



# Handwheel for EdingCNC Construction Manual

## Preparation

Make sure your workspace is clear and has enough space and suitable lighting. Lay out the parts of the kit in an orderly manner. First read these instructions completely so that you have an idea of the type and scope of the work at the beginning.

### Required tools

- Common hand tools such as screwdrivers, pliers, cutter knife.
- Drill 12 mm (step drill recommended)
- Tool for stripping fine strands
- Electronics soldering equipment
- Simple multimeter

## Housing

### Top part

To attach the label, the adhesive surface must be clean and free of grease. If cleaning is necessary, wiping with alcohol and a clean, lint-free cloth is sufficient.

- First place the label with the protective film on the adhesive surface. Try aligning the label on one of the long sides to get a feel for it.
- Remove the label again and remove the protective film. As before, place the sticker on one of the long sides and then slowly over the entire adhesive surface. Press the surface firmly with a dry cloth.

#### **i** Note:

*If there are small deviations in the holes for the buttons and the rotary encoder, that's not a big deal. Small protrusions are covered by the components.*

#### **i** Note:

*No dangerous voltages occur in the finished handwheel during operation. Nevertheless, to avoid electrical errors, we recommend using heat shrink tubing on all solder connections as a good practice. Use ferrules for unsoldered connections.*

*Heat shrink tubing and wire end sleeves are not included in the scope of delivery.*

#### **i** Note:

*The kit may contain surplus parts. This particularly applies to the SUB-D connector and the associated screws.*



1 The kit at a glance



2 Upper part of the housing without and with attached label

## Bottom part

- Mark the hole for the cable entry (see picture 3).
- Drill the hole for the cable entry with  $\varnothing$  12 mm. We recommend using a step drill.
- Deburr the hole.
- Attach cable gland and kink protection as shown in picture 4.
- Pull the blue rubber protection over the base. This is difficult to do after the cable has been installed.



3 The hole in the lower housing wall



4 Cable entry and kink protection

## Buttons and rotary encoder

Picture 5 shows the parts for installing the pushbutton switches.

- Fit the green button with the sealing ring, as shown in picture 6.
- Attach the button to the left (top view) mounting hole using the retaining bracket, as shown in picture 7 on the next page.
- Repeat the steps for the red (right) button.
- Fasten the encoder with the nuts provided.



5 Button, sealing ring, retaining bracket, screw



6 Insert sealing ring into groove



7 Fully assembled control panels



8 Housing top with switches

## Wiring

### Ground connection

- Cut a wire bridge to connect the rotary encoder to one of the buttons. Provide one of the ends with a ferrule.
- Connect the wire jumper to "0V" on the encoder.
- Solder the other end to one of the buttons.
- Continue the connection to the second button by soldering on a second bridge. Picture 9 shows the finished ground connection.



9 Ground connection of rotary encoder and buttons

### Cable connection

- First, lead one end of the connection cable through the kink protection into the lower part of the housing.
- Strip approx. 12.5 cm of the cable. Remove the braided shield and the black support wire - it only contains plastic fibers.
- Prepare the ends of the stranded wires as shown in the table to the right.

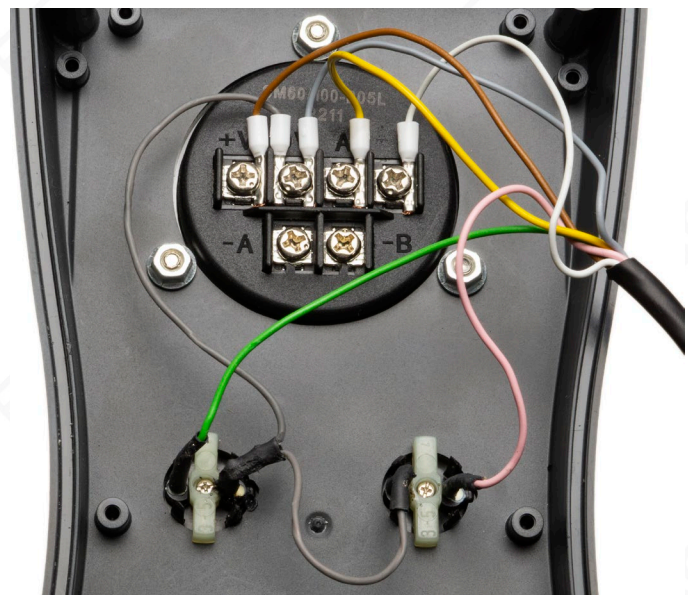
| Wire ends |           |
|-----------|-----------|
| Color     | Equipment |
| green     | tinned    |
| pink      | tinned    |
| grey      | ferrule   |
| brown     | ferrule   |
| yellow    | ferrule   |
| white     | ferrule   |

- Connect the cable wires as shown in the table to the right. Please also note the circuit diagram on page 5 and pictures 10 and 11.

| Connections in the housing |                       |
|----------------------------|-----------------------|
| Color                      | Connection            |
| green                      | Button S1 (green)     |
| pink                       | Button S2 (red)       |
| grey                       | Rot. Enc. Terminal 0V |
| brown                      | Rot. Enc. Terminal +V |
| yellow                     | Rot. Enc. Terminal A  |
| white                      | Rot. Enc. Terminal B  |



10 Cable end in the housing

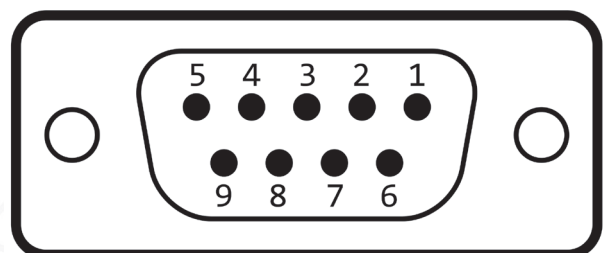


11 Connected core strands

## SUB-D connector

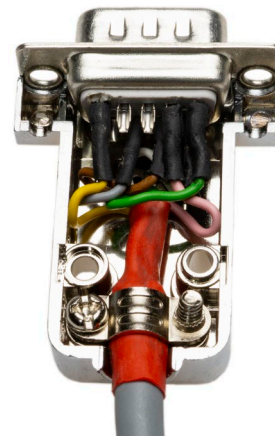
- Strip approx. 3 cm of the cable. Remove the braided shield and the black support wire.
- Strip and tin all stranded ends.
- Connect the cable wires as shown in the table below. Please also note the circuit diagram on page 5.
- Check all connections from the connections in the housing to the individual pins of the plug with the continuity tester ("beeper") of a multimeter.

| Connections in the plug |            |
|-------------------------|------------|
| Color                   | Connection |
| green                   | Pin 1      |
| pink                    | Pin 2      |
| grey                    | Pin 8      |
| brown                   | Pin 7      |
| yellow                  | Pin 5      |
| white                   | Pin 6      |

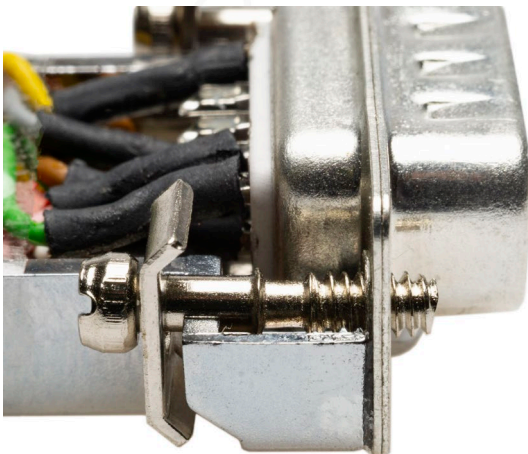


12 SUB-D 9 pin numbers. The soldering side is shown.

- Install the strain relief and insert the soldered connector into the lower part of the connector housing (see picture 13).
- Insert the locking screws with the retaining plates into the lower part of the connector housing (see picture 14).
- Assemble the upper part of the connector housing with the included screws and nuts (see picture 15).



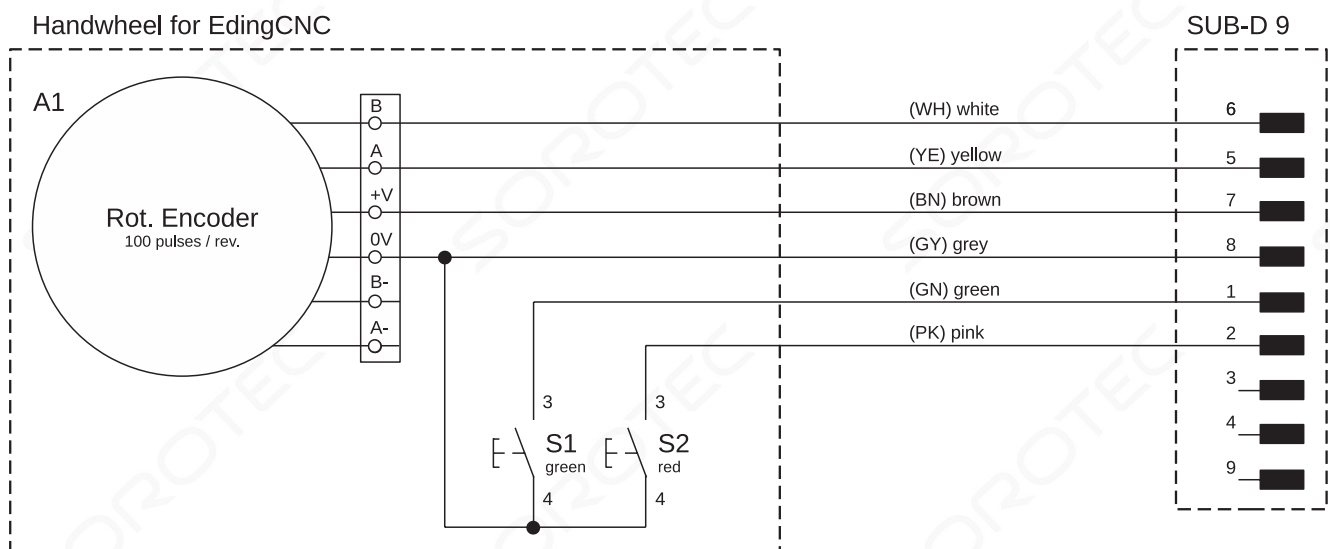
13 Strain relief on shrink tubing, housing half



14 Locking screw with retaining plate



15 Plug fully assembled



16 Circuit diagram

## Final assembly

- Lift the rubber impact protection at the top and bottom of the back of the lower housing part and insert the short plastic screws into the holes.
- Bring the top and bottom parts of the case together. Pay careful attention to the position of the sealing lip of the impact protection. This process can be difficult, please be patient.
- Tighten the four case screws.

The assembly is now complete and the handwheel is now ready for use. The operation is described in another manual, which you also received when you purchased it. You can also find the operating instructions for download on the Sorotec shop website.



17 The finished handwheel for EdingCNC