PHANTOM

ASSEMBLY MANUAL

VELDURO

What’s in the Box?

Your frame is protected by fully eco-friendly packaging.

Open the carton, and you'll find:
The Phantom e-gravel frame assembled with display, battery and motor
Phantom gravel carbon fork
Avinox 168W charger
Avinox SL cranks 165mm
Velduro customized alloy 44T chainwheel with spider, 3mm inward offset.
FSA MSR alloy stem with headset
Avinox spider assembly tool

Product Parts Overview

Before starting to buy your parts, please familiarize yourself with the names of your bicycle's comonents.

1. *Stem*
2. *Wireless controller*
3. *Shift lever*
4. *Control display*
5. *Handlebar*
6. *Strap*
7. *Fork*
8. *Tire*
9. *Rim*
10. *Spoke*
11. *Brake Caliper*
12. *Hub*
13. *Brake Disc*
14. *Crank*
15. *Chainwheel*
16. *Chainwheel spider*
17. *Saddle*
18. *Seatpost*
19. *Seat clamp*
20. *Valve*
21. *Chain guard*
21. *Cassette*
22. *Wheel axle*
23. *Derailleur*
24. *Chain*
25. *Pedal(not shown)*

Phantom parts Compatibility

Before purchasing parts, please check the information about compatiblity with your frame.

1.Stem&Headset
Your frame set already includes an FSA alloy stem and headset. If you need to replace it, please note whether the stem are compatible with the frame, spec: upper/lower 52mm bearings for 55.8mm OD head tube .

2.Handlebar:
The frame can support both dropbar and flatbar. Please note whether they are compatible with the stem, Dia 31.8mm.

3.Fork:
If you choose the fork package, your frameset will come with a velduro customized carbon fiber fork when it arrives. You can also purchase gravel-specific suspension forks, such as RS-Rudy, Fox 32TC, etc.

4.Shifters&Brakes:
Shifters and brakes are key components for cycling. Since the Phantom is equipped with a powerful Avinox electric assist system, please choose high-quality components to ensure your riding safety.
Brake specifications: Front post type mount 160mm disc, cable 900mm, Rear flat mount 160mm disc, cable 1500mm.
Shift specifications: 1x shifting only, supports UDH, as well as both electronic and mechanical shifting. Manual shift cable length 1650mm

4.Chainwheel&Crank:
Your Velduro chainwheel is specially customized, with a 3mm offset aligning to the 142mm dropout width, so please do not replace it as gear allignment will be incorrect. If replacement is needed, follow the accessory requirements below. For your safety, please choose high-quality parts.
Crank: ISIS Standard crank, no longer than 170mm, 0-offset proved.
Chainwheel: 104BCD, up to 44T, 3mm inward offset.
Chain: If 44T chainwheel and XPLR 13-speed cassette, 120links.
Chain length caculate info: Chainstay length: 425mm for S/M size, 430mm for L/XL size.

5.Wheels
Wheel sets are key components for cycling. Since the Phantom is equipped with a powerful Avinox electric assist system, please choose high-quality components to ensure your riding safety.
Hub: front 12x100mm, rear 12x142mm, Six-bolt (Six-bolt is required for installing the speed sensor ring. If your hub has a center-lock structure, please use a center-lock to six-bolt adapter for the rear wheel), Please choose the correct type of freehub to ensure it is compatible with your shifting system.
Rim: 700C as recommended, The inner width should be no less than 24mm. Please note the compatibility between the inner width and the tire width.
Tires: Width up to 50C, 45C as recomended.

Before Assembly

SYMBOLS AND THEIR MEANINGS

When reading this manual, you will find various important symbols and warnings, explained as follows:

WARNING!
The symbol paired with the word WARNING signifies a potentially dangerous scenario. If not avoided, it could lead to serious injury or death. Many such warnings state, *"You may lose control and suffer a fall."* Since any fall can cause severe harm or even fatal consequences, we do not always repeat the warning of possible injury or death.

CAUTION
- When combined with the safety alert symbol, CAUTION denotes a potentially hazardous situation. If ignored, it may cause slight to moderate harm, or serves as a reminder against unsafe practices.
- When CAUTION appears without the safety alert symbol, it indicates a situation that, if unaddressed, could result in severe damage to the bicycle or the invalidation of your warranty.

Information Symbol
This symbol draws your attention to particularly crucial information.

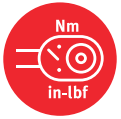
Tech Tips Symbol
Tech tips offer handy advice and tricks for installation and use.

Grease Symbol
This symbol means premium grease should be applied as shown.

Carbon Assembly Paste Symbol
This symbol indicates premium carbon assembly paste should be applied as illustrated.

Threadgrip Symbol
This symbol signifies a high-quality threadgrip should be applied as depicted.

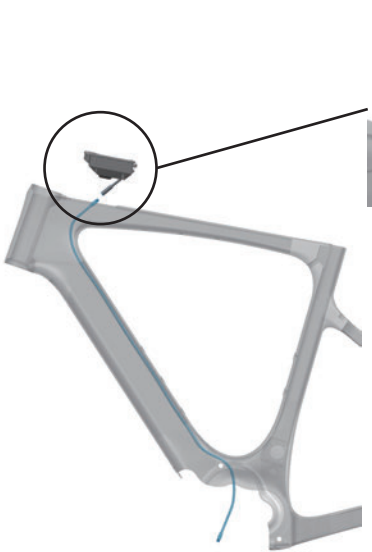
WARNING – HOT SURFACE!
The symbol combined with these words warns of a potentially dangerous situation involving a surface too hot to touch. If not avoided, it could cause burns of varying degrees.



Torque Wrench Symbol
This symbol indicates that a torque wrench is required at this step to tighten the screws to the correct torque.

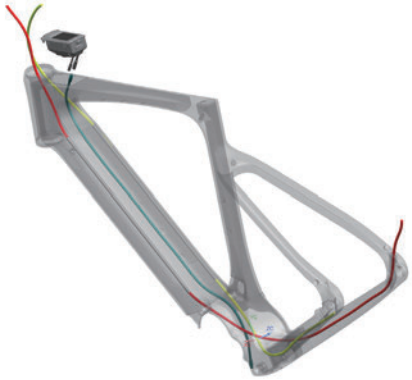
Install the Display(if not pre-installed)

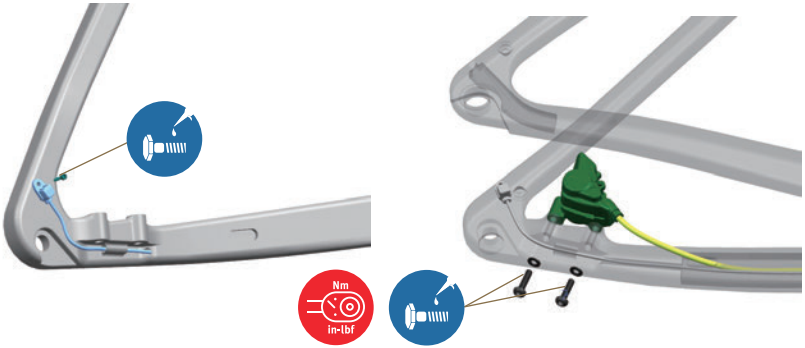
Feed the display's communication cable through the display opening on the frame's top tube until it protrudes from the opening near the motor. Take out the display and connect its communication cable to the display. First insert the rear end of the display into the frame, then press the front end until it is fully embedded. Use a 2mm hex wrench to lock the display onto the frame, with a locking torque of 0.6 Nm.



Install the Rear Brake and other cables.

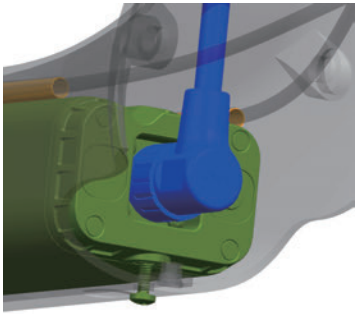
Feed the rear brake hose (shows yellow in picture) through the cable exit on the left chainstay until the hose protrudes from the motor opening. Reinsert it into the cable groove above the downtube until it protrudes from the head tube.
Feed the speed sensor wire through the cable routing channel below the brake, then throught into the frame from the inner cable exit on the right side of the left chain stay, until the connector protrudes from the motor opening. Use an H2 screwdriver to lock the speed sensor into the correct position, with a locking torque of 0.6Nm. The Gap between sensor and speed ring should be maintained between 0.8 mm and 1.8 mm, the gap less than 0.8mm is allowed, but greater than 2.2mm is not allowed.
Align the caliper with the brake mount, then use a T25 wrench to pass the screws through the frame from below and tighten the caliper, with a tightening torque of 5Nm.
If you are using mechanical shifting, feed the shift outer cable (shows red in picture) through the right chainstay in the same manner until it protrudes from the head tube.





Install the Battery(if not pre-installed)

Slide the battery into the downtube through the motor opening. Note that the battery's discharge port should face downward, and an adapter plate is required above the battery. Then, use a 3mm hex wrench from beneath the frame to lock the battery in position, with a locking torque of 5 Nm.
Insert the blue connector of the Y-cable into the battery's discharge port, push it in firmly until the locking mechanism locks into place.

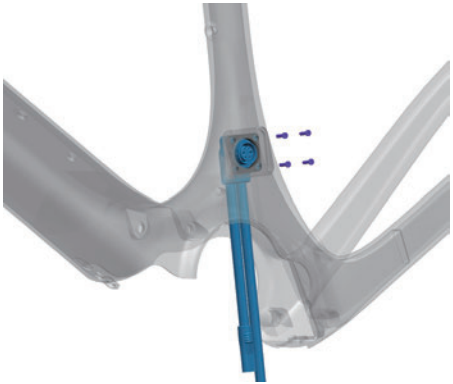


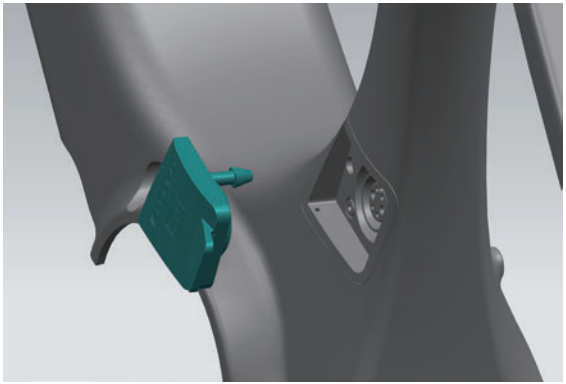
Install the Rear derailleur and cable.

Standard Rear Derailleur
Straighten the frame's derailleur hanger; clean its holes. Align derailleur tab with hanger holes, hand-tighten bolts. Torque bolts to 5-8 N·m. Attach shift cable to derailleur clamp; adjust tension.
UDH Rear Derailleur
Check derailleur fits UDH standard. Align derailleur tab with UDH's central bolt hole. Torque UDH bolt to 6-7 N·m (use derailleur-included bolt).
Attach shift cable, pull to remove slack, lock clamp. (Optional) Confirm derailleur pulleys align with cassette (UDH marks help).

Install the Charging port and cover(if not pre-installed)

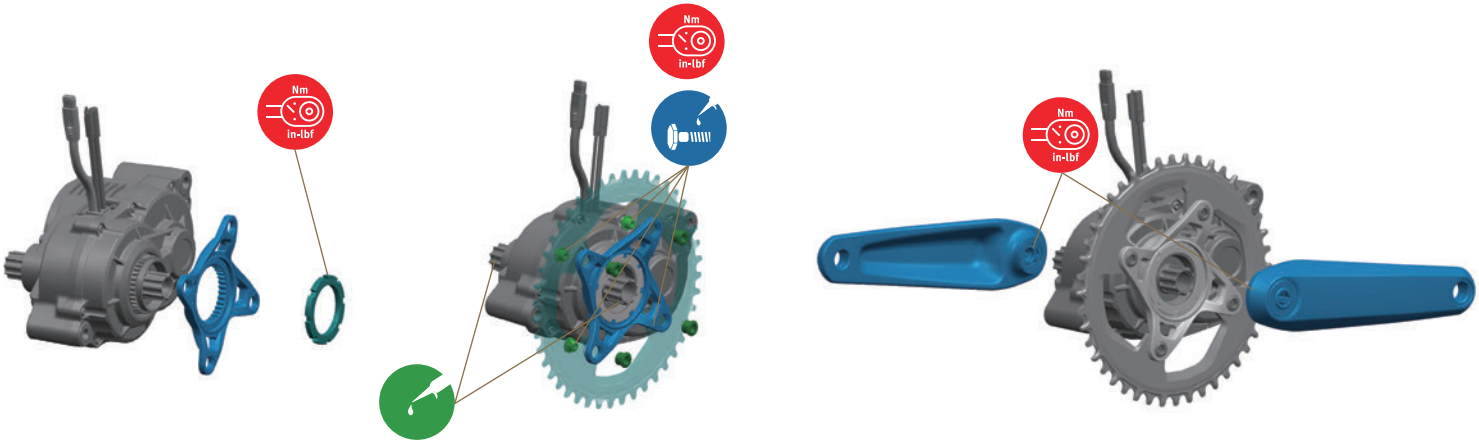
Pinch the Y-shaped cable, and align the charging port section of the Y-shaped cable with the frame opening under the seat tube. Align the positions of the four screw holes with the corresponding openings on the frame. Use an H1 screwdriver to cross-tighten the four screws, with a tightening torque of 0.5Nm.
Insert the protruding end of the rubber charging cover into the frame notch, and press firmly to make it fit tightly to maintain water resistance.





Install the Chainwheel and Crank

Chainwheel Spider Installation (if not pre-installed):
The chainwheel spider is usually pre-mounted on the motor. If not, use the avinox special tool to lock the spider onto the motor via the spider lock. Tighten to a torque of 35 N·m to secure it firmly.
Secure Chainring to Spider:
Take an H5 screwdriver and align the chainwheel with the spider, ensuring their holes match. Insert the four chainring bolts through the chainwheel and spider, then tighten each bolt with the H5 screwdriver. Use a torque wrench to lock them to 8 N·m (tighten evenly to avoid misalignment).
Install Crank to Motor:
Attach the crank to the motor's crank interface. Use an H8 wrench to tighten the crank's fixing bolt(s), then set the torque to 50 N·m with a torque wrench to ensure it's fully secured.



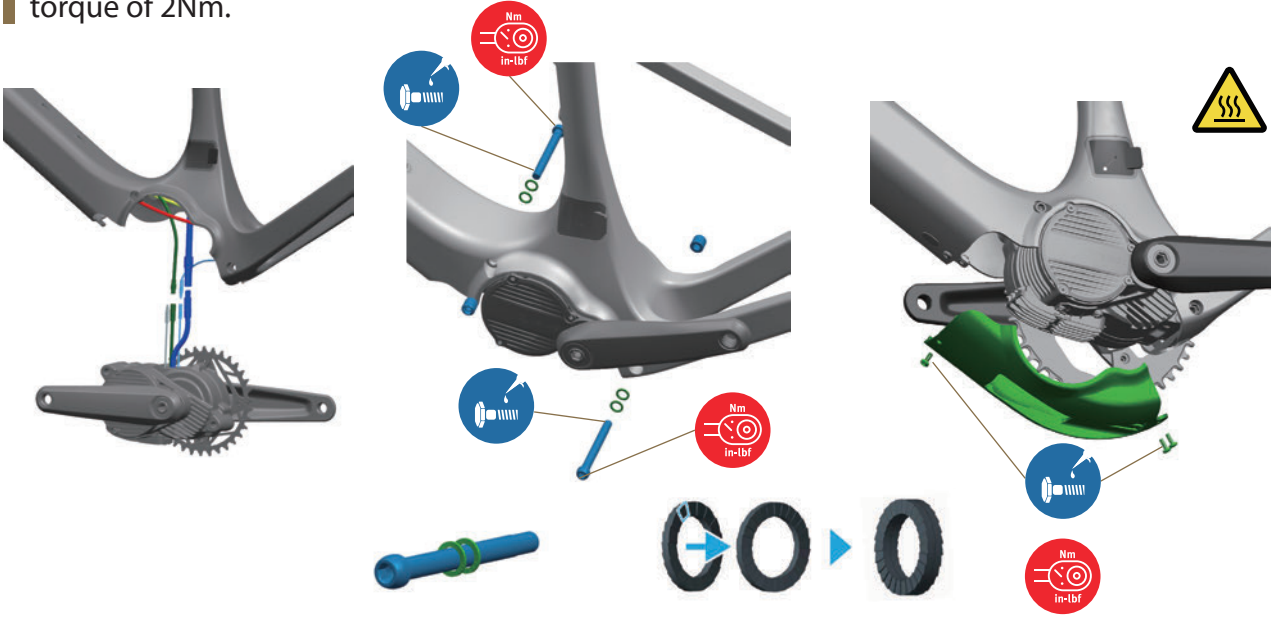
Both inside and outside the axle

Install the Motor and Cover(if not pre-installed)

Connect the wire harnesses on the frame to those on the motor respectively, and ensure they are tightly joined and covered by rubber waterproof sleeve to guarantee waterproof performance. After neatly arranging the wire harnesses, install the motor into the frame. Use H6 and H8 screwdrivers to lock the motor to the frame with the motor screws and nuts.

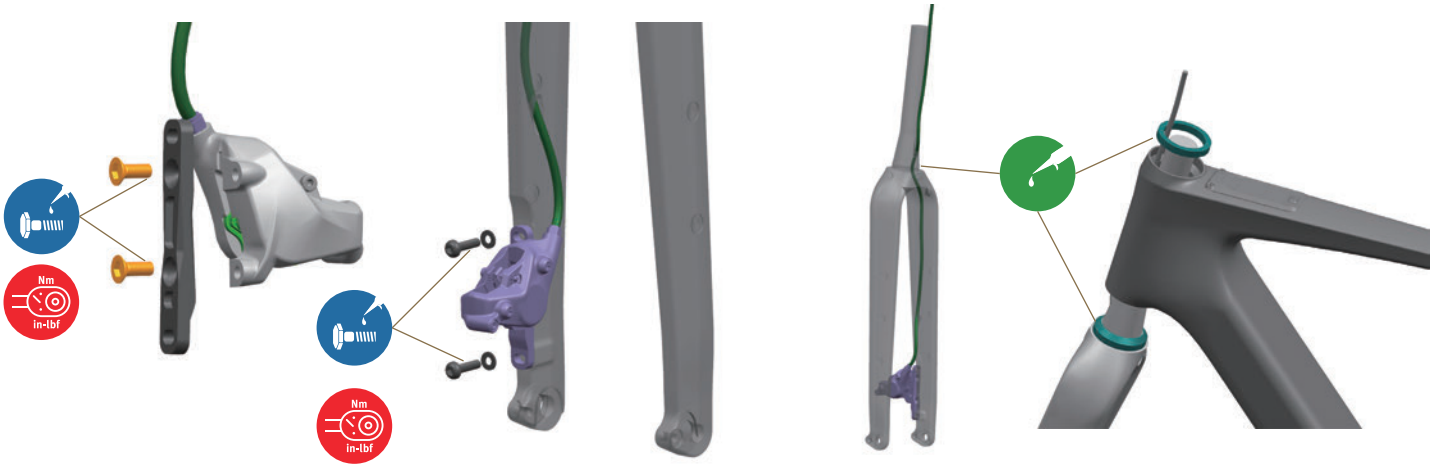
Note that the **longer** motor screws should be placed at the **front**, and the **shorter** ones at the **rear**. A set of motor mounting spacers contains two serrated spacers. To attach the spacers, first align the large serrations as depicted in the illustration, and then fit them onto the bolt, with a locking torque of 20-22Nm.

Use an H4 screwdriver to tighten each of the three motor cover screws onto the frame, with a tightening torque of 2Nm.



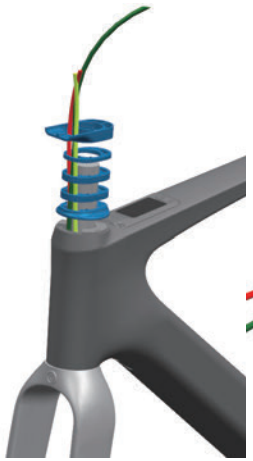
Install the Front Brake and fork

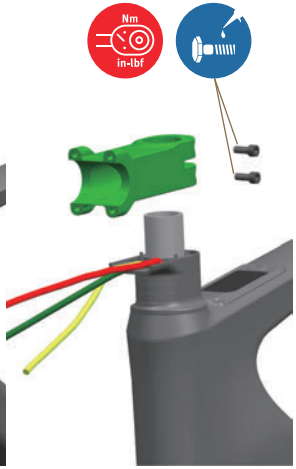
Insert the front brake cable from the inner cable tunnel on the left blade of the front fork.until it exits through the upper cable outlet of the front fork.
Usually, your front brake needs an adapter to be installed on the front fork. Please use a T25 screwdriver to secure the caliper to the adapter, then use a T25 screwdriver to secure the adapter to the front fork. Tightening torque: 6Nm.
Press-fit the headset bearings into the upper and lower ends of the head tube respectively. Insert the front fork from below the headset. Note: Please properly route the cables exiting the head tube.
The steering tube of the carbon front fork supplied with the bike may be too long. After confirming the required length, use a dedicated carbon fiber saw blade to cut it to the needed length.

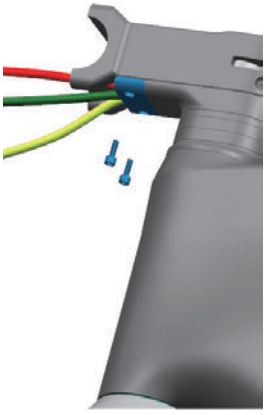


Install the Headset and Stem

Install the cable routing stopper above the headtube headset. Install spacers as needed to increase height. Finally, install the cable channel, then mount the stem onto the front fork's steerer tube. Use an H4 hex key to tighten the steerer clamp bolts in place, with a tightening torque of 6Nm.
Insert the Cover Spacer into the interface below the stem, and use an H3 hex key to secure the cable cover below the stem to the bottom of the stem, with a tightening torque of 1Nm.
Install the Top Cap by tightening the Fixing Bolt with a 6mm hex wrench to until proper bearing preload is achieved, with a tightening torque of 5Nm.

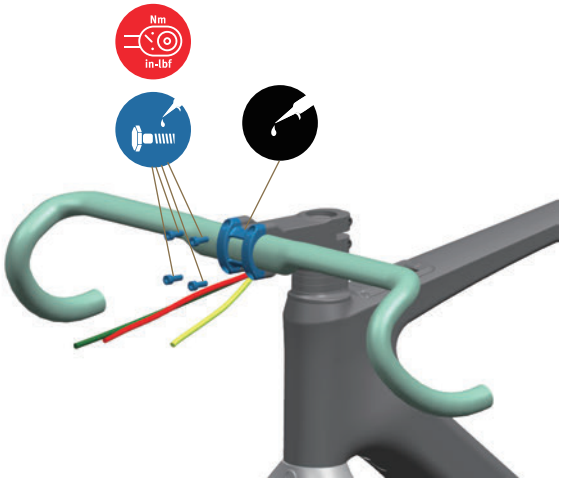


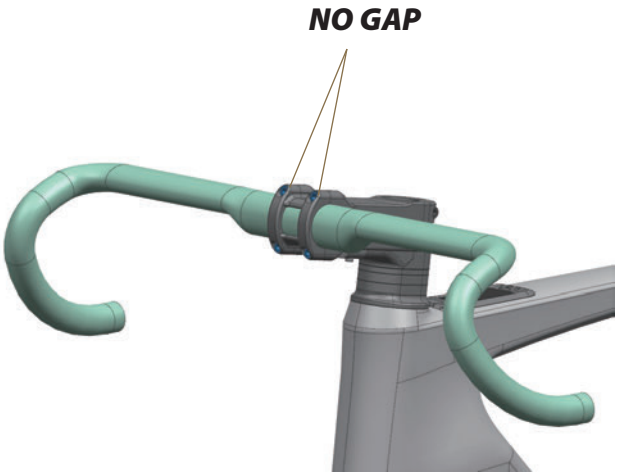




Install the Handlebar

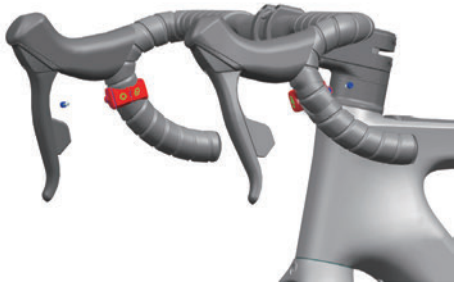
Insert the handlebar between Stem Body and Faceplate. Pre-tighten Face Plate Fixing bolts .
Apply grease to faceplate bolts and tighten the upper bolts to a torque to 6 Nm. Alternately tighten stem bolts until there is no gap between faceplate and stem body.
Tighten the lower bolts to a torque of 6 Nm, 1/4 turn at a time to tighten faceplate evenly.





Install the Brake Lever

Insert the brake hoses and mechanical shift cables (if applicable) respectively from the cable routing holes at the bottom of both sides of the handlebars, until the cable housings protrude from the cable exit holes at the front of both sides. Slide the brake lever mounting rings over the bottom of the handlebars, adjust them to the proper position and secure them with a 5mm hex wrench, with a torque of 6Nm.
Connect the brake hoses and mechanical shift cables (if applicable) to the corresponding positions on the brake levers.
Install the Avinox controller button in your preferred location and lock the button with H2 hex wrench , with a tightening torque of 1 Nm. Wrap the tape around the handlebars from the end of the bar, overlapping one-third each time you wrap. Wrap the end of the strap with tape to secure it, and insert the plug under the handlebar.



Prepare the Wheels

Front Wheel :
For centerlock hubs: First attach the centerlock-to-6-bolt adapter to the hub. Tighten it to 12-15 N·m (follow hub manufacturer's specs if different).
Align the 6-bolt rotor's holes with the adapter/hub holes.
Screw in the 6 rotor bolts with T25 wrench, with a tightening torque of 4-6 N·m (do not over-tighten to avoid damaging the rotor).
Rear Wheel (6-Bolt Rotor + Cassette):
Rotor installation: Repeat the front wheel's rotor steps (use adapter for centerlock hubs, tighten adapter to 12-15 N·m, rotor bolts to 4-6 N·m), lock the speed sensor rotor with disc rotor.
Cassette installation: Align the cassette with the rear freehub's notches. Push firmly until it clicks into place. Use a cassette tool to tighten the cassette lockring to 30-40 N·m (check cassette brand specs for adjustments).

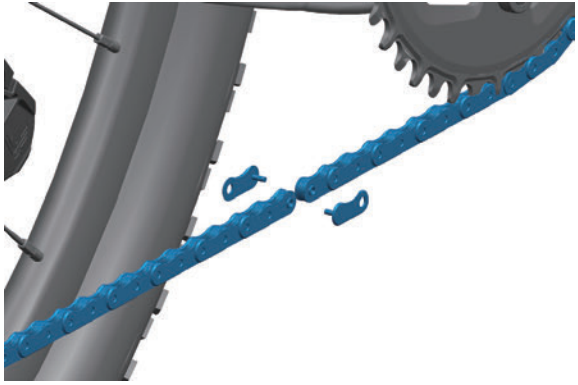
Install the Wheels

For both wheels, start by using the 8mm hex wrench to remove the corresponding thru-axle—twist counterclockwise (if threaded) to take the front axle out of the fork and the rear axle out of the frame's dropouts. Next, align the front wheel's hub with the fork's dropout slots, slide it fully into place, then insert the front thru-axle through the fork and hub (twist clockwise to start if threaded). For the rear wheel, align its hub with the frame dropouts (making sure the cassette lines up with the chain), push it all the way in, and insert the rear thru-axle through the frame and hub (thread clockwise to start if needed). Tighten both axles with the 8mm hex wrench—use the torque wrench to set the front to 12-15 N·m and the rear to 12-18 N·m (check frame specs)

Install the Chain

Wrap the chain around the front chainring and rear cassette, first ensuring the chain direction is correct: align any arrows marked on the chain with the bike's forward movement direction. For SRAM Flaptop chains, make sure the Flaptop (flat, wide side of the link) faces outward. Ensure the chain sits smoothly on the teeth with no twists. Bring the two ends of the chain together—for quick-release links, push the pins into the link until it clicks; for rivet-style chains, use a chain tool to press the rivet through both ends (stop before it fully exits the outer plate).

Pull the chain gently to check if it's secure (no slack or looseness). Shift through all gears to confirm the chain moves freely between the chainring and cassette, then spin the cranks to ensure no skipping or rubbing.

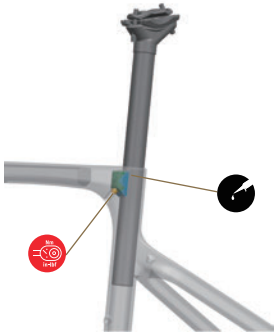


Install the Seat and Seatpost

Install Seatpost to Bike

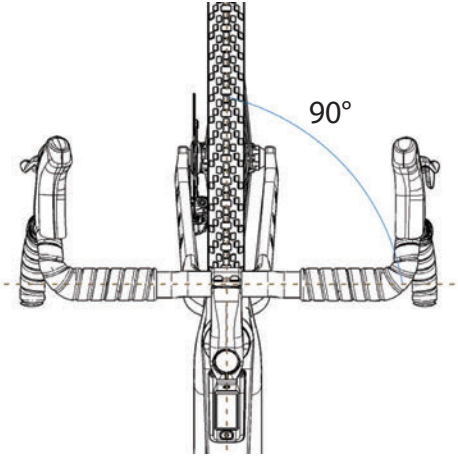
- Insert the seatpost's seat clamp into the notch inside the bike's seat tube (from the top of the seat tube).
- Take an M4 screwdriver, insert the M4 screw through the underside joint of the bike's top tube and seat tube, and connect it to the fixing slider inside.
- Slide the seatpost (with saddle attached) into the seat tube to your desired height.
- Rotate the M4 screw with the screwdriver to clamp the seatpost tightly, then use a torque wrench to lock it to 6 N·m.

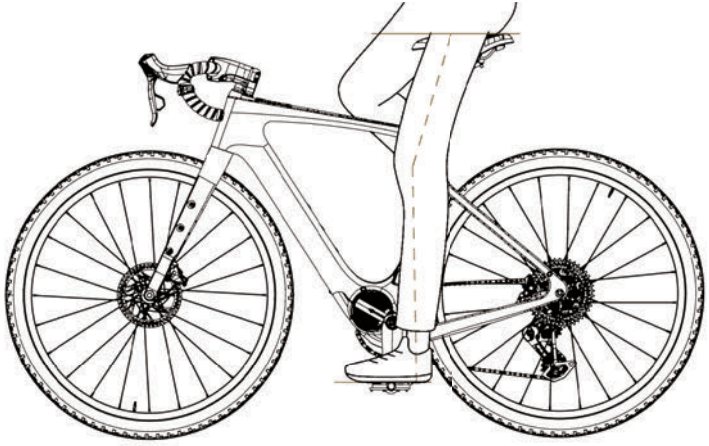
Mount Saddle to Seatpost: Align the saddle's rails with the seatpost's clamp. Slide the clamp over the rails to your preferred saddle position, then tighten the clamp bolts (use a suitable wrench) until the saddle is secure and doesn't tilt or slide.



Before Your First Ride:

Before start your first ride, make sure that all assembly and adjustment has been properly completed. Assemble the bike in strict accordance with the instructions. Complete the initial setup of the bike. Properly adjust the tires and suspension (If have). It is recommended that the seat be adjusted to the proper height according to the riding position shown in the illustration, The handlebar must be kept 90 degrees (perpendicular to the front wheel) and locked. E-bikes are significantly different from ordinary bicycles. Before riding, be sure to fully understand the functions of each component such as the brakes, transmission, seat and drive system. Read the safety guidelines carefully before use. Strictly observe the intended use of the e-bike, load limitations and all relevant laws and regulations.





DEFY THE LIMIT.

VELDURO