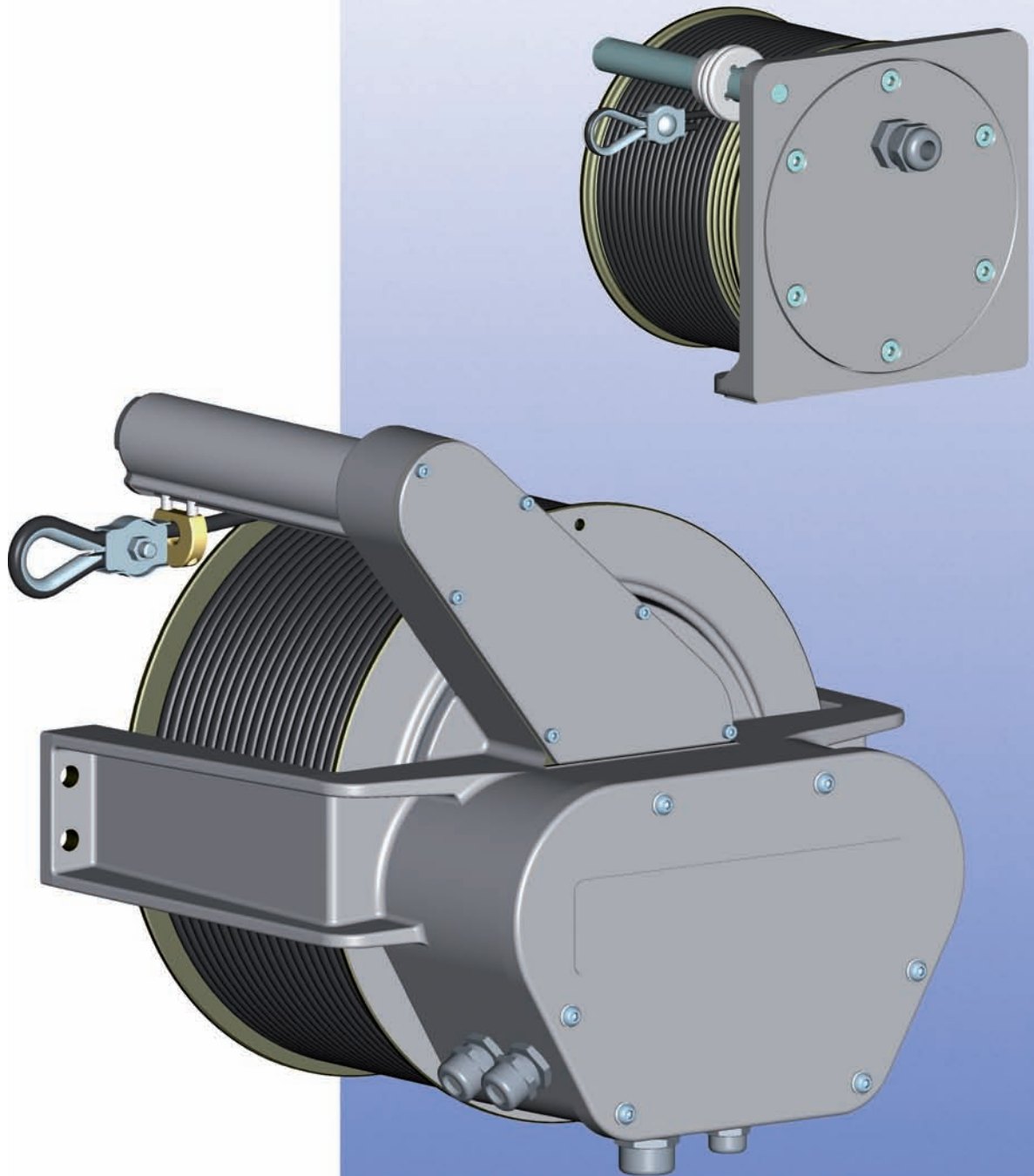


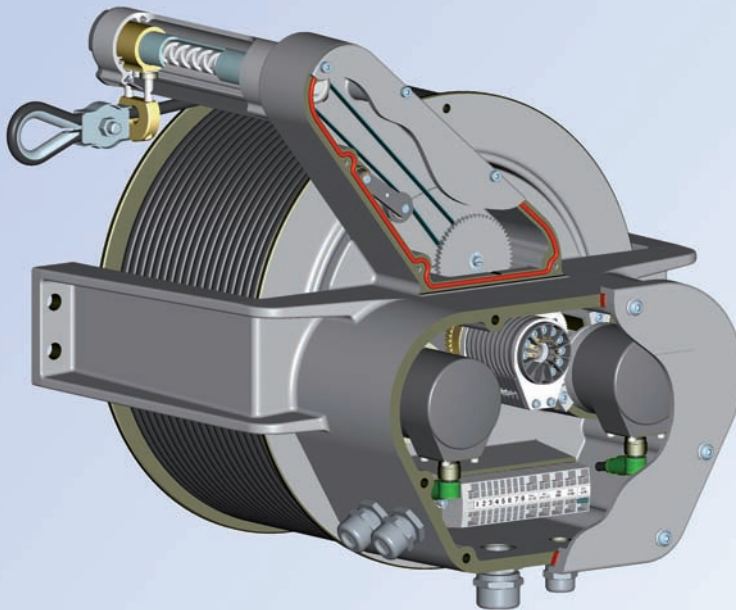
Cable Drum



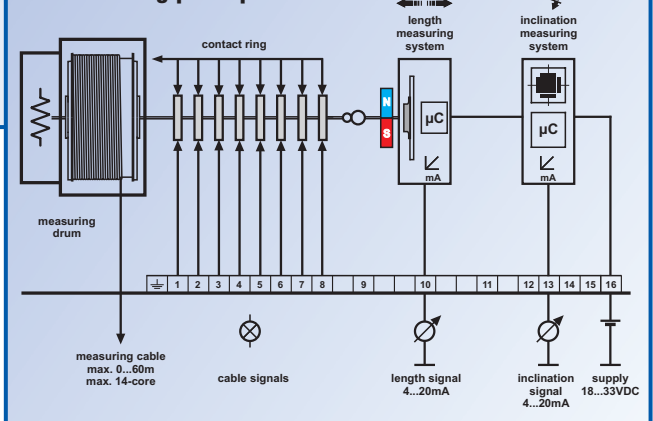
Cable Drum

with Length and Angular Transmitter

...Construction



...Measuring principle



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.



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.



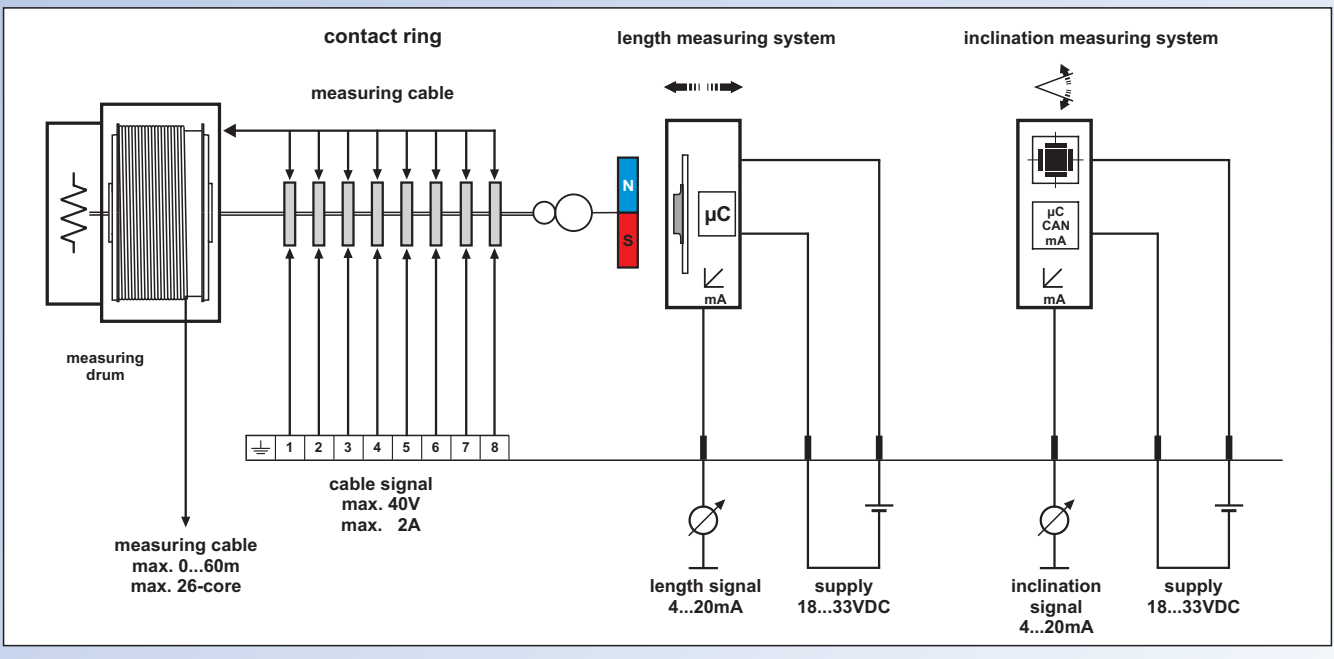
The transmission

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.

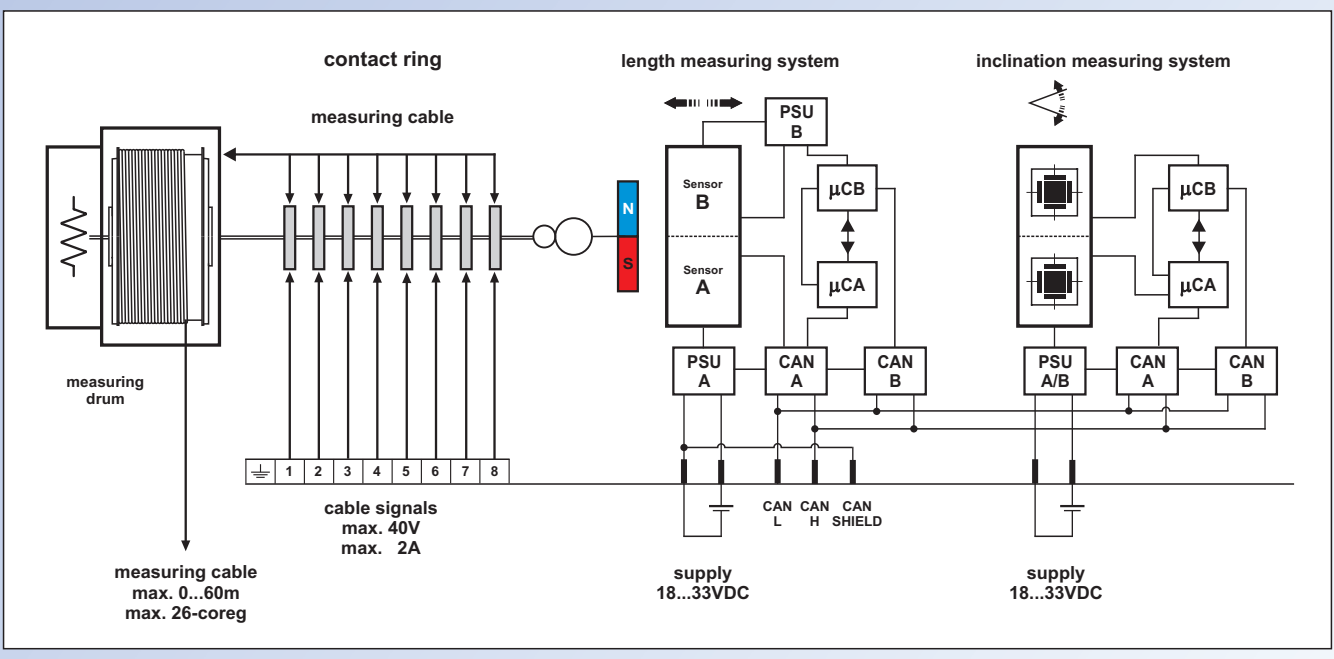
All electric components are inside of a completely closed aluminium casing of IP65.

...Simplified diagrams

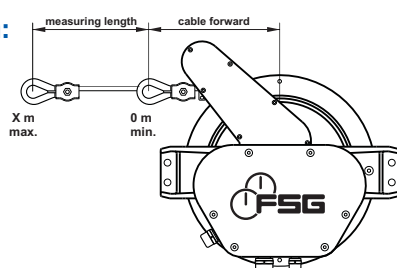
Simplified diagram for analogue signals



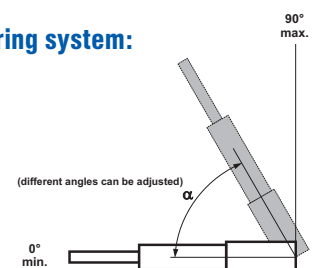
Simplified diagram for CAN-signals






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 mm²) 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 ² , type LiYCY	8 x 0.5 mm ² , type LiYCY	12 x 0.5 mm ²	3 x 0.22 mm ²
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 Ω	1, 2 or 5 k Ω		
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	± 0.1°	± 0.1°	± 0.1°	
Resistance output	1, 2 or 5 k Ω	1, 2 or 5 k Ω		
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 ²) or connector assembly		
Weight	32 kg	13 kg	15 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	1 m/s

Measuring length

Up to max.	15 m	10 m	15 m	6 m
Measuring cable	26 x 0.24 mm ² , type LiYCY	5 x 0.34 mm ² , type LiYCY	3 x 0.14 mm ² , type LiYCY	
Cable diameter	9.5 mm	5.2 mm	3 mm	
Circumference of drum <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 %	

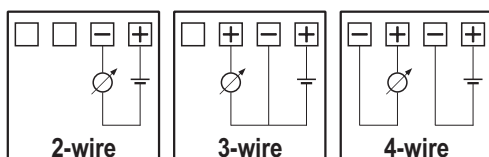
Electrical Data

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

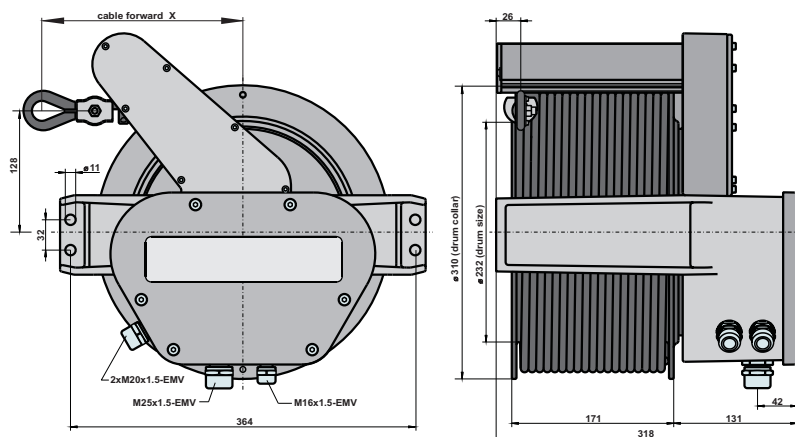
Resistance output	1, 2 or 5 k Ω	1, 2 or 5 k Ω	
Output analogue	4 - 20 mA or 0 - 10 V DC	4 - 20 mA or 0 - 10 V DC	4 - 20 mA or 0 - 10 V DC
Output digital*	CANopen	CANopen	CANopen

Type of circuit

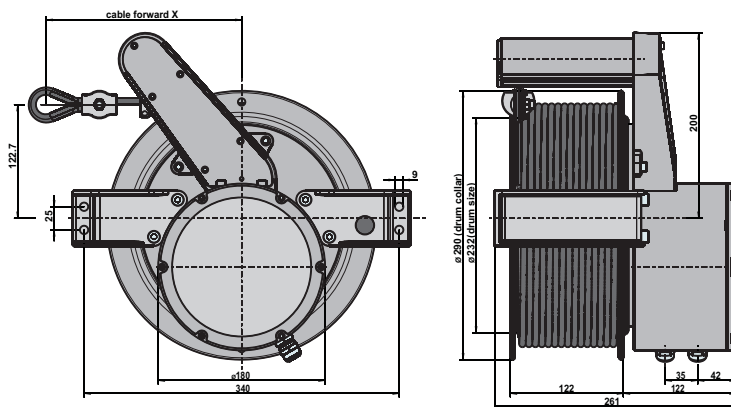
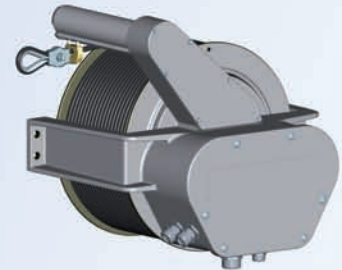


*On request also in version according to IEC 61508, SIL (Safety Integrated Level) or ISO 13849, PL (Performance Level)

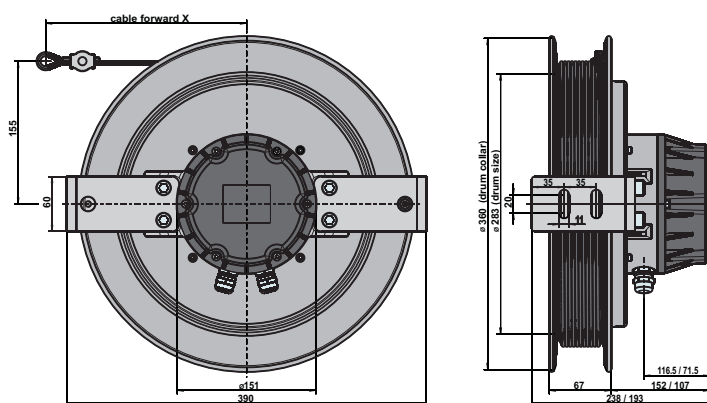
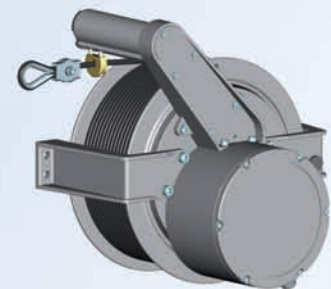
...the Types



WL 56

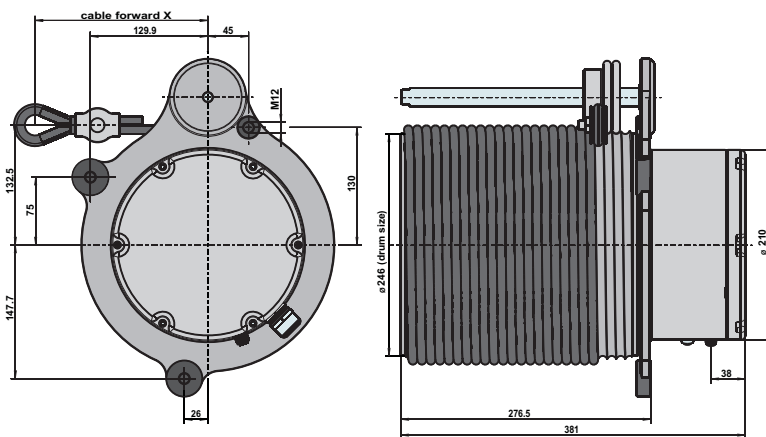


WL 020

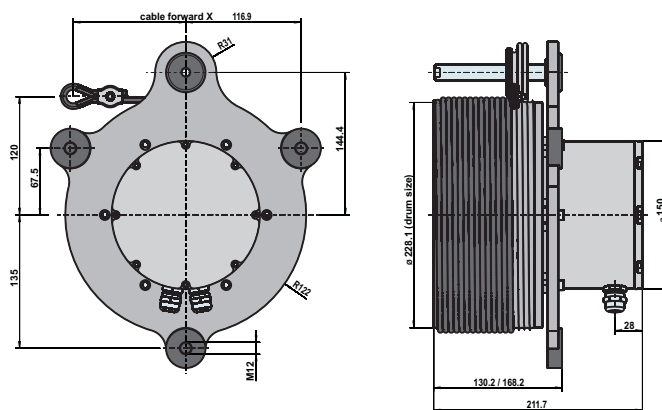
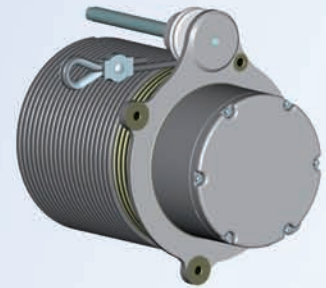


WL 18 / WL 32

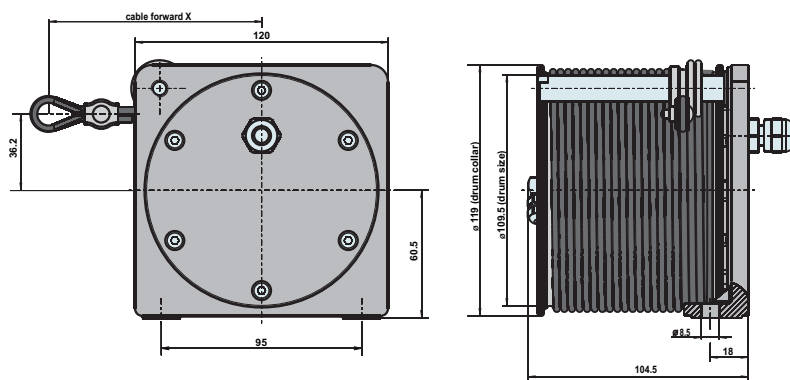
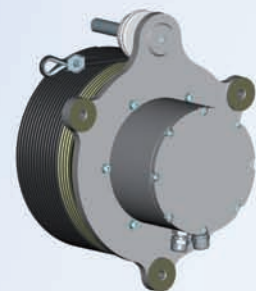




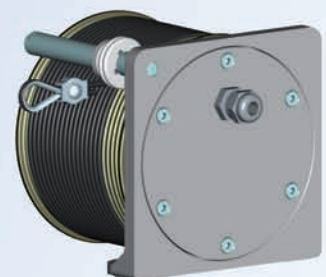
L 15



L 010 / L 015



L 06



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