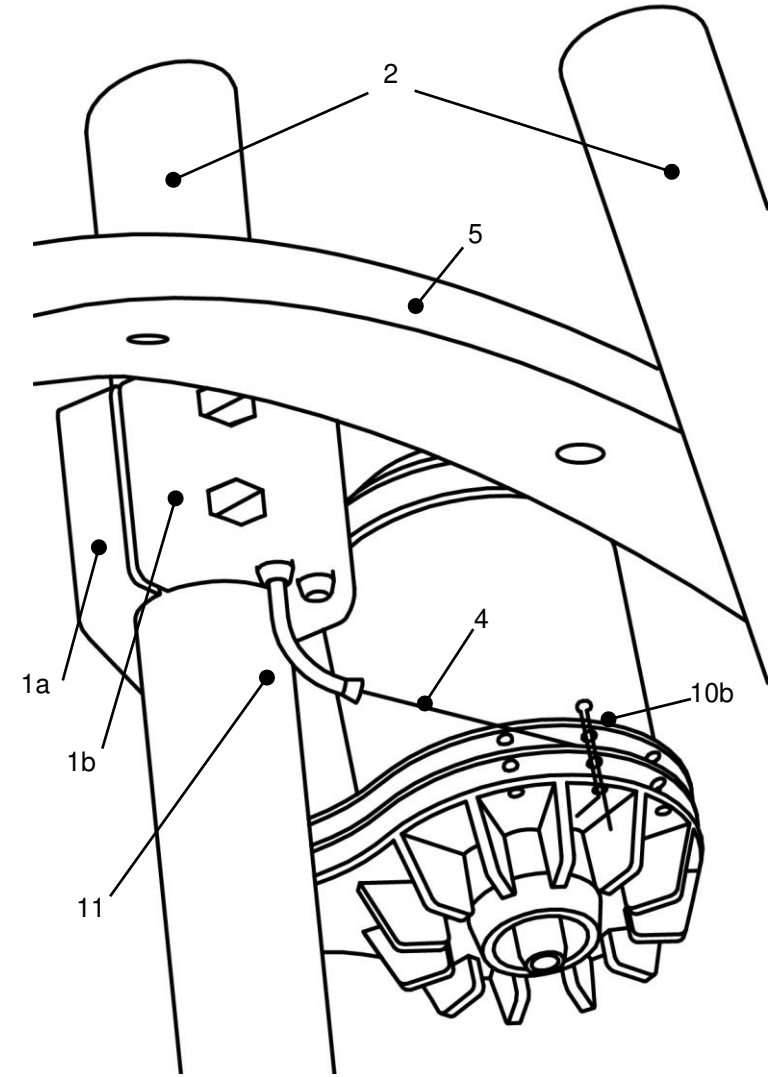
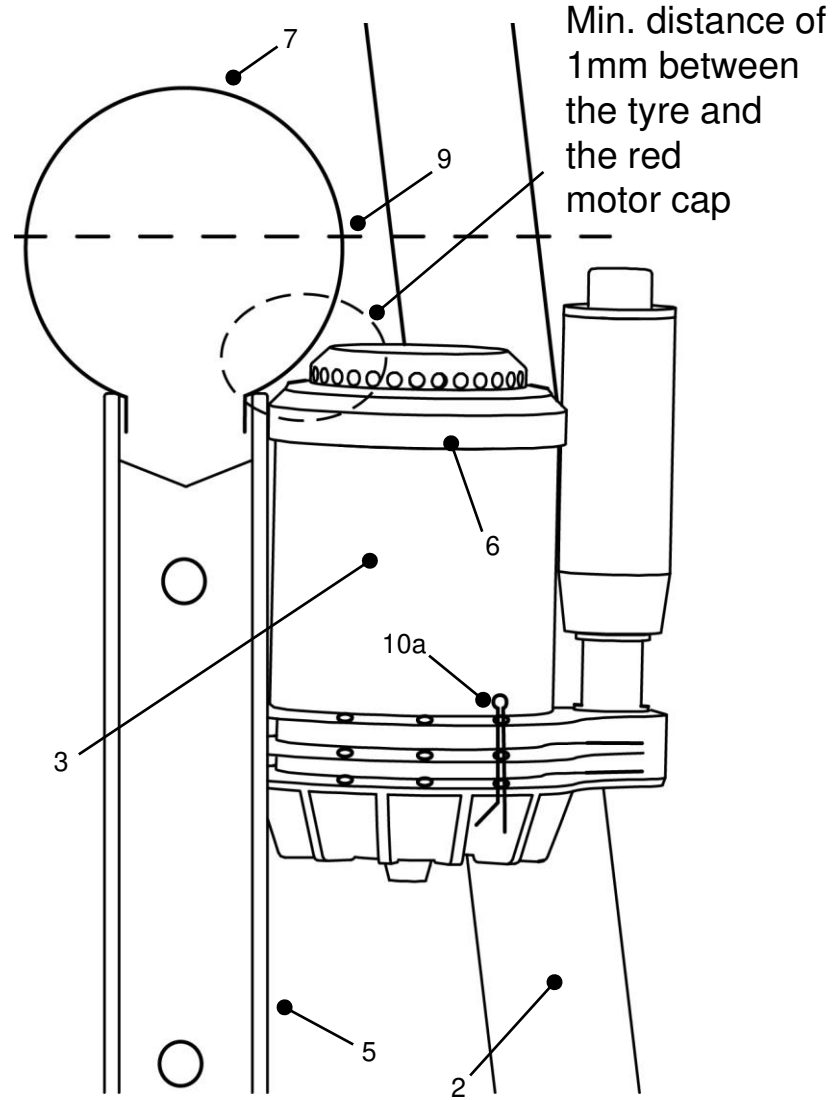
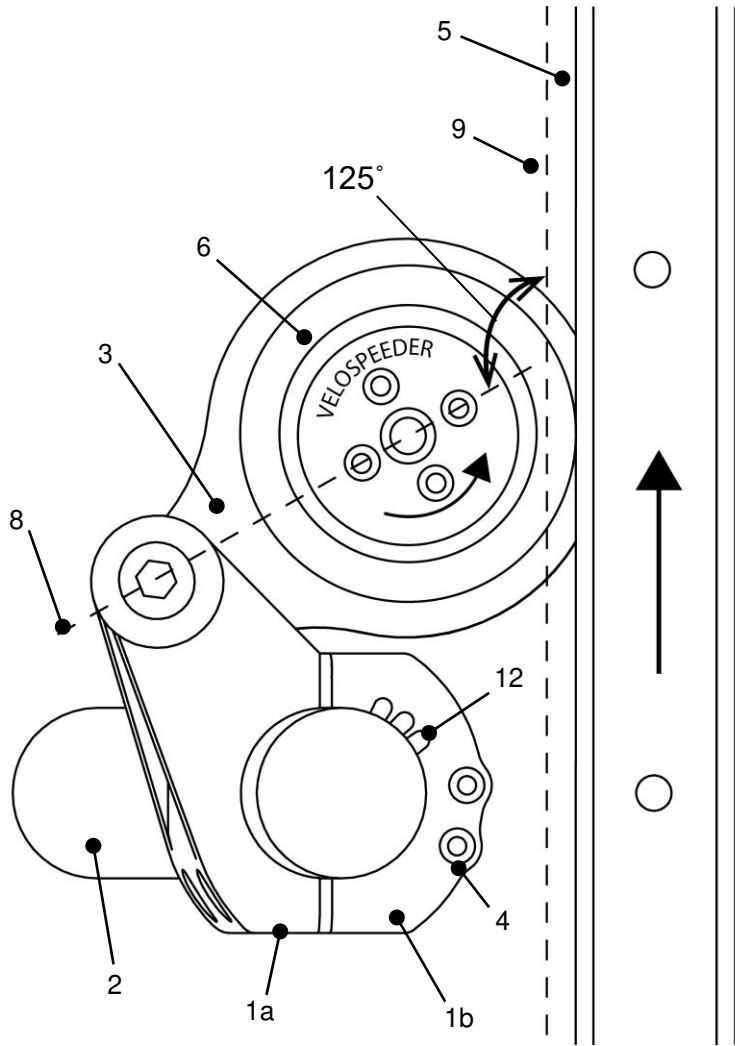


EM1a Assembly of the VELOSPEEDER with 3D bracket on round tube



1a,1b 3D motor bracket

2 Seat stay

3 Left-hand motor

4 Nylon string

5 Rim flank

6 Friction ring

7 Tyre

8 Connecting line of motor axis and swing axis

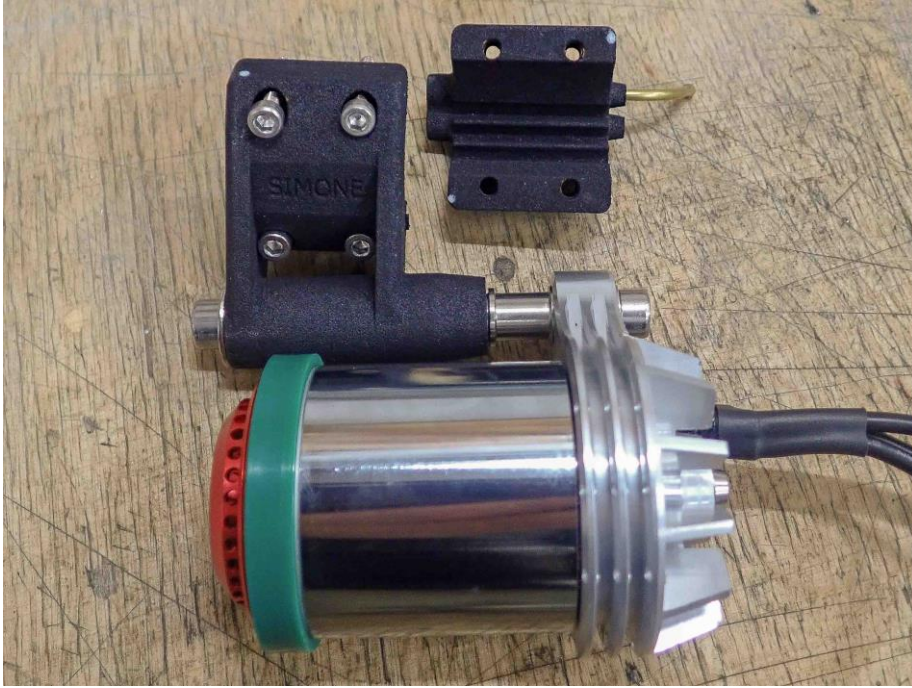
9 Contact position for the angle template

10a, 10b Cotter pin

11 Curved tube

12 Cable guide

Mounting the motor

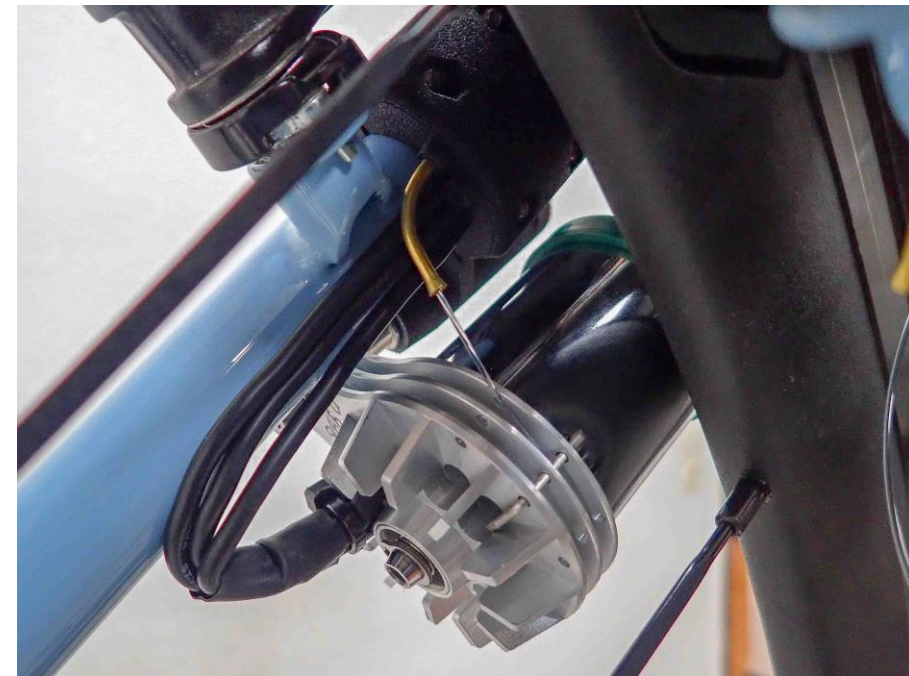


- Check the mounting position of the rear wheel: as the motors are aligned very precisely in relation to the rim, we recommend that you check the rear wheel is mounted in a reproducibly correct position. The lateral runout and symmetrical/central positioning of the rim in the frame should also be examined. If the lateral runout > 0.3 mm and/or the central offset of the rim > 1 mm, centring will be necessary so that the two deviations can be neutralized where possible. (Tip: Loosen the quick-release levers or the axle nuts on both sides, place the bike so that it is upright and exert a perpendicular downward pressure on the bike so that the rear axle is pressed evenly into the dropouts. Tighten the rear axle again while applying a gentle load).
- Remove any grease from the seat stay to ensure a secure grip for the 3D bracket (Tip: Disc brake cleaner is a good degreaser and does not attack most paint finishes.)

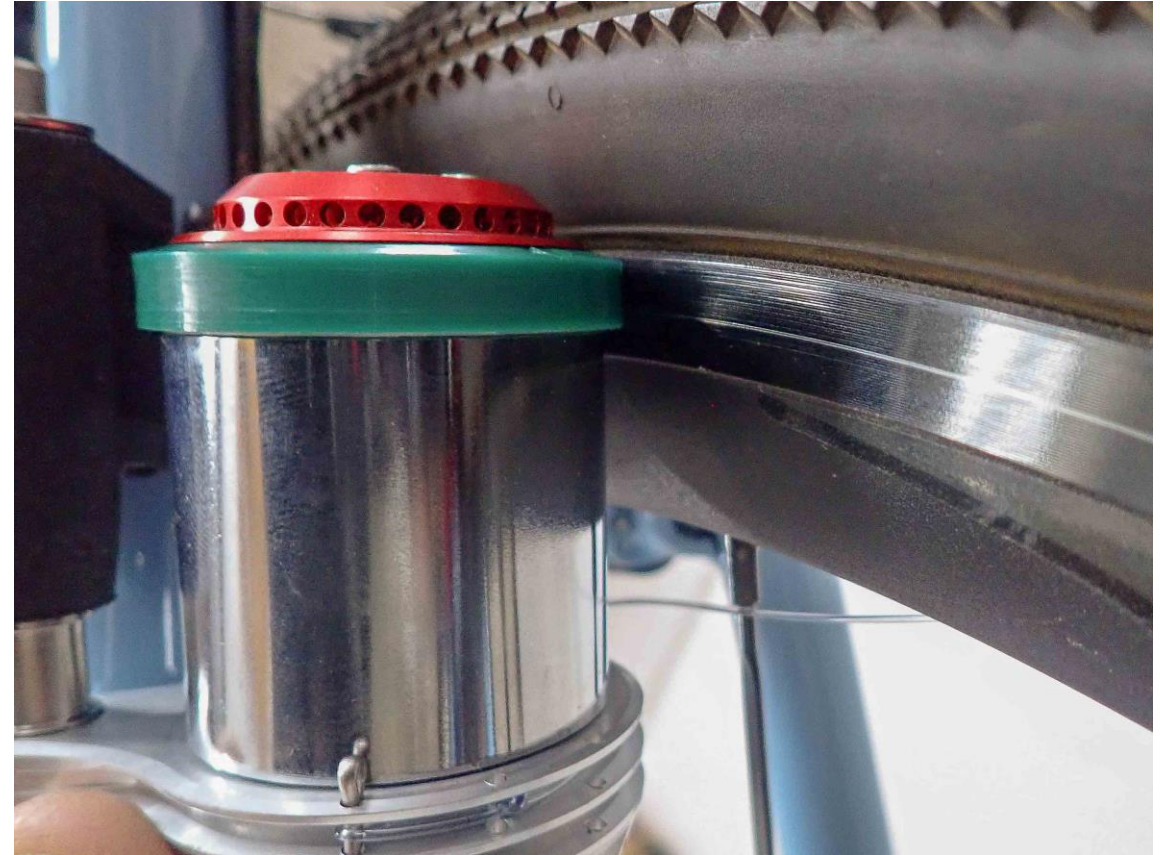
- Unscrew all four Allen screws from the left-hand motor bracket (1a, b). Hold the two halves of the block against the left-hand seatstay (2) and first fasten them provisionally with just two screws. Insert the left-hand motor (with red plug) and align roughly. Guide the three cables coming out of the motor upwards in a loop without crossing them and fasten them approx. 40 mm below the motor bracket with a small cable tie. Remove the rear half of the motor bracket (1b) and place all the cables in the grooves without crossing them. Now screw the motor bracket in place with all four screws but only so tight that it can still be moved/rotated. (Tip: The left motor mount 1a can be recognized by the "L", the right one by the "R" engraved on the underside.)



- Premount the nylon strings (4): For the long swing axis (usually on the long 3135 motor), the string lies between the two upper ribs of the motor base, in the short swing axis it lies between the two lower ribs. On the outside, the string is held by the cotter pin (10a) in the loop of the string, while, on the inside, cotter pin (10b) prevents the string from slipping out of the groove. The nylon string should follow a straight line into the mouth of the curved tube (11).

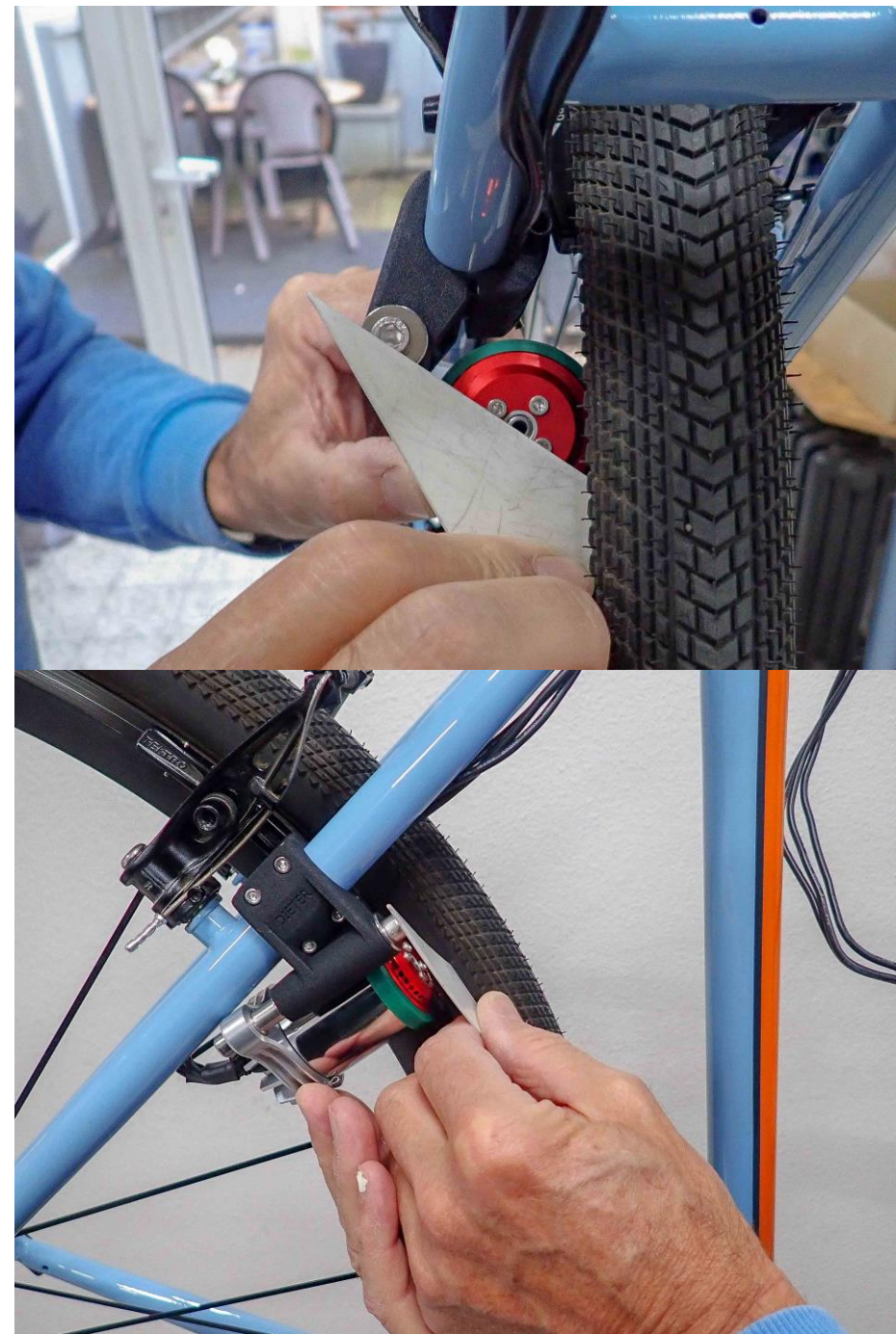
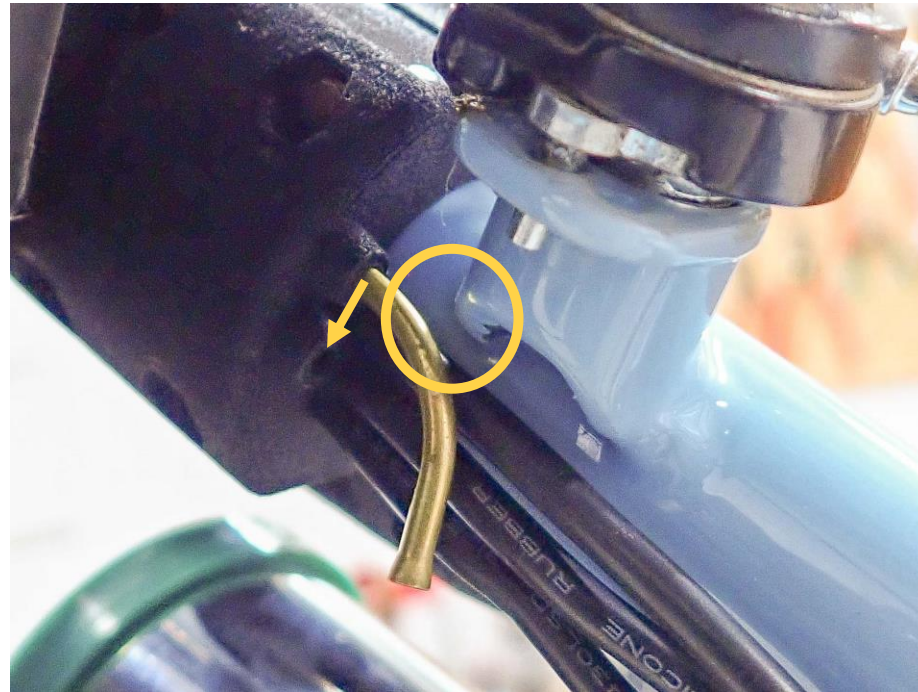


- Height adjustment: The friction ring (6) should contact the rim (5) as far out as possible, but must maintain a minimum distance > 1 mm between the red motor cap and the (fully inflated) tyre (7). (Tip 1: If the rim has a wear indicator groove, the friction ring should run either on the outer side or inner side of the groove. Tip 2: Check the minimum distance using an industrial cable tie with a thickness of 1.2 mm as a feeler gauge.)

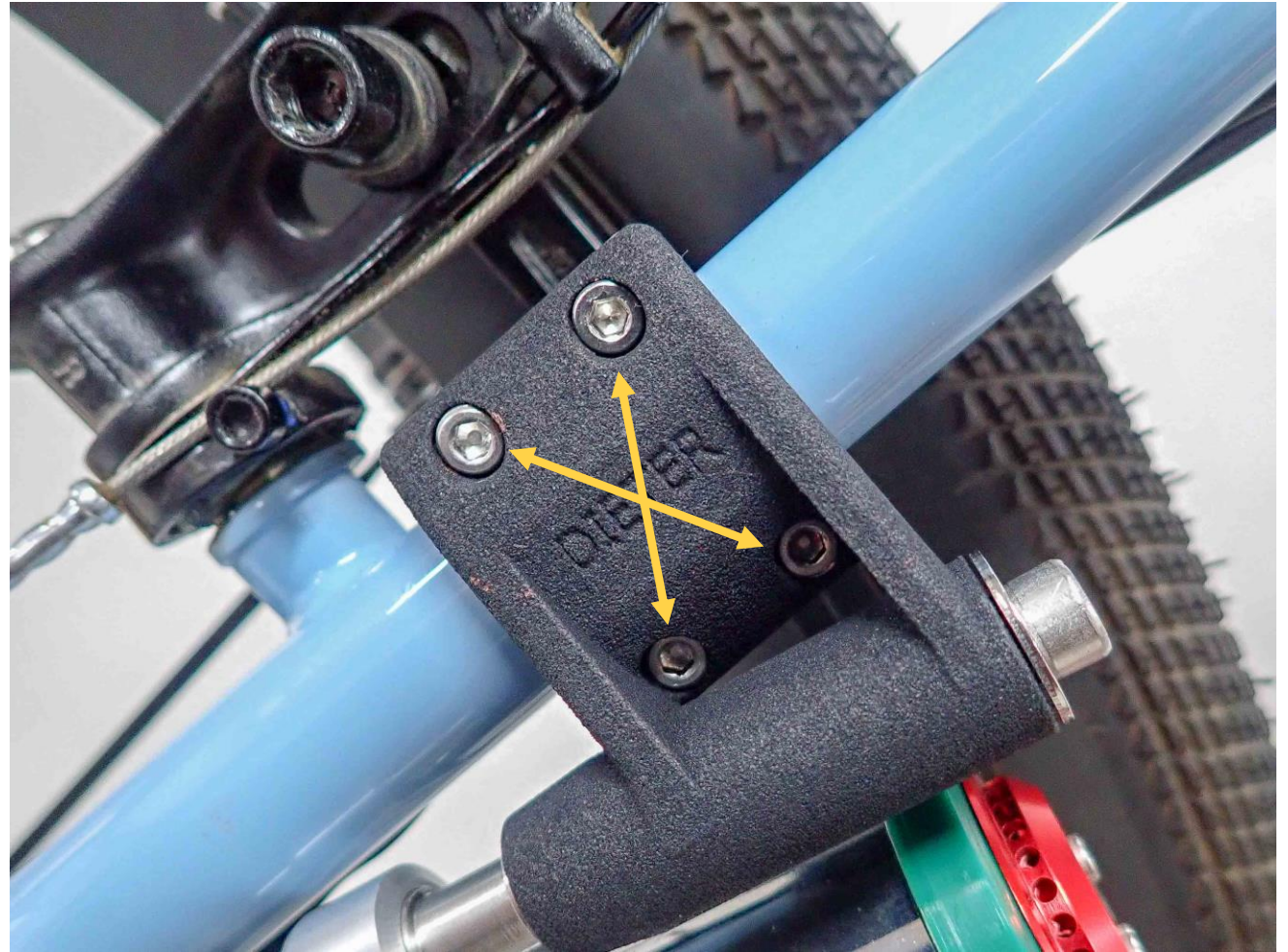


- Angular adjustment: To make sure the motor can exert the optimum pressure itself, the connecting line (8) between motor and swing axis should meet the plane created from the braking surface of the rim at an angle of 125° . In order to check this, one edge of the gauge supplied is placed tangentially against the thickest part of the tyre (9). The premounted motor bracket is now turned until the motor axis and swing axis (or their M5 screw heads) move into a central position below the second edge of the gauge.

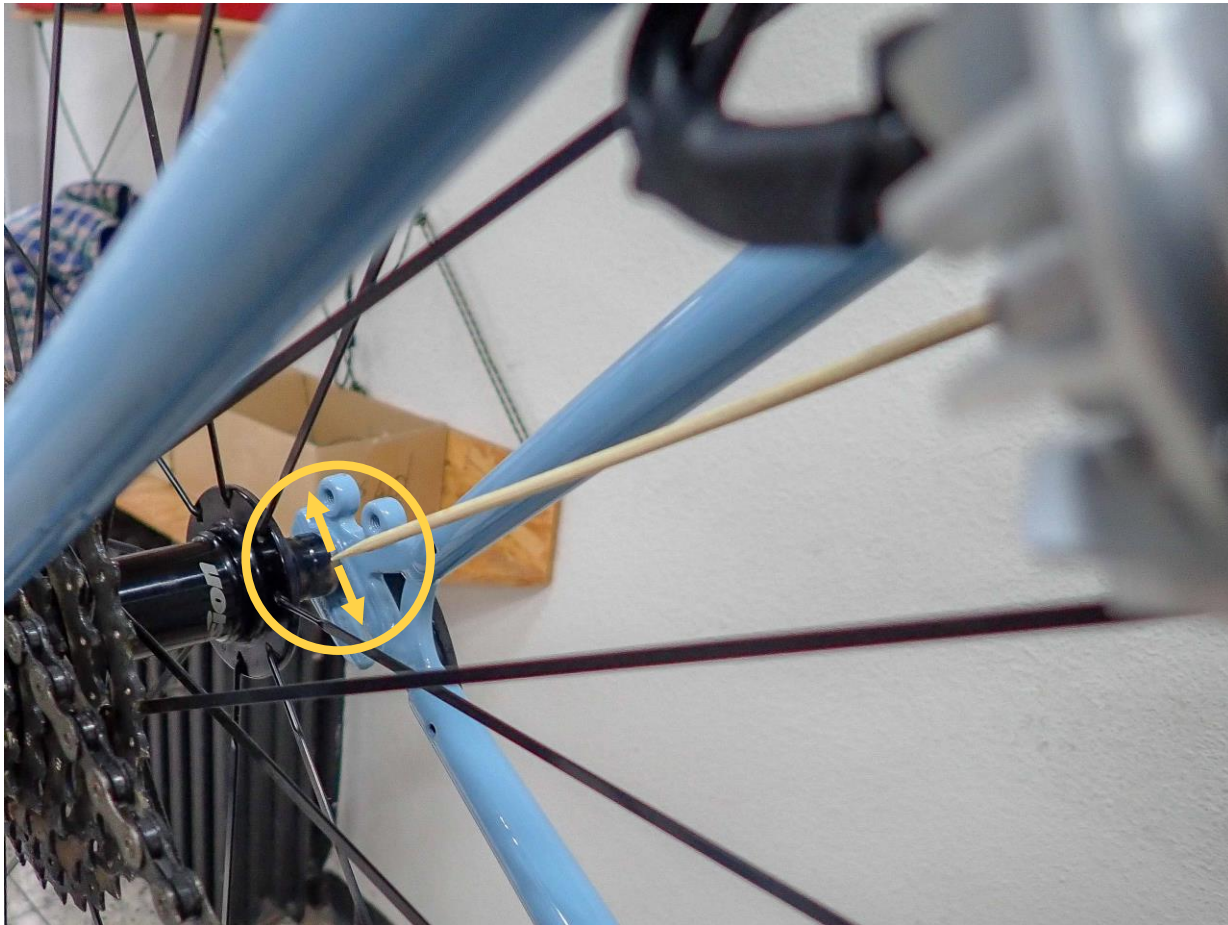
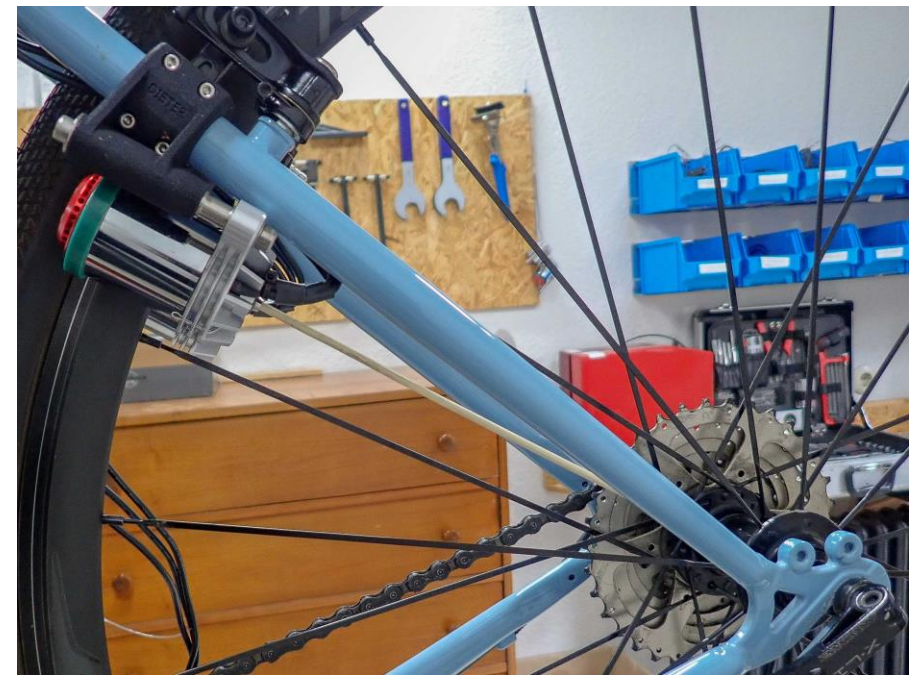
(Tip: If the brass curved tube collides with the brake socket, you can insert it into the second hole that is further away from the brake socket. If this is not sufficient, the rear halves of the left and right motor holders 1b can also be swapped. It may also be necessary to cut off the unused strut if it collides with the brake socket.)



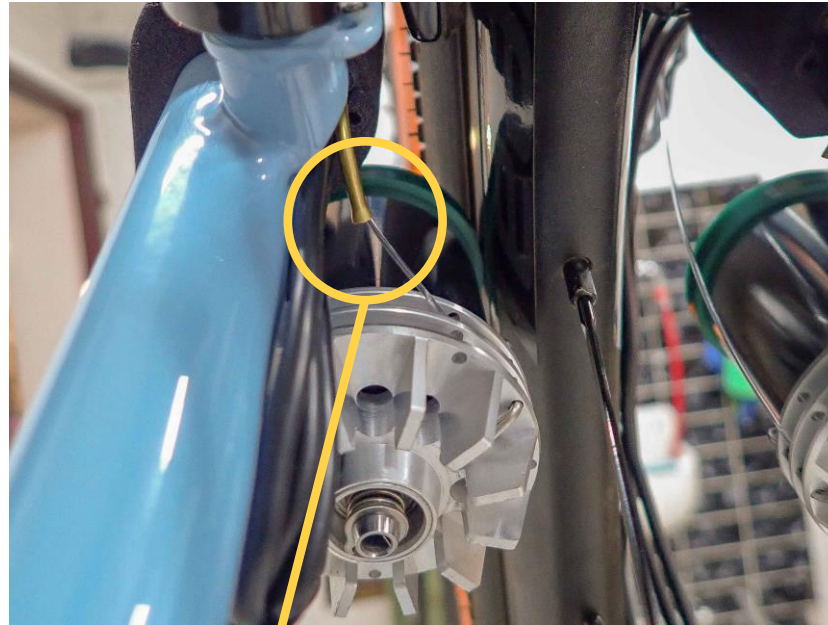
- Tightening: When you have found the correct position, check the height adjustment once more and only then should you tighten the four Allen screws on the bracket so that roughly equal gap widths remain between 1a and 1b on both sides. As the PA parts deform somewhat over time (creep), you should tighten the M3 screws after one week. Tightening torque 1.0 Nm. M5 screws at swing axis counter at 7Nm (Tip 1: In order to maintain the angular adjustment, it is recommended that you gradually tighten the four screws alternately, crosswise. Tip 2: If the diameter of the seatstay is below 15 mm and is chrome-plated or made of titanium, 500-grit wet abrasive paper should be glued to the contact surface in order to improve adhesion.



- Check alignment of the motor axis and the rear wheel axle: Push the 3 mm wooden rod supplied into the hollow shaft of the motor, press the motor against the rim and push the rod until it is close to the axle of the rear wheel. The lateral offset between motor axis and rear wheel axles should be less than 10 mm.



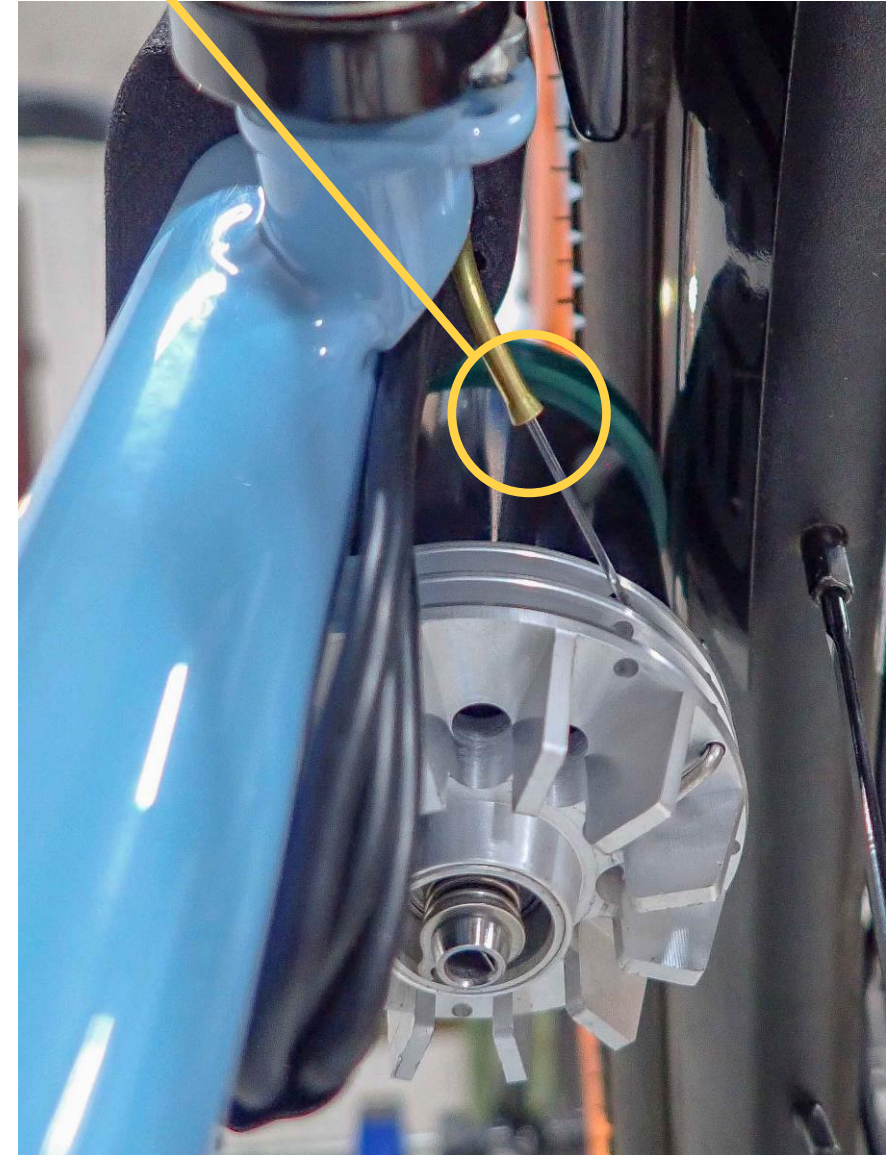
- Make the nylon string wear-resistant: With the free end of the nylon string, pull the motor against the rim and with your free hand turn/bent the brass curved tube until the nylon string runs perfectly into the mouth.



Here, the tube only needs to be turned a bit

Here, the end of the tube must be carefully but firmly pushed upwards to create a sharper bend.

Perfect



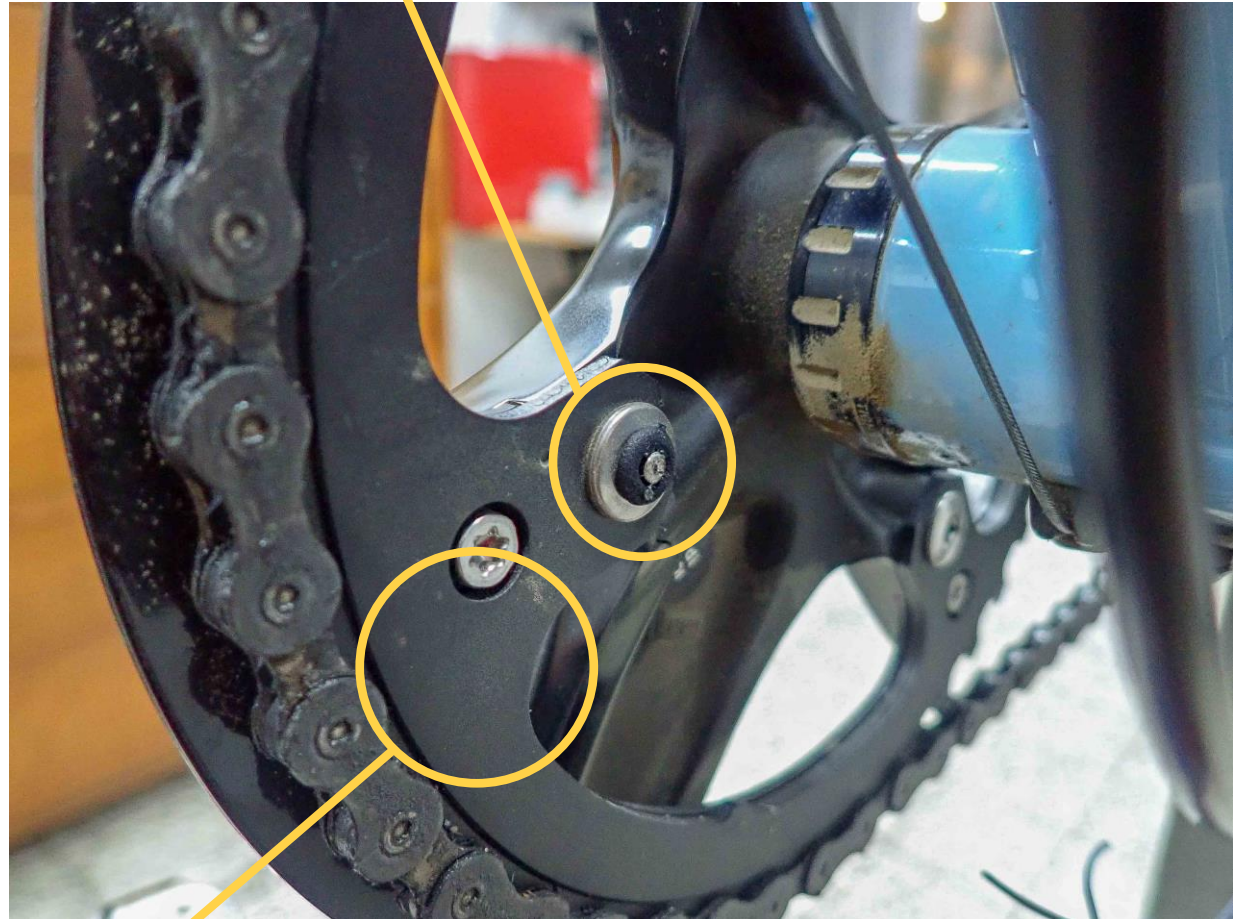
- Guide the motor cable upwards without crossing on the inner side of the seatstay and fasten with small cable ties. (Tip: For protection and better appearance, the three cables emerging upwards from the motor bracket can be wrapped with braided hose.)



Mounting the pedal sensor

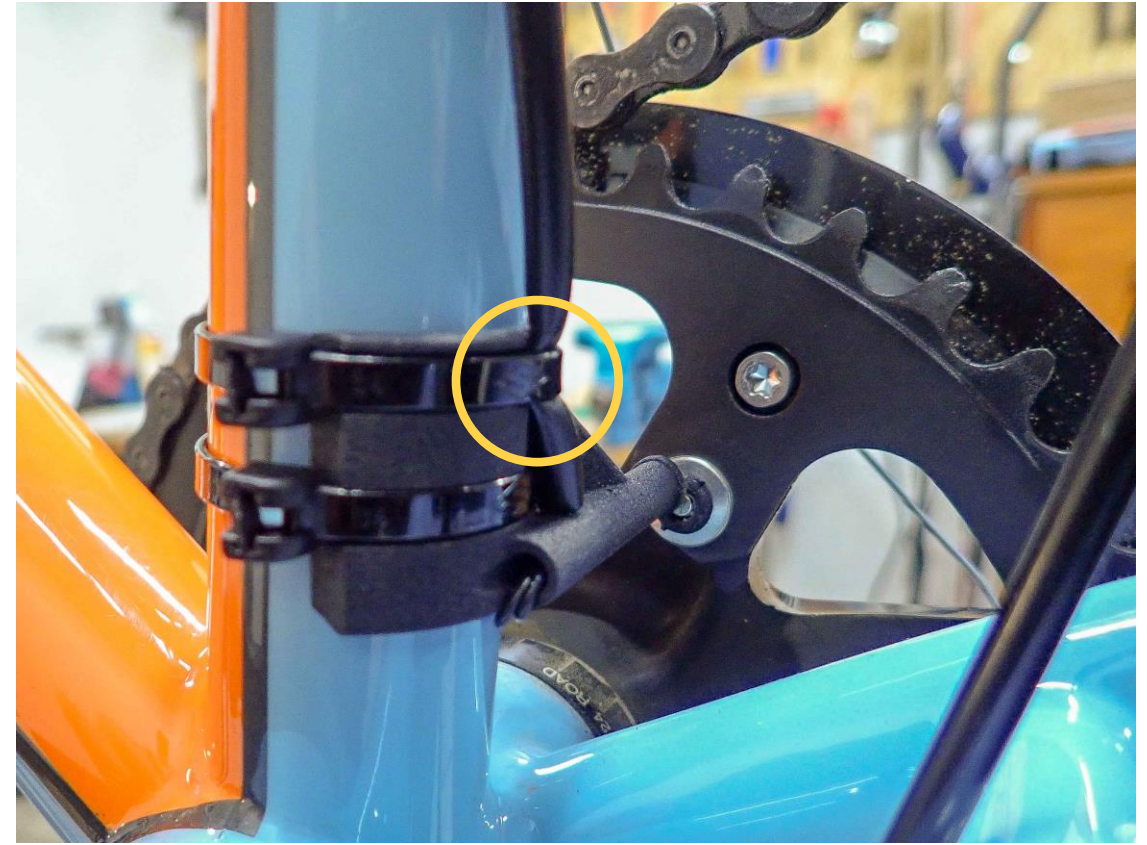
- The black magnet holders are pressed into the screws of the smallest/inside chainring. If they are not tight, secure them with all-purpose glue. If this is not possible, look for suitable places on the chainring to stick four to five magnets evenly distributed around the circumference. Degrease the glued areas, remove the protective film and press the magnets firmly into place. For triple chainrings, choose the inner/smallest chainring so that the magnets are not touched when shifting. Adjust the front derailleur so that the chain cannot jump off.

Magnet holder for Allen chainring screw



Free surface for applying adhesive magnet

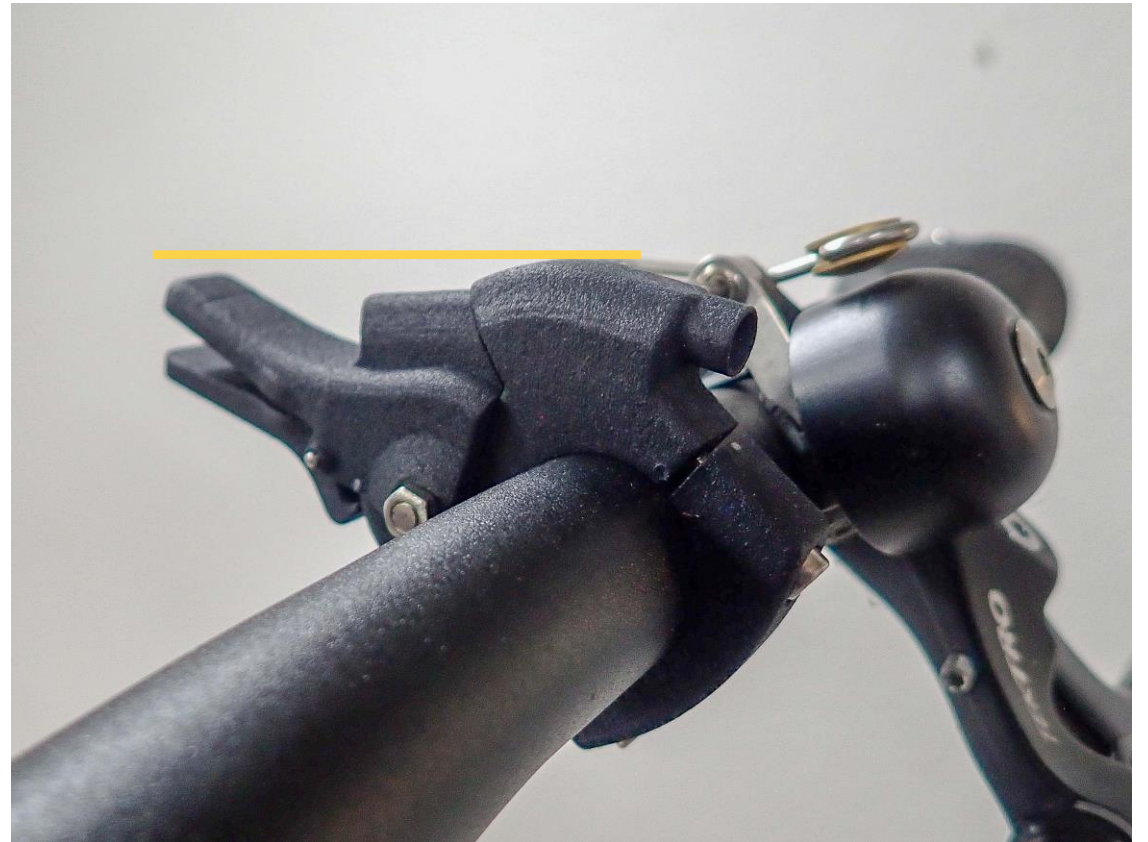
- Push/turn the pedal sensor along the seat tube until the protruding finger is level with the magnets. Maintain a distance of 1 to 2 mm between the reed contact and magnets. Fasten the pedal sensor to the seat tube with two cable ties. (Tip: For strain relief, the cable coming out of the sensor housing should be clamped under the upper cable tie.)



- Functional test: Connect the circuit tester to the two blue wires and check whether the reed contact has a current when brushing all the magnets. (Tip: If the contact remains closed from shortly before to shortly after brushing the magnet, this then guarantees a reliable function.)

Mounting the shift lever

- The shift lever should be readily accessible and preferably mounted near the left-hand handlebar grip. Avoid an exposed position for the operating lever. If the lever is positioned slightly upwards in the “Off” position, it can be conveniently switched on with a downward movement of the thumb. To switch it off, tap the locking lever from below with your thumb.



Mounting the potentiometer

- The potentiometer is an optional accessory and is attached to the handlebar or top tube with two industrial cable ties. (Tip: For strain relief, the cable coming out of the potentiometer housing should be clamped under one of the cable ties).

