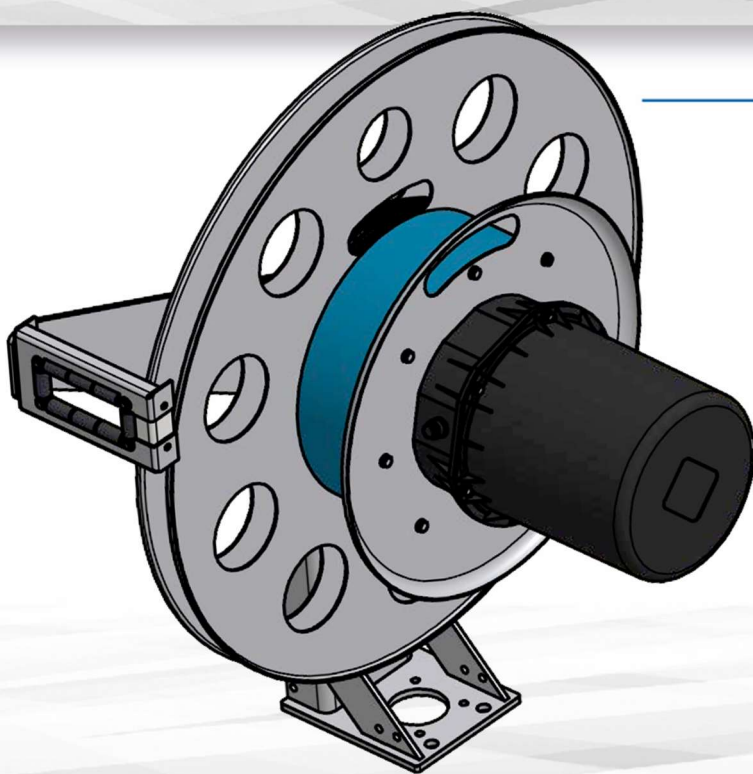


Technical Documentation

Type series FLT409004/2021-183



ChargeReel
power for emotion

abu
power for motion

www.abu-online.de

Dear customer

You have chosen a quality product from ABU GmbH. We thank you for the trust you have placed in us.

When you receive the delivery, determine whether there has been any transport damage or whether any parts are missing! Check the completeness of the delivered goods including the ordered special equipment using the delivery note. Record any visible transport damage photographically. The transport company is liable for damage caused by improper transport. Only an immediate complaint leads to compensation!

Read and follow these operating instructions, especially the safety instructions, before using the machine for the first time. Make sure that all machine operators read these operating instructions before they operate the machine.

Individual equipment may mean that not all of the descriptions in these operating instructions apply to your machine. In this case we use general wording.

If you have any questions about the use of the machine or these operating instructions, please contact us.

Regular maintenance and timely replacement of worn or damaged parts increase the lifetime of your machine.

Constant improvement of our services

Our operating instructions are updated regularly. With your suggestions for improvement, you will help to create an operating manual that is even more user-friendly. Please send us your suggestions by email to kontakt@abu-online.de.

1. User instructions

The user instructions provide you with information on how to use the operating instructions.

1.1. Purpose of the operating instructions

These operating instructions describe the operation, cleaning, maintenance and repair of the machine. They provide important information for safe and efficient use of the machine. If you have any questions, please contact us.

1.2. Keep the operating instructions

The operating instructions are part of the machine.
 It is therefore important to read these operating instructions and:

- always keep this document on or near the machine,
- keep the instructions for future use.
- pass this document over to the buyer when the machine is sold.

1.3. Representations used

Instructions for action

Activities that have to be carried out in a specified order are shown as numbered instructions. This order must be strictly adhered to.

Enumerations

Lists without a predetermined order are shown as a list with bullet points or bullet points.

Item numbers in illustrations

Numbers in figures refer to the item numbers in the adjacent definition / explanations.

1.4. Terms used

term	importance
Danger	Danger means the source of a possible hazard of injury or damage to health.
Manufacturer	The term "manufacturer" refers to the company ABU GmbH.
Device / machine	"Device" or "machine" is used to refer to the spring-driven charge reel.

2. Explanation of symbols

2.1. Explanations of symbols



ATTENTION

indicates a possible hazard that can result in physical injury or property damage if it is not avoided.

Disregarding the safety instructions marked with "CAUTION" may cause personal injury or property damage.



Important information

indicates an obligation to behave or act in a special way during assembly work and to use the machine properly.

Disregarding these instructions or failure to carry out the work steps described can lead to malfunctions on the machine or in the vicinity.



NOTE

indicates application tips and particularly useful information.

These notes help you to make optimal use of all functions on the machine.

3. Warning notices

Read and observe the operating instructions and safety instructions before starting the machine! We use the following warning symbols to indicate possible hazards in the respective chapters.



There is a risk during transport and assembly of the machine due to careless and improper handling.

- During transport and assembly, proper occupational safety (e.g. safety shoes) and suitable work equipment (e.g. lifting gear and stops) must be observed!



There is a risk of electrical current! Serious injuries or death can result.

- De-energize the machine and neighboring live parts during installation and maintenance work. The absence of voltage must be firmly and ensured.
- Make sure the machine is secured against being switched on again during installation and maintenance work.



There is a risk of crushing fingers or hands caused by accessible, moving parts of the machine, e.g. when working on assembly, adjustment, troubleshooting, cleaning, maintenance and repairs!

- Never reach into dangerous areas while the device is in motion.
- Direct people out of the danger area of the machine before the device is operated.



There is a risk from lifting or lowering parts

- During the stay in the area of a rising or lowering machine parts or other moving components, pay close attention!



There is a risk of being drawn in or caught for the entire body or parts of the body, caused by parts that rise or lower!

- When staying in the area of a rising or lowering machine parts or other moving components, you should pay particular attention! There is a risk of trapping e.g. clothing on the cable or moving parts!

4. Safety instructions

Read the necessary information to ensure safe and trouble-free operation of the machine.

All safety instructions in these operating instructions must be observed! Most accidents are caused by neglecting the simplest safety rules.

By observing all the safety instructions in these operating instructions, you will help prevent accidents.

4.1. Safety conscious working

The machine is built according to the state of the art and the recognised safety rules. Nevertheless, hazards and impairments can arise when using the machine:

- For life and limb of the operator or third parties
- for the machine itself
- other material assets

These operating instructions must be observed for the safe operation of the machine, in particular:

- the basic safety instructions, the action-related safety instructions and the handling instructions
- the information on the intended use
- the warning notices on the machine
- the national, generally applicable regulations on occupational safety, accident prevention and environmental protection

The machine is only to be operated in a perfectly safe condition.

4.2. Organisational measures

4.2.1. Obligation of the operator

The operator is obliged:

- to observe the national, generally applicable regulations on occupational safety, accident prevention and environmental protection
- only allow people to work with / on the machine who:
 - are familiar with the basic regulations on occupational safety and accident prevention
 - have been instructed in working with / on the machine
 - have read and understood these operating instructions
- to keep all warning notices on the machine in a legible condition

4.2.2. Operator obligation

All persons who are assigned to work with / on the machine are obliged to:

- observe the national, generally applicable regulations on occupational safety, accident prevention and environmental protection,
- read and observe the chapter "Basic safety instructions" of this operating manual,
- read the chapter "Warning notices and instruction notes" of this operating manual and to follow the warning notices when operating the machine,
- become familiar with the machine,
- read the chapters in these operating instructions that are important for carrying out the work assigned to them.

If the operator discovers that a device is not technically faultless in terms of safety, he must fix this defect immediately. If this is not part of the operator's job or if the relevant specialists knowledge is lacking, he must report the defect to the supervisor or the operator.

4.3. Qualifications

Only trained and instructed persons are allowed to work with / on the machine. The operator must clearly define the responsibilities of the persons for operation, maintenance and repair.

A trainee may only work with / on the machine under the supervision of an experienced person.

The operator may only carry out the work described in these operating instructions. Only specialists are allowed to carry out work requiring special special knowledge. Skilled workers have qualified knowledge and suitable aids to carry out this work properly and safely.

4.4. Product safety

4.4.1. Safe operation of the machine

Only trained and instructed persons are allowed to work with / on the machine.

4.4.2. Safety and protection devices

Only operate the machine if all safety and protection devices are properly attached and fully functional.

Faulty or dismantled safety and protection devices can lead to dangerous situations.

Check all safety and protection devices for externally visible damage and functionality before the machine is put into operation.

4.4.3. Conformity

By issuing the declaration of conformity and affixing the CE mark, the manufacturer confirms that the machine meets the basic safety and health requirements.

4.4.4. Structural changes

Structural changes, additions or modifications to the machine are not allowed. In the event of structural changes, additions or modifications, the declaration of conformity and the CE marking of the machine lose their validity. Furthermore, the operating permit loses its validity according to national and international regulations.

The manufacturer is not liable for damage caused by unauthorized changes to the machine, e. g. conversions, use of third-party accessories, welding and drilling work, etc..

4.5. Spare and wear parts as well as auxiliary materials

Machine parts that are not in perfect condition must be replaced immediately.

Only use original parts from the manufacturer or parts approved by the manufacturer so that the operating permit remains valid in accordance with national and international regulations. If spare and wear parts from third-party manufacturers are used, it is not guaranteed that they are designed and manufactured to withstand the stress and safety requirements.

The manufacturer assumes no liability for damage caused by the use of unapproved spare and wear parts or auxiliary materials.

Wear parts are not covered by the guarantee!

Measurements and visual inspections must be carried out on the wearing parts at regular intervals.

4.6. Intended use

The charge reel is to be used exclusively for charging electrically operated vehicles or their batteries - according to the specification approved by the customer - by automatically winding and unwinding the cable and for energy and data transmission. The manufacturer assumes no liability for damage caused by improper use of the machine. The charge reel is to be assembled according to local conditions and is connected to the existing electrical charging infrastructure. The end of the cable is connected to the corresponding feed point of the vehicle with a plug. The cable is wound and unwound by a spring drive that is matched to the system.

Intended use also includes:

- compliance with all instructions in this operating manual
- compliance with the inspection and maintenance work
- the exclusive use of original parts

4.7. Claims for defects and liability

Defect and liability claims for personal injury and property damage are excluded if they can be traced back to one or more of the following causes:

- improper assembly, commissioning, operation and maintenance
- operate with defective safety devices or improperly attached or non-functional safety and protection devices
- failure to observe the information in the operating instructions regarding transport, storage, assembly, commissioning, operation, maintenance and set-up
- unauthorized structural changes
- inadequate monitoring of the machine, especially machine parts that are subject to wear
- improperly carried out repairs
- natural disasters and force majeure
- vandalism

For damage resulting from improper use:

- the operator bears sole responsibility
- the manufacturer assumes no liability

5. Transport and storage



Ideally, the original packaging should be used during transport and / or storage. If possible, it should only be removed immediately before installation. It is essential to protect the device from damage!

Avoid the formation of condensation or even freezin. If necessary use the integrated heating unit or store the device in a frost-proof location.

5.1. Product handling and transport



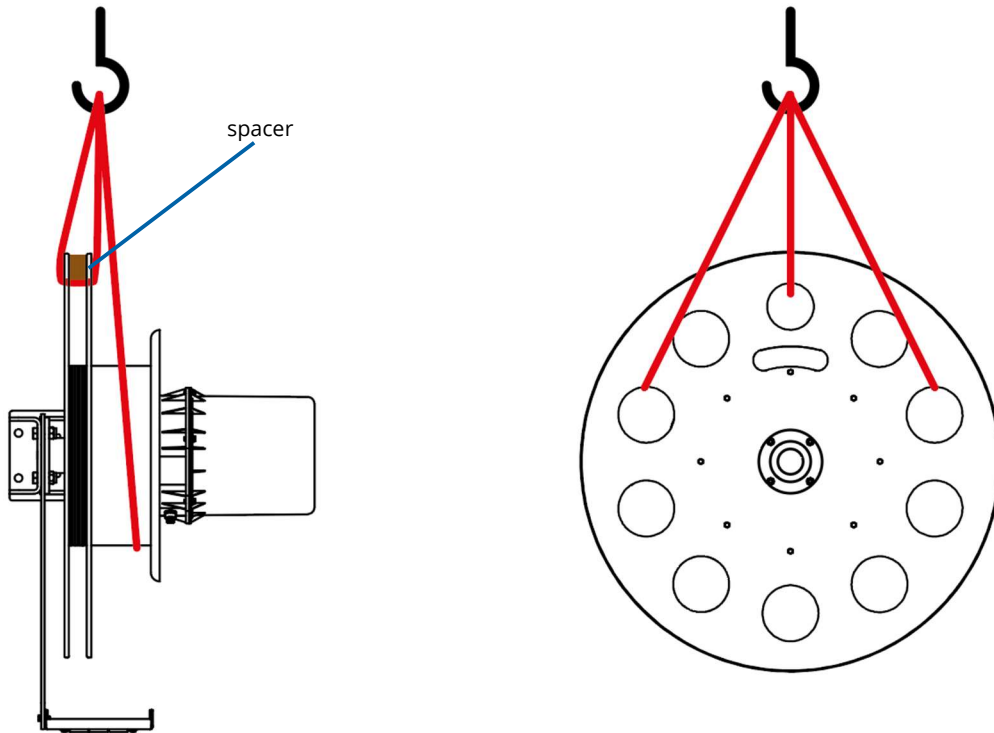
Observe the warning notices in the opening chapter of this documentation!



The entire device or individual components are usually packed in such a way that they can be transported by a forklift. Make sure that there are sufficient personnel when handling / lifting the entire unit or individual components, e.g. with a crane to ensure safe handling.

When attaching e.g. lifting straps on the device, it must be ensured that the flanges do not bend when they are lifted and that no components are damaged. Only use textile straps to avoid damage.

5.2. Positioning of lifting straps



5.3. Storage

The storage of the reel is an important point because it can happen that the device is installed in its place of destination after months. Professional storage is particularly important in areas with special environmental conditions (e.g. sea climate, salt water, high humidity, the influence of dust, high temperature differences, etc.). This is the only way to assume that all individual components will still be fully functional when the reel is installed.



- The reel is packed accordingly for transport purposes. Make sure that the device is not taken out of this packaging and that all components are present (see packing list).
- All parts must be set down in such a way that they are protected from soil moisture.
- Protect the reel from the effects of water and dust.
- Make sure that the reel is not constantly moved in its storage location and that you can carry out maintenance work on the stored device if necessary (observe the corresponding chapters of this documentation).
- Do not expose the reel or any of its components to direct sunlight!
- When storing the device, note that the storage time is not unlimited. The reel body and components are subject to the warranty provisions even during the storage period. If the reel is stored for more than 4 weeks, it must be stored in a warehouse.

5.4. Storage location

The chosen storage location should meet the following requirements:

- Closed, dust-free and vibration-free room
- Humidity up to max. 60%
- Room temperature without large temperature fluctuations
- No direct sunlight
- No aggressive media at the storage location
- If possible, adapt the storage location to the aforementioned conditions. Since these conditions represent ideal conditions, they are rarely given in practice.

It is usually sufficient if you observe the following points for interim storage:

- If components were delivered in transport boxes, you should leave them there for storage if possible. Make sure the lid of the box is open. Corrosion is largely avoided through the adequate supply of air.
- If possible, store everything in a closed building with low-dust air. If you do not have an enclosed space for storage, you must place all components in such a way that they are protected from moisture and the effects of dust.

5.5. Longer storage periods



All storage measures listed in the “Storage” section also apply to long-term storage. In addition, note the following points:

- To ensure that the carbon brushes do not have permanent contact with the sliding tracks during storage, fold outwards the brush holder's, which is part of the slip ring body, and fix it in place.
- Before the reel is put back into operation, the slip rings and brush holders must be cleaned to make sure perfect contact again.
- Before the device is put into operation, the electrical and mechanical systems must be checked for proper functionality.

6. Product description

6.1. Scope of delivery

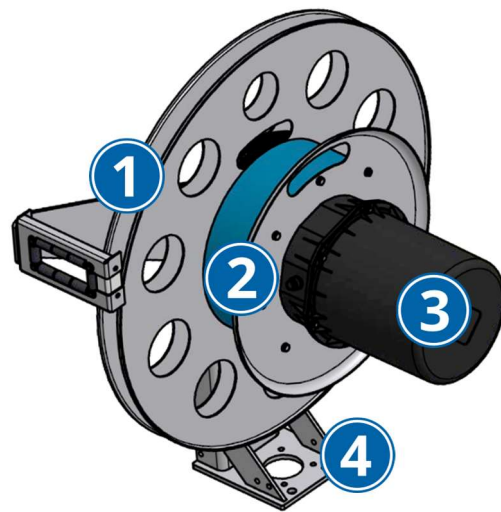
Due to the compact structure, the reel is delivered as a complete unit in accordance with the specification approved by the customer in advance. Components included in the scope of delivery are:

Component 1:
Reel body, possibly including roller window, completely assembled (without cable!)

Component 2:
Integrated spring drive

Component 3:
Slip ring assembly (SRK) including housing perhaps with integrated heating unit.

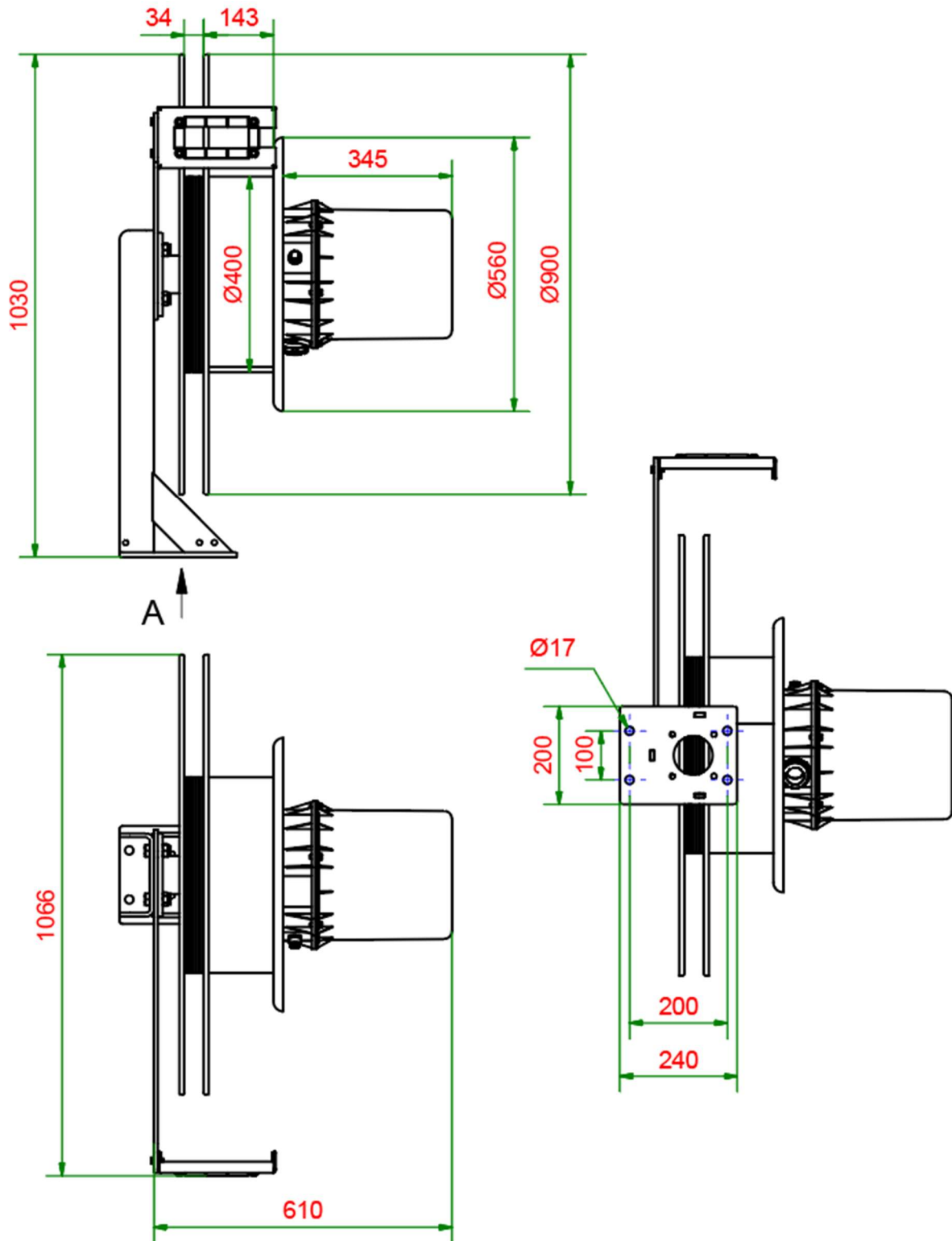
Component 4:
Mounting unit.




6.2. Function

The charge reel is a spring-driven winding device for orderly winding and unwinding of cables. End consumers (such as electric vehicles) are supplied with electrical power using the charge reel. It also ensures secure data transfer between the consumer and the charging infrastructure. It is possible to install the charge reel in underfloor, wall or ceiling mounting.

7. Technical drawing



8. Type label

		ABU GmbH Lise-Meitner-Str. 17 48529 Nordhorn Germany	Tel. +49 5921 81 966 50 Fax +49 5921 81 966 522 kontakt@abu-online.de www.abu-online.de
Type:		Serial-No.:	
Travel distance LW m	Cable		Number of turns LW
Spring turns of the reel			
n block	n pretension	n reserve	
Data of slip ring at 25°C			
Poles	x	Amp. +	Volt
Year of production 2024			



Exemplary representation of the type label. The original nameplate on the product shows the manufacturer's logo and corresponding contact details in the header.

The technical data shown here correspond to the technical data of the product described in this documentation.

9. Assembly instructions

The foundation or the assembly surface must be checked prior to assembly. Fastening holes and dimensions must correspond to the hole pattern of the flange.



All dimensions for assembly can be found in the dimensional drawing belonging to the specification.



- The foundation or the mounting surface must be designed in such a way that it can absorb the weight of the reel including the cable weight, as well as the forces generated by reeling and vibration. Vibrations in the reel body caused by an unstable foundation are not permitted.
- The foundation must be plan. Unevenness or inclination of the flange support must not exceed the values given in the specification.
- The foundation must be designed in such a way that no resonance vibrations occur and no vibrations can be transmitted from neighboring foundations. Steel structures on which the flange is mounted must be torsion-resistant. They are to be designed according to the weight and torque, taking into account the forces acting on the flange.

9.1. Assembly / fastening material

The required fastening material must be available - it is not included in the scope of delivery.



- It is attached to the foundation by screwing. The length of the screws results from the thickness of the foundation plus the thickness of the flange, the screw head, the nut and the washer.
- Place the reel precisely onto the holes in the prepared foundation. Make sure the connection surface is flat and clean. The axis of the charge reel must be aligned horizontally.
- The carrying straps may only be loosened from the reel body and drive unit once the device has been firmly bolted to the foundation.
- Insert the screws through the base, gearbox feet and lock washer and tighten all screws slightly.
- Check the alignment of the reel body to the cable run or the cable tray.



Angle errors when aligning the charge reel can lead to improper winding of the cable. Abrasion and twisting of the cable can be the result.



- Align the charge reel so that the cable does not rub against the flanged wheels during winding and unwinding.
- Tighten the screws or nuts with the specified tightening torque according to the information in the table below.

Guide values for tightening torques M_A in Nm

for set screws with metric standard thread DIN ISO 261

Head friction $\mu_K = 0.12$; Thread friction $\mu_G = 0.12$; Room temperature; Safety factor 0.93

When using Schnorr washers (clamping washer according to DIN 6796 from Schnorr GmbH), the tightening torque must be increased by 10%

Thread	Strength class *				
	8.8	10.9	A2 / A4-80	A2 / A4-70	A2 / 4-50
M 3	1.2	2	----	----	----
M 4	3	4.5	2.5	2	----
M 5	5.5	8	5	4	----
M 6	9.5	14	9	6.5	----
M 8	23	34	21.5	16	----
M 10	45	66	42	32	----
M 12	78	114	73	55	----
M 16	192	281	180	135	----
M 20	386	551	----	264	----
M 24	664	946	----	----	212
M 30	1328	1891	----	----	423
M 36	2308	3288	----	----	735

Source: M4 - M30: DIN 25201-2: 2015-12
 Table C.2 "Reduced tightening torques"

M3: internal definition

9.2. Winding up the cable



Only cables that have been approved by the manufacturer as "reeling cables" and are suitable or approved for loading vehicles may be used. Note the information provided by the cable manufacturer.

- Set up the reel body in such a way that the flanges (lateral boundary surface of the reel) are vertical and the reel body can be turned.
- There is a cutout in the flange of the reel body. Run one end of the cable through this cutout from the inside out.
- Now put a winding around the reel body of the integrated spring drive and guide the cable through the cut-out of the smaller flange in the direction of the slip ring housing.
- Guide the end of the cable through the cable gland connection into the slip ring housing. The end of the cable should reach the brush holders of the slip ring.
- Now strip the cable so that the individual wires can be connected to the brush holder.
- There are cable clamps on the outside of the smaller flange. Fasten the cable to the flange using these clamps.



It is essential that the cable is laid without twisting. Please note the information provided by the cable manufacturer. Do not pay on more cable on the charge reel than specified when ordering. More cable length means that interference may occur and a proper charging process is no longer given..

- Now wind up the cable by turning the reel.



When determining the total length of the cable, 2 turns are to be provided as strain relief. These two turns must never be unwound during operation..

- Fasten the end of the cable or the charging plug to the flange of the charge reel so that the cable does not unroll unintentionally during transport.
- The reeling cable is now wound onto the reel body.

9.3. Pre-tensioning the reel and cable connection

Leaf springs are built into the charge reel, which can be pre-tensioned by turning the reel by hand to such an extent that the cable is always kept under tension.



You can only pretension the charge reel if the reel body is already firmly installed at its destination.

- Make sure that no voltage is applied to the consumer.
- Make sure that the end of the cable is connected to the reel body.



A sticker is attached to the flange of the reel body to mark the direction of rotation. Never turn the reel against these direction when pretensioning it! The springs would turn in the wrong direction and possibly break.

- Now either open the roller window on the lateral screw connection and pull out the cable or detach the roller window as a whole from the guide arm.
- The preload revolutions "nV" are indicated on the nameplate of your charge reel. Turn the reel by hand according to the instructions in the direction of the arrow.
- Note that there is a large force acting on the reel due to the pre-tension. Move the reel in place so that it will not move and you will not be injured from the force of the reel.
- Feed the cable through the roller window again and close it or reassemble the complete roller window in its original position.
- The spring cable reel is now pretensioned.

10. Installation

Observe the warning notices in the beginning of this documentation!



Before the charge reel is used in continuous operation, all components must be checked and readjusted if necessary. The following points must be processed for commissioning:



- Checking the assembly
- Check the attachment of the reel to the foundation
- Checking the reel body
- Check of all power and data connections
- Check the end positions (reel full / reel empty)
- Final visual inspection

10.1. Checking the assembly

To check the assembly, go through the following points:



- Proper assembly of the reel ensures that all fastening screws are tightened and secured.
- Make sure that all moving or rotating parts of the reel are not blocked and that these parts can move freely.
- Before commissioning, check the individual slip rings, brush holders and carbon brushes for possible mechanical damage during transport or assembly. If you find any damage to these parts, you have to replace them. If necessary, contact the manufacturer.
- Make sure that the slip ring assembly housing is sealed. Check the rubber seals.

10.2. Check the flange fastening



- Check the fastening of the device to the foundation by checking the tightening torque of the screws with a torque wrench.
- Use a visual inspection to check that the device is correctly installed. Should you find any damage, e.g. on the flange base, the foundation or other components, they must be eliminated. In the event of damage, do not put the reel into operation.

10.3. Reel body control



- Check the reel body very carefully. Even the smallest dimensional deviations on the reel body can lead to e.g. cable grinding on the flange and thereby the cable takes damage.
- Check the reel body with a visual inspection. If you find irregularities on the reel body or other components, check the root cause.
- Tighten all screw of the reel body and the flange with the required torque by using a torque wrench (see chapter "Assembly").

10.4. Checking the power and data wiring



- Check all clamp connections of the connection box or the socket or plug connection. Check the cable and the slip ring assembly and, if necessary, the connections to the machine`s control cabinet and all infrastructure.
- Check the cable entries of the slip ring assembly housing. Make sure that the cable entries are sealed so that no moisture can enter.
- Check the insulation of the cables for damage. If you find any damage, determine the reason and fix the problem!

10.5. Checking the reeling process



- Check the function of the spring drive by paying-off and paying-on the cable. The individual end positions (reel full / reel empty) must be checked. If necessary, the spring tension and the number of wraps must be readjusted.

When determining the total length of the cable, 2 turns are to be provided as strain relief. These two turns must never be unwound during operation.

10.6. Final visual inspection

The final visual inspection must be carried out in trial operation.



- Check the cable pay-on and pay-off. The cable must be unwound evenly onto or from the reel body. Under no circumstances should it run at an angle between the flanged disks or be clamped, as this would damage the cable.
- Observe the behavior of the reel. It must be bolted so tightly to the foundation that movements are impossible.

If problems arise during regular operation and you´re not able to determine the reason and solve the problem yourself, please contact the manufacturer.

11. Regular operation

Observe the warning notices in the beginning of this documentation!



The cable pay-on and pay-off is carried out by the spring drive.



- Carry out regular visual inspections. If you find any damage, determine the reason and fix the problem!
- Regularly check the function of the reel during operation. If malfunctions are discovered during operation, operation must be stopped immediately and the problem has to be fixed.
- Carry out a thorough visual inspection of the device and the cable on a regular basis. Check all clamp connections as well as the tightness of all connections and screw connections. If you find any damage, determine the reason and fix the problem!

If problems arise during regular operation and you're not able to determine the reason and solve the problem yourself, please contact the manufacturer.

12. Maintenance

Observe the warning notices in the beginning of this documentation!



For reliable operation it is necessary to carry out regular visual inspections and other maintenance work. We recommend adapting this maintenance work to the maintenance intervals of the corresponding operated consumers.

12.1. Maintenance intervals

If the electrical consumer has shorter maintenance intervals, these intervals should be used.

Wartungstätigkeit	Wartungsintervall
Visual inspection of the screw connections	monthly
General inspection	quarterly
Inspection of slip rings and carbon brushes	quarterly
Check screw connections	yearly
Change carbon brushes	yearly

12.2. Semi-annual maintenance

In addition to the visual and auditory checks, cleaning work must also be carried out on the system.



Check and clean slip ring assembly

- Make sure that the device is free from electrical voltage and that no one can switch the voltage back on without your knowledge.
- Open the slip ring assembly housing.
- Clean the slip ring body and remove any accumulated carbon dust. Use a dry cloth or, if necessary, a vacuum cleaner for cleaning.
- Check the slip rings. Remove the abrasion from the contact carbons. Sand the oxidized areas of the running surfaces with the help of a fine sandpaper. Remove

the dust that arises from this work.

- Wipe the entire slip ring assembly (including the brush holder and insulation material) with a clean cloth so that it is dry and free of dust and grease. If you have the equipment, remove also the carbon dust in the slip ring assembly with the aid of compressed air.
- Check the brush holders and the connecting cables on the brush holders.
- Close the slip ring assembly cover properly again.

Check the screw connections

Due to the constant movement and environmental influences, the reel is heavily stressed during operation. Since we do not know the local environmental influences in detail, we recommend checking all screw connections annually.

- Check all screw connections of the reel body, the connection between the reel body and the drive unit and the connection between the drive unit and the foundation. If screws are missing, they must be replaced immediately.
- Tighten all screw connections with the torque wrench and the appropriate torque.

Checking the carbon brushes

The power is transmitted via the slip ring body. The associated carbon brushes pick up the current from the rotating slip rings and pass it on to the electrical consumer.

- Carbon brushes are wearing parts. They need to be replaced on a regular basis. The wear of the carbon brushes depends on the use and the transmitted current. Experience has shown that the brush holders should be replaced annually.
- The brush holder brushes may not be worn more than 1/3 of their original length.



As the slip rings can be destroyed, the carbon brushes may not be worn out to the end.

If more than 2/3 of the carbon coating is worn, the carbon brushes must be replaced. In order to avoid damage, replace the carbon brushes in time.



Carbon brushes can be exchanged individually. However, since all tracks rotate evenly, all carbon brushes should show the same wear and should therefore always be replaced completely. Depending on the brush holder type, the carbon brushes may be bolted or riveted.

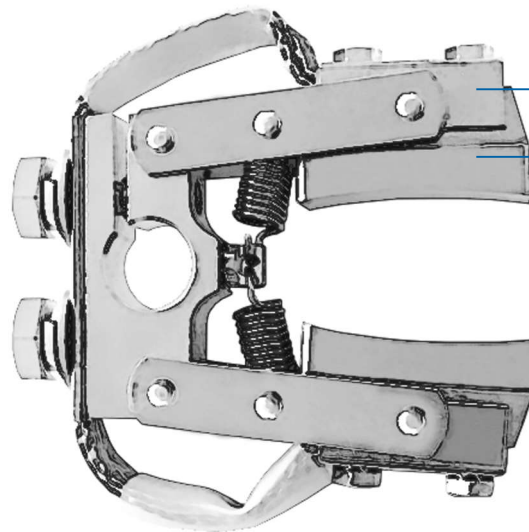
Replacing the carbon brushes

- Make sure that the device is free from electrical voltage and that no one can switch

the voltage back on without your knowledge.

- Open the slip ring assembly cover.
- Loosen the two screws at the brush holder to dismantle one single coal.
- Pull the brush holder upwards slightly by hand and pull the old coal downwards.
- Put the new coal back in exactly the same way: First slide the coal into the brush holder and then screw it back to its final position. Riveted carbon brushes have to be replaced as entire brush holder unit.
- Follow these steps for all coals.
- Close the slip ring assembly cover.

Note the wear limit!
1/3 = approx. 8.3 mm



We recommend replacing the brushes in individual steps to avoid accidentally connecting electrical cables to the wrong brush holders. For the sake of clarity, you can temporarily mark the brush holders that have already been replaced.

After the work has been carried out, a test run should be carried out to determine whether the current is transmitted via the tracks, brush holders and carbon brushes to the electrical cabinet.

12.3. Checking the heater (if installed)



- Make sure that the slip ring assembly is free from electrical voltage and that no one can switch the voltage back on without your knowledge.
- Clean the heater (especially the heat baffles).
- Turn the heater back on. Make sure that the slip ring assembly (main current) is de-energized.
- Check the function of the heating. If the heating does not work, the supply cable or the heating must be replaced with new components.

13. Dismantling and disposal

Observe the warning notices in the beginning of this documentation!



Proceed as follows to dismantle and dispose of the device or individual components:



- Separate parts by type of material
- Sort the consumables used and separate them according to their properties



The dismantling and disposal of the device or individual components must be carried out by a specialist company with the appropriate skills!

