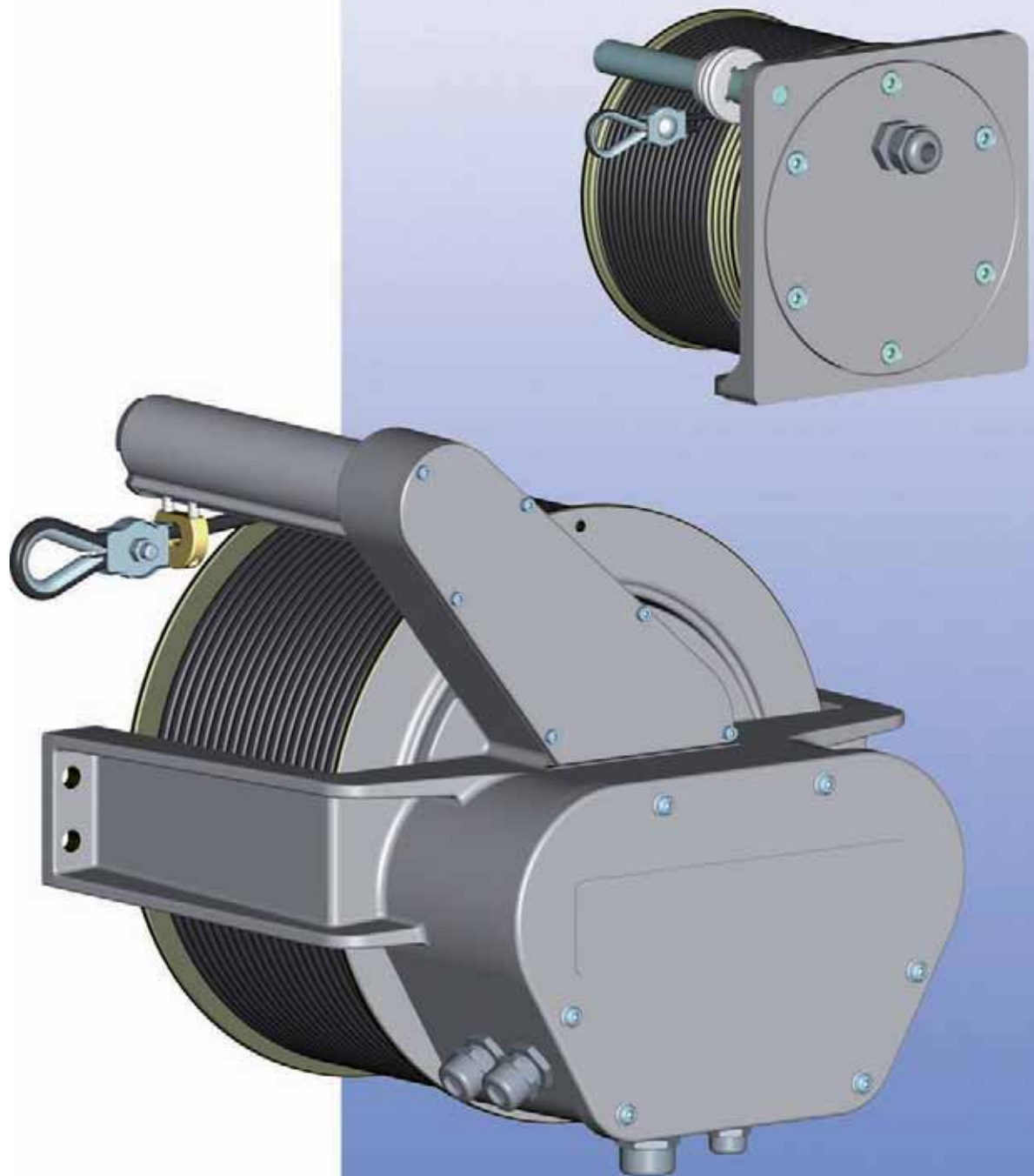


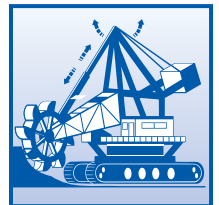
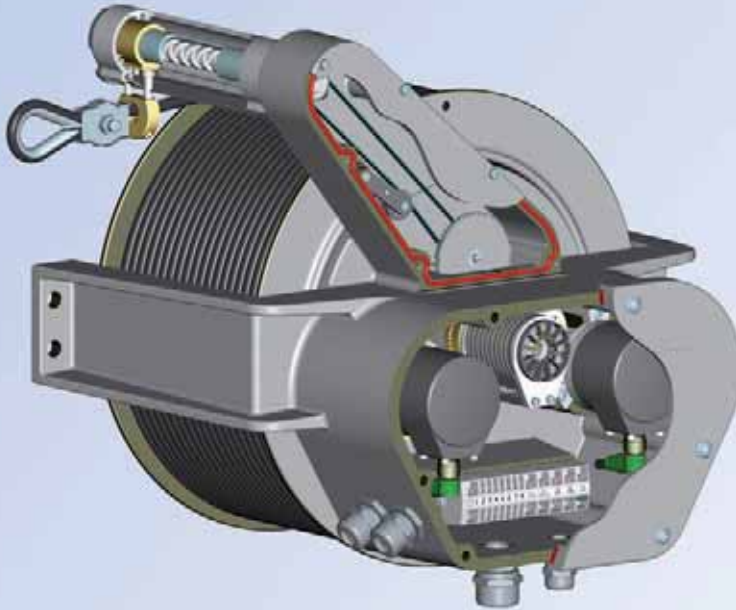
# Cable Drum



# Cable Drum

with Length and Angular Transmitter

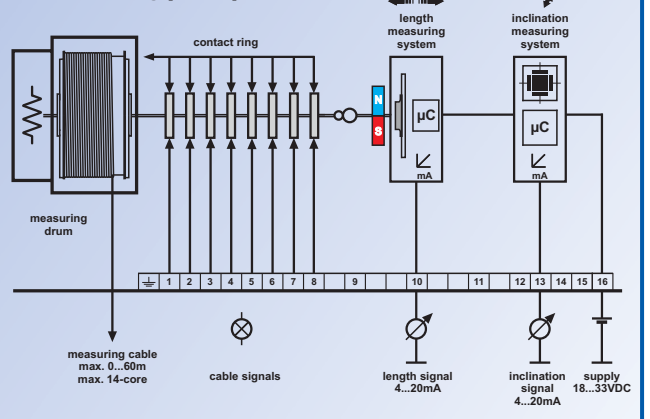
## ... Construction



## The Cable Drums

can be used to measure the length, inclination and speed depending on the version. A further application is the possibility of transfer the supply voltage and measuring data via the measuring cable. They are mainly used for the measurement of telescopic arms and telescopic booms in cranes and lifting platforms as well as for the control of stage constructions in the event technology.

## ... Measuring principle



## The angle measurement

will be carried out e. g. via a **high-resolution micro-electro-mechanical inclination measuring system**. In the standard version is for the **output a current or a voltage signal** available.



## The length measurement

will be made according to the **wire measuring principle**. A multi-core measuring cable is used, which is wound one or multi-layered on a cable drum. The cable drum is equipped with a pull-back spring. In large measuring lengths a spindle roll guide make sure that in case of multi-layered cable windings exactly lay on lay is wound.

The number of length proportional drum rotations will be measured, **e. g. via a magnetic angular transducer**, optional with **voltage or current output**.

In identical construction the length and inclination values can also be measured with digital transducer systems and read out in data type **CANopen**, also in **redundant version for security-relevant applications**, e. g. SIL2 according to IEC 61508.

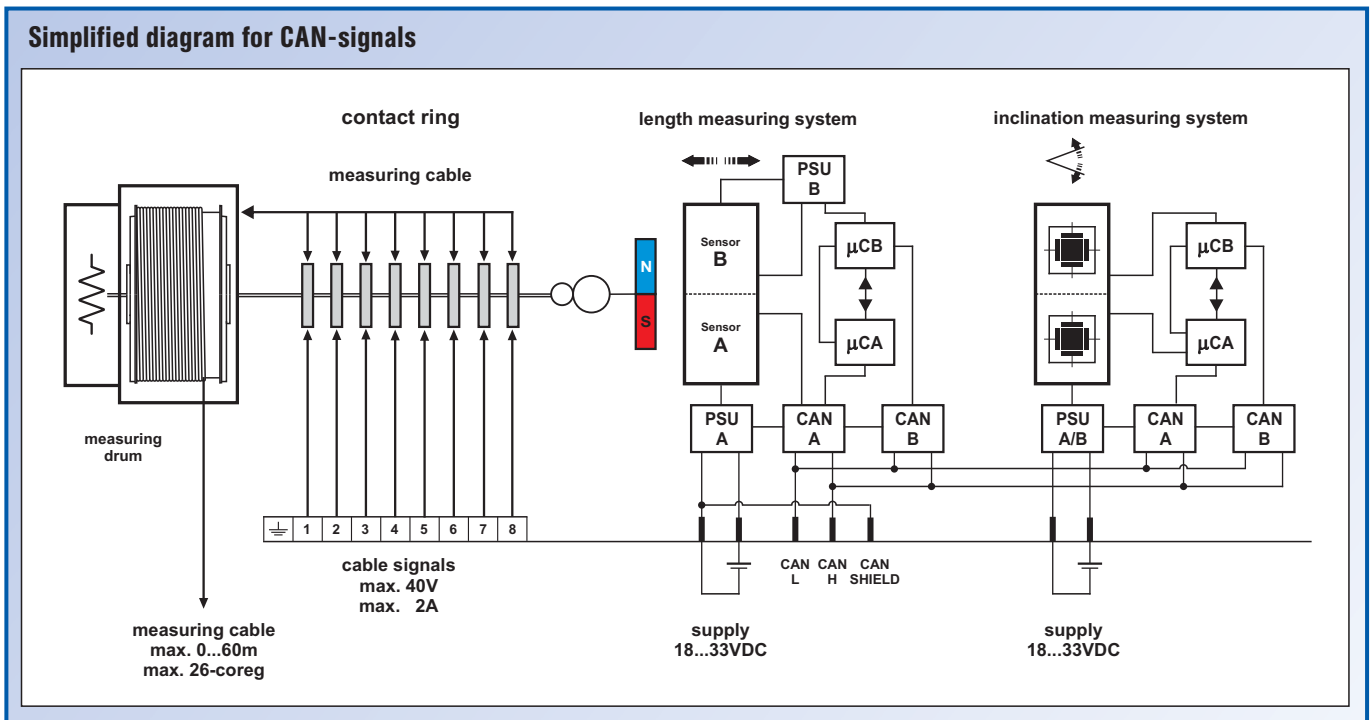
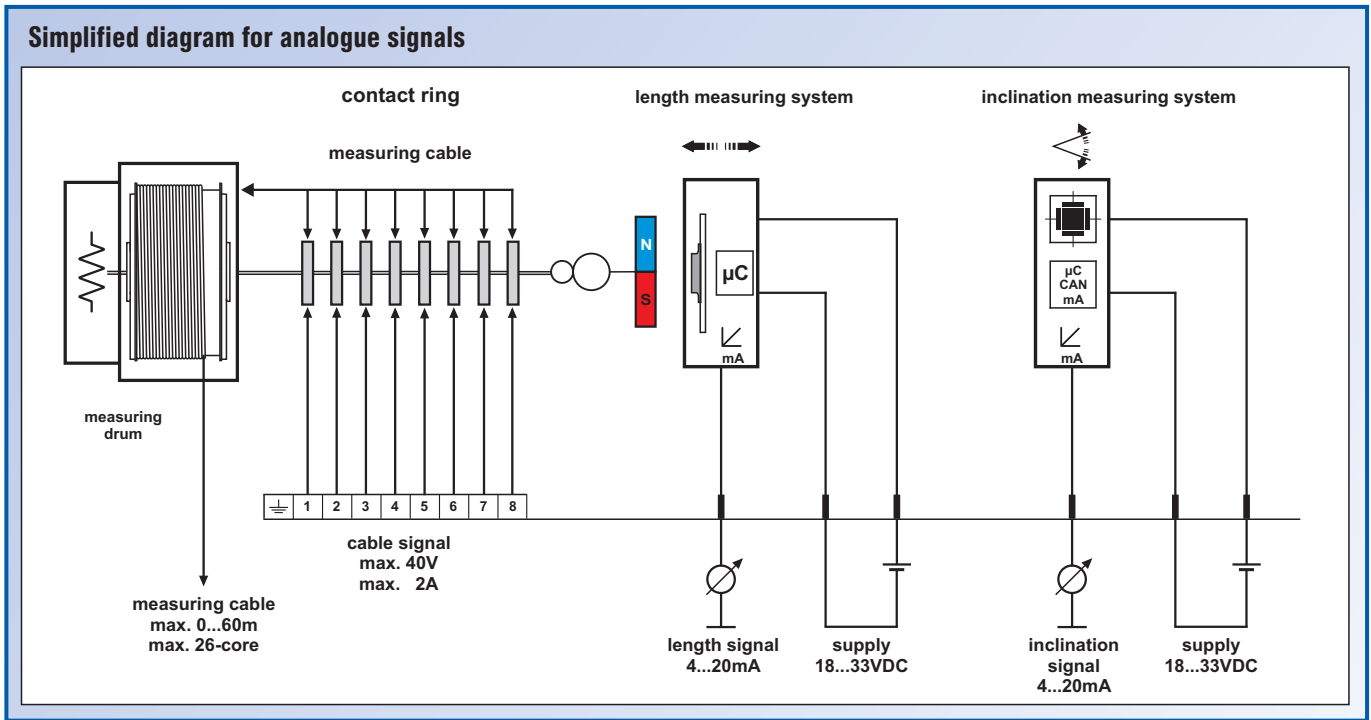


## The transmission

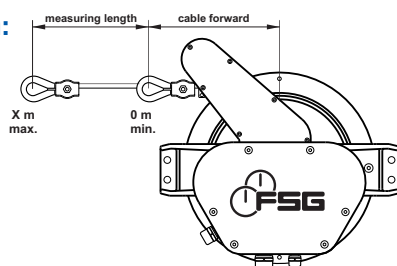
of the measuring data and control signals will be made via the cable conductors of the measuring cable, which will be gripped on a multi-layered slip ring body and bounded to terminal strip.

All electric components are inside of a completely closed aluminium casing of IP65.

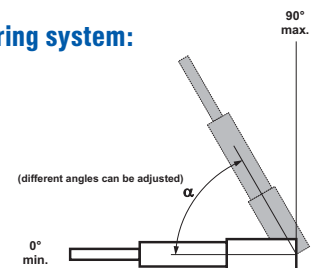
# ...Simplified diagrams






**Length measuring system:**



**Inclination measuring system:**



# ...Data

| Systems | Length and Angle measurement  |  |   |       |
|---------|---|--|---|-------|
| Model   |  |  |  |       |
| Series  | WL 56   | WL 020   | WL 18   | WL 32 |

## Mechanical Data

|                            |   |                             |                                |       |
|----------------------------|---|-----------------------------|--------------------------------|-------|
| Connection and drum casing | Aluminium cast, grey coated   | Aluminium cast, grey coated | Aluminium cast and steel plate |       |
| IP code                    | IP 65   | IP 65                       | IP 65                          |       |
| Electrical connection      | Series terminal strip (max. 2.5 mm <sup>2</sup> ) or connector assembly |                             |                                |       |
| Weight                     | 34 kg   | 20 kg                       | 12 kg                          | 14 kg |

## Clockwork Motor

|                           |             |             |             |  |
|---------------------------|-------------|-------------|-------------|--|
| Initial force / end force | 36 N / 70 N | 30 N / 65 N | 30 N / 60 N |  |
| Haul-off speed            | 1 m/s       | 1 m/s       | 1 m/s       |  |

## Measuring length

|  |                                       |  |                          |                          |
|--|---------------------------------------|--|--------------------------|--------------------------|
| Up to max.   | 56 m                                  | 20 m                                   | 18 m                     | 32 m                     |
| Measuring cable  | 12 x 0.5 mm <sup>2</sup> , type LiYCY | 8 x 0.5 mm <sup>2</sup> , type LiYCY   | 12 x 0.5 mm <sup>2</sup> | 3 x 0.22 mm <sup>2</sup> |
| Cable diameter   | 8 mm                                  | 7 mm                                   | 8 mm                     | 3.9 mm                   |
| Circumference of drum <small>(with one-layered wire winding)</small> | 756 mm                                | 753 mm                                 | 904 mm                   | 890 mm                   |
| Cable winding  | Multi-layered (with layer winder)     | Multi-layered (optional: layer winder) | Multi-layered            |                          |
| Length accuracy  | 0.3 %                                 | 2 % (0.3 %)                            | 2 %                      |                          |

## Electrical Data

|                                     |               |              |            |         |
|-------------------------------------|---------------|--------------|------------|---------|
| Slip ring body, MS-hard-gold plated | Max. 12-poles | Max. 8-poles | 12-poles   | 3-poles |
| Circuit data                        | 40 V / 2 A    | 40 V / 2 A   | 40 V / 2 A |         |

## Length Transducer




|                   |                          |                          |                          |  |
|-------------------|--------------------------|--------------------------|--------------------------|--|
| Resistance output | 1, 2 or 5 k $\Omega$     | 1, 2 or 5 k $\Omega$     |                          |  |
| Output analogue   | 4 - 20 mA or 0 - 10 V DC | 4 - 20 mA or 0 - 10 V DC | 4 - 20 mA or 0 - 10 V DC |  |
| Output digital*   | CANopen                  | CANopen                  | CANopen                  |  |

## Inclination Transducer

|                   |                          |                          |                          |  |
|-------------------|--------------------------|--------------------------|--------------------------|--|
| Inclination angle | 0 - 360°                 | 0 - 360°                 | 0 - 360°                 |  |
| Angle accuracy    | $\pm 0.1^\circ$          | $\pm 0.1^\circ$          | $\pm 0.1^\circ$          |  |
| Resistance output | 1, 2 or 5 k $\Omega$     | 1, 2 or 5 k $\Omega$     |                          |  |
| Output analogue   | 4 - 20 mA or 0 - 10 V DC | 4 - 20 mA or 0 - 10 V DC | 4 - 20 mA or 0 - 10 V DC |  |
| Output digital*   | CANopen                  | CANopen                  | CANopen                  |  |

## General Data

|                    |                     |
|--------------------|---------------------|
| Supply             | 18 - 33 V DC        |
| Temperature range  | -30°C up to +70°C   |
| Test voltage       | 500 V, 50 Hz, 1 min |
| EMV accord. to DIN | EN 61 000-6-2 / 3   |
| Adjusting cycle    | up to 200.000       |

| Systems | Length measurement  |   |   |      |
|---------|---|---|---|------|
| Model   |  |  |  |      |
| Series  | L 15  | L 010   | L 015   | L 06 |

### Mechanical Data

|                            |   |                             |                        |      |
|----------------------------|---|-----------------------------|------------------------|------|
| Connection and drum casing | Aluminium cast, grey coated   | Aluminium cast, grey coated | Aluminium, grey coated |      |
| IP code                    | IP 65   | IP 65                       | IP 65                  |      |
| Electrical connection      | Series terminal strip (max. 2.5 mm <sup>2</sup> ) or connector assembly |                             |                        |      |
| Weight                     | 32 kg   | 13 kg                       | 15 kg                  | 8 kg |

### Clockwork Motor

|                           |              |             |             |             |
|---------------------------|--------------|-------------|-------------|-------------|
| Initial force / end force | 80 N / 160 N | 35 N / 50 N | 30 N / 55 N | 10 N / 20 N |
| Haul-off speed            | 1 m/s        | 1 m/s       |             | 1 m/s       |

### Measuring length

|   |  |                                       |      |                                       |
|---|--|---------------------------------------|------|---------------------------------------|
| Up to max.  | 15 m                                   | 10 m                                  | 15 m | 6 m                                   |
| Measuring cable   | 26 x 0.24 mm <sup>2</sup> , type LiYCY | 5 x 0.34 mm <sup>2</sup> , type LiYCY |      | 3 x 0.14 mm <sup>2</sup> , type LiYCY |
| Cable diameter  | 9.5 mm                                 | 5.2 mm                                |      | 3 mm                                  |
| Circumference of drum<br><small>(with one-layered wire winding)</small> | 800 mm                                 | 733 mm                                |      | 350 mm                                |
| Cable winding   | One-layered                            | One-layered                           |      | One-layered                           |
| Length accuracy   | 0.5 %                                  | 0.5 %                                 |      | 1 %                                   |

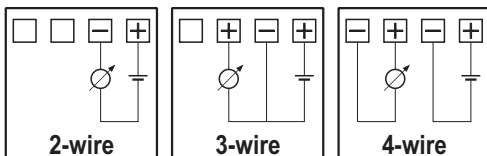
### Electrical Data

|                                     |            |              |            |
|-------------------------------------|------------|--------------|------------|
| Slip ring body, MS-hard-gold plated | 26-poles   | Max. 5-poles | 3-poles    |
| Circuit data                        | 40 V / 2 A | 40 V / 2 A   | 40 V / 2 A |

### Length Transducer

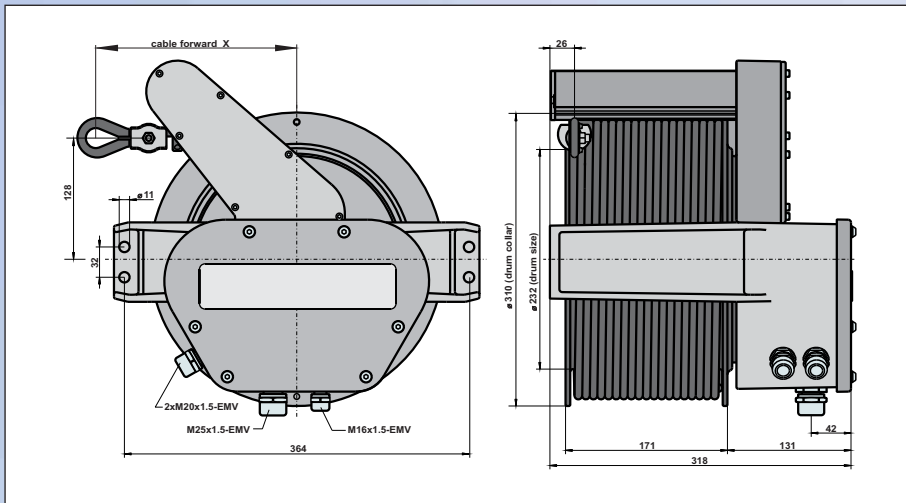
|                   |                          |                          |                          |
|-------------------|--------------------------|--------------------------|--------------------------|
| Resistance output | 1, 2 or 5 k $\Omega$     | 1, 2 or 5 k $\Omega$     |                          |
| Output analogue   | 4 - 20 mA or 0 - 10 V DC | 4 - 20 mA or 0 - 10 V DC | 4 - 20 mA or 0 - 10 V DC |
| Output digital*   | CANopen                  | CANopen                  | CANopen                  |

### Type of circuit

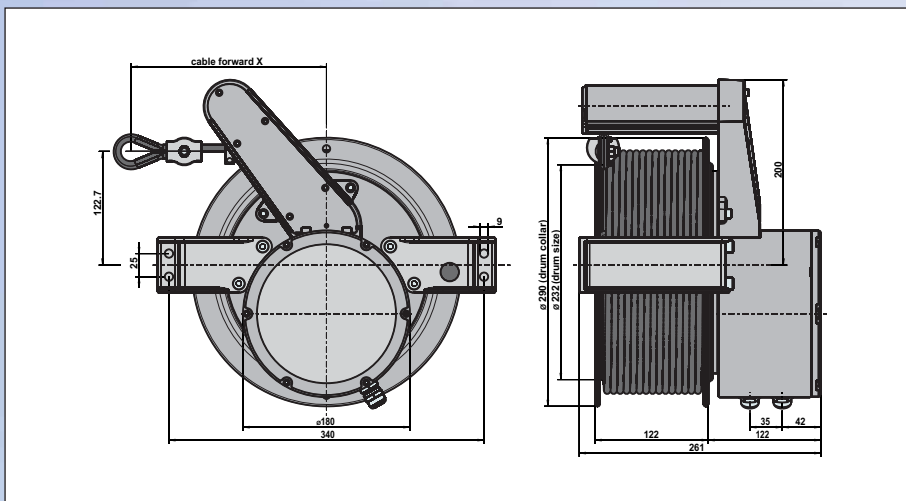
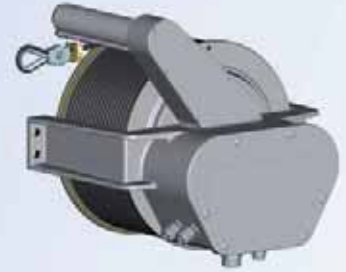


\*On request also in version according to IEC 61508, SIL (Safety Integrated Level) or ISO 13849, PL (Performance Level)

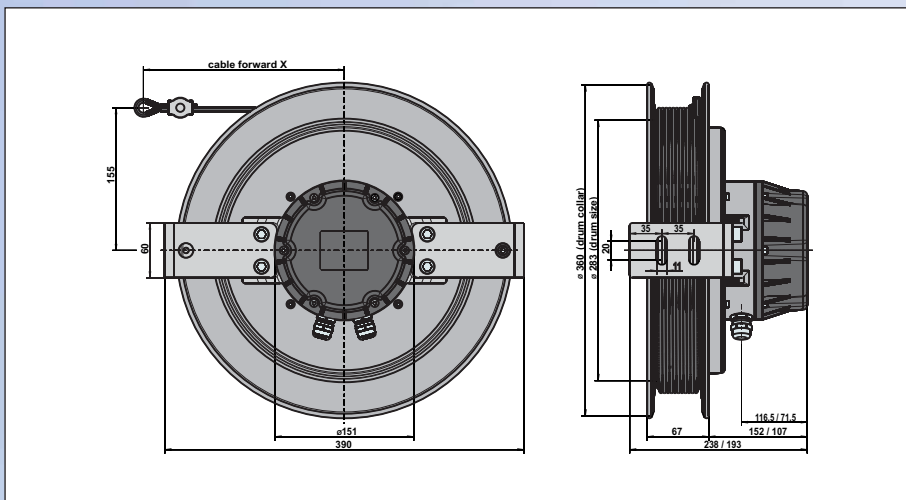
# ...the Types



WL 56

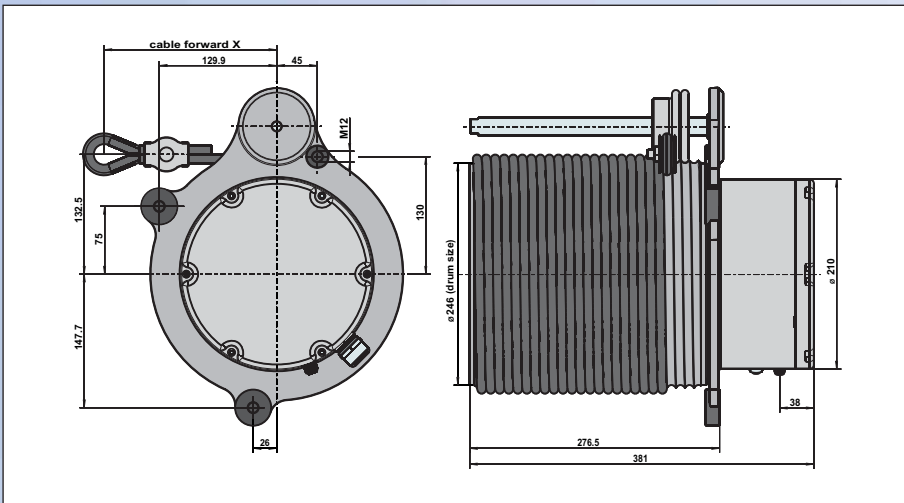


WL 020

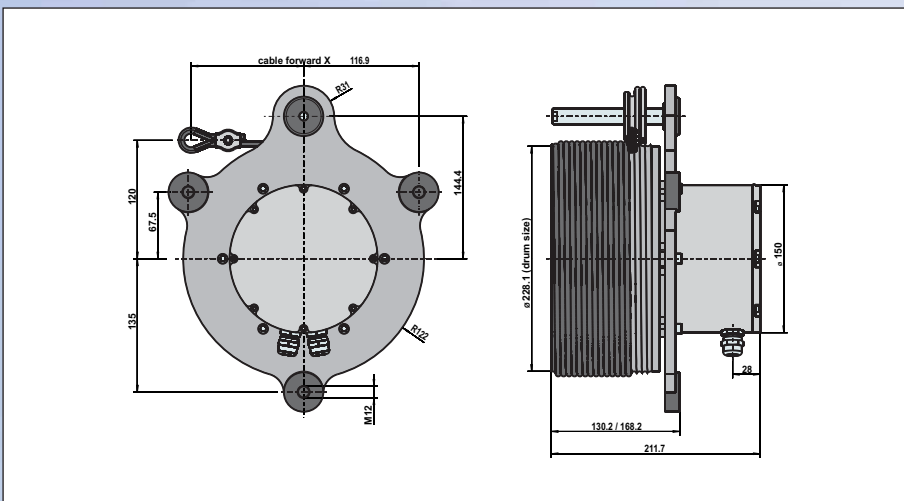


WL 18 / WL 32

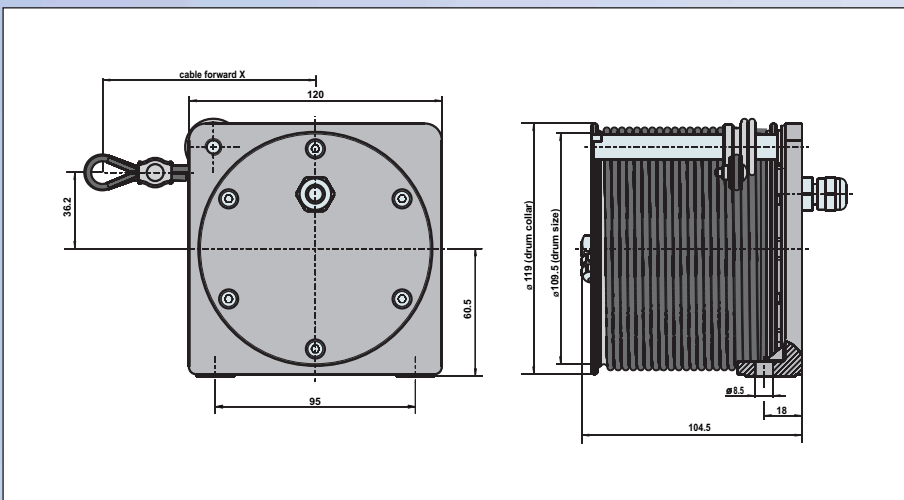




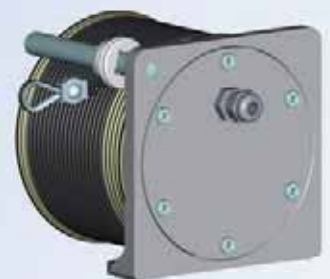
L 15



L 010 / L 015



L 06



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