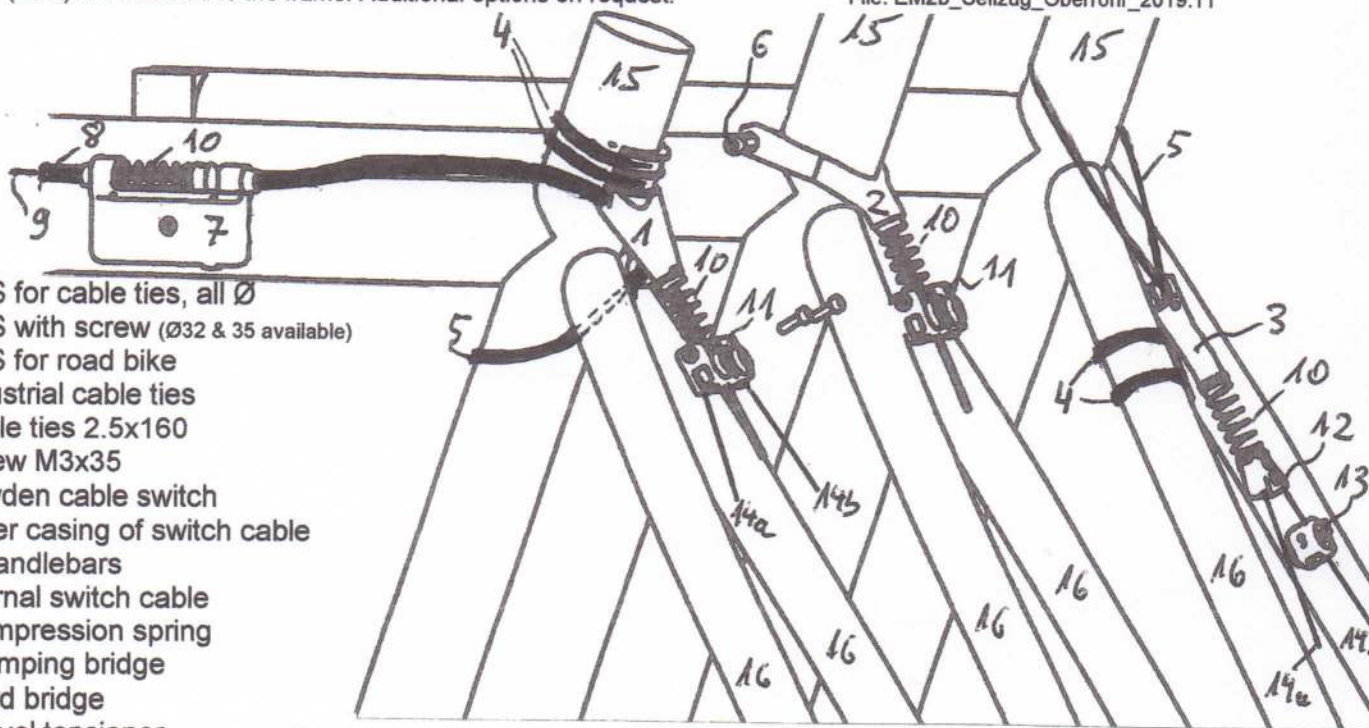


EM2b Final assembly of control cabling on top tube (The images show how three different Bowden cable stoppers (BCS) are fastened to the frame. Additional options on request.

File: EM2b_Seilzug_Oberrohr_2019.11



- 1: BCS for cable ties, all \emptyset
- 2: BCS with screw ($\emptyset 32$ & 35 available)
- 3: BCS for road bike
- 4: Industrial cable ties
- 5: Cable ties 2.5×160
- 6: Screw $M3 \times 35$
- 7: Bowden cable switch
- 8: Outer casing of switch cable to handlebars
- 9: Internal switch cable
- 10: Compression spring
- 11: Clamping bridge
- 12: Cord bridge
- 13: Swivel tensioner
- 14a: Nylon cord to left-hand motor 14b: Nylon cord to right-hand motor
- 15: Seat tube 16: Seatstay

□ First determine the length of the outer casing for the switch cable (8): it runs along the top tube, starting from the handlebar switch. The Bowden cable switch (7) should be positioned so that it causes the least possible interference. Ideally it should be directly before the front end of the frame bag. Roughly fasten the outer casing of the control cable (8), take account of the turn of the handlebars and then cut it to a corresponding length.

□ Guide the inner control cable (9) through the handlebar switch and into the outer control cable casing (8), feed the free \emptyset end of the wire through the hole in the housing of the Bowden cable switch (7) (at the front, where the cables emerge), loosely through the spring (10), the switch cone and opposite hole in the housing and then pull it tight. Both ends of the spring should now click into their base. (Tip: Of course you previously have to remove the premounted piece of wire, by undoing the grub screw in the switch cone by one turn and pulling out the wire.)

□ Fasten the eye of Bowden cable stopper (1) with a cable tie (5) on the seat tube (15) below the top tube, attach two industrial cable ties (4) at the top of the seat tube. Clip BCS2 over the seat tube, align it and fasten it with the Allen screw. Fasten BCS3 to the seatstay (16) with two industrial cable ties (4), align the upper part symmetrically to the frame and fasten in this position with the concealed grub screw. Feed the cable tie (5) through the eye in the upper part and around the seat tube. Measure the length for the outer control cable casing between the Bowden cable switch and the BCS and cut it accordingly. Pull the free end of the inner control cable (9) through the outer control cable casing, BCS, spring (10) and clamping bridge (11) or cord bridge (12). (Tip: The clamping bridge (11) is normally easier to mount. The combination of cord bridge (12) with swivel tensioner (13) should only be used if there is insufficient mounting space.

□ Move the handlebar switch to the "Off" position (Pos.1, inner control cable completely extended), move the clamping or cord bridge (11/12) upwards until the spring is 50% compressed: in this position, tighten the two grub screws just so far that the inner control cable can still slip through when pulled with more force. Move the handlebar switch slowly downwards into the second notch (Pos.3, "On" with increased compression) so that the outer control cable casing is pressed into the guide holes as far as it will go at all four ends. Afterwards, switch it back to "Off" and tighten both grub screws by half a turn. (Tip: Do not tighten the grub screw on the switching cone of the Bowden cable switch (7) until you have made all the adjustments.)

□ Test: It must now be possible to move the handlebar switch smoothly into Pos.3, the compression spring (10) on the BCS should then be almost fully compressed.

□ After the test has been successfully completed, tighten the grub screws again carefully. Shorten the protruding inner control cable to 10 mm and press on the end sleeve. (Tip: The threaded holes are made of plastic and may be destroyed by excessive tightening.)

□ 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 by pulling the 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 cable 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 where the clamping bridge or cord bridge is located. (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 clamping or cord bridge. The aim here is to ensure that the cord does not rub on the tube openings either at the bottom or top.)

□ If necessary, you will have 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 and then deburr it on the inside with a small utility knife.)

□ Set the handlebar switch to the "Off" position (Pos.1), pull the two motors with rubber rings against the rim. Pull the nylon cord from the left hand motor (14a) through the left-hand opening of the clamping bridge and then further through the swivel tensioner until it is tight. Use a coin to turn the swivel tensioner through one rotation clockwise. Turn the Allen screw in the swivel tensioner as far as it will go. Repeat the process for 14b, however the right-hand swivel tensioner has to be rotated anticlockwise.

In the version with a cord bridge, the cord from the left-hand motor (14a) which runs through the tube is fed into the cord bridge (7) from above and then fed out again at the bottom. The two free cord ends are threaded into the opposite holes of the swivel tensioner (13), both are then pulled down tight by the swivel. Use a coin to turn the swivel tensioner through one rotation clockwise. Now you can correct the position of the spiral clamp in case it is too close to the cord bridge or is touching the tube. Turn the Allen screw in the swivel tensioner as far as it will go. (Tip: Knot the nylon cord as an additional security.)

□ Remove the rubber rings so that the motors can fold up freely. Carefully move the handlebar switch to "On" (Pos.2), then further to Pos.3 and back again to "Off" (Pos.1). The motors should now be positioned 2 to 3 mm away from the rim. If this is so, provisionally tighten the clamping screws on the clamping bridge, readjusting them beforehand with a coin if necessary.

□ Test: If you now push the bicycle forwards slowly and at the same time move the handlebar switch slowly from "Off" to "On", both motors should begin to rotate more or less simultaneously before the switch clicks into Position 2.

□ In the "Off" position (Pos.1), now tighten the grub screw on the switching cone of the Bowden cable switch. At roughly half-way between Pos. 1 and 2, it must click in order to ensure that the drive switches on and off reliably. Attach the switch cover.

