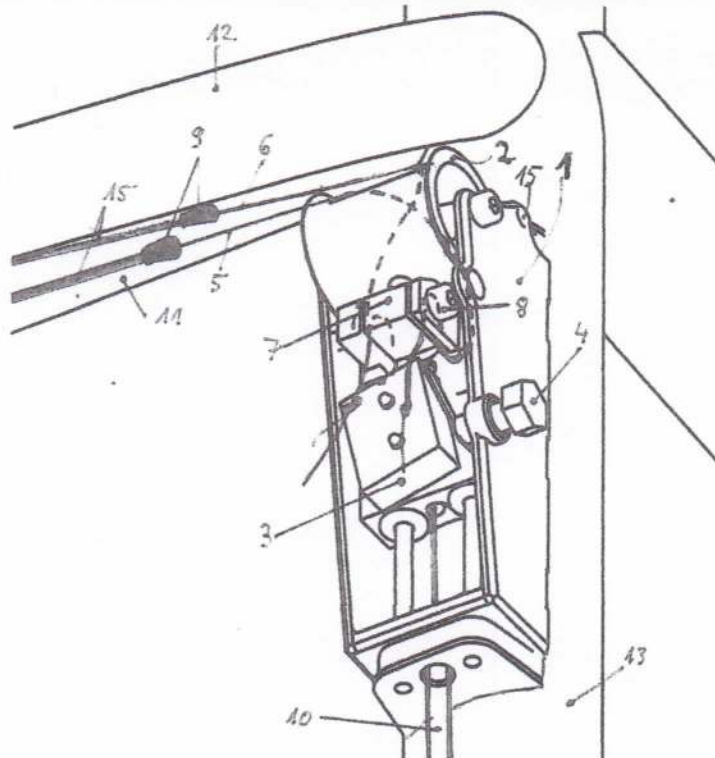


## EM2a Final assembly of roller switching bridge

File: EM2a\_Rollenschaltbrücke\_2019.11\_EN

- 1: Case:
- 2: Guide roller
- 3: Microswitch
- 4: Adjusting screw
- 5: Nylon cord from left-hand motor
- 6: Nylon cord from right-hand motor
- 7: Switching block
- 8: Clamping screw
- 9: Sleeve
- 10: Outer control cable casing
- 11: Left-hand seatstay
- 12: Right-hand seatstay
- 13: Seat tube
- 14: Right hole (in the switching block, Picture on p.2)
- 15: Hole (for small cable tie as tension relief)



First determine the length of the outer casing for the switch cable (10): It runs along the down tube, starting from the handlebar switch, bends upwards at the bottom bracket and ends in the roller switching bridge. The switching bridge should be mounted as high as possible so that the guide roller (2) lies protected between the seat stays. Roughly fasten the outer casing of the control cable, taking account of the turn of the handlebars, and then cut it to a corresponding length. (Tip: Do not secure the switching bridge to the seat tube yet, but wait until the inner switch cable and the cords to the motor have been preassembled.)

Feed the inner switch cable into the handlebar switch and into the outer sheath of the control cable, guide the free end of the wire through the centre hole of the housing (1) and the switching block (7).

Set the handlebar switch to the "Off" position (inner switch cable fully extended). Hold the switching bridge and pull hard on the free end of the inner switch cable so that the outer casing of the control cable is pressed into the guide holes as far as it will go. The switching block (7) is now in the rest position (clamping screw (8) aligned centrally to the hole in the housing).

First insert the grub screw next to the microswitch (3) and provisionally turn it until you can feel a resistance, then set the handlebar switch to the "On" position (first notch) so that the second grub screw becomes visible and can then be tightened provisionally in the same way. (Tip: When switching, the inner switch cable must not slip through, but should also not be too greatly deformed so that it can still be readjusted.)

Test: The handlebar switch must now move freely as far as the second notch, the springs are then almost fully compressed. When the switch is set back to the "Off" position, the switching block must return to the rest position. (Tip: There should also be as little play as possible, i.e. even every small movement of the handlebar switch should be fully transmitted to the switching block.)

After a successful test, the two grub screws are carefully tightened by a maximum of one half turn. (Tip: The thread is made of plastic and may be destroyed if the screws are overtightened. You should therefore hold the Allen key by the short end so that you can feel the tension better.)

Cut off the protruding inner switch cable as close as possible to the upper end of the switching block.

Thread the motor control cord into the curve of the lower brass tube and push it through until it emerges again at the upper end of the straight tube. Pull the motor against the rim using the control cord and check whether the cord runs smoothly into the opening of the curve. (Tip: The cord would wear prematurely if pulled over the sharp edge of the tube opening. This is why the cord fastening is positioned between the

two lower cooling fins on the short 3125 motors, and between the upper fins on the long 3135 motors. The tube can be rotated in the mounting block and the curve can be bent upwards or downwards slightly by hand so that the cord can enter perfectly.)

- Check the length and alignment of the upper brass tube and, if correction is needed, bend and rotate it by hand until the opening points to the position which the guide roller will later occupy. (Tip: The best way to do this is pull the free end of the nylon cord and, while maintaining the tension, bend the protruding end of the brass tube towards the guide roller. The aim here is to ensure that the cord does not rub on the tube openings either at the bottom or top.)
- It may be necessary to adapt the length of the brass tube: either by replacing it with a shorter/longer version or cutting it off. (Tip: To shorten the brass tube, press a utility knife onto the tube at right angles and rotate the tube to create a groove, snap off the end, file the end face until smooth and then deburr it on the inside with a small utility knife.)
- Turn the switching bridge so that the convex contact surface is pointing in the direction of travel. The cord coming from the left-hand motor (5) is fed into the right-hand hole (14), drawn into the right-hand slot and pulled down around the clamping screw (8). Do the same with cord (6), noting that the cords should cross over on the guide roller. (Tip: Threading the cords into the switching block is easier if you remove the guide roller.)
- Use two industrial cable ties to firmly secure the switching bridge in the position determined at the outset (with the guide roller reinserted) between the seatstays on the seat tube (13). (Tip: The guide roller must be able to rotate freely. From now on, the switching bridge must no longer be able to slip because otherwise the setting for the cables will be lost. On seat tubes with a glossy paint finish, it is recommended that you use an intermediate layer of 500-grain wet abrasive paper for better adhesion.)
- Adjusting the length of the cables: Set both motors to the "Off" position, use the free ends of the cords to pull both motors against the rim. While doing this, make sure that the contact angle of the clamping screw remains at around 180°. In several steps, move the handlebar switch more and more towards "On" and switch back to "Off" each time while noting whether the motors are raised from the rim. When both motors in the "Off" position have an equal distance of 2 to 3 mm from the rim, the clamping screw (8) can be tightened gently. Move the switch to the second notch (increased compression) and return it to "Off" again, checking the distance once more. (Tip: A knot in the protruding cable section makes it easier to pull when readjusting at a later stage.)
- If the tubes give way or oscillate under tension when you switch from the "Off" position to the second notch, their final position must be secured (e.g. with cable ties on the seatstay above the motor holder) and then corrected again. Any slippage of the switching bridge under tension can also be prevented with thin cable ties through the holes (15) in the upper edge of the housing.
- Test: Push the bike forwards and at the same time move the switch slowly from "Off" towards "On". Both motors should now begin to rotate simultaneously as far as possible before the switch clicks into the "On" position. (Tip: If motors do not rotate in the "On" position, retightening will be necessary. If one or both motors in the "Off" position rises less than 2 mm from the rim, loosen the clamping screw, lift the cable out of the clamping slot and move the motor away from the rim by hand.)
- Tighten the clamping screw (8). As there is a built-in steel nut, you can fasten it correspondingly tightly (1.0 Nm).
- The switching point of the microswitch can be altered with the adjusting screw (4): if the drive does not switch off reliably, turn it clockwise by ½ to 1 rotation. If it does not switch on reliably, turn it ½ to 1 rotation anticlockwise.

