

Order-No:

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1 Explanation of terms

- Drive spring : Flat spiral spring without winding space but high energy capacity
- Cassette: Steel housing in which the springs are capsulated to protect the personal from uncontrolled spring release.
- Protection grade : Protection against contact and penetration from dust and water (see EN 60529; DIN VDE 0470-1)
- Spring characteristics:
 - n_v : pre-loading revolutions
 - n_a : operation revolutions
 - n_R : reserve revolutions
 - n_{Bl} : revolutions until block

2 Technical Data

All important technical data like type-no., serial-no., winding-length and spring specifications n_v and n_a are shown on the type plate.

3 Design

Spring cable reels are used to automatically wind up cables on mobile consumers. This winding process is effected by preloaded spiral springs, which are installed within the reel body.

The reel is equipped with a mounting flange which is connected with 2 screws to the steady axle. The reel is ball-bearred. The reel body consists of a solid sheet joint (galvanised sheet). The springs are located in spring cassettes inside the drum. All springs and ball-bearings are specially greased for a temperature range from -55°C to $+100^{\circ}\text{C}$.

The slip ring assembly is mounted to the shaft opposite to the mounting flange and capsulated by a steel or plastic housing with protection grade IP 65. The cable gland entry is situated in the lower part of the housing. The rings of the slip ring body are fixed to the steady axle. The brushholder unit is attached to the rotating reel body.

4 Taking into operation

The initial operation is to be executed only by an expert.

Pass the flexible cable through the slot on the outer drum flange and the lower part of the slipring housing and connect the cable cores to the current collectors.

Wind up cable by hand without spinning and fix the end of it.

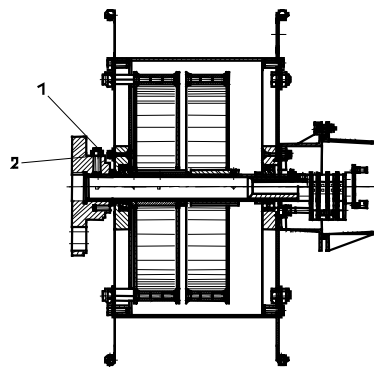
Place the cable reel into its position of use. The fixed supply cable must be lead through the hollow shaft and be connected to the connectors.



Safety note:

The correct position and connection between fixing flange and reel axle has to be observed. The 2 threads pins [1] have to be centered in the holes of the axle, tightened and checked with the hexagon head nuts [2].

The non-observance of these safety notes may cause damage to objects and injuries to people.

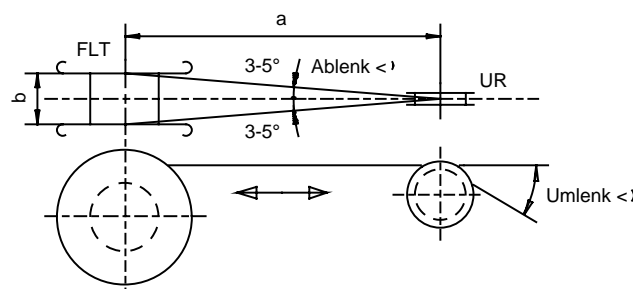


Start pre-loading the reel with n_v revolutions in pull-off direction and secure the reel. Now loosen the end of the cable and unwind by hand as much cable as necessary to suit the shortest distance to the feed point. Then connect the flexible cable to the feed point and release the reel. The quantity of turns can be found on the name plate.



Safety note:

To reach a optimum winding behaviour the fixed point must be within the winding width b and the angle of deflection of the cable must not exceed 5° , to prevent irregularities during winding and improper axial forces. The same has to be observed for deviating rollers and roller nozzles.



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The required pre-loading windings „ n_v “ can also be determined as follows:
In order to achieve maximum life-time of the spring it has to operate in its medium range.
This adjustment can be achieved as follows.
Turn the reel by hand until the spring is completely wound up.
By unwinding the cable reel slowly you can determine the total number of revolutions.
Now subtract the operation revolutions n_a from the total number of revolutions. The result divided by two is the number of required pre-loading windings n_v and the number of the reserve windings n_R .



Safety note:

There must be at least 2 spare windings. Never draw up the spring set until it stops, this would cause improper forces on the flange→danger of breakage.

The non-observance of these safety notes may cause damage to objects and injuries to people.

5 Maintenance

Depending on the use, however after one year at the latest, we recommend to carry through a routine inspection by an expert of the following works.

Reel:	All parts like screws and nuts should be inspected by its tightness.	
	Check rubber joints and cable gland-screwings for leakage and	
damages.	Replace all leaking or damaged parts.	
Flange:	Check if the connection between flange and axle is tightened.	
Slip ring body:	Check the wear rate of the contact brushes and replace if necessary.	
	Clean the slip ring body from dust and abrasion.	
	Check the ring surface, polish if necessary.	
	Check all screws and nuts and re-tighten if necessary.	
	Check all cables regarding damages of insulation and fixing.	
Cable:	Check for twist:	- in case: untwist
	Check for damage:	- in case: re-new



Safety note:

Maintenance works must only be carried out under off-circuit conditions!

6 Overhaul

Spare parts for the reel and the slip ring body are shown in the corresponding spare part list.



Safety note:

For safety reasons the main springs are encapsulated in cassettes. Do not open the cassettes. Springs must only be replaced completely together with the cassettes. Handling loose springs is perilous. If, however, this should be required, please observe the operating instructions BAL6100-0001 (please order, if required).

- Before starting any disassembling set the cable reel off-circuit.
- Disconnect the flexible cable from the feed point and wind it on the reel body. The springs have to be relaxed completely and slowly.
- Remove the upper part of the slipring housing.
- Disconnect fixed supply cable from slip ring body (slip rings or connection board) and remove through hollow axle.
- Remove the whole reel from the unit.

Serial spring arrangement: (spring code e.g. 2DH(T)**H**, H signifies serial arrangement)

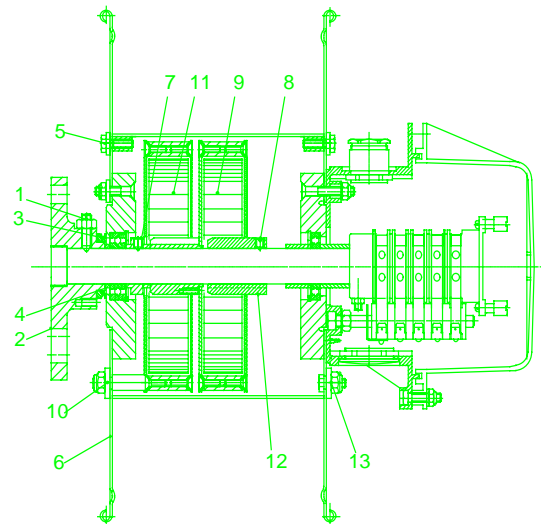
- Loosen screw bolts of mounting flange [1] and remove mounting flange [2], seal [3] and spacer ring [4].

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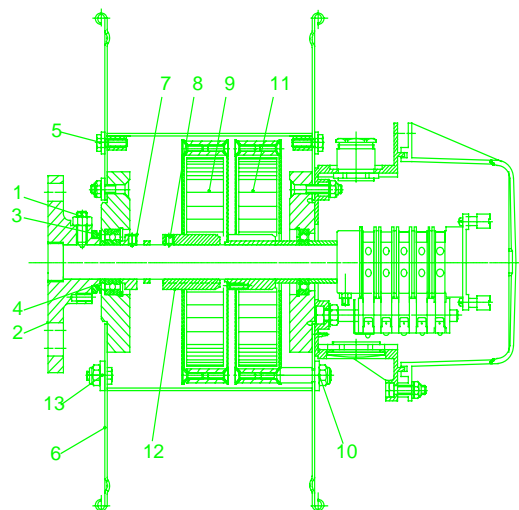
For feed-off "left":

- Loosen the hex. bolt nuts [10] of the spring cassettes on the flange side and the hex screw bolts [5] of the spring cassette.
- Remove silicone joint between reel flange and reel body and remove reel cover and flange [6] carefully.
- Loosen screw bolt [7] of fixing ring and remove fixing ring (not for types BEF265/325).
- Remove spring cassettes [9, 11] carefully.



For feed-off "right":

- Loosen the hex bolt nuts [5] of the reel flange and the reel body.
- Remove silicone joint between reel flange and reel body and remove reel cover and flange [6] carefully.
- Loosen screw bolt [7] of fixing ring and remove fixing ring (not for types BEF265/325).
- Loosen screw bolt of spring nut [8] and remove spring nut.
- Remove spring cassette [9] and spring nut
- Loosen hexagon nuts [10] of the steady spring cassette [11] on the outside of the reel flange on the slip ring side of the drum. Remove spring cassette.



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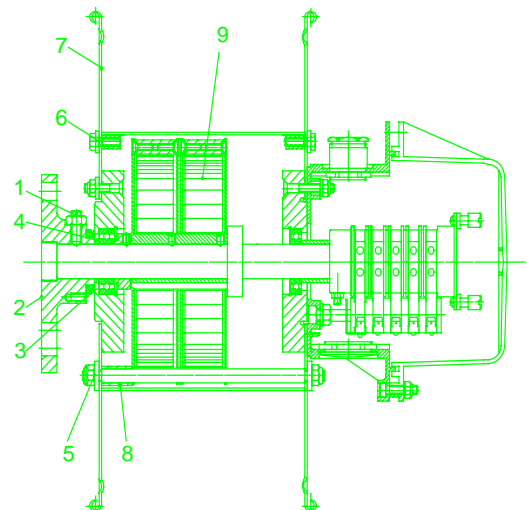
Re-assembly:

Even unbroken springs should be replaced since the lifetime is identical to the broken one and material could be fatigued.

- Before reassembling the reel, the spring nuts should be cleaned and greased with elastic and acid-free grease (e.g. grease type CENTOPLEX 2 DL of Messers. Klüber, Germany).
- Clean all parts determined for re-use.
Re-assemble the reel vice versa to the instructions mentioned above.
Please take care of a proper connection of the ground core.
Before installation and taking into operation follow point 4.

Parallel spring arrangement: (spring code e.g. 2DH(T), no H signifies parallel arrangement)

- Loosen screw bolts of mounting flange [1] and remove mounting flange [2], seal [3] and spacer ring [4].
- Loosen hexagon nuts [5] of spring bolts and hexagon screws [6] that connect reel flange and reel body.
- Remove silicone joint between reel flange and reel body and remove reel cover and flange [6] carefully.
- Remove spacer rings [8] from the parallel bolt



Remove spring cassettes [9] carefully.

Re-assembly:

Even unbroken springs should be replaced since the lifetime is identical to the broken one and material could be fatigued.

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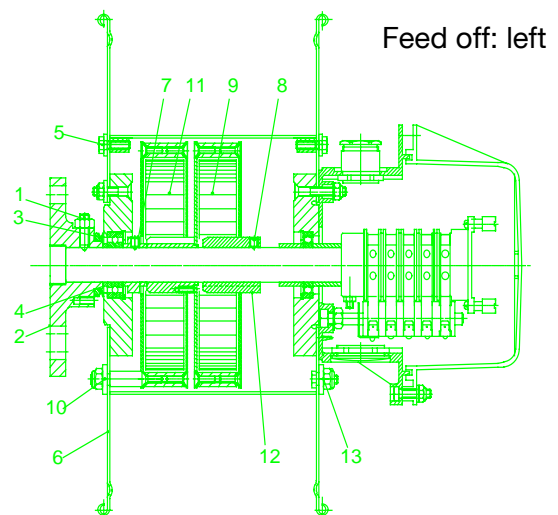
- Before re-assembling the reel the spring nuts should be cleaned and greased with elastic and acid-free grease (e.g. grease type CENTOPLEX 2 DL of Messers. Klüber, Germany).
- Clean all parts determined for re-use.
Re-assemble the reel vice versa to the instructions mentioned above.
Please take care of a proper connection of the ground core.
Before installation and taking into operation follow point 4.

7 Change of rotation direction

Serial spring arrangement (spring code e.g. 2DH(T)H, **H** signifies serial arrangement)

The described procedure refers to the change of feed-off direction from left to right:

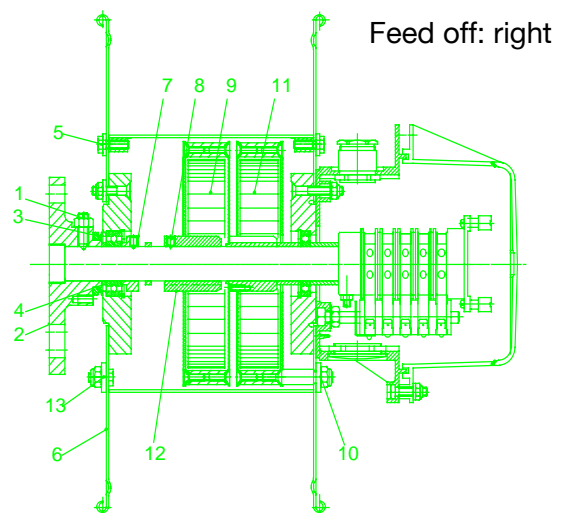
- Preparing steps as described under point 6 „change of springs“
- Loosen screw bolts of mounting flange [1] and remove mounting flange [2], seal [3] and spacer ring [4].
- Loosen the hex nuts [10] of the spring cassette and the hex screws of the reel flange [5] and reels body.
- Remove silicone joint between reel flange and reel body and remove reel flange and bearing flange [6] carefully.



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- Loosen screw bolt [7] of fixing ring and remove fixing ring (not for types BEF265/325).
- Remove spring cassettes [9, 11] carefully.
- Loosen screw bolt of spring nut [8] and remove spring nut.
- Remove the hex nuts [13] of the „blind“ screw joint of the reel flange on the slip ring body side in order to close the open drills of the spring cassette bolt on the reel flange of the flange side.



- Turn the first cassette with the stud bolt for 180° and insert it into the free drill of the reel flange on the slip ring body side and fasten it with hex nut [10].
- Turn all other spring cassettes 180° and insert them one after the other into the first spring cassette resp. in each following.
- Turn the finishing spring nut [12] for 180° and fix it that way on the axle that the spring cassettes have at least 4 - 5 mm play.
- Fix set collar [7] on axle.
- Attach reel flange [6] onto the axle (set collar as limit stop) and fix it with the hex screws [5] on the reel body.
- Attach spacer ring [4], seal [3] and flange [2] and fix it.
- Seal separation fractures with silicone.
- Connect reel as described under point 4 „taking into operation“
Caution! Take care of a proper connection to the ground core.

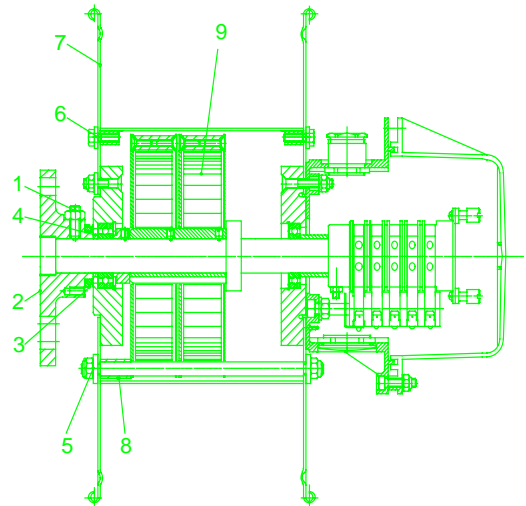
Parallel spring arrangement (spring code e.g. 2DH(T), no „H“ signifies parallel arrangement!)

- Preparing steps as described under point 6 „change of springs“

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- Loosen screw bolts of mounting flange [1] and remove mounting flange [2], seal [3] and spacer ring [4].
- Loosen the hex nuts [5] of the parallel bolt and the hex screws of the reel flange [6] and reels body-connection.
- Remove silicone joint between reel flange and reel body and remove reel flange and bearing flange [7] carefully.
- Loosen spacers [8] from the parallel bolt.
- Remove spring cassettes [9] carefully.
- Turn spring cassettes 180° and align them on the axle.
- Attach spacers on parallel bolt.
- Attach reel flange [7] onto the axle (set collar as limit stop) and fix it with the hex screws on the reel body.
- Attach spacer ring [4], seal [3] and flange [2] and fix it.
- Seal separation fractures with silicone.
- Connect reel as describe under point 4 „taking into operation“
Caution! Take care of a proper connection to the ground core.



8 Additional documents

Dimensions sheet

Upon submitting an order or inquiry for spare parts always indicate the type number of the reel and the serial number. Both numbers can be found on the type plate of the reel.