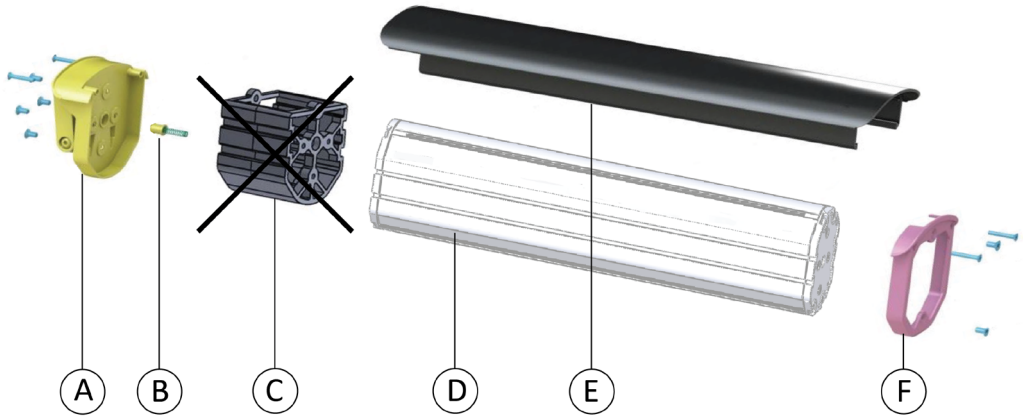
7.2. Upgrading a 500 Wh Powertube battery to a 625 Wh battery

The Trek Allant+7 bicycles are standard equipped with a 500 Wh Powertube battery.

A 625 Wh Powertube battery contains more battery cells to provide a higher capacity and is a bit longer in length- then a 500 Wh battery.

All bicycles with an 'Allant' frame however, have a battery bay dimensioned to fit the 625 Wh Powertube battery.

This means that it is technically possible to upgrade the standard 500 Wh battery to the 625 Wh battery, with a higher capacity, to boost the range.



Follow these steps to upgrade the battery (refer to the figure above):

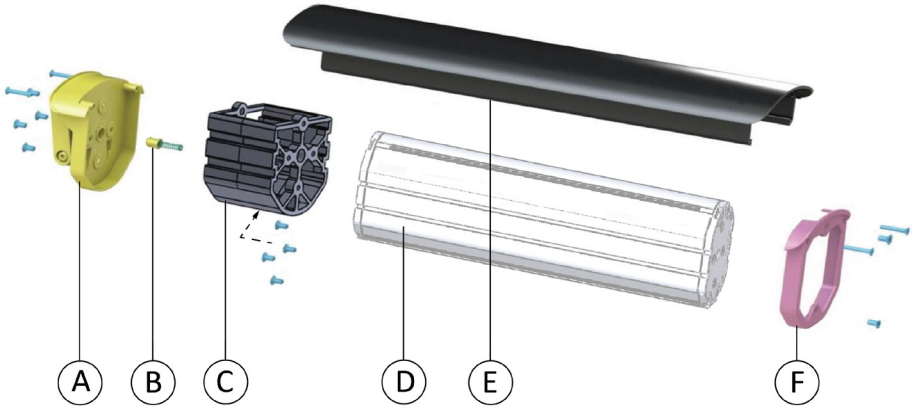
1. Switch off the assist system,
2. Remove the standard 500 Wh battery,
3. Dismount the battery cover, battery spacer, spring, handle and lower bracket (the spacer 'C' is left over). The cover slights off the battery to either side. Be careful not to lose the spring assembly 'B'.
4. Install the handle 'A', spring assembly 'B', cover 'E' and lower bracket 'F' to the new 625 Wh Powertube battery 'D'. **Be sure to mount the spring assembly 'B' in place!**
5. Install the new battery on the bicycle.
6. Switch on the assist system and check for normal operation.

Note.

The new battery will automatically be recognized by the Bosch assist system.

7.3. Downgrading from a 625 Wh Powertube battery to a 500 Wh battery

On bicycles with a standard 625 Wh Powertube battery mounted, it is possible to downgrade the battery to a 500 Wh Powertube battery. A 500 Wh Powertube battery contains less battery cells in comparison with a 625 Wh battery and is a bit shorter in length. To extend the length of a standard 500 Wh battery to fit in the 625 Wh battery bay, contact your Trek representative for a space kit.



Follow these steps to downgrade the battery (refer to the picture above):

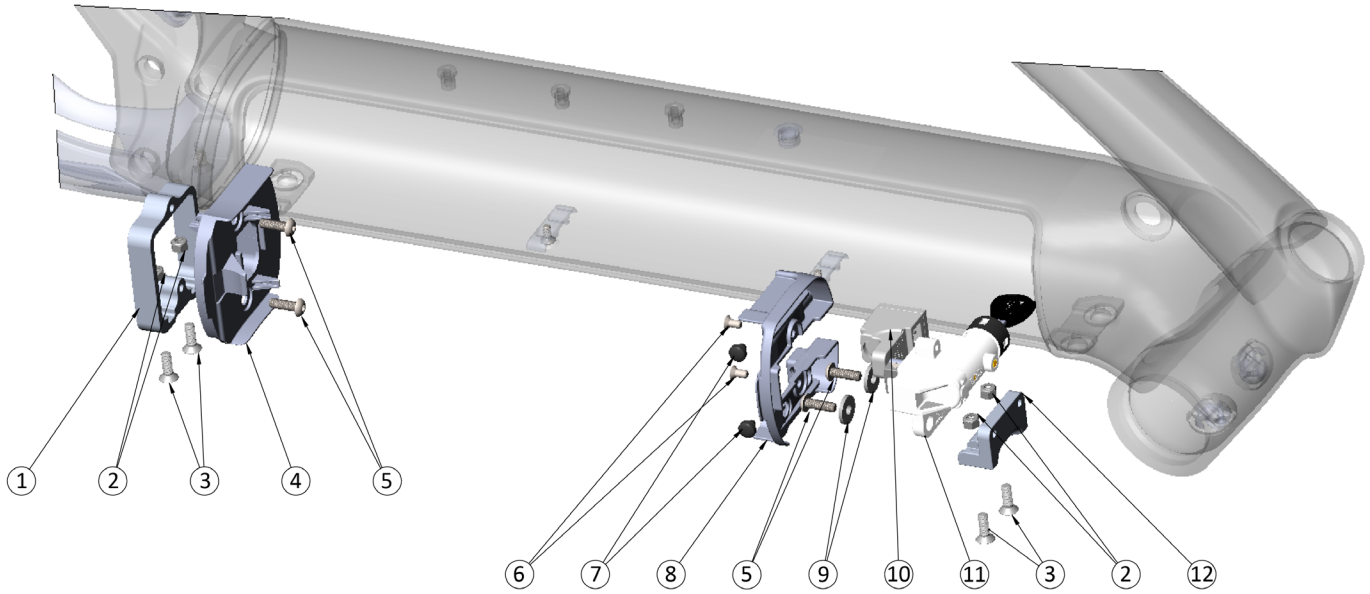
1. Switch off the assist system,
2. Remove the 625 Wh battery,

3. Dismount the handle ‘A’, lower bracket ‘F’ and battery cover ‘E’; the cover slights off the battery to either side. Be careful not to lose the spring assembly ‘B’.
4. Install the handle ‘A’, spring assembly ‘B’, battery spacer ‘C’, cover ‘E’ and handle ‘F’, to the new 500 Wh Powertube battery ‘D’. **Be sure to mount the spring assembly ‘B’ in place!**
5. Install the new battery on the bicycle,
6. Switch on the assist system and check for normal operation.

Note.
The new battery will automatically be recognized by the Bosch assist system.

7.4 Alignment of integrated battery

To position the battery in the middle of the battery bay, it is possible to adjust the position of both upper and lower battery docking.
The battery lock is part of the upper docking. The down tube is equipped with a hole to access the lock with the key to unlock the battery.



Overview of the battery mounting with upper and lower docking

1	RIB* lower docking bracket (Bosch)	7	RIB* bumper 2 (lock part)
2	Locknut M5x18-8, RVS, nylon-insert	8	RIB* lock cover
3	Screw, M5x0.8x15, RVS, T25-Bo hexalobular internal drive, (theft-deterrent). Torque to 15 Nm.	9	Washer M5
		10	RIB* Eject plunger assembly no M5 nut
4	Powertube connector plate (Bosch)	11	Abus+ lock assembly
5	Screw, M5x.8x16 mm button head cap. Torque to 5 Nm.	12	RIB* Abus upper docking lock (Bosch)
6	Bolt, M4x0.7x8 mm RVS, countersunk. Torque to 5 Nm.	*RIB = Removable Integrated Battery*	

Note. *The plastic plate on the upper and lower docking (no 4 and 8) move with the dockings.*

7.4.1 Pre-Inspection

Tools needed:

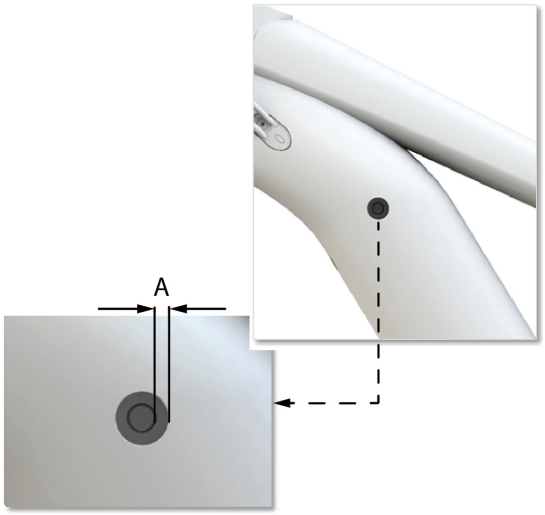
- 2 mm Allen key
- 3 mm Allen key

Follow these steps to check the alignment of the integrated battery:

1. Try to slide the battery down towards the drive unit.
2. Use a 2 mm Allen key to check for a 2 mm gap at the bottom of the battery, between frame and battery cover.

Check the gap at the bottom of the battery cover

3. Check that the key slot is centered within the keyhole in the frame.
   As a gauge, use a 3 mm Allen key to measure the minimum distance between the keyhole itself and the frame.



Check the position of the lock. A = minimum 3 mm

4. Check that the battery installs and ejects smoothly and quickly and does not miss the secondary catch when turning the key to release.

5. If any of the criteria in steps 2 through 4 are not satisfied, proceed to the top and bottom battery docking adjustment instructions.

7.4.2 Battery docking alignment at the top of the integrated battery

Tools needed:

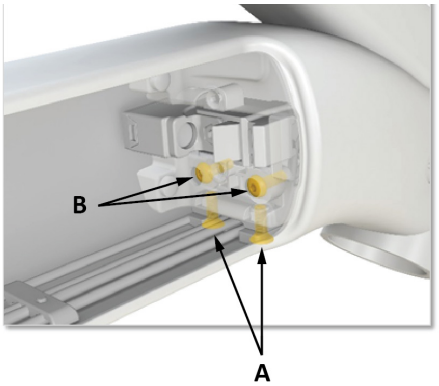
- Special bit; Torx TX25 Bo (e.g. Trek P/N 558561 or equivalent); Bo = with Bore

A special bit with bore is necessary to loosen the lock bolts

- Ratchet + bit adapter
- 2 mm Allen key
- 3 mm Allen key
- Small, flat screwdriver

To adjust the position of the battery, follow these steps:

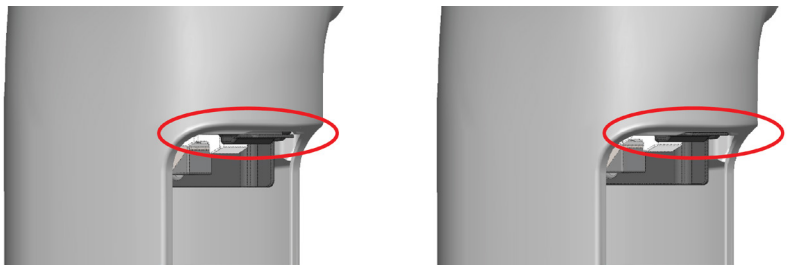
1. Use a Torx security bit (Trek P/N 558561) to loosen the two T25 security bolts (pos. A) on the outside of the down tube and, only if necessary, the two T25 bolts (pos. B) on the inside of the dock to allow the locking system to move around.



Upper docking; loosen T25 bolts A and B a few turns to adjust the position of the battery

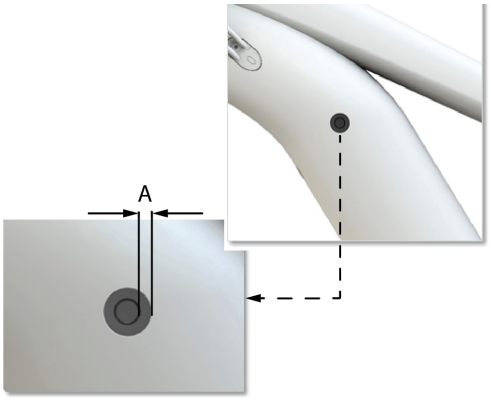
NOTICE.
Do not remove the bolts. Use caution to not fully unthread them from the internal locknuts. Loosen them only enough to expose the underside of the fastener head.

2. Apply grease inside the two countersink holes of the security bolts when the bolts are loose. This will help make torqueing the bolts easier when you re-assemble the system.
3. With grease applied, make sure all four bolts are still loose, so the bracket and the lock are able to slide.
4. Locating the lock.



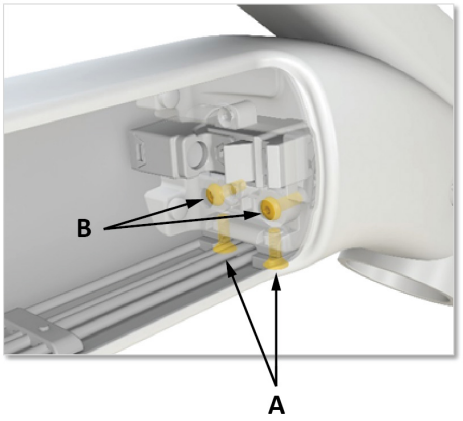
Incorrect - gap existing *Correct - no gap*

A. On the drive side, the tab of the plastic cover should be centered within the gap of the frame. There should be no gap between the plastic tab and the frame.
B. On the non-drive side down tube, preferably the lock is centered within the hole of the frame. Adjust as necessary. Refer to the Pre-Inspection section par. 7.4.1. on page 39 for the centering criteria.



Preferably the lock is centered within the hole of the frame, A = minimum 3 mm

5. Use the Torx security bit (Trek P/N 558561) to torque the four T25 bolts (A and B) to 5 Nm.



Torque the four T25 bolts (A and B) to 5 Nm to secure the upper docking

Notes.

- *After aligning the integrated battery, check the bicycle for normal operation.*
- *Check if the battery can be removed and installed easily without jamming.*

7.4.3 Battery docking alignment at the bottom of the integrated battery

Tools needed:

- Special bit; Torx TX25 Bo (e.g. Trek P/N 558561 or equivalent); Bo = with Bore

A special bit with bore is necessary to loosen the lock bolts

- Ratchet + bit adapter
- 2 mm Allen key
- 3 mm Allen key
- Small, flat screwdriver

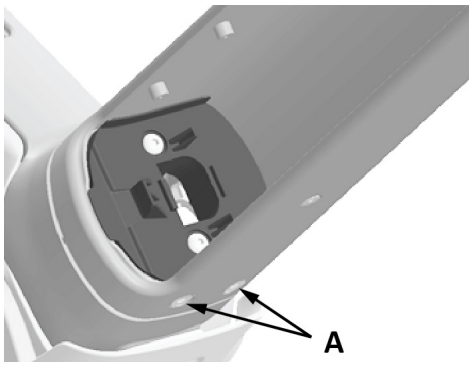
To adjust the position of the battery, follow these steps:

1. Use a Torx security bit (Trek P/N 558561) to loosen the two T25 security bolts on the outside of the down tube to allow the locking system to move around. Do not remove the bolts.

NOTICE.
Do not remove the bolts. Use caution to not fully unthread them from the internal locknuts. Loosen them only enough to expose the underside of the fastener head.

Notes.

- *You may need to remove a drive unit cover or charge port to gain access to these bolts.*
- *Make sure the two Torx bolts on inside of the bottom of the top tube are torqued to 5 Nm.*



Lower docking; loosen the two T25 bolts a few turns to adjust the position of the battery at the lower end

2. Apply grease inside the two countersink holes when the bolts are loose. This will help make torqueing the bolts easier when you re-assemble the system.
3. Protect the paint with some protective tape and tap carefully on the bolts with a soft rubber hammer to make sure the nuts on the inside are loose.

Protect the paint with some tape and use a soft rubber hammer to make sure the nuts inside are loose

4. With grease applied, make sure the two bolts are still loose so the bracket is able to slide.
5. Fully install the battery into the frame.
6. Hold the battery in place and use a Torx T25 Bo security bit (Trek P/N 558561) to torque the two bolts to 5 Nm.
7. Attempt to pull the battery downward, along the down tube, toward the drive unit to ensure it is seated against the lower docking.
8. Use a 2 mm Allen key to check for a minimum 2 mm gap at the bottom of the battery.
9. If the gap is less than 2mm, remove the battery and loosen the Torx bolts.
10. Adjust the lower docking up by 1 mm. The plastic tab may not be contacting the frame at this point. This is okay.

    Note.

    You may wish to remove the drive unit and push upward on the loosened lower docking, with the battery installed. Then you will be able to dynamically check the battery-to-frame gap.

11. When the gap is satisfactory at a minimum of 2 mm, torque the outside Torx bolts to 5 Nm.

Check the gaps at the bottom of the battery cover with the use of a 2 mm Allen key

12. If the gap is not satisfactory, repeat steps 5 through 10 (using a 2 mm or 3 mm Allen key) until the gap is a minimum of 2 mm.
13. Torque the two T25 bolts to 5 Nm.

Notes.

- *After aligning the integrated battery, check the bicycle for normal operation.*
- *Check if the battery can be removed and installed easily without jamming.*

7.4.4 Battery-to-frame final alignment

Tools needed:

- Special bit; Torx TX25 Bo (e.g. Trek P/N 558561 or equivalent); Bo = with Bore

A special bit with bore is necessary to loosen the lock bolts

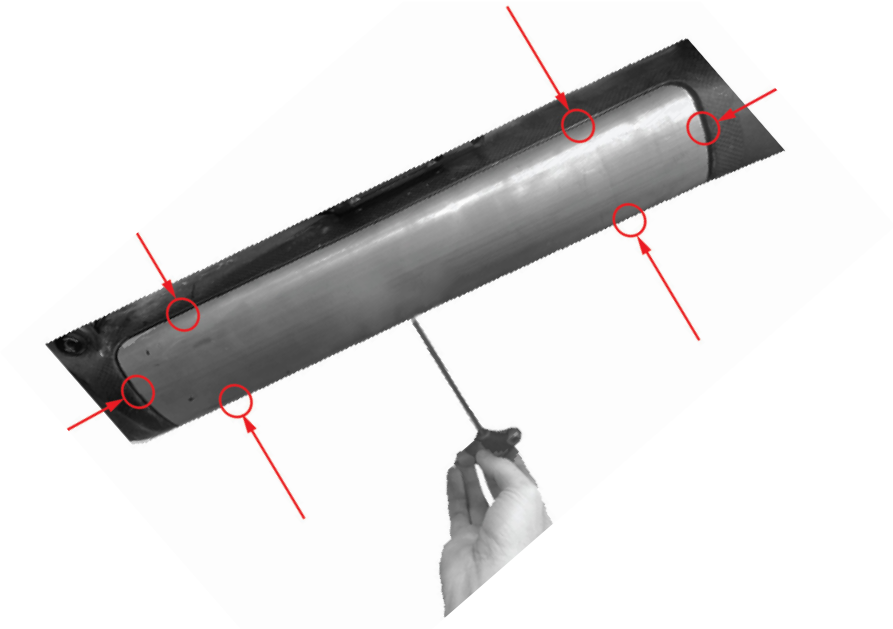
- Ratchet + bit adapter
- 2 mm Allen key
- 3 mm Allen key
- Small, flat screwdriver

To adjust the position of the battery, follow these steps:

1. Loosen the two upper and two lower T25 Torx bolts on the inside of the battery docks.
   Keep the bolts snug so there is some resistance during this adjustment.

Loosen bolts A (upper docking) and B (lower docking) to adjust the battery-to-frame position

2. Fully install the battery.
3. Adjust the battery so there is a uniform gap along the entire length of the battery-to-frame fitting.
4. Use a 2- or 3- mm Allen key as a feeler gauge to achieve a uniform and symmetrical gap (minimum 2 mm).



Use a 2 or 3 mm Allen key to adjust the position of the battery and cover to archive symmetrical gaps

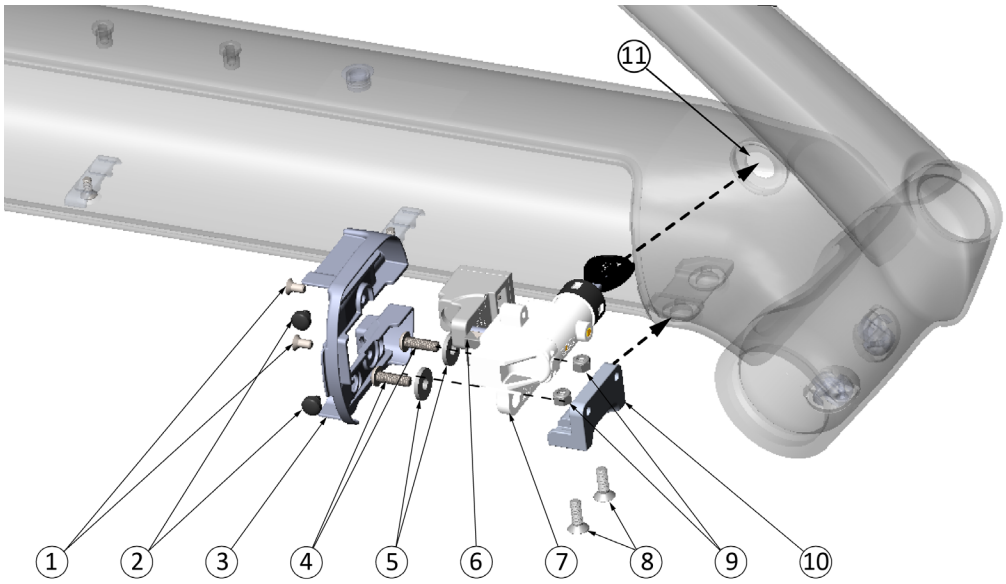
5. Remove the battery and torque the two upper and two lower inside bolts to 5 Nm.

6. With bolts tightened and the battery in place, check to make sure the minimum 2 mm gap is maintained along the battery-to-frame fit.
7. Repeat steps 1 through 6 if necessary.
8. Take out the battery to make sure the lock functions properly.

Notes.

- *After aligning the integrated battery, check the bicycle for normal operation.*
- *Check if the battery can be removed and installed easily without jamming.*

7.5 Replacing the battery lock



Overview of the battery lock mounting at the upper docking

1	Screw, M4x0.7x8 mm RVS, countersunk. Torque to 5 Nm.	7	Abus+ lock assembly
2	RIB* bumper 2 (lock part)	8	Screw, M5x0.8x15, RVS, T25-Bo hexalobular internal drive, (theft-deterrent). Torque to 15 Nm
3	RIB* lock cover	9	Locknut M5x18-8, RVS, nylon-insert
4	Screw, M5x0.8x16 mm button head cap. Torque to 5 Nm	10	RIB* Abus upper docking lock (Bosch)
5	Washer M5	11	Lock hole in frame
6	RIB* Eject plunger assembly	*RIB = Removable Integrated Battery	

The lock can be replaced from inside the battery bay, it is not necessary to remove the battery sleeve.

To replace the lock, follow these steps (refer to the figure above):

1. Remove the battery.
2. Remove the key from the lock.
3. Remove the screws (1) that holds the lock cover (3) and remove the cover.
4. Unscrew the bolts that secure the locking mechanism (4).

   Note.
   It is not necessary to remove the upper docking of the lock (10).

5. Replace the locking mechanism (7).
6. Tighten the screws (4) of the locking mechanism to 5 Nm.

   Notes.
   - *Ensure that the eject plunger assembly (6) is fitted correctly.*
   - *Check the postion of the lock relative to the frame hole.*

7. Install the lock cover and tighten the screws to 5 Nm.
8. Install the battery.

   Note.

   If necessary, fine-tune the position of the lock by moving the upper docking to have a correct fit .

   The battery fit should not be too loose (possibly leads to bad contacts or a rattling battery) or too tight (difficult to remove).

9. Install the battery and check the system for normal operation.

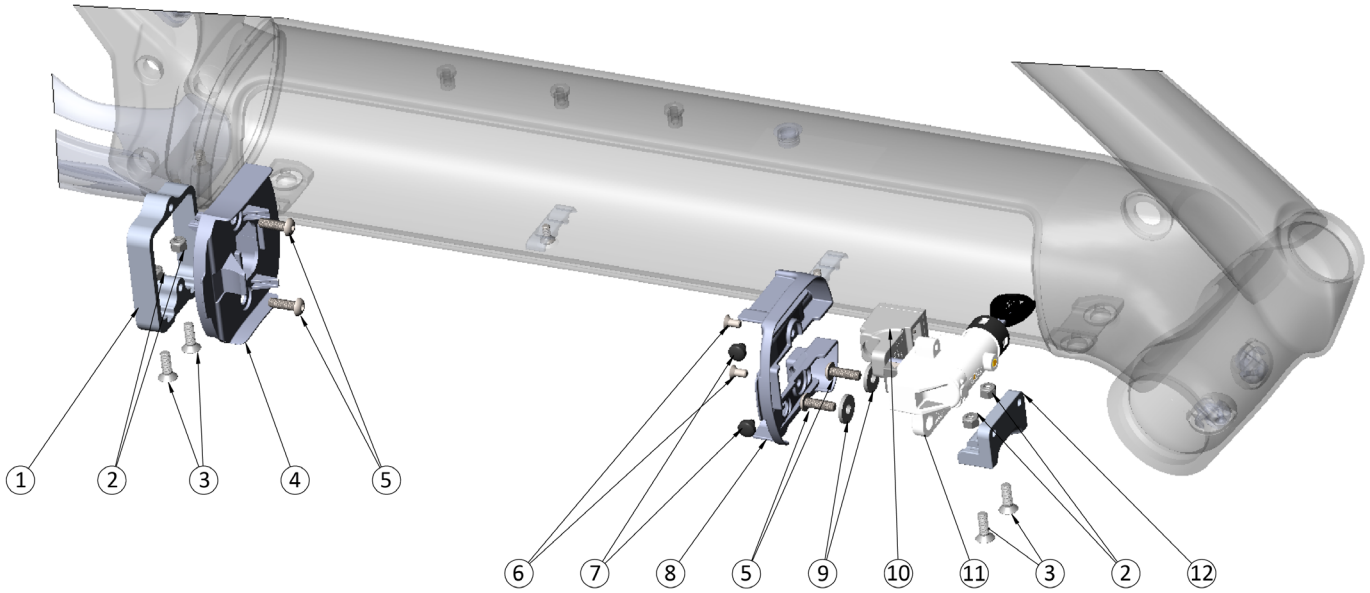
7.6 Battery removal if the key is lost

Tools needed:

- Special bit; Torx TX25 Bo (e.g. Trek P/N 558561 or equivalent); Bo = with Bore

A special bit with bore is necessary to loosen the lock bolts

- Ratchet + bit adapter
- Small, flat screwdriver



Overview of the battery mounting with upper and lower docking

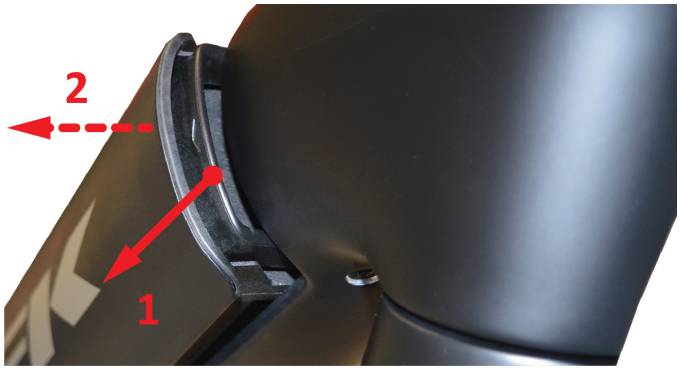
1	RIB* lower docking bracket (Bosch)	7	RIB* bumper 2 (lock part)
2	Locknut M5x18-8, RVS, nylon-insert	8	RIB* lock cover
3	Screw, M5x0.8x15, RVS, T25-Bo hexalobular internal drive, (theft-deterrent). Torque to 15 Nm.	9	Washer M5
		10	RIB* Eject plunger assembly no M5 nut
4	Powertube connector plate (Bosch)	11	Abus+ lock assembly
5	Screw, M5x.8x16 mm button head cap. Torque to 5 Nm.	12	RIB* Abus upper docking lock (Bosch)
6	Bolt, M4x0.7x8 mm RVS, countersunk. Torque to 5 Nm.	*RIB = Removable Integrated Battery*	

If the key for the lock is lost, the best option is to loosen the upper and lower battery docking (refer to the picture above).

1. From the outside the downtube, loosen all bolts (3) a few turns* to give maximum play to the upper and lower docking.

   Notes.

   - *Turn so far, that the nuts just do not come loose from the bolts thread (2 to 3 threads left).*
   - *Else, when you turn too far, the nuts will come loose, leading to much more work to replace the lock. Loose nuts are difficult to reach, so if this happens, the dockings must be taken apart to install the nuts (2) from the start.*



Removal of the integrated battery

2. Try to move the battery back and forth in the battery bay to free the batteries' security lock at the top docking.
3. Lift the battery out of the upper holder by pressing the security lock (1) and pull it out (2) of the top and lower holder to remove the battery from the bicycle.
4. Replace the lock, as described in paragraph 7.5 on page 45.
5. Align the battery as described in paragraph 7.4.2 to 7.4.4 on page 40 to 44.
6. After repairs, check the system for normal operation.

NOTICE
If the battery cannot be removed as described above, the bicycle must be shipped to a local Trek/Diamant service center for repairs.