2021 POWERFLY FULL SUSPENSION

SERVICE MANUAL SUPPLEMENT

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NOTE This manual has the unique design features and components for the 2021 Powerfly FS bicycle.

2021 Powerfly Full Suspension service manual supplement

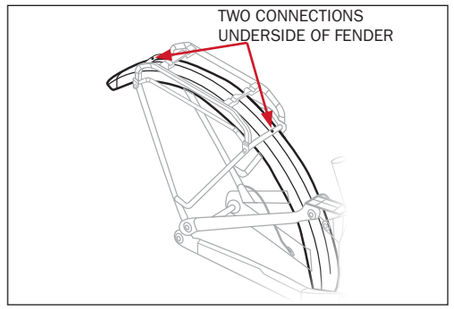
Install the rear fender and rear rack

The rear fender and the rear rack are installed together as an assembly.

1. Remove the rear wheel.
2. From the underside of the fender, use the two M5x0.8x14mm button head bolts and M5 flat washers to attach the rack to the fender.

NOTE Make sure these bolts have threadlocker applied.

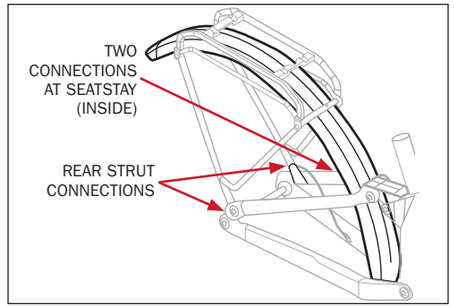
   a. If you are reusing these bolts, clean with isopropyl alcohol and apply Loctite 242 threadlocker or similar prior to attachment.



3. Torque the two bolts to 6Nm.
4. Route the rear light cable connections up through the inside of the non-driveside rack strut.

NOTE The light cable connectors are on the inside of the non-driveside chainstay.

5. Connect the cable connections to the rear light.
6. Attach the fender/rack to the two holes at the top of the seatstay.



7. Attach the fender/rack struts to the holes at the rear of each chainstay.

NOTE Make sure chainstay bolts have threadlocker applied.

   a. If you are reusing the chainstay bolts, clean with isopropyl alcohol and apply Loctite 242 threadlocker or similar prior to attachment.

8. Torque the chainstay bolts to 6Nm.

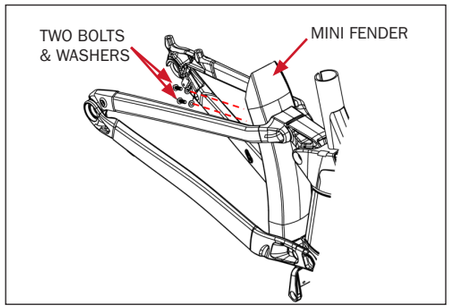
Install the rear mini fender

1. Remove the rear wheel.
2. Use the two M5x0.8x14mm bolts and flat washers to attach the mini fender to the two holes at the top of the seatstay.

NOTE Make sure these bolts have threadlocker applied.

   a. If you are reusing these bolts, clean with isopropyl alcohol and apply Loctite 242 threadlocker or similar prior to attachment.

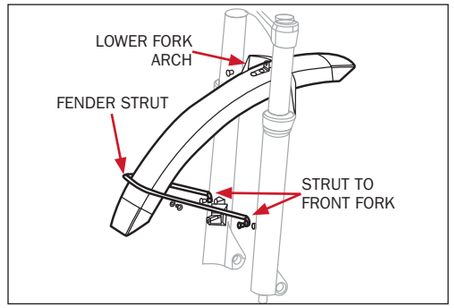
3. Torque the bolts to 6Nm.



Install the front fender

NOTE The 27.5 model has a different front fender than the 29er model.

1. Use an M5 bolt and washer to attach the U-shaped front fender strut to the fender.



2. Torque the bolt to 2.5Nm.
3. Use an M6 bolt to attach the fender and strut assembly to the lower fork arch.

NOTE Make sure the lower fork arch bolt has threadlocker applied.

   a. If you are reusing the fork arch bolt, clean with isopropyl alcohol and apply Loctite 242 threadlocker or similar prior to attachment.

4. Torque the bolt to 9Nm.
5. Use two M5 bolts to attach the struts to the front fork.

NOTE Make sure the strut bolts have threadlocker applied.

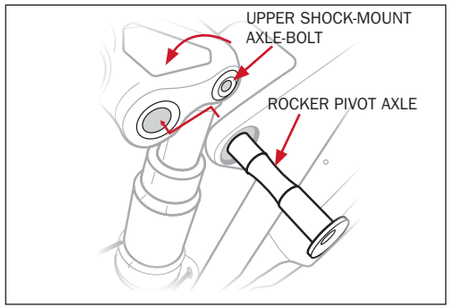
   a. If you are reusing the strut bolts, clean with isopropyl alcohol and apply Loctite 242 threadlocker or similar prior to attachment.

6. Torque the strut bolts to 6Nm.

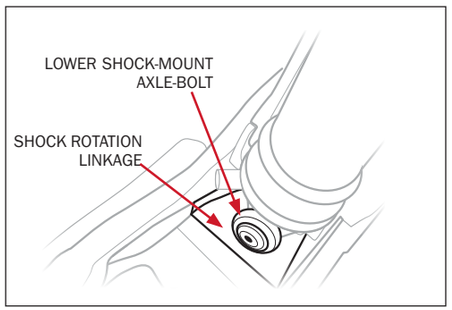
Remove the rear shock

1. Remove the rear fender.
2. Remove the rear wheel.
3. Remove the end cap bolt (non-drive side) and the rocker pivot axle (drive side).

NOTE Do not remove the bearings and spacers at this pivot location.

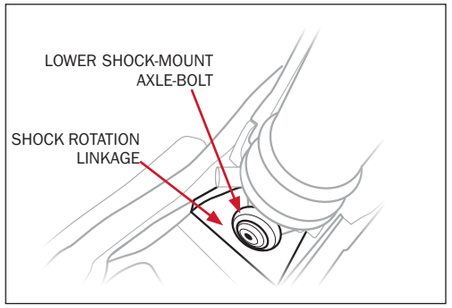


4. Pivot the seatstay rearward to expose the top shock mount.
5. Remove the upper shock-mount axle-bolt.
6. Remove the lower shock-mount axle-bolt from the shock rotation linkage.



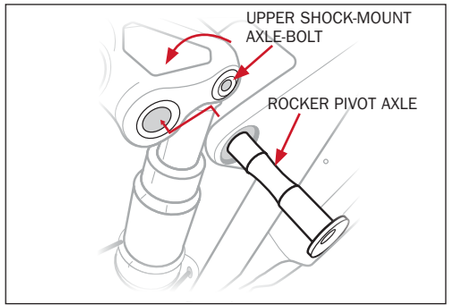
Install the rear shock

1. Attach the lower shock-mount axle-bolt in the shock rotation linkage.



2. Torque the bolt to 10Nm.

3. Attach the upper shock-mount axle-bolt.



4. Torque the bolt to 10Nm.

5. Pivot the seatstay forward to align the rocker pivot axle with the seatstay mounting hole.

6. Grease the driveside bearing bore.

7. Insert the rocker pivot axle (drive side).

NOTE Make sure there is a spacer inside and a bearing outside in the seatstay hole.

8. Grease the non-driveside bearing bore.

9. With the spacer, bearing and rocker pivot axle installed from the drive side, install the end cap bolt in the non-drive side.

NOTE Make sure there is a spacer inside and a bearing outside in the seatstay hole.

10. Torque the rocker pivot axle to 17Nm.

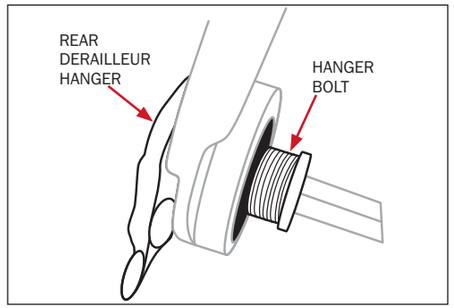
11. See page 1 to reinstall the rear fender and rear rack, or page 2 to reinstall the rear mini fender.

Install the rear derailleur hanger

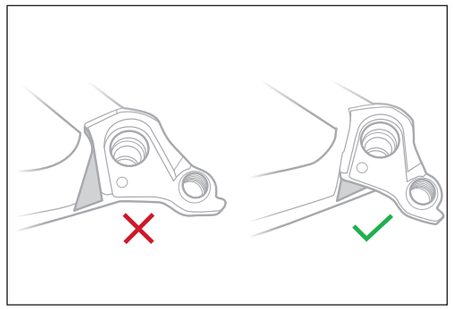
⚠ CAUTION: Do not apply grease between the hanger and the bicycle frame.

⚠ CAUTION: Do not apply grease to the UDH bolt threads.

1. Insert the hanger on the inside of the driveside chainstay (2-piece swing arm) and attach with the hanger bolt (left-hand thread).



2. Make sure to have the hanger in the correct position as shown.

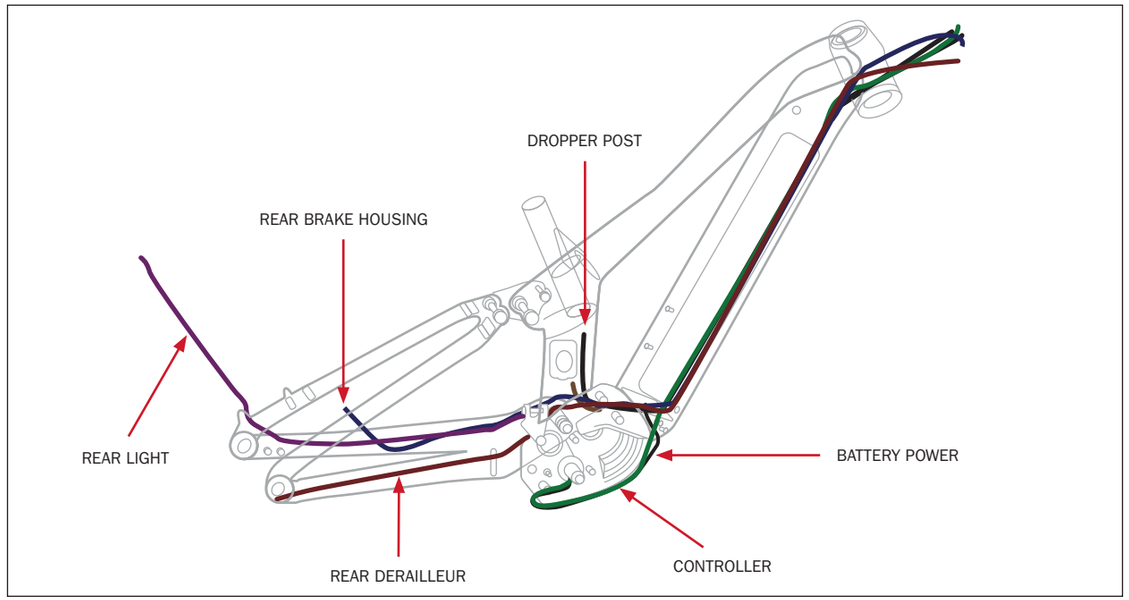


3. Torque the hanger bolt to 25Nm (left-hand thread).

Cable routing

Cable	Color
Shifter	Red
Dropper	Black
Controller	Green
Rear brake	Blue
Battery power	Gray
Rear light	Pink
Speed sensor	Yellow
Charge port	Orange

NOTE The rear light cable routes through the non-driveside chainstay, then up internally through the rack strut to the light.



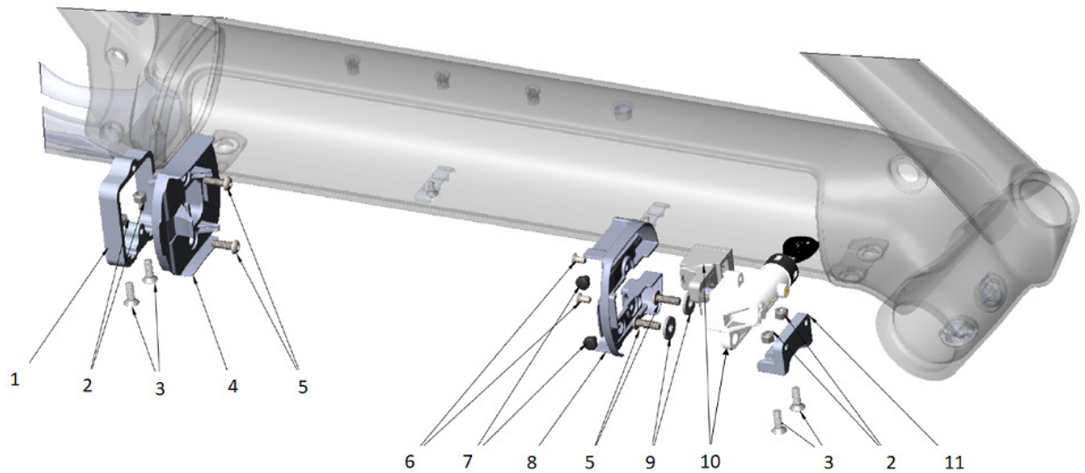
Remove the early Bosch RIB system

NOTE This can be done without removing the drive unit from the bike frame.

NOTE Save all fasteners, bumpers, and lock assembly for installation.

Parts list

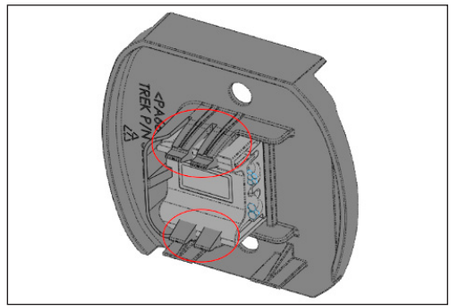
1. Lower docking bracket
2. Two nylon-insert locknuts (M5) from the upper and lower docking brackets
3. Four T25 security screws
4. Powertube connector plate
5. Two button head cap screws (M5x.8x16mm) from the upper and lower docking brackets
6. Two countersunk bolts (M4x0.7x8mm)
7. Two bumpers
8. Lock cover
9. Two washers
10. Lock assembly
11. Upper docking bracket



Remove the early Bosch RIB system

1. Remove the RIB battery from the downtube.
2. Note the cable routing paths. The cable routing will be the same for the installation.
3. Remove the key from the battery lock.
4. Remove the two bolts (6), the two bumpers (7), and the lock cover (8) from the upper docking.
5. Remove the two button head screws (5), the washers (9), and the lock assembly (10).
6. Remove the two T25 security screws (3) and the two locknuts (2), and the upper docking lock (11).
7. Set aside the screws (5), (6), bumpers (7), and locknuts (2) for reuse.
8. Set aside the lock assembly (10) for re-installation.
9. Remove the two button head screws (5) from the lower docking.
10. Carefully extract the connector plate (4) and find the connection point for the battery plug.
11. Disconnect this connection point from the battery plug.
12. Remove the two T25 security screws (3), the locknuts (2), and the lower docking bracket (1). Completely remove the lower docking sub-assembly from the bicycle.
13. If installing the new RIB system, remove the existing battery connection plug from the lower connector plate (4).

NOTE To aid removal, you may need to use a pair of cutters to clip off some or all of the plastic hooks as shown. This plastic connector plate will not be reused with the new RIB system.



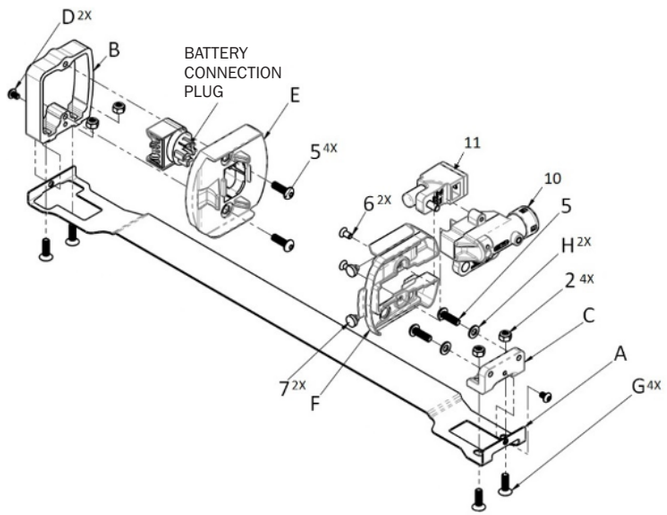
Install the early Bosch RIB system

1. Check that the cables running along the bottom and/or top of the down tube are firmly held in place and in the same routing paths from the removal.
2. Use the two T25 security screws (3), the locknuts (2) to install the lower docking bracket (1).
3. Carefully connect the battery plug in the connector plate (4) to the battery connection on the drive unit.
4. Use the two button head screws (5) to install the connector plate (4).
5. Use the two T25 security screws (3) and the two locknuts (2) to install the upper docking lock (11).
6. Use the two button head screws (5), the washers (9) to install the lock assembly (10).
7. Use the two bolts (6), the two bumpers (7) to install the lock cover (8) to the upper frame docking.
8. Insert the key into the battery lock.
9. Install the RIB battery in the down tube.
10. To test the connection, try to slide the battery toward the head tube with the system powered on.
11. Update the software per the manufacturer's process.
12. Perform the battery install and eject standard operating procedure.

Remove the new RIB system

Parts list

Description **NOTE:** The lettered parts are for the new RIB system. The numbered parts are re-used from the old RIB system.	Item #
A. Alignment plate Length of plate corresponds to length of battery opening in down tube.	PN W5252100 (500Wh) PN W5252805 (625Wh)
B. Lower metal docking bracket	Kit PN 5256255
C. Upper metal docking bracket	
D. Two 6mm button head screws (with threadlocker)	Kit PN 5257257
2. Two nylon-insert locknuts (M5)	
5. Two button head cap screws (M5x.8x16mm)	
6. Two countersunk bolts (M4x0.7x8mm)	
G. Four 16mm T25 security screws (no threadlocker)	
H. Two 10mm washers	
E. Lower battery-plug mounting cover	Kit PN 5256256
F. Upper plastic lock cover	
7. Two bumpers	
10. Lock assembly	PN W591941
11. Plunger	PN 564539



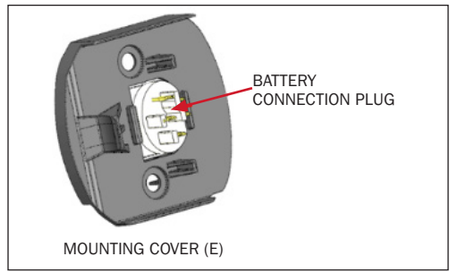
Remove the new RIB system

1. Remove the RIB battery from the down tube.
2. Note the cable routing paths. The cable routing will be the same for the installation.
3. Remove the key from the battery lock.
4. Remove the two bolts (6), the two bumpers (7), and the upper plastic lock cover (F).
5. Remove the plunger (11) and the lock assembly (10).
6. Remove the two button head screws (5) and the washers (H) from the upper metal docking bracket (C).
7. Remove two button head screws (5) and the lower battery-plug mounting cover (E) with the battery plug.
8. Thread the battery plug connection through the lower metal docking bracket (B) and remove the plug connection.
9. Remove the four T25 security screws (G) and the locknuts (2) to remove the alignment plate (1) with the upper (C) and lower (B) docking brackets as a sub-assembly.
10. Remove the two button head screws (D), and the upper (C) and lower (B) docking brackets from the alignment plate (A).

Install the new RIB system

1. Install the existing battery connection plug into the new lower battery plug mounting cover (E).

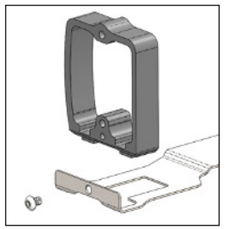
NOTE Make sure the cables running along the bottom and/or top of the down tube are firmly held in place.



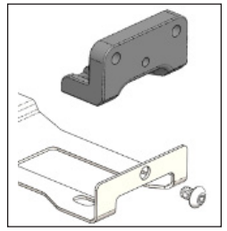
2. Use one button head screw (D) each to pre-assemble the alignment plate (A) with the lower metal docking bracket (B) and the upper metal docking bracket (C).

3. Torque the two screws (D) to 3Nm.

NOTE To avoid possible stripping, make sure your hex driver is not worn.

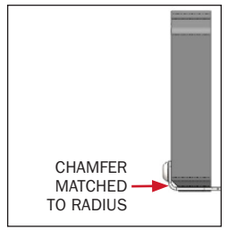


LOWER BRACKET

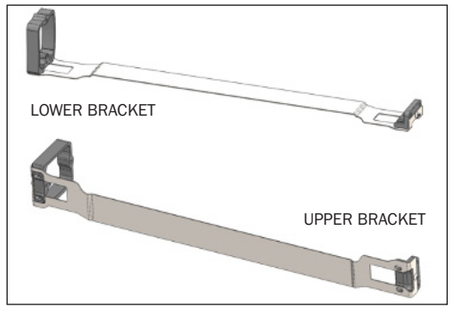


UPPER BRACKET

NOTE Make sure the chamfer on the lower metal docking bracket (B) is pointed toward the bend in the alignment plate as shown.



NOTE This metal docking bracket has 'DRIVE SIDE' laser etched on the side for proper assembly.



COMPLETED SUB-ASSEMBLY

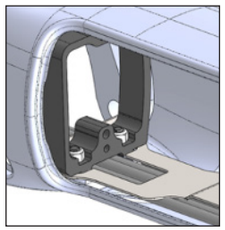
4. Place the sub-assembly into the down tube.

NOTE The underside of the alignment plate has a directional arrow to show which end points to the head tube.

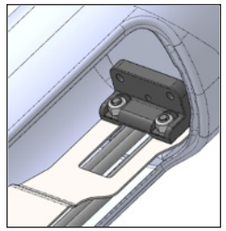
5. Grease the heads of the four new 16mm T25 security screws (G).

6. Use these four T25 security screws (G) and the locknuts (2) (from removal) to attach the sub-assembly. Do not fully tighten the screws at this time.

NOTE Make sure you do not crush or squeeze any cables running along the base of the down tube. Cable routing should match the original cable routing prior to this modification.



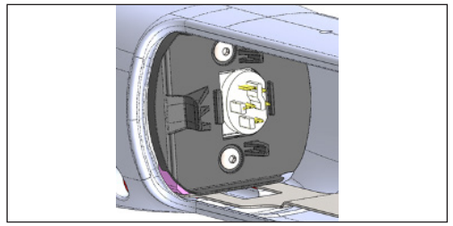
LOWER BRACKET



UPPER BRACKET

7. Apply threadlocker 242 or similar into the threaded holes in the dock mounts. Wipe away excess threadlocker to minimize the chance of contact with the nylon mounting cover (E).

8. At the lower bracket, thread the battery plug connection through the new lower metal docking bracket (B).



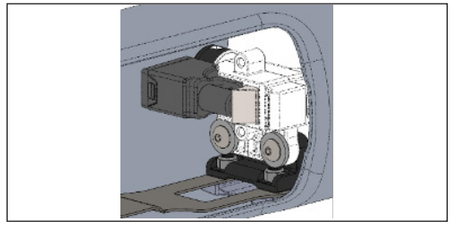
NOTE If you elected to leave the battery plug connected to the system when you removed the original plastic bracket (4) (from removal), go to step #10.

9. Reuse two button head screws (5) to install the lower battery plug mounting cover (E) with the battery plug (from Installation step 1).

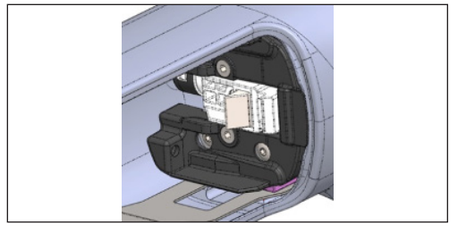
Do not fully tighten the screws at this time.

10. Use the two new washers (H) and reuse the button head screws (5) (from removal) to install the lock assembly (10) to the upper metal docking bracket (C).

11. Tighten the screws until the washers (H) slightly contact the lock core and you can still slide the lock core against the metal docking bracket (C) for adjustment.

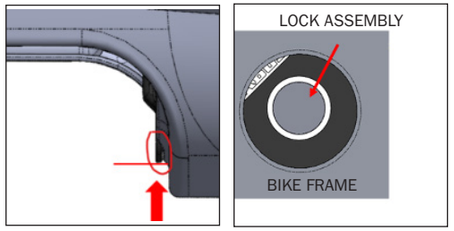


12. Reuse the two bolts (6) and the two bumpers (7) to install the upper plastic lock cover (F). Tighten the bolts to 2Nm.



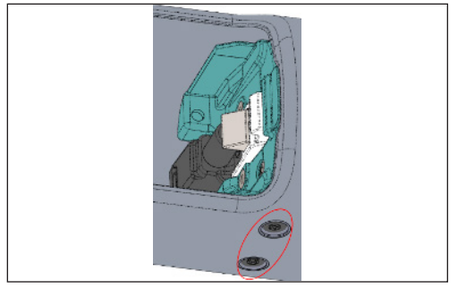
13. Push the upper plastic lock cover (F) toward the head tube until the small plastic tab is just touching the edge of the frame cutout. Do not apply excess pressure.

14. Check to make sure the lock is centered (as much as possible) in the bicycle frame hole.

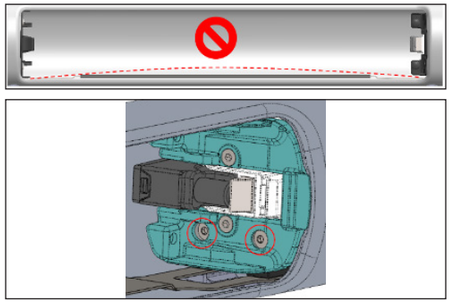


LOCK IS CENTERED IN FRAME

15. Once the lock is centered, snug – but do not fully tighten – the two security screws (G) in the bicycle frame.



16. Ensure the middle of the alignment plate is not bowed upward or downward and snug – but do not fully tighten – the two button head screws (5).



17. Slide the lower docking toward the drive side as far as it can go, and tighten the two T25 security screws (G) to 5Nm.

18. Slide the upper docking toward the drive side as far as it can go, and tighten the two T25 security screws (G) to 5Nm.

19. Install the RIB battery and observe if the battery appears to install and eject properly.

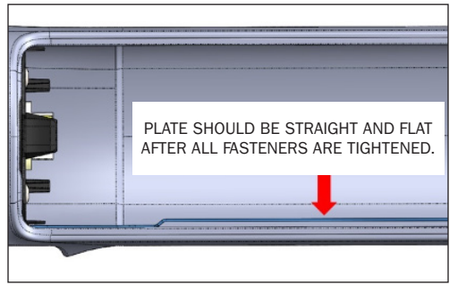
Because you have adjusted the dockings to their maximum driveside adjustment, the gap between battery and frame may be greater than desired.

20. Loosen the two button head screws (5) on each docking and adjust the driveside/non-driveside position of the dockings until you have a 2-3mm frame gap. Then torque the two upper and the two lower button head screws (5) to 5Nm.

21. You may see that the gaps at the upper and lower end of the battery are not symmetrical. This is okay from a functional standpoint. But you may, with caution, use the T25 security screws (G) to position the docking assembly farther down toward the motor. However, it is recommended that the best visual appearance be maintained at the upper edge of the battery, versus the lower.

22. After adjustments are complete, remove the battery and inspect the alignment plate

IMPORTANT: Make sure the alignment plate is straight and not bowed up or down.



23. Re-install the battery.

24. To test the connection, try to slide the battery toward the head tube with the system powered on.

25. Update the software per the manufacturer's process.

26. Perform the battery install and eject standard operating procedure.

Bosch drive unit removal/installation

See the appropriate Bosch removal and installation instructions for your drive unit.

Aftermarket spec limitations

- Chainline: 52
- Maximum chain ring: 46t
- Minimum chain ring: 34t
- Maximum tire size with full fender or mini: 2.4
- Maximum tire size without fender: 2.6