



## Wire handling

Pull out the wire perpendicular to the wire outlet (fig. 2).

Do not let the wire go; in every position and during every move the wire must be stretched by the cable drum's spring force.

For correction function the wire must remain without kinks or flattening.

## Extension wire (accessory)

If necessary an extension wire can be used.

**Attention:** By using an extension wire the maximum measuring length can not be altered. Make sure that the maximum extension length is not exceeded.

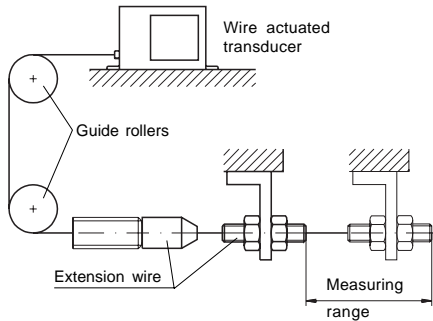


Fig.3 : Extension wire, Guide roller

For mounting the wire extension : Push the connecting piece (3) onto the screw connector (1). The press-fit clamping sleeve (2) will neatly join both elements.

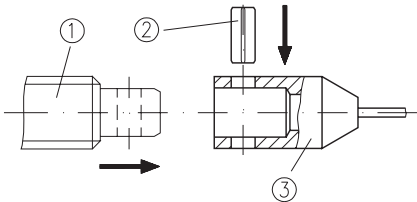


Fig.4 : Mounting of the wire extension

## Guide rollers (accessory)

Are used for applications where wire actuated transducer and wire cannot be mounted in one line. Using guide rollers the wire can be pulled out in any direction (fig. 3).

- Guide rollers must be mounted in line with the wire.
- Maintain cleanliness of guide rollers at all times.

**Attention:** When using an extension wire make sure that the wire connector does not go over the guide roller.



## 5. Electrical connection

- **Switch power off before any plug is inserted or removed !!**
- Wiring must only be carried out with power off.
- Provide stranded wires with ferrules.
- Check all lines and connections before switching on the equipment.

## Interference and distortion

All connections are protected against the effects of interference. **The location should be selected to ensure that no capacitive or inductive interferences can affect the encoder or the connection lines!** Suitable wiring layout and choice of cable can minimise the effects of interference (eg. interference caused by switching power supplies, motors, cyclic controls and contactors).

## Necessary steps:

- Only screened cable should be used. Screen should be connected to earth at both ends. Wire cross section is to be at least 0,14 mm<sup>2</sup>, max. 0,5 mm<sup>2</sup>.
- Wiring to screen and to ground (0V) must be via a good earth point having a large surface area for minimum impedance.
- The unit should be positioned well away from cables with interference; if necessary a **protective screen or metal housing must be provided**. The running of wiring parallel to the mains supply should be avoided.
- Cross section of cables connecting from screen to machine or to control cabinet (GROUND) should be at least 4 mm<sup>2</sup>.
- Metallic components of the transmitter housing should be earthed according to local regulations and should not be connected potential free.

## How to open the casing cap

When the screws are removed (1) and the cover opened (2), (3) the electrical connections can be accessed.

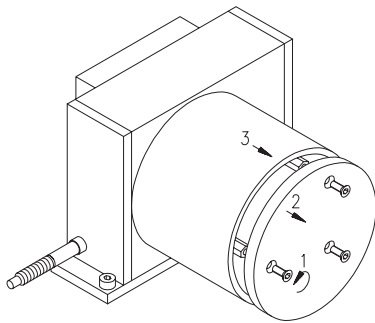


Fig. 5 : Removal of cover

### Potentiometer

The measuring range of the potentiometer is matched to the total pull-out length of the wire. Ex works value 0 Ohm is preset for wire length 0 mm (wire completely pulled in).

### Instrument transformer

The instrument transformer provides a loop current of 4 ... 20mA.

### Supply voltage of the instrument transformer

Operating voltage depends on execution and is indicated in the delivery documentation or on the identification plate.

**20 ... 28 VDC**

### Cam switches

Connect cam switches accord. to fig. 6. Switch A is closer to the device than switch B (Fig. 9).

### Connection without instrument transformer

Terminal-No.	Color	Designation
7	white	Po Start point
8	brown	S Moving contact
9	green	Pe End point

### Connection with instrument transformer

Terminal-No.	Color	Designation
7	---	---
8	brown	I+
9	white	I-

- Connect strands to the clamps (fig. 6).
- Close the geared potentiometer (see chapter 4).

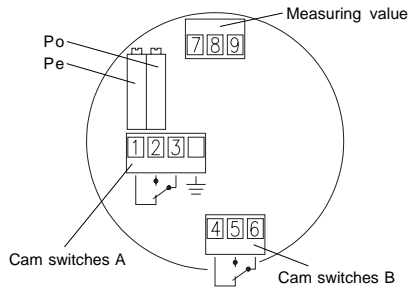


Fig. 6 : Electrical connection

- Prepare wire accord. to fig. 7
- Open the device (see chapter 4) and unscrew the PG-screws.

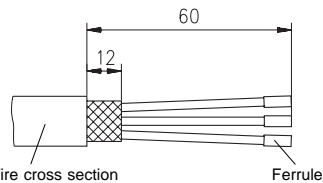


Fig. 7 : Cable preparation

- Push nut (1) and plastic bushing (2) onto the cable.
- Put the wire screening (3) over the plastic bushing (2).
- Slide strands through screw (4). Insert plastic bushing (2) into the screw fitting.
- Fix nut (1) and then fix the complete PG-screw to the casing.

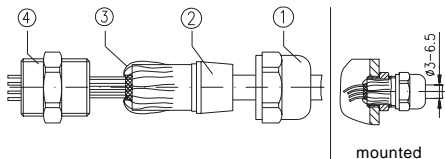


Fig. 8 : PG-screw

## 5. Adjustment and Alignment

### 5.1 Potentiometer setting

When correctly connected and switched on, the unit displays the current actual value.

### 5.2 Adjustment of the trip cams

Ex works the trip cams are not fixed radially to the shaft. Trip cam adjustment is carried out only after mounting.



#### **Important information!**

Do not touch the roller levers during trip cam adjustment: damage from bending may result.

- Bring the turnable trip cams (A, B) into a position which is favorable for fine adjustment: grub screw (1) and screw (2) must be easily accessible.
- Fix the grub screws (1) to prevent straining of the trip cams.
- The setting screw (2) is used for precise setting of the trip cam; use a screw driver size 3 (see fig. 9).

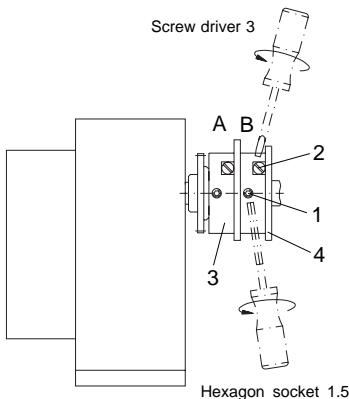


Fig. 9 : Trip cam adjustment

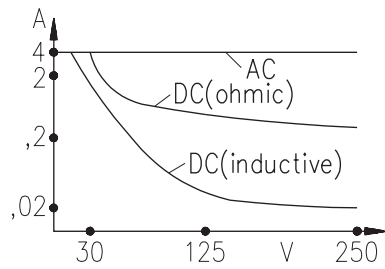


Fig. 10 : Nomogram: Load rating cam switches

### 5.3 Alignment of the instrument transformer

The unit comprises a resistance current converter. The potentiometer's resistance is converted into a current of 4 ... 20mA (twin-core cable). The measuring current is also used for feeding the instrument transformer.

The instrument transformer is preset to standard values 4mA for potentiometer's start position (Po) and 20mA for end position (Pe). **Via two trimmpotentiometer's Po and Pe (see fig. 6) these values can be adjusted to the application's actual start and end position:**

#### **Alignment:**

- Trimpotentiometer's Po is used to adjust a current of 4 mA to potentiometer values of 0 to 15% of the total range.
- Trimpotentiometer's Pe is used to adjust a current of 20 mA to potentiometer values of 90 to 100% of the total range.

The smallest available potentiometer range, in which 4 to 20 mA are delivered, is hence 15% to 90% of the potentiometer's resistance range.

#### **Alignment**

- 1) Move axis to start position.
- 2) Turn left potentiometer (Po) until start value (4mA) is measured.
- 3) Move axis to end position.
- 4) Turn right potentiometer (Pe) until end value (20mA) is measured.

The steps 1 to 4 are to be repeated until the values are counterbalanced.

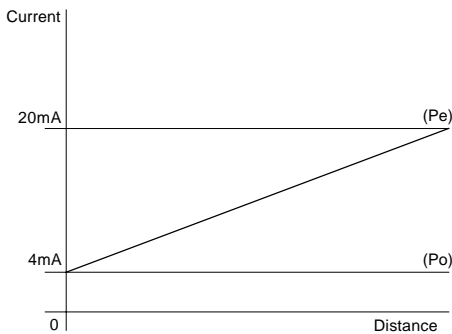


Fig. 10 : Alignment

#### 5.4 What to do if... (Instrument transformer)

##### ...the counting direction is wrong?

- Current of 4 ... 20 mA can be interpreted the wrong way around (4 mA would then correspond to the end value. Can for example be achieved by a corresponding software programming).

##### ... if the instrument transformer's start / end value cannot be set to 4 / 20 mA?

- the potentiometer's setting range is perhaps too small.
- check, whether you can do with a smaller current range; otherwise adjust the gear's input ratio accordingly ( by ordering / changing the counting direction at SIKO).

#### What to do if... (Potentiometer)

##### ... an undefined value is displayed?

- Carry out re-alignment or precise alignment. Undefined values can be caused by cable breaks.

## 6. Starting

Please ensure that the instructions given in chapter 4 and 5 regarding mechanical and electrical connection are followed. This will ensure correct installation and the operating reliability of the device.

Before starting check again:

- correct polarity of the supply voltage
- correct cable connection
- correct mounting of the device

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