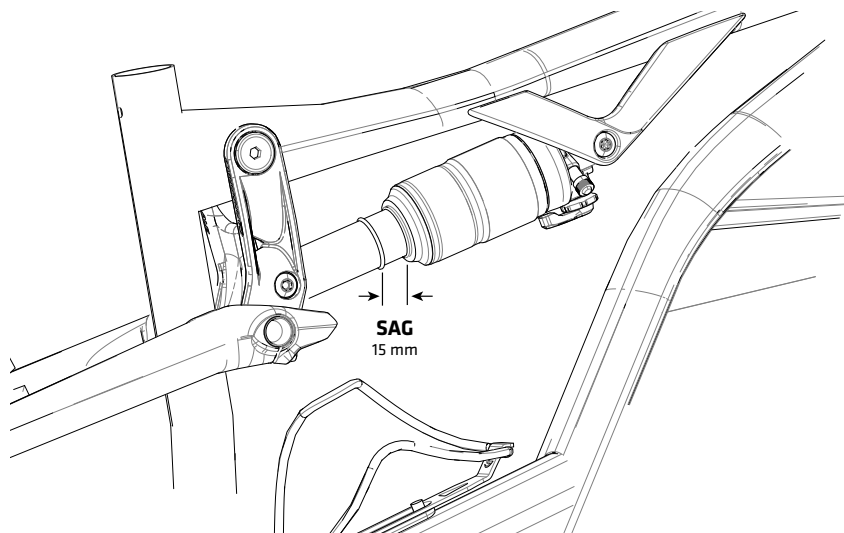
The following items should be inspected often to make sure they are securely mounted and in good condition and if damaged, have them replaced by your Cannondale Dealer:

1. Chain Stay Protector - Prevents chain movement from damaging the chain stay.
2. Chain Guide - Retains the chain.
3. Front Chain Ring
4. Chain Ring Nut

WARNING

DO NOT RIDE WITH A MISSING OR DAMAGED CHAIN GUIDE.

Rear Shock



Set Up

1. Set the air pressure according to your body weight. Follow the shock manufacturer's instruction for pressurizing the shock.
2. Slide the O-ring against the shock wiper seal.
3. Sit on the bike in a normal riding position with your hands on the handlebar and feet on the pedals so that your weight compresses the rear shock.
4. Measure the SAG. Adjust the air pressure in the shock to achieve the correct SAG measurement.

Add air to decrease sag.

Release air to increase sag.

Recommended Sag 30%

WARNING

SELECT ONLY COMPATIBLE SHOCKS AND 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

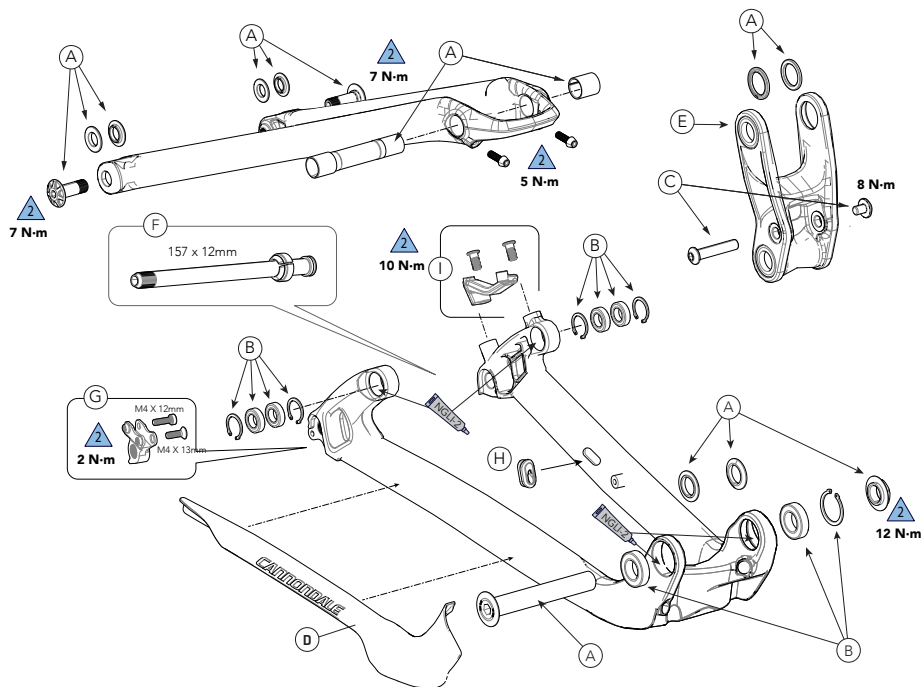
- Riding with the wrong rear shock can damage the frame. You could have a serious accident. Make sure the total travel, eye-to-eye length, and stroke length of the rear shock you select meet the SPECIFICATIONS listed in this manual.
- When selecting different shocks or forks for your bike, make sure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

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

NOTICE

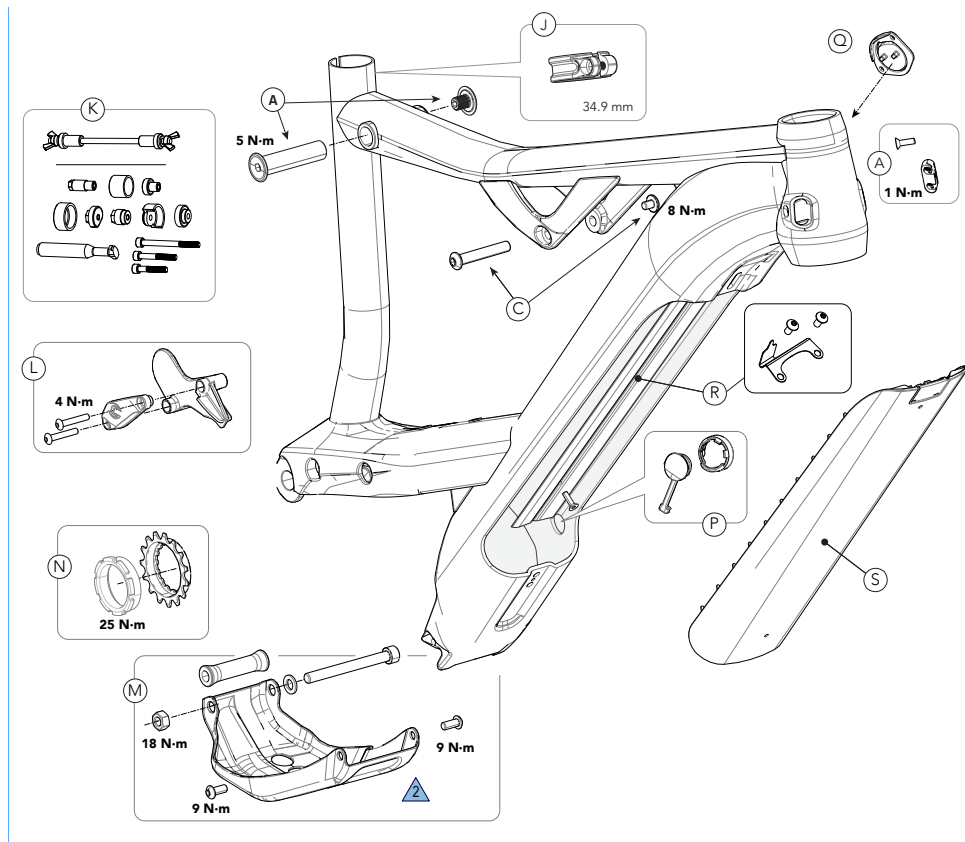
Mount the shock as shown.

REPLACEMENT PARTS



ID	Part Number	Description
A	CK3067U10OS	Moterra Link Hardware BLK
B	CK3047U00OS	Moterra Pivot Bearings
C	CK3057M00OS	Moterra Shock Mount Hardware
D	CK3037U10OS	Moterra Chainstay Protector BLK
E	CK3297U00OS	Moterra CRB Link, w/brgs
F	K83037	Syntace Thru Axle X12 157x12
G	KP173/	Derailleur Hanger TA ST DS 026
H	KP312/	Open Oval Grommet (QTY 10)

ID	Part Number	Description
I	KP176/X	Brake Adapter Post Mount 180 mm
	KP177/X	Brake Adapter Post Mount 185 mm
	KP178/X	Brake Adapter Post Mount 203 mm



ID	Part Number	Description
J	KP388/	Seatbinder MTN Bolt 34.9
K	KP169/	Tool Jekyll Pivot
L	CK2017U10OS	Moterra Chainguide BLK
M	CK3017U10OS	Moterra Skid Plate BLK
N	CK2047U00OS	Moterra Sprocket and Lockring
O	KP456/	Modular Cable Guides HT
P	K34249	Battery Key Seal
Q	K34159	Charge Port Cover PT
R	K32089	DT Cable Guide Internal Channel

ID	Part Number	Description
S	K3425910	Battery Cover DT Bottom Exit SGG
	K3425920	Battery Cover DT Bottom Exit GRA
	K3425930	Battery Cover DT Bottom Exit BPL
--	KP205/	Headset Integrated Headshok To Taper

MAINTENANCE

The following table lists only supplemental maintenance items. Please consult your Cannondale Bicycle Owner's Manual for more information on basic bike maintenance. Consult with your Cannondale Dealer to create a complete maintenance program for your riding style, components, and conditions of use. Follow the maintenance recommendations given by the component manufacturer's for the various non-Cannondale parts of your bike.

CHECK THE FOLLOWING BEFORE EACH RIDE:

- Make sure the battery is fully charged and locked securely in position on the bicycle.
- Check tire pressure and wheel condition.
- Check the drive chain condition. Make sure it is clean and well-lubricated. Chain wear is greater compared with pedal only bikes. This requires frequent inspection and replacement.
- Check the bicycle brakes, make sure they are working well. Brake system pad and disc wear is greater compared with pedal only bikes. This requires frequent inspection and replacement.
- Inspect condition of electrical cables (i.e. Kinks free, no signs of abrasive wear)
- Test the drive assist system, make sure the drive system functions normally.
- If your eBike model was equipped a lighting system, brake lights, headlights, and number plate illumination, make sure these lights are each functioning normally. Make sure the number plate is clean and readable.

IF YOU FIND ANY DAMAGE, DO NOT RIDE THE BIKE, CONTACT YOUR CANNONDALE DEALER.

TO BE PERFORMED BY CANNONDALE DEALER :

Recommended after the first 150 km, bring your bike to your Cannondale Dealer for an initial check-up. It should include checks of the drive assist system, drive chain condition, proper shifting, accessories, wheels and tire condition, brakes, etc. This visit will help you establish a schedule for repeated visits appropriate for how and where you ride.

Every 1000 km, bring your bike in to your Cannondale Dealer for a regular detailed inspection, adjustment, and replacement of wear items across the entire bike. Electrically powered assist cycle (electric bikes) can wear out wheels, tires, drive chain, brakes, more quickly.

WARNING

ANY PART OF A POORLY MAINTAINED BIKE CAN BREAK OR MALFUNCTION LEADING 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.

WWW.CANNONDALE.COM

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2019 Moterra NEO Owner's Manual Supplement
137366 Rev. 1

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