Spring Cable Reel Type Series ID
Owner’s Manual

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December 2016
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</table>
1 Service Contact Information

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1-866-MAG-SERV
(1-866-624-7378)

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2 Preface and Safety

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2.1 Product Safety Information

Magnetek, Inc. (Magnetek) offers a broad range of radio remote control products, control products and adjustable frequency drives, industrial braking systems, and power delivery products for material handling applications. This manual has been prepared by Magnetek to provide information and recommendations for the installation, use, operation and service of Magnetek's material handling products and systems (Magnetek Products). Anyone who uses, operates, maintains, services, installs or owns Magnetek Products should know, understand and follow the instructions and safety recommendations in this manual for Magnetek Products.

The recommendations in this manual do not take precedence over any of the following requirements relating to cranes, hoists, lifting devices or other equipment which use or include Magnetek Products:

- Instructions, manuals, and safety warnings of the manufacturers of the equipment where the Magnetek Products are used,
- Plant safety rules and procedures of the employers and the owners of the facilities where the Magnetek Products are being used,
- Regulations issued by the Occupational Health and Safety Administration (OSHA),
- Applicable local, state, provincial, or federal codes, ordinances, standards and requirements, or
- Safety standards and practices for the industries in which Magnetek Products are used.

This manual does not include or address the specific instructions and safety warnings of these manufacturers or any of the other requirements listed above. It is the responsibility of the owners, users and operators of the Magnetek Products to know, understand and follow all of these requirements. It is the responsibility of the employer to make its employees aware of all of the above listed requirements and to make certain that all operators are properly trained.

No one should use Magnetek Products prior to becoming familiar with and being trained in these requirements and the instructions and safety recommendations for this manual.

2.2 Product Warranty Information

Magnetek, hereafter referred to as Company, assumes no responsibility for improper programming and/or installation of a device (such as a drive or radio) by untrained personnel. A device should only be programmed-installed by a trained technician who has read and understands the contents of the relevant manual(s). Improper programming/installation of a device can lead to unexpected, undesirable, or unsafe operation or performance of the device. This may result in damage to equipment or personal injury. Company shall not be liable for economic loss, property damage, or other consequential damages or physical injury sustained by the purchaser or by any third party as a result of such programming. Company neither assumes nor authorizes any other person to assume for Company any other liability in connection with the sale or use of this product.

For information on Magnetek’s product warranties by product type, please visit www.magnetek.com.
2.3 DANGER, WARNING, CAUTION, and NOTE Statements

Read and understand this manual before installing, operating, or servicing this product. Install the product according to this manual and local codes.

The following conventions indicate safety messages in this manual. Failure to heed these messages could cause fatal injury or damage products and related equipment and systems.

---

**DANGER**

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

---

**WARNING**

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

---

**CAUTION**

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

---

*NOTE: A NOTE statement is used to notify people of installation, operation, programming, or maintenance information that is important, but not hazard-related.*
3 About This Document

These operating instructions are a part of the unit.

Read the operating instructions, and especially the safety notes and warnings, before using the unit and make sure that they are observed for all work on and with the unit.

In the event that there is a change of ownership of the unit, the operating instructions are to be handed over to the new owner.

If the unit is installed in a system, the regulations that are contained in these operating instructions must be included in the operating instructions of the system.

3.1 Validity

These operating instructions exclusively refer to the unit as identified by its rating plate (→ 5.7, page 17).

3.2 Additional Information

In addition to these operating instructions, the following information must also be observed:
- Data sheet
- Installation instructions
- Dimension sheet
- Circuit diagram

3.3 Symbols and Markings

The following symbols are used in these operating instructions:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Signal word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td>ATTENTION</td>
<td>Information regarding the avoidance of damage to property.</td>
</tr>
<tr>
<td>✓</td>
<td></td>
<td>A prerequisite for an action.</td>
</tr>
<tr>
<td>▶</td>
<td></td>
<td>A single-step operating instruction.</td>
</tr>
<tr>
<td>1, 2, 3, …</td>
<td></td>
<td>Multi-step operating instructions. <em>(The order of the steps must be observed.)</em></td>
</tr>
<tr>
<td>→</td>
<td></td>
<td>A reference to additional information.</td>
</tr>
<tr>
<td>➔</td>
<td></td>
<td>Measures for warnings.</td>
</tr>
<tr>
<td>⇄</td>
<td></td>
<td>Several statements in a note.</td>
</tr>
</tbody>
</table>
4 Safety

4.1 Intended Use
The spring cable reel is used for unwinding/winding a cable for the supply of a piece of equipment or a consumer.

The intended use requires that the operating conditions and operating instructions as well as the additional information are observed.

Any other uses of the unit shall not be regarded as intended use.

4.2 Foreseeable Incorrect Use
All types of load movement using the device.

4.3 Duties of the Owner
The operating instructions must have been read and understood and must be observed, especially the "Safety" section.

The unit must only be operated and maintained in accordance with the following regulations:

- Operating instructions
- Local regulations: laws, standards and guidelines
- Accident prevention regulations
- Health & safety regulations

The following must be observed with regard to the personnel:

- Only use qualified and trained personnel.
- Carry out regular trainings at the unit.
- Check the safety awareness of the personnel at regular intervals.
- The personnel must be provided with personal protective equipment.

Make sure that the following conditions with regard to the personnel are fulfilled:

- The applicable accident prevention regulations and health & safety regulations are known and observed.
- PPE is worn.

Make sure that the following conditions are fulfilled in the workplace as well as at the unit:

- The workplace is adequately lit.
- The exhaust air is extracted to the outside according to applicable regulations.
- The signs on the unit are complete and legible.
- The maintenance intervals are observed.

4.4 Qualifications of the Personnel
Make sure that the following qualifications of the personnel are fulfilled:

- Mechanical installation of the unit on site, electrical installation, commissioning, maintenance, fault clearance:
  - Use only qualified and trained personnel.

- Work on the unit:
  - Use either qualified personnel or instructed personnel under the supervision of qualified personnel.
Personnel in training may only work on the unit under the supervision of qualified personnel.

4.5 Personal Protective Equipment

The following personal protective equipment must be worn:
- Safety shoes
- Hard hat
- Safety gloves
- Safety glasses

4.6 Basic Safety Notes

Personnel

All work on the unit must be carried out by qualified personnel only.

Installation, Operation

Carefully read the operating instructions before the installation and operation of the unit and keep them for future reference. Always observe the safety notes and warnings.
- The applicable health & safety regulations and well as the environmental regulations must be observed.
- All local accident prevention and safety regulations must be complied with.
- Observe the notes on the rating plate.
- Observe the notes regarding the direction of rotation on the slip ring cover.
- Make sure that the rating plate and notes plate regarding the direction of rotation are kept free from paint and contamination. Missing or illegible plates and signs must be replaced immediately.
- The unit may only be operated in correct technical condition.
- In the event of a fault or if the unit's operating behavior changes, the unit and higher-level system must be shut down immediately and the fault must be corrected.
- Work on the unit may only be carried out when the springs are unloaded.
- When transporting units with a weight above 20 kg, fix the unit at its transport point using a round loop and only transport it using the appropriate lifting equipment.

Maintenance

The observance of the regular maintenance intervals is a prerequisite for the safe and reliable operation of the unit.
- Remove all dirt from the outside and inside of the unit.
- Do NOT use compressed air for cleaning.
- Correct all technical defects immediately.
- Only use genuine replacement parts.

Modification and Repair

Incorrect alterations to and modifications of the unit may result in injury and/or damage to property.
- The spiral leaf springs may only be replaced by the manufacturer.
- Replace all live cables whose insulation is faulty immediately.
- Only use genuine accessories.
**Disposal**

In the event of decommissioning, disassemble the device properly and dispose of all components in accordance with regional regulations.

---

**4.7 Residual Risks**

**4.7.1 Risk of Injury from Tearing of the Retractable Cable**

If the retractable cable tears during operation, it winds up in a fast and uncontrolled manner due to the spring force of the cable drum. The whipping cable can cause injuries to persons and/or damage to property.

- Only operate the system with the installed protective device in the area of the reeling cable.
- Secure the work area against unauthorized access.
- Do not operate the unit with a damaged cable.

**4.7.2 Danger to Life due to Electrical Current**

Always proceed with extreme caution when working on electrical cables or parts:

- The installation and electrical work on the unit may only be carried out by a qualified electrician.
- Before opening the unit, disconnect the mains voltage from the unit and the higher-level system (all-pole disconnection) and secure them against unintended activation.
- Make sure that the unit has been de-energized (all-pole disconnection).
- Check the cable reel for electrical insulation.
- Check the continuity of the protective earth conductor system for electrical installation (minimum test current of 10 A).
- Do NOT use the PE conductor system as a PEN system.
- For the installation and implementation of electrical work on the unit, EN, VDE and local safety regulations must be complied with.

**4.7.3 Swinging Loads**

Due to the heavy weight of the device and its components, the following dangers are posed during transport and assembly.

- Risk of jamming, crushing and impact posed by the device moving or tipping over.
- Risk posed by falling devices or components.

Persons may be hit or jammed in by swinging loads.

Note the following on personal protection:

- Never walk, stand or sit under swinging loads.
- Never stand between the load and a wall.
- Wear the necessary protective clothing.
- Only use prescribed transport and sling gear.
5 Description

5.1 Type Overview
These operating instructions describe the following units:
- ID0604
- ID0705
- ID0905
- ID1207
- ID1709
- ID2112

Model examples:
ID1207-LP272/18-4-32

ID1207   Cable reel, inside diameter ~12in
LP272/18  Payout direction, and spring information
4        Number of poles
32       Current in Ampere

5.2 Layout

NOTE:  The unit is delivered with or without the cable.
       The cable data is provided on the enclosed data sheet.

Figure 1 Layout of the Standard Unit

1  Mounting flange
2  Hollow axle
3 Screw connection of the flange-side cable
4 Shield (flange side)
5 Spring housing
6 Slip ring housing
7 Shield (slip ring side)
8 Spiral leaf spring(s)
9 Slip ring cover seal
10 Slip ring body
11 Slip ring cover
12 Cable entry with cable screw connection and seal

The drive unit in the spring housing consists of up to three springs. It winds the reeling cable that has previously been unwound from the reel. The slip ring body is responsible for the electrical power or signal transmission and is located underneath the slip ring cover in the slip ring housing. The reeling cable is placed on the winding area between both shields.

5.3 Sample Application of the Overall System

If the unit is fitted to the undercarriage of a construction crane that runs on rails, this is an application on a drivable fixture.

The following additional equipment is required for driving round bends or on curved tracks:
- The roller yoke that is fitted to the unit prevents the cable from jumping over the shield on the slip ring side.
- The link chain keeps the cable in the center while it is being wound up.

When the cable fixed point is passed, the link chain changes direction and ensures the optimum deflection radius of the cable.
- The deflection guide prevents the cable from kinking when the feed point is passed.

Figure 2 Undercarriage of a Construction Crane Running on Rails

5.4 Function

The spring cable reel consists of a rotating reel with a bearing and a return spring. In the initial state, the cable is completely wound on the reel and the spring is preloaded. When the cable is being unwound, the spring tension as well as the return force of the spring and the tensile force of the cable all increase.
When the cable is returned to the reel, the cable is wound onto the reel by the spring’s return force. The slip ring body establishes a continuous electrical connection between the fixed and the rotating machine parts.

The reeling cable is unwound from the reel in order to supply a consumer. The unit is either installed in a fixed location or mounted to a carriage unit.

The reeling cable can be unwound and wound horizontally or vertically.

The unit can transmit electric current or communication signals.

Application examples:
- Plants for steel production
- Mechanical engineering (machine tools)
- Environmental technology plants
- Automotive cranes
- Gantry cranes
- Sewage plants
- Lifting and sliding platform technology
- Forklift trucks, rider-controlled trucks

5.5 Spring Drive Operating Range

The initial tensile force, the final tensile force and the usable number of operating rotations depend on the reel type, the number and type of employed springs as well as the reeling cable. For details please see the enclosed data sheet.

! ATTENTION

Maximum permissible rotations exceeded!
The spring(s) or cable is (are) irreparably damaged.

➔ In normal operation, the maximum number of rotations according to the data sheet must not be exceeded.

The spring must be pre-loaded before the unit is operated (→ 7.9, page 28).
The spring can only be used for a limited number of rotations.
The number of usable reel rotations results from the maximum possible number of spring rotations minus the number of rotations for pre-loading.
The following diagram shows this correlation graphically.
5.6 Deployment Types of the Unit

The spring cable reel is used for horizontal or vertical power supply. The unit is either installed in a fixed location or mounted to a carriage unit.

Vertical power supply:
- The reeling cable is unwound downwards from a fixed-mounted device.
- The reeling cable is unwound upwards from a fixed-mounted device.

Horizontal power supply:
- The reeling cable is drawn out in one direction from a fixed-mounted device by a mobile unit on which the fixed point is located. Cable winding takes place on cable deposit rollers.
- The device is mounted onto a mobile unit, with the reeling cable connected onto the stationary fixed point. The cable is unwound by the mobile unit.
- The device is mounted onto a mobile unit. The cable is routed via the deflection rollers. The mobile unit crosses the central feed. The reeling cable is routed under the mobile unit. The cable is unwound in two directions.

The arrows in the following illustration show the directions for winding and unwinding the reeling cable.

Tension is released on the reeling cable as follows:
- Tension-release with cable grip on the fixed point (without central feed).
- Tension release through cable entry guide with cylinder, if the fixed point is crossed by a mobile unit during operation (central feed).
5.6.1 Unit Mounted in a Fixed Location, Customer Connection at a Drivable Fixture

Figure 4  Horizontal Cable Unwinding with Cable Deposit Rollers

Figure 5  Vertical Cable Unwinding Upwards
Figure 6  Vertical Cable Unwinding Downwards

5.6.2 Unit Mounted on a Drivable Fixture, Customer Connection in a Fixed Location

Figure 7  Horizontal Cable Unwinding
5.6.3 Work Area from the Unit to the Fixed Point

<table>
<thead>
<tr>
<th>Reel body winding width [in]</th>
<th>Minimum distance of the cable from the reel to the fixed point or the first cable deflection [in]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3</td>
<td>31.5</td>
</tr>
<tr>
<td>4.7</td>
<td>35.4</td>
</tr>
<tr>
<td>5.1</td>
<td>39.4</td>
</tr>
<tr>
<td>7.5</td>
<td>55.1</td>
</tr>
<tr>
<td>9.4</td>
<td>70.9</td>
</tr>
<tr>
<td>12.2</td>
<td>90.6</td>
</tr>
</tbody>
</table>
5.6.4 Work Area Does Not Begin Directly at the Unit

![Diagram showing work area (b) of the unit on a drivable fixture.]

The application example (→ Figure 10, page 17) shows that the cable is taken off the unit without any reel rotation and is routed to a drivable fixture over a distance (a) before it is connected at that distance. During the operation, the cable is only unwound over the travel distance b. The cable is also wound up again over that travel distance in the direction of the unit due to the movement of the drivable fixture. For the described application, the reeling cable is significantly longer than the work area of the unit na (→ Figure 3, page 14). The travel distance b of the drivable fixture must be smaller than the work area of the unit.

5.7 Rating Plate

The rating plate is located on the slip ring cover.

The rating plate displays the following information at the very top:

- Type designation
- Serial number

Further down, the key technical data is provided.

5.8 Product Data

Additional data is provided on the enclosed data sheet.
Table 3 Product Data

<table>
<thead>
<tr>
<th>Reel body ID</th>
<th>d</th>
<th>D</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID0604</td>
<td>6.10</td>
<td>10.24</td>
<td>4.33</td>
</tr>
<tr>
<td>ID0705</td>
<td>7.09</td>
<td>11.81</td>
<td>5.12</td>
</tr>
<tr>
<td>ID0905</td>
<td>8.66</td>
<td>15.75</td>
<td>4.72</td>
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<tr>
<td>ID0906</td>
<td>8.66</td>
<td>17.72</td>
<td>5.91</td>
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<tr>
<td>ID0907</td>
<td>8.66</td>
<td>17.72</td>
<td>6.69</td>
</tr>
<tr>
<td>ID1207</td>
<td>11.81</td>
<td>21.65</td>
<td>7.48</td>
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<tr>
<td>ID1211</td>
<td>11.81</td>
<td>21.65</td>
<td>11.22</td>
</tr>
<tr>
<td>ID1709</td>
<td>16.54</td>
<td>26.77</td>
<td>9.45</td>
</tr>
<tr>
<td>ID2112</td>
<td>20.87</td>
<td>26.77</td>
<td>12.20</td>
</tr>
<tr>
<td>Speed [ft/min]</td>
<td>≤ 195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum acceleration [ft/s²]</td>
<td>≤ .66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable unwinding</td>
<td>Horizontally to 1 side or 2 sides or vertically</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring drive</td>
<td>1 ... 3 spiral leaf spring(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrangement for 2 springs</td>
<td>In series or parallel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unwinding direction (standard)</td>
<td>To the left (when looking at the slip ring cover)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 Transport and Storage

6.1 Transport

The unit is packed for shipment depending on the transport route and the unit’s size.

! CAUTION

The unit is very heavy! Back injuries from lifting are possible.

Units with a weight above 20 kg should be transported with a lifting cart. Always use the appropriate lifting equipment.

6.1.1 Transporting the Unit with a Lifting Cart

► Transport the packed unit to its installation location secured on a wooden pallet.

6.1.2 Transporting the Unit with Lifting Equipment

Transport the unit to its installation location suspended from lifting equipment as follows:

1. Remove the packaging.
2. Fix the round loop to the unit (→ Figure 12, page 19).
3. Lift the unit with the lifting equipment.
4. Make sure that the weight of the unit is evenly distributed.
5. Position the unit in its installation location.

Figure 12 Position of the Round Loop at the Unit
6.2 Unpacking

**CAUTION**

The unit may tilt or fall over during unpacking! Danger of injury (bruises, contusion, bone fractures) to the extremities. Damage to property.

➔ Do not leave the unit on the shields unsecured after it has been unpacked.
➔ Instead, secure the unit with a round loop and lifting equipment.

**CAUTION**

The unit may roll off in an uncontrolled manner! Danger of injury (bruises, contusion, bone fractures) to the extremities. Damage to property.

➔ Do not leave the unit on the shields unsecured after it has been unpacked.
➔ Instead, secure the unit with a round loop and lifting equipment.

Inspect the unit for completeness and damage while unpacking it.

Notify the manufacturer of missing parts or damage immediately.

Remove the packaging materials and transport fixtures and dispose of them according to applicable regulations.

6.3 Storage

**DANGER**

Swinging or falling loads! Danger of injury (bruises, contusion, bone fractures).

➔ Never walk, stand, or sit under swinging loads.
➔ Never stand between the load and a wall.

Do not stack the units.

The stored unit must be protected against:

- Moisture
- Frost
- Dust and contamination
7 Mechanical and Electrical Installation

NOTE:

- Observe the tightening torques of the screws (→ 15.1, page 45).
- Remove the slip ring body before the flange-side cable is connected (→ 7.2, page 23).
- Reinstall the slip ring body when the cable is being connected (→ 7.1, page 22).
- Replace any old or damaged seals.

The unit is delivered in various variants. Depending on the scope of delivery, different installation steps are required before the unit can be commissioned. (Observe the right order.)

Delivery variants of the unit:

- Unit with flange-side cable and reeling cable
  - The flange-side cable and the reeling cable are connected by the manufacturer.

- Unit without cable
  - The flange-side cable is connected to the slip rings by the customer.
  - The reeling cable is connected to the brush holders by the customer.

- Unit without cable
  - The flange-side cable is connected to the terminal strip by the customer.
  - The reeling cable is connected to the brush holders by the customer.

- Unit with reeling cable
  - The flange-side cable is connected to the slip rings by the customer.

- Unit with reeling cable
  - The flange-side cable is connected to the terminal strip by the customer.

- Unit with flange-side cable
  - The reeling cable is connected to the brush holders by the customer.

The following working steps are described in Section 7:

- Remove the slip ring carrier.
- Connect the flange-side cable to the slip rings.
- Connect the flange-side cable to the terminal strip.
- Connect the reeling cable to the brush holders.
- Wind the reeling cable.
- Change the reeling cable (only if required).
- Assemble the unit in its installation location.
- Preload the unit.
- The customer carries out the electrical installation of the unit.
7.1 Layout of the Slip Ring Body

Figure 13 Slip Ring Body

1. Hexagon nut, flat disc, spring ring
2. Brush holder phase
3. Brush holder PE
4. Insulating pipe
5. Insulating pipe
6. Pipe MS58
7. Brush bolts
8. Hexagon nut, flat disc, spring ring
9. Insulating pipe
10. Slip ring phase
11. Insulating pipe
12. Slip ring bolts
13. Slip ring PE
14. Slip ring carrier
7.2 Removing the Slip Ring Body

✓ The unit's springs are unloaded.

1  Remove the slip ring cover from the reel body.
2  Remove the hexagon nuts, flat discs and spring rings (→ Figure 13, item 1) from the two brush bolts of the brush holders (→ item 7).
3  Loosen the clamping screw at the brush holders (→ items 2 and 3).
4  Remove the brush holder phase (→ item 2).
5  Remove the brush holder PE (→ item 3).
6  Remove the brush holder phase insulating pipes (→ items 4 and 5).
7  Remove the brush holder PE brass pipe (→ item 6).
8  Remove both brush bolts from the brush device (→ item 7).
9  Remove the hexagon nuts, flat discs and spring rings (→ item 8) from the slip ring bolts (→ item 12) of the slip ring carrier (→ item 14).
10 Remove the short insulating pipes (→ item 9), slip ring phases (→ item 10) and long insulating pipes (→ item 11).

7.3 Connecting the Flange-Side Cable to the Slip Rings

NOTE: Assemble the slip ring body when connecting the flange-side cable so that the wires at the slip rings are always offset by 120° towards the neighboring wires after the connection has been made (→ Figure 14, page 23).

![Figure 14 Connections at the Slip Rings are offset by 120°](image)

1  Connection slip ring PE
2  Connection slip ring phase
3  Connection slip ring phase
4  Connection slip ring phase
✓ The slip ring body has been removed.

1  Loosen the screw connections at the Mounting flange.
2  Remove the slip ring cover from the reel body.
3 Route the flange-side cable through the cable screw connection at the axle and into the slip ring housing.
4 Strip the cable depending on the required connection length.
5 Strip the cable ends of the four wires and fit them with insulated ring cable lugs.
6 Connect the wire PE to the slip ring PE with the provided brass screw (→ Figure 13, item 13).
7 Connect the three wires phase to the slip rings phase (→ item 10) while the slip ring body is being assembled.
8 Turn the slip ring body and make sure that the cables are not damaged by the rotary movement.
9 Check the continuity of the connection PE.
10 Check the continuity of the phases and all other connections.
11 Number the connections at the slip rings and wires of the flange-side cable if required.
12 Firmly tighten the cable screw connection at the Mounting flange. In this way, the cable tension is removed and the slip ring space is sealed against the ingress of moisture and dust.
13 Fit the slip ring cover at the reel body.

7.4 Connecting the Flange-Side Cable to the Connection Plate

✓ The slip rings are connected to the connection plate inside the unit by a cable.

1 Remove the slip ring cover from the reel body.
2 Loosen the screw connections at the Mounting flange.
3 Route the flange-side cable through the cable screw connection at the Mounting flange and into the slip ring body.
4 Strip the cable depending on the required connection length.
5 Strip the ends of all wires and fit them with insulated cable lugs.
6 Connect all wires to the connection plate according to the assembly.
7 Turn the slip ring body and make sure that the cables are not damaged by the rotary movement.
8 Check the continuity of the connection PE.
9 Check the continuity of the phases and all other connections.
10 Firmly tighten the cable screw connection at the Mounting flange. In this way, the cable tension is removed and the slip ring space is sealed against the ingress of moisture and dust.
11 Fit the slip ring cover at the reel body.

7.5 Connecting the Reeling Cable to the Brush Holders

⚠️ CAUTION

The unit on the cable reel unwinder may tilt or fall over! Danger of injury (bruises, contusion, bone fractures) to the extremities. Damage to property.

⇒ A second person needs to secure the unit at the cable reel unwinder.

NOTE:

usaha To avoid tension in the spring drive:
Do not rotate the reel body against the flange.
usaha For units with a roller yoke, route the reeling cable through the roller yoke before inserting it into the cable screw connection.

✓ The unit is mounted on a cable reel unwinder.
✓ The spring drive is fully unloaded.

1 Remove the slip ring cover from the reel body.
2 Loosen the cable screw connection in the slip ring housing.
3 Insert the reeling cable through the cable screw connection from the outside towards the inside.
4 Strip the reeling cable depending on the required connection length.
5 Strip the ends of all wires and fit them with insulated cable lugs.
6 Connect all wires to the brush holders.
   The first brush holder (as viewed from the hollow axle) is the brush holder PE.
7 Firmly tighten the cable screw connection at the slip ring housing. In this way, the cable tension is
   removed and the slip ring space is sealed against the ingress of moisture and dust.
8 Turn the unit flange in the direction of unwinding (see the directional arrow on the reel body) and
   make sure that the cables are not damaged by the rotary movement.

7.6 Winding the Cable Reel

⚠️ CAUTION

The unit on the cable reel unwinder may tilt or fall over! Danger of injury (bruises, contusion, bone
fractures) to the extremities. Danger of injury (abrasions or cuts) to the hands. Damage to property.

➔ A second person needs to secure the unit at the cable reel unwinder.
➔ Wear safety shoes.

✓ The unit is mounted on a cable reel unwinder.
✓ The spring drive is fully unloaded.
✓ The reeling cable is connected to the unit.

1 In order to wind the reeling cable, turn the unit on the cable reel unwinder in the unwinding
direction.
2 Feed the cable correctly (➔ Figure 15, page 25).
3 Wind the reeling cable under tension in a parallel and twist-free manner (➔ Figure 16, page 26).
4 Fix the cable end of the reeling cable on the placed cable with cable ties or adhesive tape.

Figure 15    Winding the Cable Using the Cable Reel Unwinder
7.7 Changing the Reeling Cable

⚠️ **CAUTION**

*The cable is under tension!* If the taut cable is disconnected from its fixed point, the cable will be wound up quickly and in an uncontrolled manner. The flying cable can cause bruises or even fractures.

- Slacken/unload the system in the best possible way.
- Mechanically fix the reel body before the reeling cable is disconnected.
- A second person needs to secure the reel body against the uncontrolled unloading of the springs during the slow winding of the reeling cable.
- A second person needs to secure the reeling cable until the cable has been fully wound up and the unit’s springs have been unloaded.

⚠️ **DANGER**

*Swinging or falling loads!* Danger of injury (bruises, contusion, bone fractures).

- Never walk, stand, or sit under swinging loads.
- Never stand between the load and a wall.

⚠️ **CAUTION**

*The unit on the cable reel unwinder may tilt or fall over!* Danger of injury (bruises, contusion, bone fractures) to the extremities. Damage to property.

- A second person needs to secure the unit at the cable reel unwinder.

**NOTE:**

- *Our service technicians will be pleased to change the reeling cable for you.*
- *To avoid tension in the spring drive:*
  - *Do not rotate the reel body against the flange.*
For units with a roller yoke, first route the reeling cable through the roller yoke before inserting it into the cable screw connection.

The unit is still being operated by the customer.

1. Disconnect the mains voltage from the unit and the higher-level system (all-pole disconnection) and secure them against unintended activation.
2. Mechanically fix the unit.
3. Disconnect the reeling cable from the Mounting point.
4. Carefully loosen the mechanical Mounting and fully unload the spring(s) of the unit while slowly winding up the entire cable.
5. Fix the cable end of the reeling cable on the placed cable with cable ties or adhesive tape.
6. Fix the unit to suitable lifting equipment using a round loop. Tighten the round loop and maintain the tension (→ Figure 12, page 19).
7. Remove the unit form the Mounting flange.
8. Place the unit on a cable reel unwinder with the help of the lifting equipment.
9. Unwind the old reeling cable from the cable reel unwinder.
10. Remove the slip ring cover from the reel body.
11. Loosen the cable screw connection in the slip ring housing.
12. Disconnect all wires of the brush holders.
13. Pull the old cable out of the slip ring housing through the cable screw connection.
14. Route the new reeling cable through the cable screw connection and into the slip ring housing from the outside.
15. Strip the cable end of the new reeling cable depending on the required connection length.
16. Strip all wires and connect them to the brush holders.
   The first brush holder (as viewed from the hollow axle) is the brush holder PE.
17. Firmly tighten the cable screw connection at the slip ring housing. In this way, the cable tension is removed and the slip ring space is sealed against the ingress of moisture and dust.
18. Manually turn the unit flange in the direction of unwinding (see the directional arrow on the reel body) and make sure that the cables are not damaged by the rotary movement.
   Turn the unit on the cable reel unwinder in the unwinding direction in order to wind the reeling cable. Feed the cable correctly (→ Figure 15, page 25).
19. Wind the reeling cable under tension in a parallel manner.
20. Fix the cable end of the reeling cable on the placed cable with cable ties or adhesive tape.
21. Have qualified personnel perform electrical checks according to applicable statutory regulations and approved technical rules.
22. Fit the slip ring cover at the reel body.
23. Transport the unit to its installation location at the round loop using suitable lifting equipment.
24. Assemble the unit in its installation location using a new screw connection.
25. Preload the unit (→ 7.9, page 28).
26. Mechanically fix the unit.
27. Slowly loosen the mechanical Mounting and unwind the reeling cable against the spring force until the fixed point is reached.
28. Mechanically fix the unit.
29. Connect the reeling cable to the fixed point.
30. Slowly loosen the mechanical Mounting.
31. Commission the unit (→ 8, page 31).

### 7.8 Assembling the Unit in its Installation Location

- The unit has been unpacked and is ready for assembly in its installation location.
- The installation location is free from contamination.
DANGER

Swinging or falling loads! Danger of injury (bruises, contusion, bone fractures).

Never walk, stand, or sit under swinging loads.
Never stand between the load and a wall.

1 Fix the round loop to the transport point of the unit (→ Figure 12, page 19).
2 Lift the unit with the lifting equipment.
3 Position the unit in its installation location.
4 Align the unit.
5 Fit the unit's flange in the installation location and check the tightening torques of the screw connections (→ 15.1.1, page 45).

7.9 Preloading the Unit

✓ The unit has been assembled in its installation location.
✓ The tightening torque of the screw connections at the Mounting flange has been checked.

CAUTION

The unit is under spring tension! If the preloaded reel body is let loose, the fixed cable end can become unattached from the reel. The flying cable can cause bruises or even fractures.

A second person needs to secure the unit during the entire preloading process until the mechanical fastening has been completed.
Mechanically fix the unit after the preloading process has been completed.

NOTE:

The number of rotations that is required for preloading can be found on the data sheet and the rating plate (→ 5.7, page 17).
The unwinding direction is marked on the shield on the slip ring side of the unit.

1 Manually turn the reel body in the unwinding direction until the specified number of rotations for preloading has been reached.
2 Mechanically fix the unit.

Figure 17 Unwinding Direction to the Left
Figure 18 Unwinding Direction to the Right
7.10  Electrical Installation of the Unit by the Customer

![DANGER]

DANGER

Danger to life due to electrical current!

- The electrical installation and work on electrical parts may only be carried out by a qualified electrician.
- Disconnect the mains voltage from the unit and the higher-level system (all-pole disconnection), secure them against unintended activation and ensure a voltage-free estate.
- Observe EN, VDE, and locally applicable safely regulations.

![CAUTION]

CAUTION

The unit is under spring tension! If the preloaded reel body is let loose, the fixed cable end can become unattached from the reel. The flying cable can cause bruises or even fractures.

- A second person needs to secure the unit during the electrical installation.

**NOTE:**

- The cable pulling grip (→ 14.3, page 44) ensures optimum tension relief of the cable at the fixed point.
- Make sure that the wires are not squashed during the connection.
- The minimum bending radius of the cable at the fixed point must be observed.

### 7.10.1 Work Area from the Unit to the Fixed Point

**NOTE:** The deflection angle $\alpha \leq 4^\circ$ for the cable feed from the unit to the fixed point or first cable deflection after the unit must be observed (→Figure 19, page 29).

- The unit has been preloaded and mechanically fixed.
- The flange-side cable has been connected.

1. Carefully loosen the mechanical Mounting and unwind the reeling cable against the spring force until the fixed point is reached.
2. Mechanically fix the reel body.
3. Connect the cable end of the reeling cable to the fixed point.

![Figure 19](image-url)  
**Figure 19**  
Cable Routing from the Device to the Fixed Point or to the First Cable Deflection
Table 4 Minimum Distance between the Cable to the Fixed Point or First Cable Deflection in Relation to the Winding Width of the Unit

<table>
<thead>
<tr>
<th>Reel body winding width [in]</th>
<th>Minimum distance of the cable from the reel to the fixed point or the first cable deflection [in]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3</td>
<td>31.5</td>
</tr>
<tr>
<td>4.7</td>
<td>35.4</td>
</tr>
<tr>
<td>5.1</td>
<td>39.4</td>
</tr>
<tr>
<td>7.5</td>
<td>55.1</td>
</tr>
<tr>
<td>9.4</td>
<td>70.9</td>
</tr>
<tr>
<td>12.2</td>
<td>90.6</td>
</tr>
</tbody>
</table>

7.10.2 Work Area Does Not Begin Directly at the Unit

The application example (→ Figure 20, page 30) shows that the cable is routed to a drivable fixture over a distance (a) before it is connected to the fixed point at that distance. During the operation, the cable is only unwound over the distance (b). The cable is also wound up again over that distance in the direction of the unit due to the movement of the drivable fixture.

- The unit has been preloaded and mechanically fixed.

1. Unwind the cable length (a) from the unit and route it to the fixed point at the drivable fixture without turning the reel so that the preloading of the spring drive remains constant.
2. Connect the cable end of the reeling cable to the drivable fixture.
8 Commissioning the Unit

CAUTION

The cable is under tension! If the cable suddenly snaps at the fixed point, the cable will be wound up quickly and in an uncontrolled manner. The flying cable can cause bruises or even fractures.

⇒ Two people must secure the reel body against the uncontrolled unloading of the spring(s) during the slow unwinding and winding of the cable.

NOTE:
⇒ Listen and watch out for bearing noise and vibration during the commissioning of the unit.
⇒ Make sure that the cable is wound up correctly.
⇒ During the operation of the unit, two cable windings for strain relief must always remain on the reel body.
⇒ If you experience problems with the cable tensile force during unwinding/winding of the cable, please contact the manufacturer.

✓ The cable route is clear of obstacles.
✓ The tightening torque of the screw connections at the Mounting flange has been checked.

1 Under operating conditions, unwind the cable at reduced speed.
2 Under operating condition, wind the cable at reduced speed.
3 Check the following unit parameters (⇒ see the enclosed data sheet):
   • Minimum cable tensile force
   • Final tension
   • Maximum cable unwinding

Figure 21 Checking the cable tensile force while the reeling cable is being unwound/wound up
9 Unit Decommissioning and Removal

DANGER

Danger to life due to electrical current!

→ The electrical installation and work on electrical parts may only be carried out by a qualified electrician.
→ Disconnect the mains voltage from the unit and the higher-level system (all-pole disconnection), secure them against unintended activation and ensure a voltage-free state.
→ Observe EN, VDE and locally applicable safety regulations.

DANGER

Swinging or falling loads! Danger of injury (bruises, contusions, bone fractures).

→ Never walk, stand or sit under swinging loads.
→ Never stand between the load and a wall.

CAUTION

The cable is under tension! If the taut cable is separated from its fixed point, the cable will be wound up quickly and in an uncontrolled manner. The flying cable can cause bruises or even fractures.

→ Slacken/unload the system in the best possible way.
→ Mechanically fix the reel body before the reeling cable is disconnected.
→ Two people must secure the reel body against the uncontrolled unloading of the spring(s) during the slow winding of the cable.

✔ The unit is still being operated by the customer.

1 Disconnect the mains voltage from the unit and the higher-level system (all-pole disconnection) and secure them against unintended activation.
2 Mechanically fix the unit.
3 Disconnect the reeling cable from the Mounting point.
4 Carefully loosen the mechanical Mounting and fully unload the spring(s) of the unit while slowly winding up the entire cable.
5 Fix the cable end of the reeling cable on the placed cable with cable ties or adhesive tape.
6 Fix the unit to suitable lifting equipment using a round loop.
7 Tighten the round loop and maintain its tension.
8 Remove the unit form the Mounting flange.
9 Lift the unit onto a pallet for transport using a lifting cart and secure the unit.
10 Disposal and Recycling

► Dispose of old units after they have been decommissioned.
► The unit's components, cables and packaging materials must be recycled or disposed of according to local laws and regulations.

11 Maintenance

![DANGER]

Danger to life due to electrical current!

⇒ The electrical installation and work on electrical parts may only be carried out by a qualified electrician.
⇒ Disconnect the mains voltage from the unit and the higher level system (all-pole disconnection), secure them against unintended activation and ensure a voltage-free state.
⇒ Observe EN, VDE and locally applicable safety regulations.

![CAUTION]

The cable is under tension! If the cable suddenly snaps at the fixed point, the cable will be wound up quickly and in an uncontrolled manner. The flying cable can cause bruises or even fractures.

⇒ Slacken/unload the system in the best possible way.
⇒ Two people must secure the reel body against the uncontrolled unloading of the spring(s) during the slow winding of the cable.

11.1 Repetitive Regular Checks and Inspections during the Operation

1 Inspect the unit for visible damage.
2 Check the screw connections.
3 Listen and watch out for bearing noise and vibration.
4 Check the electrical insulation.
5 Check the continuity of the PE protective earth conductor system (minimum test current of 10 A).

Units where defects have been detected must not be used until the defects have been corrected.
Correct all defects and their causes immediately.

11.2 Repair and Modification Instructions

The manufacturer has repair and modification instructions for the spring cable reel, which describes the following:

- Replacement of spiral leaf springs that are aligned parallel to each other.
- Replacement of spiral leaf springs that are aligned in series.
- Changing the unwinding direction of the unit.
11.3 Cleaning and Care

**NOTE:**
- Do not use any cleaning agents that are aggressive or contain acids or chlorine!
- Do not use compressed air for cleaning the slip ring space.

- Wipe the external surfaces of the unit with a moist cloth or a mild cleaning agent (detergent, neutral cleaning agent).
- For cleaning the slip ring space, remove the slip ring cover and use an industrial vacuum cleaner.
- Remove any moisture from the slip ring space with a clean cloth.

11.4 Maintenance Intervals

Table 5 Maintenance Intervals

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Initial Interval</th>
<th>Further Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reel body check</td>
<td>1 week</td>
<td>6 months</td>
</tr>
<tr>
<td></td>
<td>- Tight fitting of all screw connections/strain reliefs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Clean cable winding and unwinding.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Running noise and vibration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Slip ring carrier check</td>
<td>1 week</td>
<td>6 months</td>
</tr>
<tr>
<td></td>
<td>- Tight fit of all wire screw connections.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Contamination (→ 11.3, page 34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Condensation/moisture (→ 11.3, page 34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check the electrical insulation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check the continuity of the PE protective earth conductor system (minimum test current of 10 A).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Cleaning the slip rings, collectors and insulators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Wear limit of the collector brushes² (→ 15.2, page 46).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The data of the slip ring body is indicated on the rating plate, e.g. 36 Amps.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Mobility of the brush holders</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Contact pressure between the brush holders and rings²</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Wear limit of the finger collector (→ 15.3, page 46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cable Check</td>
<td>1 week</td>
<td>6 months</td>
</tr>
<tr>
<td></td>
<td>- Insulation of all cables</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Tight fit of all wire screw connections to the fixed point.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Tight fit of all wire screw connections, permanently routed cable at the customer’s.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Function/condition of all strain reliefs (Cable pulling grip, cable entry guide, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Function/condition of all cable guides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Roller deflection guides, cable deflection rollers, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Deposit roller Mounting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clean cable course.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Based on 40 operating hours per week. For a higher number of operating hours, the maintenance interval must be shortened accordingly.

2. If a brush holder has reached the wear limit, replace the complete brush holder.
### 12 Detecting and Correcting Faults

#### Table 6 Faults

<table>
<thead>
<tr>
<th>Fault description</th>
<th>Cause</th>
<th>Measure(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cable doesn't wind/unwind</td>
<td>The reel body rotates on its axle. The feather key on the axle is</td>
<td>Replace the feather key.</td>
</tr>
<tr>
<td></td>
<td>missing or broken.</td>
<td></td>
</tr>
<tr>
<td>The spring(s) is (are) faulty.</td>
<td></td>
<td>Contact the customer service.</td>
</tr>
<tr>
<td>Corrosion at the spring(s).</td>
<td></td>
<td>Contact the customer service.</td>
</tr>
<tr>
<td>The application isn't suitable for the</td>
<td></td>
<td>Contact the customer service.</td>
</tr>
<tr>
<td>configuration of the spring(s) in the unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The spring(s) has (have) moved out of the</td>
<td></td>
<td>Contact the customer service.</td>
</tr>
<tr>
<td>axle groove.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ball bearing is faulty.</td>
<td></td>
<td>Contact the customer service.</td>
</tr>
<tr>
<td>The spring(s) is (are) not pre-loaded.</td>
<td></td>
<td>Disconnect the reeling cable from the fixed point, wind the cable by</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hand and preload the unit (→ 7.9, page 28).</td>
</tr>
<tr>
<td>The cable unwinding/winding is messy</td>
<td>The cable route is outside the tolerance range.</td>
<td>Align the cable route (→ Figure 19, page 29).</td>
</tr>
<tr>
<td>The hollow axle is not precisely horizontal</td>
<td></td>
<td>Align the unit.</td>
</tr>
<tr>
<td>or perpendicular to the unwinding/winding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>direction.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The reeling cable has not been placed in a</td>
<td></td>
<td>Fully unwind the reeling cable. Fix the reel. Disconnect the cable from</td>
</tr>
<tr>
<td>twist-free manner or has become twisted after</td>
<td></td>
<td>the fixed point and untwist it.</td>
</tr>
<tr>
<td>a long operating period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faults of the transmission of the electric</td>
<td>Loose screw connections at the slip rings or brush holders.</td>
<td>Check the screw connections at the slip rings and brush holders and</td>
</tr>
<tr>
<td>current or of data</td>
<td></td>
<td>retighten them if required.</td>
</tr>
<tr>
<td>Heavily contaminated brush holder contacts or</td>
<td></td>
<td>Clean all contaminated parts.</td>
</tr>
<tr>
<td>slip rings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worn brushes.</td>
<td></td>
<td>Replace the brush holders.</td>
</tr>
<tr>
<td>High moisture levels in the slip ring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>housing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruption of the power or data transmission</td>
<td>Flashover between PE and phase.</td>
<td>Contact the customer service.</td>
</tr>
</tbody>
</table>
13 Spare Parts Drawings

Please specify the designation of the spare part and the serial no. (SN) of the unit when ordering spare parts. The SN is shown on the unit's rating plate.

13.1 ID0604, ID0705

1. Mounting flange
2. Hollow axle (not field replaceable)
3. Screw connection of the flange-side cable (not field replaceable)
4. Ball bearing (not field replaceable)
5. Bearing cover (flange side) (not field replaceable)
6. Spring housing (not field replaceable)
7. Spiral leaf spring(s) (not field replaceable)
8. Slip ring housing (not field replaceable)
9. Cable entry
10. Screw connection of the reeling cable
11. Slip ring carrier PE
12. Slip ring phase
13. Brush holder PE
14. Brush holder phase
15. Slip ring cover seal
16. Slip ring cover
13.2 ID0604, ID0705 with Ratchet and Roller Yoke

1. Mounting flange
2. Hollow axle (not field replaceable)
3. Screw connection of the flange-side cable (not field replaceable)
4. Ball bearing (not field replaceable)
5. Ratchet
6. Roller yoke
7. Bearing cover (flange side) (not field replaceable)
8. Spring housing (not field replaceable)
9. Spiral leaf spring(s) (not field replaceable)
10. Slip ring housing (not field replaceable)
11. Cable entry
12. Screw connection of the reeling cable
13. Slip ring carrier PE
14. Slip ring phase
15. Brush holder PE
16. Brush holder phase
17. Slip ring cover seal
18. Slip ring cover
13.3 ID0905, ID1207, ID1709

1  Mounting flange
2  Hollow axle (not field replaceable)
3  Screw connection of the flange-side cable (not field replaceable)
4  Ball bearing (not field replaceable)
5  Shield (flange side) (not field replaceable)
6  Spring housing (not field replaceable)
7  Spiral leaf spring(s) (not field replaceable)
8  Slip ring housing (not field replaceable)
9  Shield (slip ring side) (not field replaceable)
10 Cable entry
11 Screw connection of the reeling cable
12 Slip ring carrier PE
13 Slip ring phase
14 Brush holder PE
15 Brush holder phase
16 Slip ring cover seal
17 Slip ring cover
13.4 ID0905, ID1207, ID1709 with Ratchet and Roller Yoke

1. Mounting flange
2. Hollow axle (not field replaceable)
3. Screw connection of the flange-side cable (not field replaceable)
4. Ball bearing (not field replaceable)
5. Ratchet
6. Roller yoke
7. Shield (flange side) (not field replaceable)
8. Spring housing (not field replaceable)
9. Spiral leaf spring(s) (not field replaceable)
10. Slip ring housing (not field replaceable)
11. Shield (slip ring side) (not field replaceable)
12. Cable entry
13. Screw connection of the reeling cable
14. Slip ring carrier PE
15. Slip ring phase
16. Brush holder PE
17. Brush holder phase
18. Slip ring cover seal
19. Slip ring cover
13.5 ID2112

1 Mounting flange
2 Hollow axle (not field replaceable)
3 Screw connection of the flange-side cable (not field replaceable)
4 Ball bearing (not field replaceable)
5 Ring flange (not field replaceable)
6 Shaft sealing ring (not field replaceable)
7 Shield (flange side) (not field replaceable)
8 Spring housing (not field replaceable)
9 Spiral leaf spring(s) (not field replaceable)
10 Slip ring housing
11 Shield (slip ring side) (not field replaceable)
12 Cable entry
13 Screw connection of the reeling cable
14 Slip ring carrier
15 Slip ring PE
16 Slip ring phase
17 Brush holder PE
18 Brush holder phase
19 Slip ring cover seal
20 Slip ring cover
13.6 ID2112 with Ratchet and Roller Yoke

1 Mounting flange
2 Hollow axle (not field replaceable)
3 Screw connection of the flange-side cable (not field replaceable)
4 Ball bearing (not field replaceable)
5 Ratchet
6 Roller yoke
7 Ring flange (not field replaceable)
8 Shaft sealing ring (not field replaceable)
9 Shield (flange side) (not field replaceable)
10 Spring housing (not field replaceable)
11 Spiral leaf spring(s) (not field replaceable)
12 Slip ring housing
13 Shield (slip ring side) (not field replaceable)
14 Cable entry
15 Screw connection of the reeling cable
16 Slip ring carrier
17 Slip ring PE
18 Slip ring phase
19 Brush holder PE
20 Brush holder phase
21 Slip ring cover seal
22 Slip ring cover
14 Accessories

14.1 Ratchet

The ratchet allows you to arrest the unit and to stop the winding of the cable. By default, this process is carried out at a rate of one notch per rotation. The latch of the ratchet turns when the spring drive unloads and the cable is wound up. The division of the ratchet can be increased to two positions per rotation if required. It is possible to assemble several ratchets to the unit. The ratchet can be retrofitted to the Mounting flange.

14.2 Roller Yoke

The rigid roller yoke ensures the smooth unwinding/winding of the reeling cable. The roller yoke prevents the cable from jumping over the reel's shield. Due to its two plastic rollers, the roller yoke puts very little strain on the cable. The cable can easily be unwound in the defined direction. The roller yoke can be retrofitted to the Mounting flange.
14.3 Cable Pulling Grip

![Cable Pulling Grip Image](image)

Figure 24 Cable Pulling Grip

The cable pulling grip is adjusted to the cable diameter. It ensures the strain relief of the reeling cable at the fixed point. The cable pulling grip distributes the strain relief across an area, thereby preventing any point loads. The cable pulling grip is designed with three times the maximum tensile force of a conventional strain relief device. The cable pulling grip is only suitable for horizontal unwinding.

14.4 Mounting Options

![Rigid Mounting Image](image)

Figure 25 Unit with Rigid Mounting

![Swivel Wall Mounting Image](image)

Figure 26 Unit with Swivel Wall Mounting

![Rotary Floor/Ceiling Mounting Image](image)

Figure 27 Unit with Rotary Floor/Ceiling Mounting
15 Appendix

15.1 Screws and Tightening Torques

NOTE:
- The parts’ faces must be flush with the installation location when the screw connection is being made.
- Replace all grub screws that have become unusable with new ones of the same property class.

15.1.1 Mounting Flange

Table 7 Tightening Torques of the Mounting Flange

<table>
<thead>
<tr>
<th>Thread Size</th>
<th>Tightening Torque, property class 8.8 [Nm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6</td>
<td>10</td>
</tr>
<tr>
<td>M8</td>
<td>23</td>
</tr>
<tr>
<td>M10</td>
<td>46</td>
</tr>
<tr>
<td>M12</td>
<td>80</td>
</tr>
<tr>
<td>M14</td>
<td>135</td>
</tr>
<tr>
<td>M16</td>
<td>194</td>
</tr>
<tr>
<td>M20</td>
<td>391</td>
</tr>
<tr>
<td>M24</td>
<td>675</td>
</tr>
<tr>
<td>M30</td>
<td>1450</td>
</tr>
<tr>
<td>M36</td>
<td>2600</td>
</tr>
</tbody>
</table>

15.1.2 Slip Ring Body

Table 8 Tightening Torques of the Slip Ring Body

<table>
<thead>
<tr>
<th>Thread Size</th>
<th>Tightening Torques [Nm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3.5</td>
<td>0.8</td>
</tr>
<tr>
<td>M4</td>
<td>1.2</td>
</tr>
<tr>
<td>M5</td>
<td>2.0</td>
</tr>
<tr>
<td>M6</td>
<td>3.0</td>
</tr>
<tr>
<td>M8</td>
<td>6.0</td>
</tr>
<tr>
<td>M10</td>
<td>10.0</td>
</tr>
<tr>
<td>M12</td>
<td>15.5</td>
</tr>
<tr>
<td>M16</td>
<td>30.0</td>
</tr>
</tbody>
</table>

15.1.3 Cable Screw Connections

The flange-side cable and the reeling cable are routed through the cable screw connections and into the slip ring housing. The cable screw connections ensure the strain relief of the cable and seal the slip ring space against moisture and dust. The protection class is shown on the rating plate.

Table 9 Cable Screw Connections

<table>
<thead>
<tr>
<th>Cable Screw Connection Type</th>
<th>Cable Diameter [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>M12 x 1.5</td>
<td>3 ... 6</td>
</tr>
<tr>
<td>M16 x 1.5</td>
<td>5 ... 9</td>
</tr>
<tr>
<td>M20 x 1.5</td>
<td>8 ... 13</td>
</tr>
<tr>
<td>M25 x 1.5</td>
<td>11 ... 17</td>
</tr>
<tr>
<td>M32 x 1.5</td>
<td>15 ... 21</td>
</tr>
<tr>
<td>M40 x 1.5</td>
<td>19 ... 28</td>
</tr>
</tbody>
</table>
15.2 Replacing Collector Brushes

15.2.1 Establishing the Wear Limit

![Figure 28](image)

Figure 28 Measures of the new collector brush (B) and the worn collector brush (A)

15.2.2 Collector Brush Measurements

Table 10 Collector Brush Measurements

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>32/36</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>40</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>42</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>60</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>125</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>150</td>
<td>14</td>
<td>20</td>
</tr>
</tbody>
</table>

1 When the wear limit A has been reached, replace the collector brush.
2 Dimension for new collector brush.

15.3 Replacing Finger Collectors

15.3.1 Establishing the Wear Limit

![Figure 29](image)

Figure 29 Measurements of the new finger collector contact (B) and the worn finger collector contact (A)

15.3.2 Finger Collector Measurements

Table 11 Finger Collector Measurements

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>1.2</td>
<td>2.0</td>
</tr>
</tbody>
</table>

1 When the wear limit has been reached, replace the collector brush.
2 Dimension for new finger collector contact.