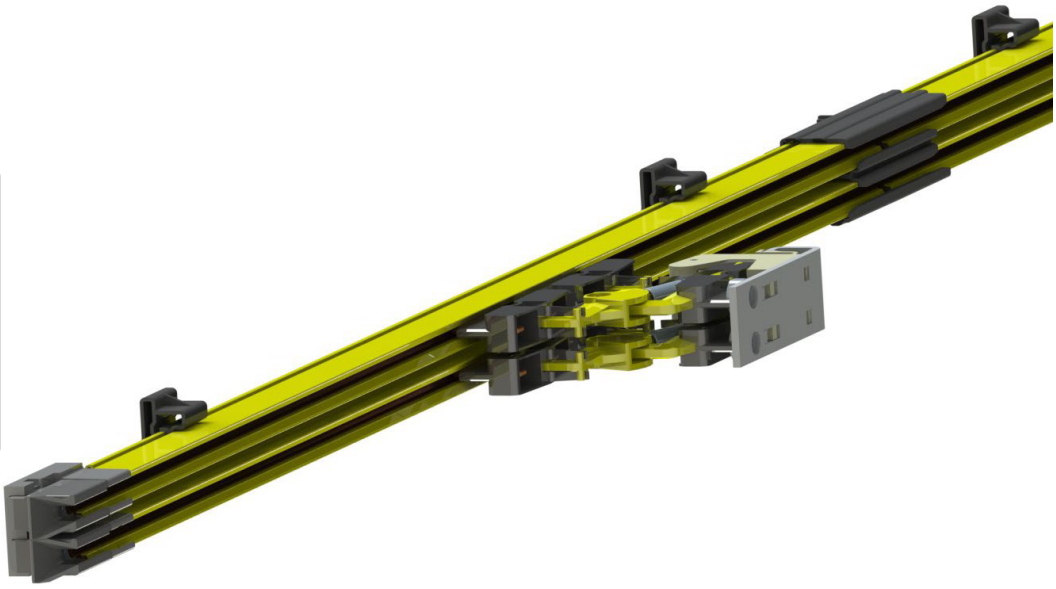
MultiLine 0835
Conductor rail system

Assembly and operation manual

Read this manual prior to performing any task!
Assembly and operation manual (translation of the original)



MAL0835-0002, 1, en_US

CONDUCTIX wampfler

Table of contents

1 Safety

1.1 Warnings and symbols

This document contains safety-relevant information in various places. The safety section contains general safety instructions that are relevant for several or all phases of the product life cycle. Further safety instructions relating to a specific phase of the product life cycle can be found at the beginning of the corresponding section.

Warnings are also used. These are identified by symbols and signal words. The symbol indicates the type of danger, the signal word indicates the degree of danger. Warnings are handling-related additions that are placed directly next to the respective work step.

Always observe all safety and hazard information and work carefully to avoid accidents, bodily injury or material damage!

The product safety labels, i.e. the symbols affixed to the product, must also be observed.

Signal word	Meaning
DANGER	This combination of symbol and signal word indicates an imminently dangerous situation that will result in death or serious injury if it is not avoided.
WARNING	This combination of symbol and signal word indicates a potentially dangerous situation that can result in death or serious injury if it is not avoided.
CAUTION	This combination of symbol and signal word indicates a possible dangerous situation that can result in minor injury if it is not avoided.
NOTICE	This combination of symbol and signal word indicates a potentially dangerous situation that can result in material and environmental damage if it is not avoided.
ENVIRONMENT	This combination of symbol and signal word indicates a potentially dangerous situation that can result in material and environmental damage if it is not avoided.

Tips and recommendations

Indicates tips and recommendations drawn from Conductix-Wampfler's many years of experience. These appear at or after a work step and/or a description.

Warning signs	Type of danger
	Warning – danger zone.
	Warning – crushing hazard.

Warning signs	Type of danger
	Warning – dangerous electrical voltage.
	Warning – danger of entanglement.
	Warning – flammable substances.
	Warning – suspended load.
	Warning – toxic substances.

1.2 Intended use

The conductor rail system is a multi-pole, electric power supply system for track-guided mobile consumers. The conductor rail system may only be used indoors and in warehouse areas that are not accessible to the public, e.g. for supplying power to a shuttle in a warehouse with horizontal shelving. The conductor rail system may only be installed in a horizontal and straight position. The current collector may be engaged laterally in the conductor rail.

➦ *Chapter 3 “Technical Data” on page 17*

Intended use also includes compliance with all the information in this document.

Any use beyond the intended use or any other use, reconstruction or other modifications are considered misuse.

1.3 Improper use

Any use that deviates from or goes beyond the intended use described here involves considerable risks for people and material.

Improper use particularly includes, but is not limited to:

- Operation outside the stated technical specifications
- Operation outside the specified operating and ambient conditions
- Operation without initiating measures resulting from the operator's risk assessment

  ➦ *Chapter 1.4 “Operator responsibility” on page 8*

- Operation under ambient conditions that permanently damage the material properties and/or reduce the insulating properties
- Operation in areas with flammable or explosive gases and/or dusts
- Operation in clean rooms and/or white rooms
- Exceeding the max. system length
- Installation in an area accessible to the public without protective devices

  ➦ *Chapter 1.4 “Operator responsibility” on page 8*
- Overloading of current collectors and conductor rails due to excessive current and voltage
- Operation in areas that require a higher degree of protection than specified
- Use of the conductor rail system as a climbing aid
- Use of unsuitable cleaning agents

  ➦ *“Unsuitable cleaning agents” on page 79*
- Use of accessories not supplied and not approved or authorized by the manufacturer
- Use of spare parts that have not been approved by the manufacturer
- Use of tools that are not intended for professional use
- Operation of the system by untrained and insufficiently qualified personnel
- Execution of any work on the system by insufficiently qualified personnel
- Overriding of safety devices
- Use of different conductor materials without additional measures
- Use on sections with grade resistance (inclined plane)

1.4 Operator responsibility

The product is used in the commercial sector. The operator is therefore subject to the legal obligations relating to workplace safety. In addition to the warning and safety instructions in this document, all safety, accident protection and environmental regulations valid in the place of operation of the product must also be observed.

This particular applies to the following:

- The operator must ensure protection against electric shock (protection against indirect contact).
- The operator must be informed of the applicable workplace safety regulations and identify any additional dangers that may arise from the specific working conditions at the system operating site. These must be implemented in the form of operating instructions for operating the system.
- The operator must examine the system during the entire operating period and determine whether the operating instructions issued by the operator comply with the current state of the regulations. The operating instructions must be updated if necessary.
- The operator must clearly regulate and define the responsibilities for installation, operation, maintenance, and cleaning.
- The operator must ensure that all personnel who are involved with the system have read and understood these instructions. In addition, the operator must also train the personnel at regular intervals and inform them of dangers.
- The operator must provide the necessary personal protective equipment to the required personnel.
- The operator must store the keys for the switching cabinets securely, i.e. only expressly authorized persons may have access to the keys.
- The operator must ensure that the service intervals specified in this document are observed.

- The operator must ensure that the check points for functionality are carried out before initial commissioning in accordance with this document.
- The controls and safety devices provided by the operator for operating the system must be checked for functional safety and completeness.

1.5 Personnel requirement

Electrically trained person

- has been trained by a qualified electrician
- knows the potential dangers of improper conduct
- knows the necessary protective measures and protective equipment
- is supervised by a qualified electrician

Minimum 2 persons

- At least 2 people are required to carry out specific activities

Qualified electrician

- Are persons who are specially trained for the working environment surrounding electrical systems
- Consists of persons who are capable of independently performing assigned tasks on electrical systems based on their professional training, knowledge and experience, who also are able to independently recognize and avoid potential hazards and
- possess an understanding of the applicable standards and regulations.
- The operator must document that the relevant certificates or other proofs of qualification are available or have been verified.

Specialist personnel

- Consists of persons who are capable of independently performing assigned tasks based on their professional training, knowledge and experience, who also are able to independently recognize and avoid potential hazards and
- possess an understanding of the applicable standards and regulations.
- The operator must document that the relevant certificates or other proofs of qualification are available or have been verified.

Users

- may take on tasks within the scope of normal operations.
- have been instructed by the operator in this regard and familiarized with the potential dangers.

1.6 Personal protective equipment

FFPE protective mask

To protect against serious and permanent respiratory diseases.

An FFP3 mask is recommended when working with very high dust levels.

Protective clothing

Primarily to protect against ensnarement by moving machine parts. Protective work clothing must be close fitting with a low resistance to tearing; it must have close-fitting sleeves and no protruding parts.

Protective eyewear

For eye protection against mechanical and chemical hazards.

Protective footwear

For protection against heavy falling parts and slipping on slippery floors.

Protective gloves (mechanical)

For hand protection against mechanical hazards such as friction, abrasions, punctures or deeper wounds.

Protective headgear

For protection against falling and flying parts.

Safety vest

To improve the visibility of people in work areas.

1.7 Product-specific safety instructions

The dangers described here describe residual risks that may arise from the product even when used as intended.

➦ *Chapter 1.2 "Intended use" on page 7*

1.7.1 Electrical hazards

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

  ➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Fire hazard due to overload or sparking

Fire hazards occur due to overloading the system or individual components (e.g.: Cables, current collectors, etc.), arcing, short circuits or spark formation.

- Comply with permissible current ratings.
- Easily combustible materials may not be stored near the product.
- Observe installation tolerances.
- Check, service and clean the product regularly.

1.7.2 Mechanical hazards

WARNING

Risk of injury due to sharp edges

When working on the conductor rail, skin and limbs may be cut or severed.

– Wear personal protective equipment for all work.

WARNING

Risk of death due to suspended loads

When lifting loads, there is a risk of death due to falling or swinging parts.

– Never walk under suspended loads.
– Only move loads under supervision.
– Observe the specifications for the intended attachment points.
– Never attach parts to projecting machine parts or to eyelets on installed components.
– Check that lashing components are securely fastened.
– Only use authorized lifting gear and separate lifting accessories with sufficient load capacity.
– Do not use torn or worn ropes or straps, replace with new ones if necessary.
– Do not attach ropes or straps to sharp corners and edges.
– Do not knot or twist ropes or straps.
– Set down all suspended loads before leaving the work area.

WARNING

Risk of injury due to impact

Moving components of the conductor rail system can cause injuries to limbs.

– Point out this risk to specialist personnel during instruction.
– The conductor rail system is not suitable for an environment with solvents.

1.7.3 Danger due to substances

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

– Wear a FFP3 protective mask when working with very high levels of dust.

1.8 5 Safety Rules for working on electrical systems

Follow the 5 Safety Rules (see DIN VDE 0105-100)

1. Disconnect the system from the voltage supply at the main switch.
2. Secure the main switch against being turned back on.
3. Verify the absence of a voltage by measuring.
4. Ground and short-circuit parts of the system on which work will be conducted.
5. Cover or block off adjacent energized parts.

2 General information

This document is part of the product and enables safe and efficient handling of the product. It must be kept accessible to personnel at all times.

Compliance with all warnings, safety instructions and instructions for use is a basic prerequisite for safely working with the product. Furthermore, the local accident prevention regulations and general safety regulations for the use of the system or machine apply.

This document does not provide instructions for operating the system or machine in which the product is integrated.

Illustrations are provided for basic understanding and may deviate from the actual implementation.

2.1 Copyright

2.2 Brands

The names, trade names, goods identification, etc. used in this document may be trademarks even if not specifically marked as such and as such are subject to legal provisions.

2.3 Disclaimer

The contents of this document have been reviewed for concurrence with the product described. Nevertheless, because deviations cannot be entirely ruled out, we assume no liability for the complete concurrence. Necessary corrections are included in the following versions.

2.4 Limitation of liability

The contents of this document have been compiled taking into account the applicable standards and regulations, the state of the art and Conductix-Wampfler's many years of knowledge and experience.

Conductix-Wampfler accepts no liability for damage or operational faults resulting from:

- Non-compliance with the technical documentation
- Improper use
- Use of untrained specialist personnel
- Unauthorized modifications and technical changes
- Use of unauthorized spare parts or accessories
- Use of the product, despite a negative transport inspection
- Disadvantages that arise if the product does not function properly

The actual scope of delivery may differ from the explanations and descriptions provided here if the model in question is a special one, if additional equipped has been ordered or due to recent technical changes.

The obligations agreed upon in the Delivery Agreement and our General Terms and Conditions of Business apply, as do the delivery conditions of the manufacturer and the legal obligations applicable at the time the contract was concluded.

Conductix-Wampfler reserves the right to make technical changes within the context of improvement of function and further development.

2.5 Warranty

The warranty period and the scope of the warranty are determined by your contractual conditions and by Conductix-Wampfler's General Terms of Delivery.

The warranty does not apply in the following circumstances:

- Changes to the product without the consent of Conductix-Wampfler
- Improper handling, transportation or maintenance of the product
- Use of parts that are not original Conductix-Wampfler parts
- Non-compliance with this document
- If tolerances are not observed

2.6 Customer service

All Conductix-Wampfler employees are always interested in new information and on-site experience that can contribute to improving the products.

Customer service is available for all technical questions.

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2.7 About this document

Explanation of symbols

Measuring equipment

Instruction-related information for when dimensions must be drawn in, measured, and observed is available in graphic form.

Cutting tool

Instruction-related information for when components must be separated from each other (e.g. with a saw) is available in graphic form.

Rubber mallet

Instruction-related information for joining components with a rubber mallet is available in graphic form.

Power drill

Instruction-related information for drilling components is available in graphic form.

File

Instruction-related information for deburring sharp edges is available in graphic form.

Crimping tool

Instruction-related information for crimping cable ends is available in graphic form.

Torque wrench (hexagon wrench)

Instruction-related information for when a specific torque must be observed is available in graphic form.

Hexagon wrench

Instruction-related information for when screws must be manually tightened is available in graphic form.

Misuse or installation error

Instruction-related information that always contrasts with a graphic showing the correct use is available in graphic form.

Correct use or result

Instruction-related information that always contrasts with a graphic showing incorrect use or an installation error is available in graphic form.

Audible click

Indicates that product components must be audibly connected to each other during assembly. Assembly sequences that show these work steps are available.

Other information

Dimensions within the document

Dimensions without units are given in millimeters.

Tolerance specification

If no tolerance is specified for the dimension, the tolerances according to **DIN ISO 2768-2 apply: 1991-04 Tolerance Class M**.

3 Technical Data

Specification of type plate information

The information on the type plate must be provided for all inquiries regarding the product.

Mechanical

Data	Value	Unit
Direction of travel	To and from	
Conductor rail system installation orientation	Horizontal	
Current collector insertion	From the side	
Number of Poles	2	
Pole spacing	14	mm
Max. travel speed	300	m/min
Max. system length without expansion units	150	m
Max. conductor rail length	4000	mm
Hanger clamp spacing	800	mm
Current collector contact force on the conductor rail	Approx. 6	N
Conductor material of the conductor rail	Copper or steel	

Electrical

Data	Value	Unit
Rated current	32	A
Max. rated voltage	500	V AC/DC
Protection class	IP 2X / IP 4 X	
Assignment	1 or 2 PH, 1 PE	
Ohmic resistance at 35° C	0.000747	Ω/m
Resistance at 50 Hz/35°C	0.000745	Ω/m
Cross-sections for connection cables	1.5 – 2.5 or 4 – 6	mm^2

Ambient conditions

Data	Value	Unit
Temperature range	-5 to 60	°C
Transport temperature	-25 to +55	°C
Storage temperature	-25 to +55	°C
Relative humidity	Max. 85	%
Max. operating temperature difference	40	K
Environment	Indoors	
Altitude above sea level	≤1000	m

4 Description and Functional Principles

The conductor rail system consists of two compact conductor rail poles that are mounted on the support profile using hanger clamps. Two current collectors that are attached to the end consumer, e.g. logistics shuttle, engage in the conductor bar of the conductor rail with their sliding contacts via a permanent contact force. The electrical energy from the power feed is supplied to the current collector via this contact, which passes it on to the end consumer via connection cables.

Connectors are used to connect the individual conductor rails to each other. This means: Connector pins are pushed into the conductor bars and the connection point is protected with a connector cap.

The conductor rail system is electrically connected to the power supply network via the power feed. Power feed terminals with connection cables are installed at the start or end of the system and protected with end caps. The end cap base is also screwed to the support profile on this side of the system. This creates an anchor point that allows the conductor rails to always extend to the same side from this point.

The conductor rail system expands differently when it becomes warm. The system can compensate for expansion of up to 150 m and up to 25 K temperature difference. Expansion units are also required.

➦ *Chapter 3 "Technical Data" on page 17*

End caps are fitted to the last conductor rail for a protected system termination.

The section power feed of the conductor rail system from the 0815 product range is used to feed electrical energy into a track section.

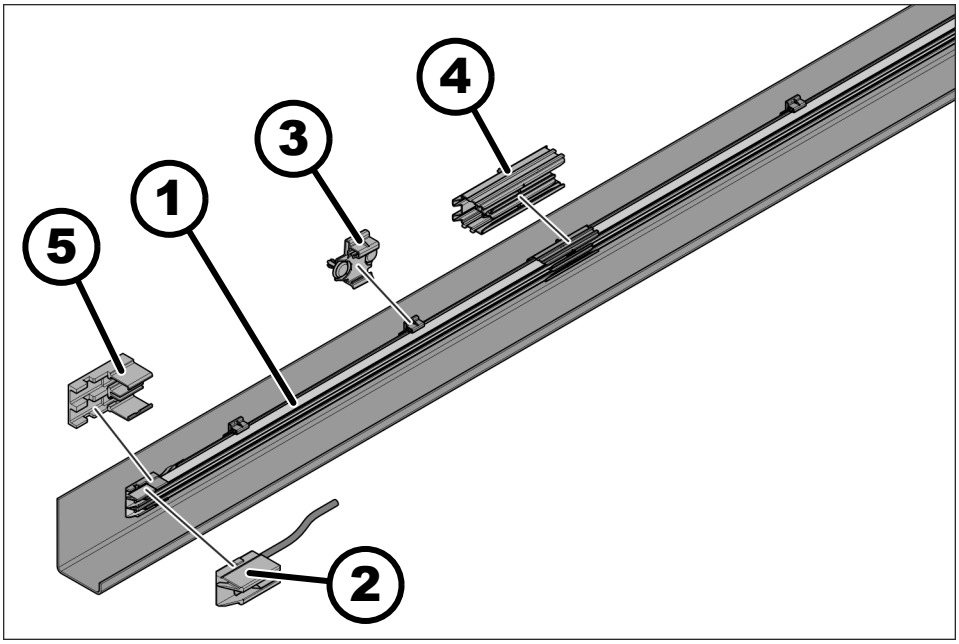

Fig. 1: System start

① Conductor rail
② Power feed
③ Hanger clamp
④ Connector
⑤ End cap base

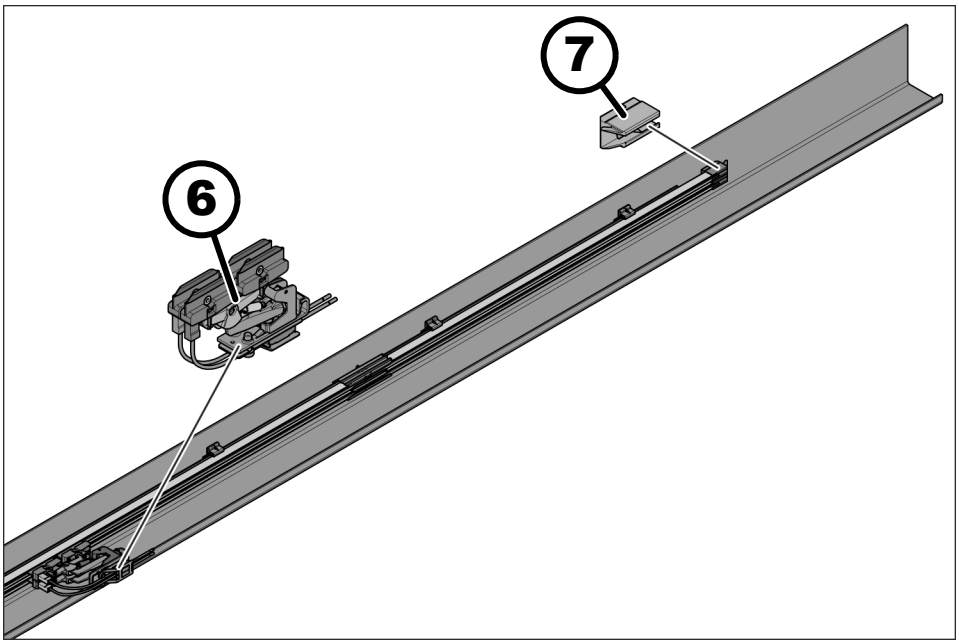

Fig. 2: System end

⑥ Current collector
⑦ End cap

Follow the link or scan the QR code to see the animation:

➦ *Follow here for the system overview*

5 Scope of delivery

Main components

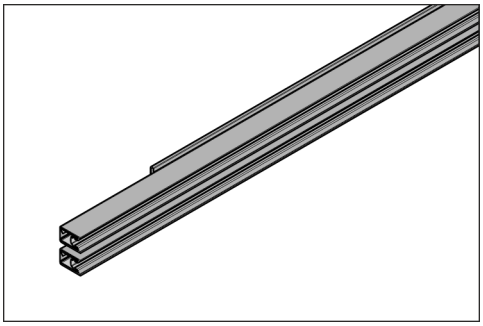

Fig. 3: End piece for system start and track section with projection of 2.5 mm on both sides and milled recess on the back of the insulation profile

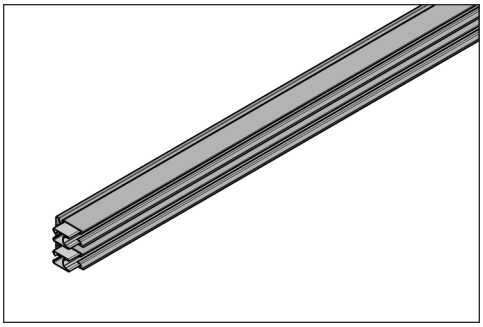

Fig. 4: Conductor rail for the system section with a projection of 7.5 mm on both sides of the conductor bar

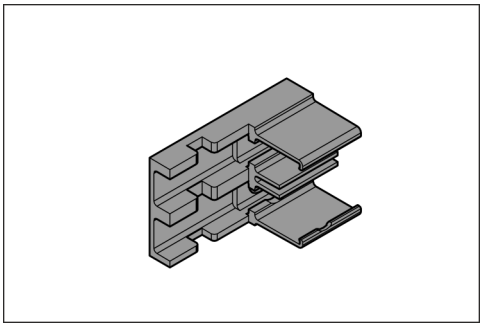

Fig. 5: End cap base

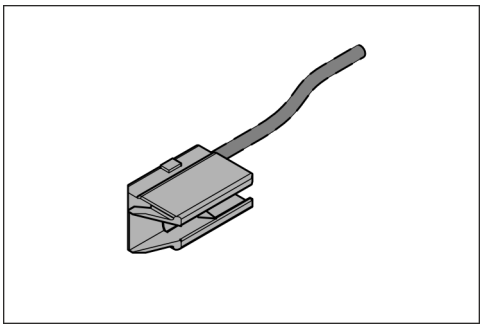

Fig. 6: End cap with power feed

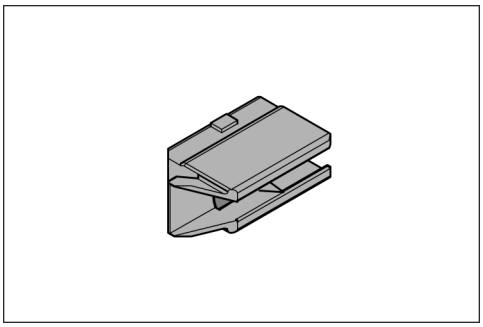

Fig. 7: End cap without power feed

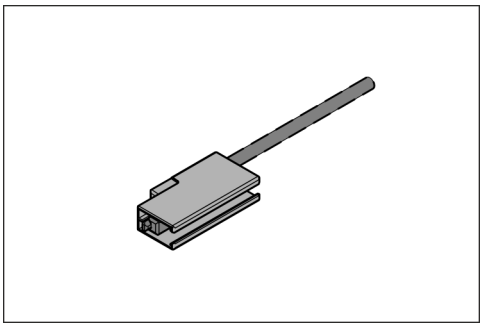

Fig. 8: Section power feed

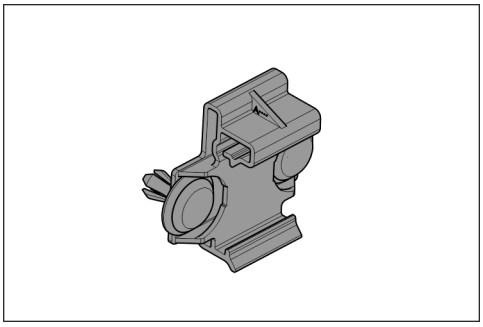

Fig. 9: Hanger clamp

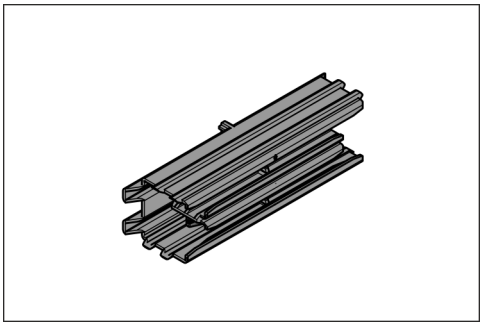

Fig. 10: Connector

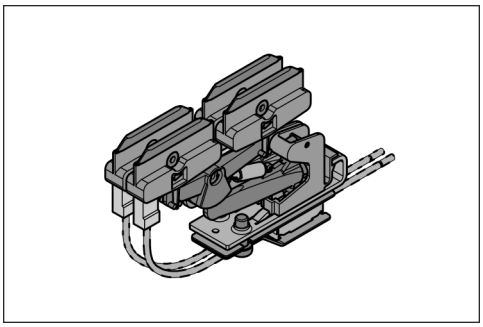

Fig. 11: Current collector unit

The connection cables are not supplied with all current collector units, which is why the connection cables may need to be separately ordered.

Optional accessories

The device (Order No.: 08-V015-0463) consists of a mechanical stop and mounting cap:

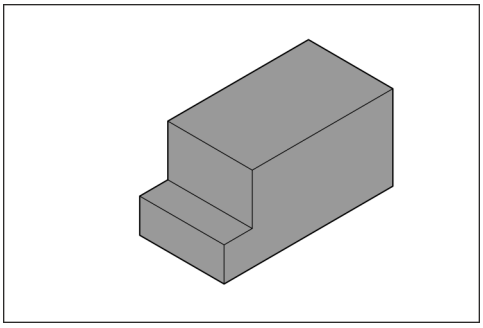

Fig. 12: Mechanical stop

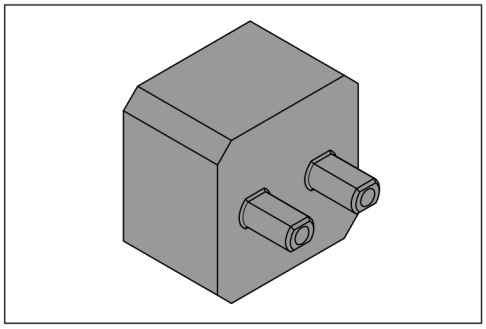

Fig. 13: Mounting cap

6 Transport and Storage

6.1 Transport inspection

Immediately check the delivery for completeness and transport damage upon delivery, since claims for damages can only be asserted within the complaint periods.

Proceed as follows in the event of externally visible transport damage:

- Document and report any defects identified.
- Do not accept the extent of the damage or accept it only with reservations.
- Note the extent of the damage on the transport documents or on the transport company's delivery note.
- If Conductix-Wampfler is the deliverer, report the incident to Conductix-Wampfler.

  ➦ *Chapter 2.6 "Customer service" on page 14*

6.2 Storage

Store packaged parts under the following conditions:

- Dry and dust-free
- Do not expose to aggressive media
- Protect from direct sunlight
- Avoid mechanical vibrations
- Only set on level surfaces
- Do not destroy the packaging; remove it shortly before installation.
- Maintain the environmental conditions according to the technical specifications.

  ➦ *Chapter 3 "Technical Data" on page 17*
- Check the condition of the parts and their packaging regularly if the storage period exceeds three months. Relocate the packages if necessary

ENVIRONMENT

Environmental damage due to improper disposal!

Valuable raw materials can be reused through environmentally friendly disposal.

- Observe locally applicable disposal regulations.
- Have a specialized company carry out the disposal if necessary
- Comply with the Hazardous Substances Ordinance, particularly the regulations on handling hazardous substances.
- Dispose of materials marked for recycling using the respective recycling process.

7 Installation

7.1 Product-specific safety instructions

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Risk of injury due to sharp edges

When working on the conductor rail, skin and limbs may be cut or severed.

- Wear personal protective equipment for all work.

WARNING

Risk of injury due to impact

Moving components of the conductor rail system can cause injuries to limbs.

- Point out this risk to specialist personnel during instruction.
- The conductor rail system is not suitable for an environment with solvents.

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

- Wear a FFP3 protective mask when working with very high levels of dust.

7.2 Tools and materials

Required tools

Aids such as folding ruler or large screwdriver

An individual aid to reach into the hollow space between the balance and the current collector head.

Brush

Caliper

Crimping tool

Cutting tool

Device (Order No.: 08-V015-0463)

➦ *Chapter 5 “Scope of delivery” on page 21*

File

Hexagon screwdriver SW5

Measuring equipment

Power drill

Resistance meter according to IEC / EN 61010-1

Rubber mallet

Sandpaper grit 180

Sandpaper grit 400

Screw clamp

Slotted screwdriver

Spatula

Spring scale with a measuring range of 0 to 20 N

Torque wrench (hexagon wrench): SW2.5

Torque wrench (hexagon wrench): SW3

Wrench, SW7

Required tools

Absorbent cloth

Cleaning agent

S.LX.-Top

B.W.R. 210

O.C.X. Oxide solvent

Vacuum cleaner with a Class H fine filter

7.3 Preparations on the support profile

Preparations

Personnel:

- Specialist personnel

Protective equipment:

- Protective eyewear
- Protective gloves (mechanical)
- Protective headgear
- Protective clothing
- Protective footwear
- Safety vest

Tool:

- Measuring equipment
- Power drill

Prepare the support profile:

1. After installation, the current collector must be able to be engaged in the conductor bar without lateral displacement.

   ➡ Determine the position of the hanger clamps depending on the position and height of the conductor bar (see *Fig. 14*, *Fig. 15*, *Fig. 16* and *Fig. 17*).

2. At the system start, drill the holes for the end cap base with the anchor point and the first two hanger clamps (see *Fig. 14*).

   The hole diameter for the hanger clamp expanding rivets depends on the thickness of the support profile.

Support profile thickness	Bore diameter dimension X
2 mm	4.6 $\pm^{0.05}$ mm
3 mm	4.7 $\pm^{0.05}$ mm
4 mm	4.8 $\pm^{0.05}$ mm
5 mm	4.9 $\pm^{0.05}$ mm
6mm	5.0 $\pm^{0.05}$ mm
7 mm	5.1$\pm^{0.05}$ mm

3. Drill the holes for all other hanger clamps and connectors on the track section in the support profile (see *Fig. 15* and *Fig. 16*).
4. Drill the holes for the hanger clamp and end cap at the system end (see *Fig. 17*).

Specification of tolerances

The tolerances according to DIN ISO 2768-2: Tolerance Class M if no other tolerance is specified for the dimension.

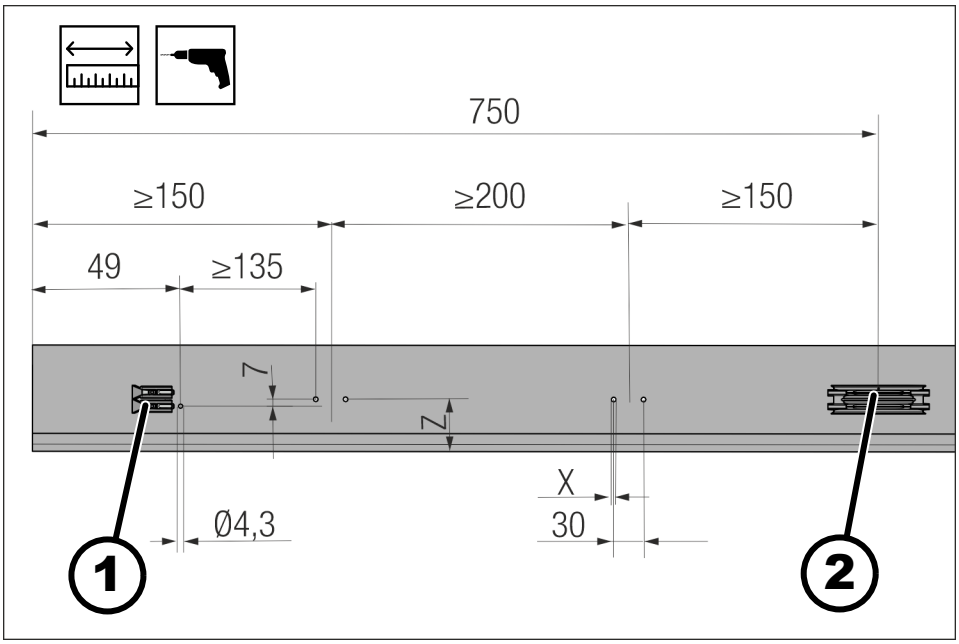

Fig. 14: System start

① Power feed for end cap base
② Connector

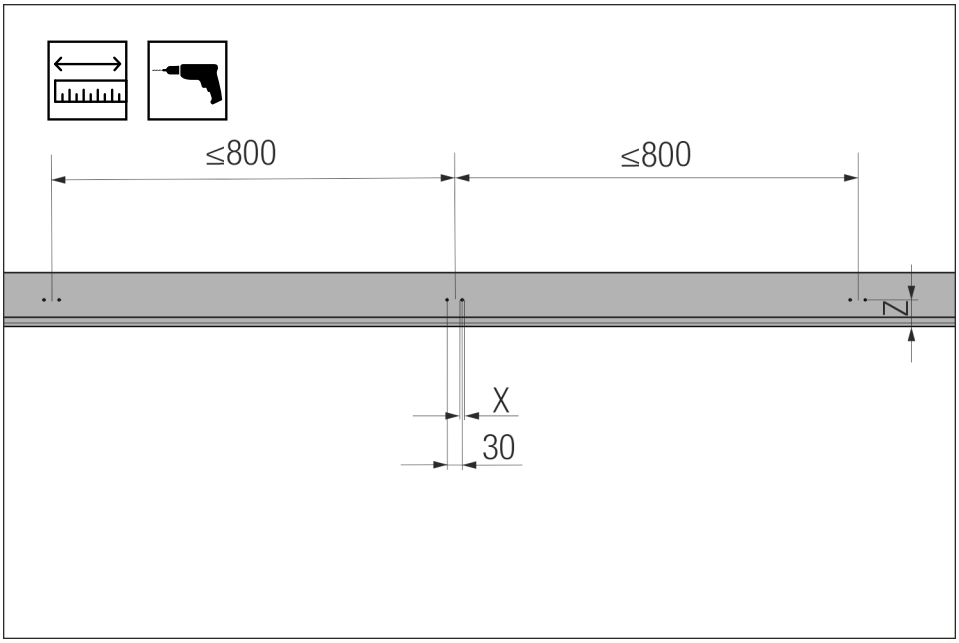

Fig. 15: Holes for hanger clamps

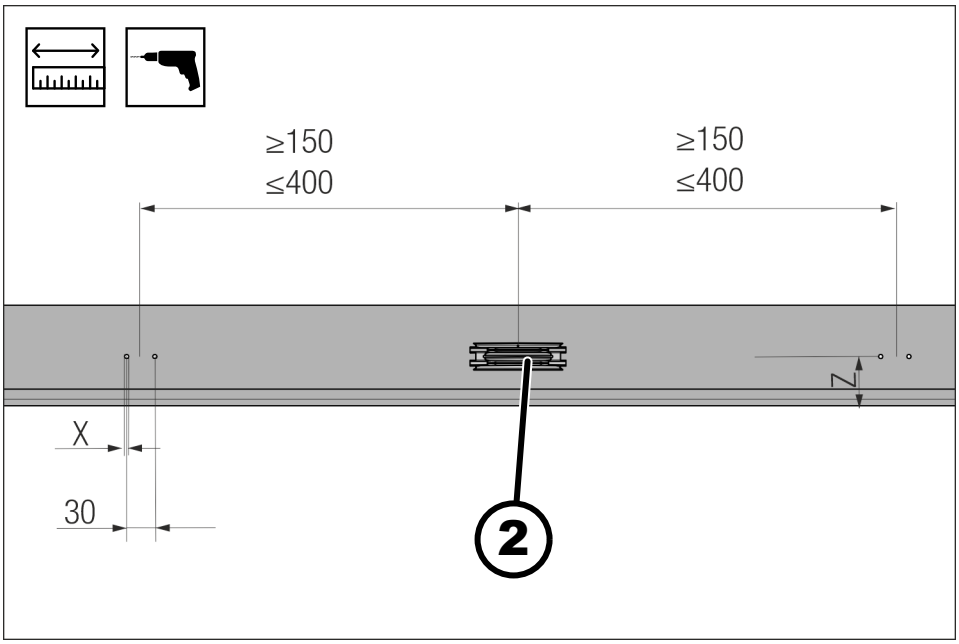

Fig. 16: Spacing between hanger clamp and connector

② Connector

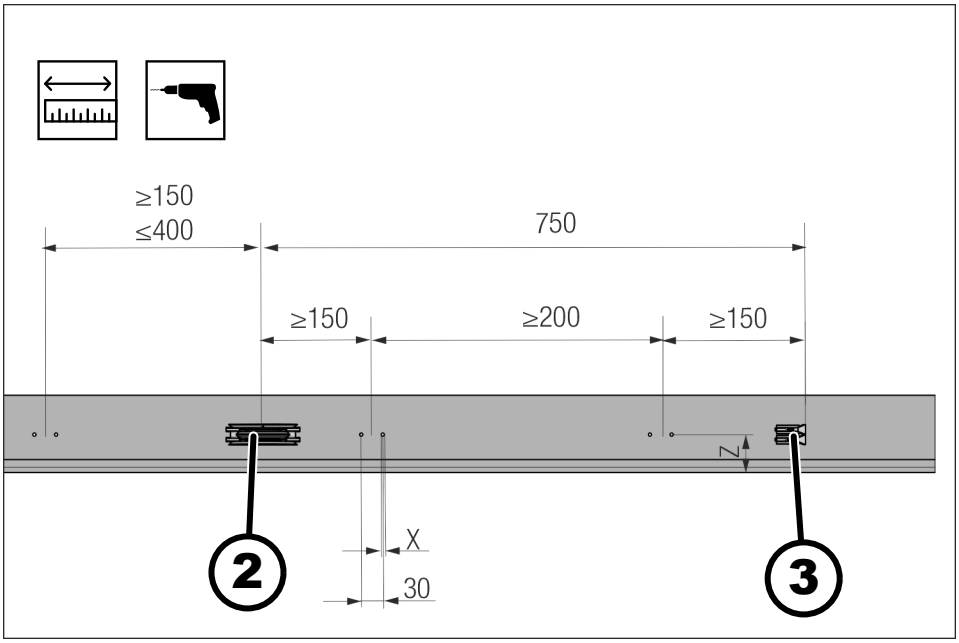

Fig. 17: System end

② Connector
③ End cap

7.4 Installation dimensions

Allow for sufficient free space

The screws must not restrict the movement of the current collector and the connection cables.

The current collectors must be within the following tolerances:

Data	Value	Unit
Working stroke of the current collector relative to the conductor rail	±10	mm
Lateral deflection relative to the conductor rail	±10	mm

The contact force is approx. 6 N.

The contact forces stated refer to the current collectors with vertical insertions and with new sliding contacts.

The contact force tolerance is ± 20 %.

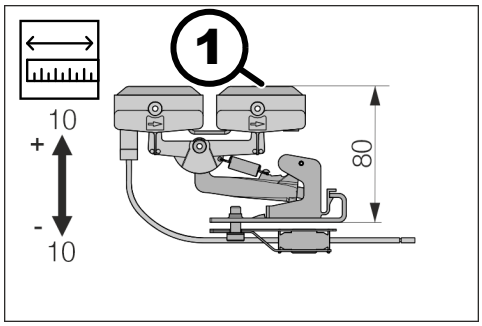

Fig. 18: Check the installation dimensions of the double current collector and the contact force. The working stroke must not be exceeded or fall short.

① Sliding surface

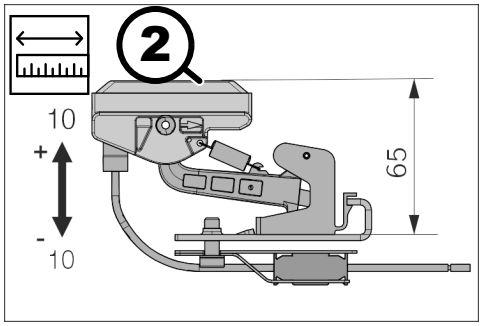

Fig. 19: Check the installation dimensions of the single current collector and the contact force. The working stroke must not be exceeded or fall short.

② Sliding surface

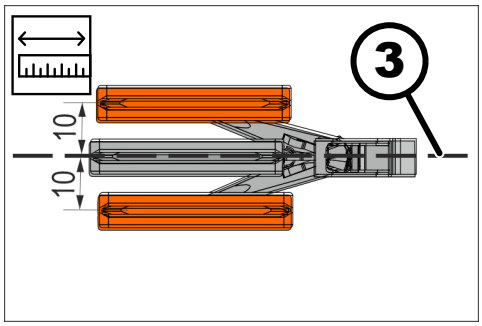

Fig. 20: Align the sliding contacts of the current collector in the center of the conductor rail axis and check the lateral tolerance of the sliding contacts.

③ Conductor rail axis

7.5 Work steps

7.5.1 Mounting the hanger clamp, end segment, and power feed

Preparations

Personnel:

- Specialist personnel

Protective equipment:

- Protective footwear
- Protective gloves (mechanical)
- Safety vest
- Protective eyewear
- Protective headgear

Tool:

- Torque wrench (hexagon wrench): SW2.5
- Torque wrench (hexagon wrench): SW3
- Wrench, SW7
- Crimping tool

Requirement:

- The support profile is level and free of interfering contours (e.g. screw heads).
- All holes for the end cap base with anchor point, hanger clamp and connector are drilled.
  ➦ *Chapter 7.3 “Preparations on the support profile” on page 27*
- A hole for the connection cables was drilled at the system start.

Mount the end cap base with anchor point and hanger clamp

The hanger clamps and the conductor rails connected to them must be within the following tolerances:

Data	Value	Unit
Conductor rail on the X-axis	±3	mm
Conductor rail on the Y-axis	±1	mm

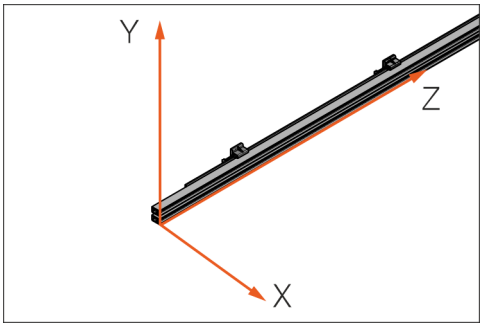

Fig. 21: Coordinate system

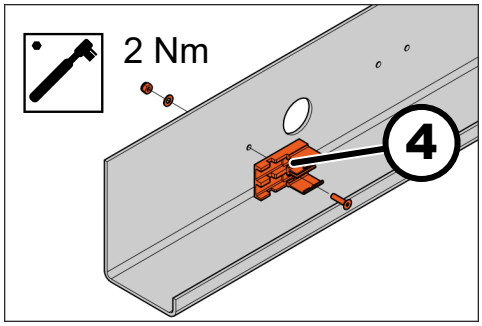

Fig. 22: Mounting end cap base.

④ End cap base

Observe the function of the screwed-on end cap base

The anchor point of the conductor rail system is the screwed-on end cap base. This means that from this rail end, the expansion begins in the direction of the rail end without the screwed-on end cap base.

The system start is the conductor rail section to which the end cap base is screwed.

Allow a free space of up to 200 mm at the system end for expansion.

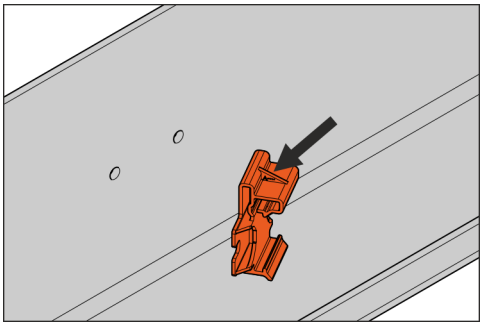

Fig. 23: The clip is seated at the top.

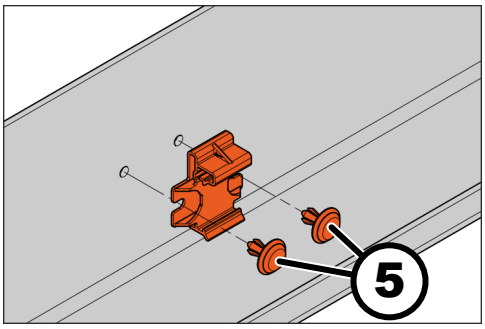

Fig. 24: Mounting hanger clamps

⑤ Expanding rivet

DANGER: Danger due to the reuse of expanding rivets. Dispose of dismounted expanding rivets.

Installing the power feed at the system start

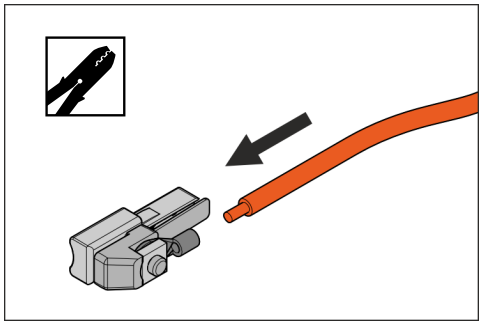

Fig. 25: Crimp the connection cables.

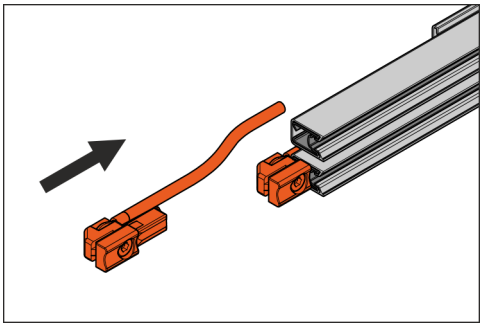

Fig. 26: Slide the power feed terminals into the conductor bar.

Check the position of the conductor bar and the power feed terminal (see *Fig. 27* and *Fig. 28*).

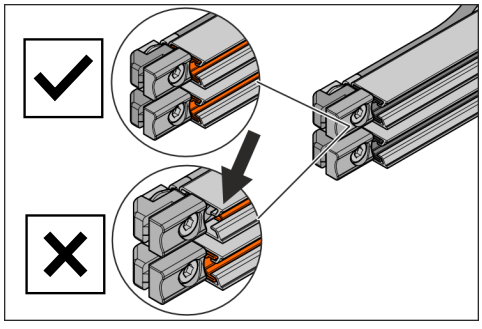

Fig. 27: The connector must lie flush with the conductor bar.

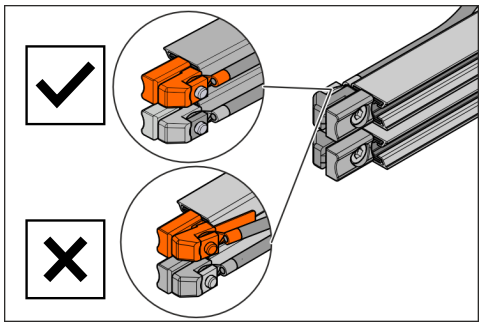

Fig. 28: The power feed terminal must not protrude.

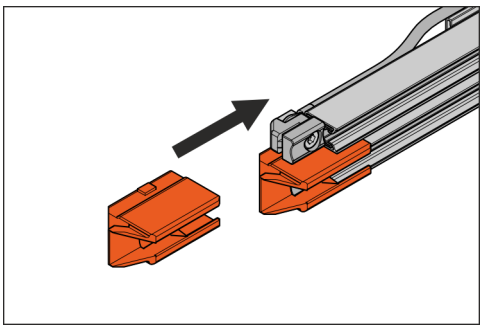

Fig. 29: Slide the end caps over the conductor rail end.

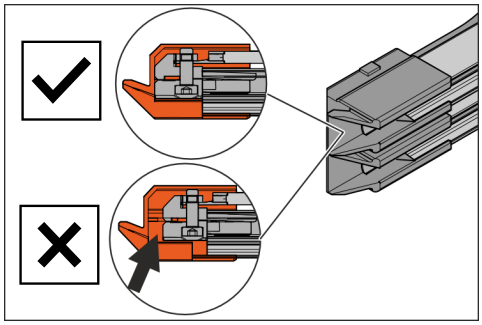

Fig. 30: Check the seating of the end caps.

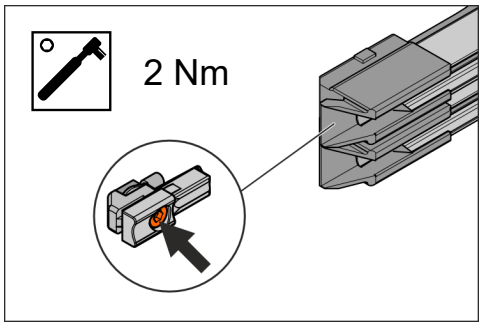

Fig. 31: Tighten the power feed terminal and check that the power feed terminal and end cap are firmly seated.

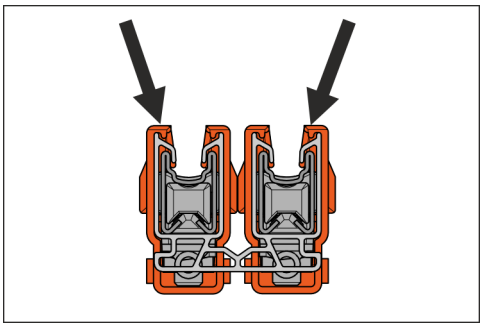

Fig. 32: Check the position of the end caps in the insulation profile.

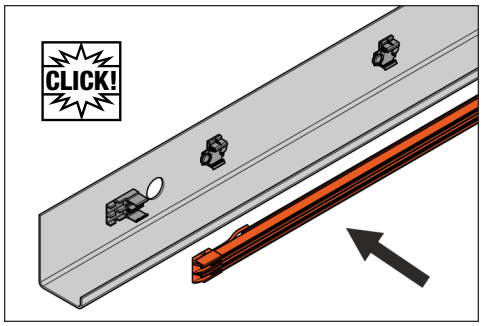

Fig. 33: Hook the first conductor rail into the end cap base and the hanger clamps.

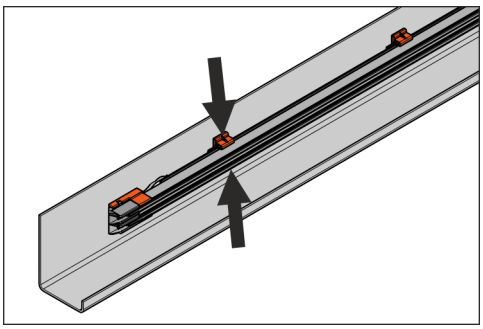

Fig. 34: Check the seating of the conductor rail in the hanger clamps.

Follow the link or scan the QR code to see the animation:

➦ *Follow here for mounting the hanger clamp and end segment with anchor point*

Installing a section power feed

The section power feed of the conductor rail system from the 0815 product range is used to feed electrical energy into the system section.

The end piece (750 mm) with the cut-out on the back of the insulation profile for the track section is used for this (see *Fig. 3*).

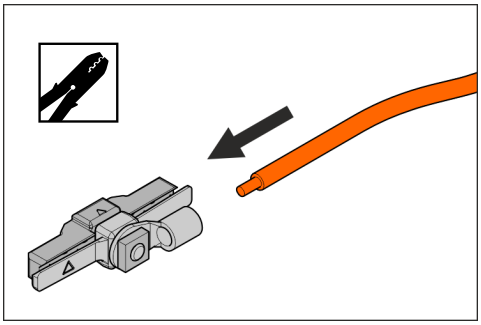

Fig. 35: Crimp the connection cables.

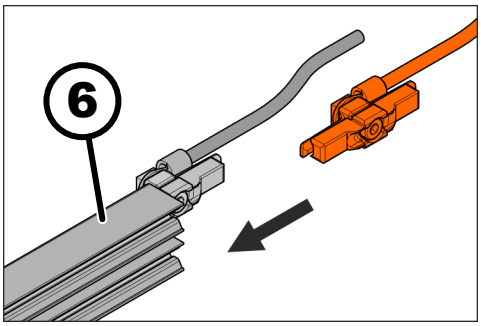

Fig. 36: Slide the power feed terminals into the conductor bar of an end piece.

⑥ End piece (750 mm)

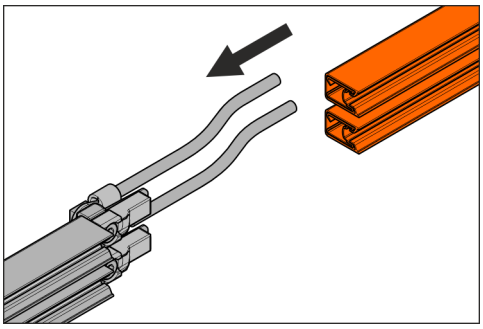

Fig. 37: Slide the second end piece over the section power feed.

Check the seating of the power feed terminal (see *Fig. 38*) .

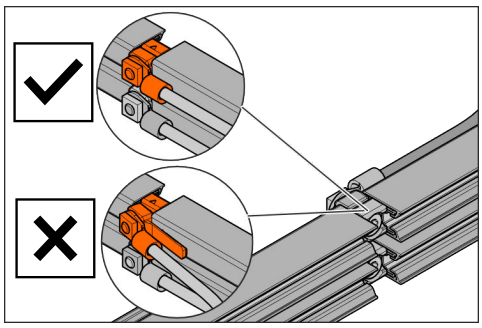

Fig. 38: The power feed terminal must not protrude.

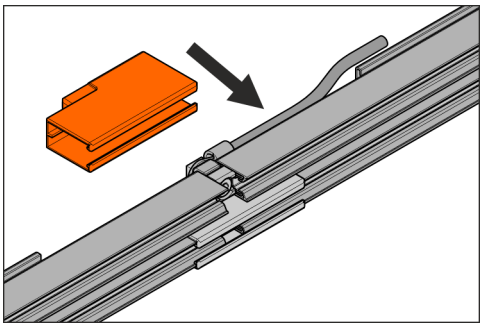

Fig. 39: Slide the power feed cap over the connection point.

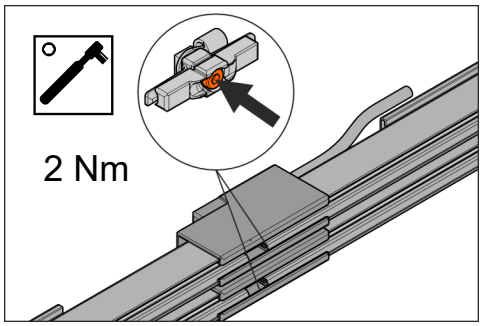

Fig. 40: Tighten the power feed terminal.

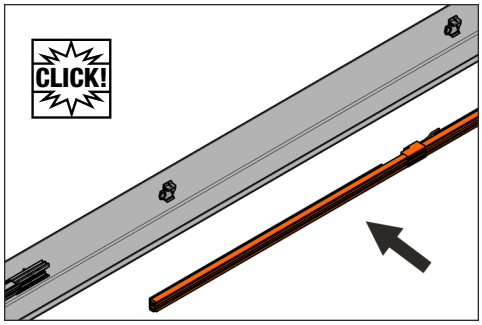

Fig. 41: Hook the conductor rail with section power feed into the hanger clamps.

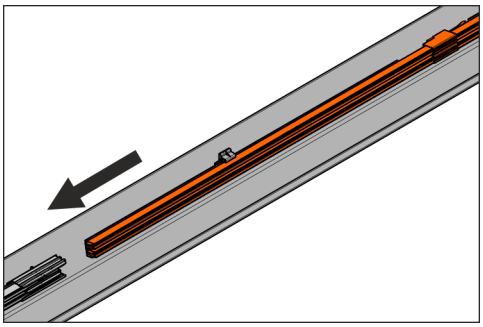

Fig. 42: Slide the conductor rail with section power feed into the connector.

➦ *Chapter 7.5.3 “Connecting the conductor rail” on page 40*

7.5.2 Trimming the conductor rail

Preparations

Personnel:

- Specialist personnel

Protective equipment:

- Protective eyewear
- Protective gloves (mechanical)
- Protective clothing
- Protective footwear
- Safety vest

Tool:

- Measuring equipment
- Cutting tool
- File

Requirement:

- The mounting surface is prepared for trimming.

Work steps

The conductor rail must not be sawn off shorter than 300 mm.

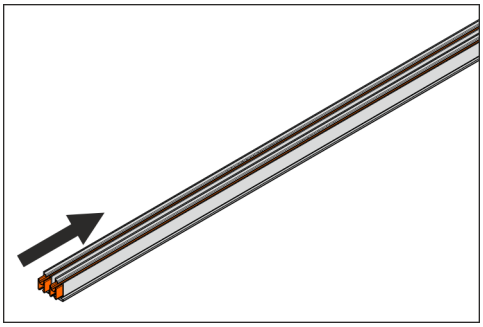

Fig. 43: Slide the conductor bar flush with the insulation profile.

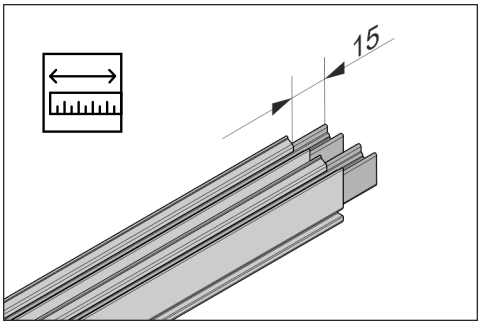

Fig. 44: Check the overhang of the conductor bar.

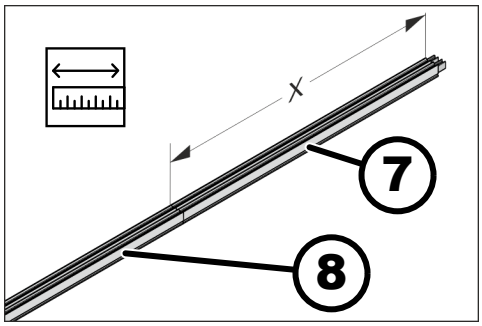

Fig. 45: Mark the dimension at the end of the rail with the overhang.

⑦ Rail end with overhang
⑧ Rail end without overhang (waste piece)

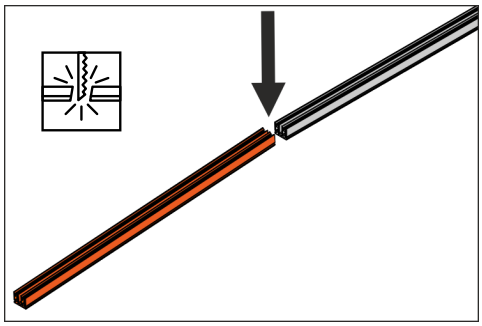

Fig. 46: Saw off the rail end from top to bottom without overhang. The conductor rail opening points toward the saw blade.

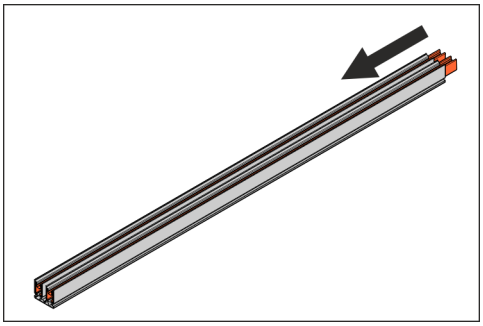

Fig. 47: Slide the conductor bar back evenly after sawing.

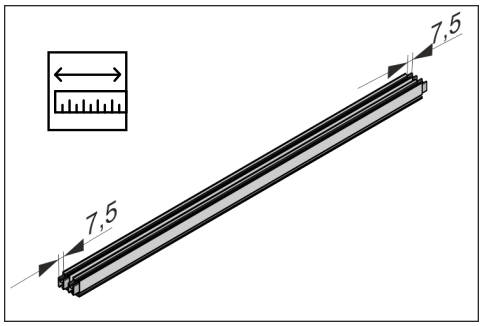

Fig. 48: Check the overhang of the conductor bar.

NOTE: Sharp edges lead to loss of contact with the sliding surface. Chamfer the conductor bar and insulation profile.

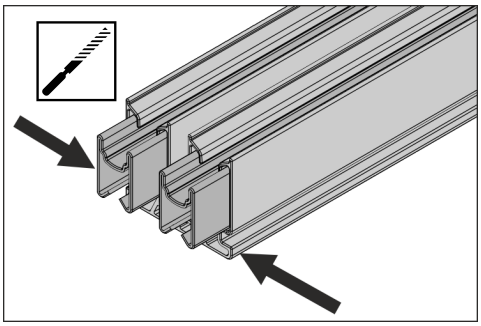

Fig. 49: Chamfer the conductor bar and the insulation profile.

Follow the link or scan the QR code to see the animation:

➦ *Follow here for trimming the conductor rail*

7.5.3 Connecting the conductor rail

Preparations

Personnel:

- Specialist personnel
- Minimum 2 persons

Protective equipment:

- Protective clothing
- Protective footwear
- Protective gloves (mechanical)
- Safety vest

Tool:

- Device (Order No.: 08-V015-0463)
- Screw clamp
- Rubber mallet

Requirement:

- All hanger clamps are mounted.
- The end segment with end cap base is mounted.

Work steps

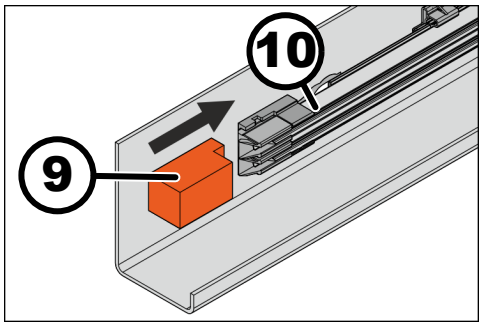

Fig. 50: Mount the mechanical stop to the end segment.

⑨ Mechanical stop
⑩ End segment

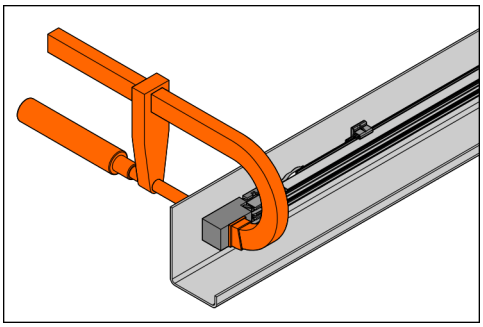

Fig. 51: Attach the mechanical stop to the support profile with a screw clamp.

WARNING: Fire hazard due to defective plug connectors. Do not reuse removed plug connectors ➦ *Chapter 11.5 "Replacing conductor rail in a section" on page 74*. Dispose of dismounted plug connectors ➦ *Chapter 12.1 "Disassembly and Disposal" on page 82*.

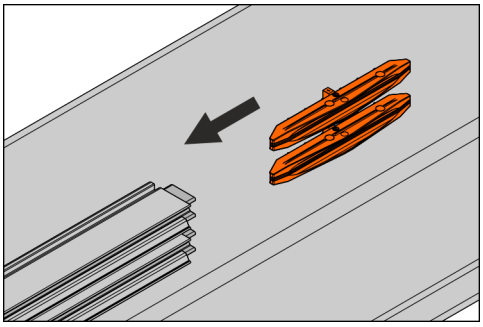

Fig. 52: Plug the connector pins into the conductor bar up to the mechanical stop.

Observe the following when installing the connectors:

- Only install the connector on the level.
- Do not bend or twist the connector.
- The backs of the connector caps must be able to support themselves and must not hang openly in the air.

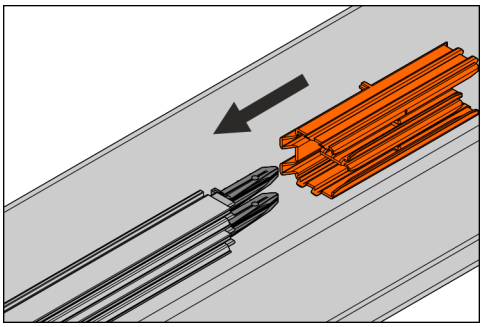

Fig. 53: Slide the connector cap over the connector pins.

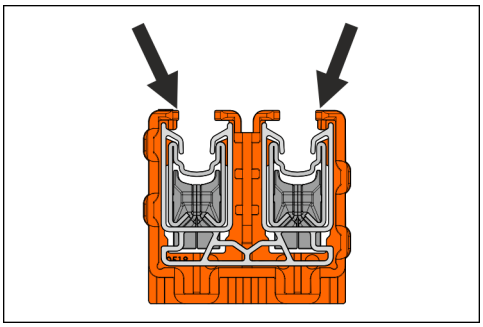

Fig. 54: Check the position of the connector caps in the insulation profile.

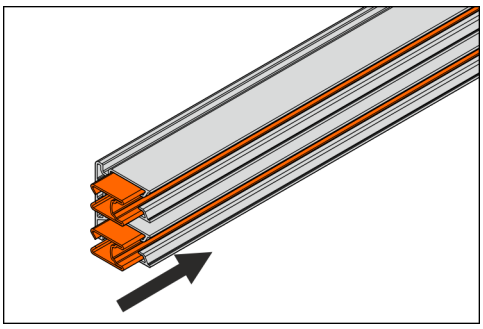

Fig. 55: Slide the conductor bar flush with the insulation profile.

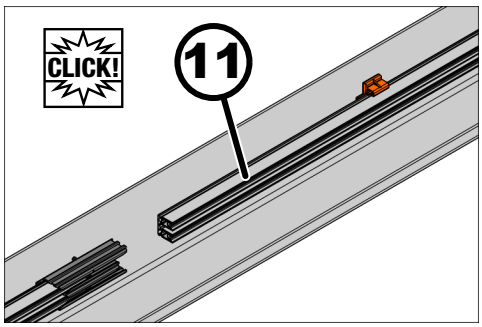

Fig. 56: Hook the second conductor rail into the hanger clamps. When connecting, ensure that the PE strip forms a continuous strip.

⑪ Second conductor rail

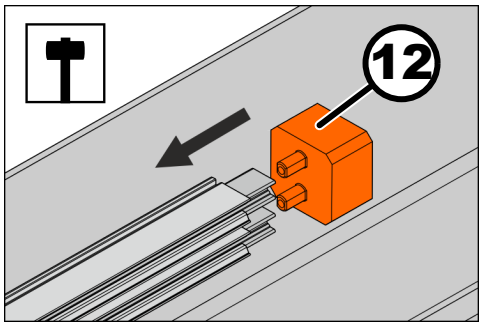

Fig. 57: Tap the mounting cap with a hammer until the conductor bar lies against the mechanical stop of the connector.

⑫ Mounting cap

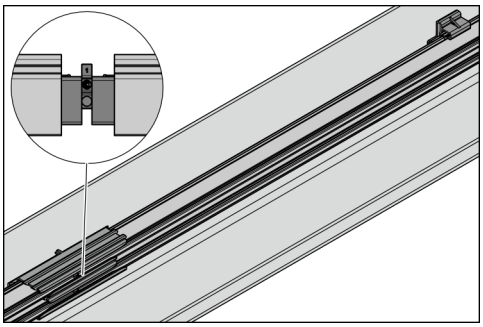

Fig. 58: The connector pins must have a gap of approx. 2.5 mm.

NOTE: Material damage due to forgotten installation aids. Remove all required installation aids once the installation is complete.

Follow the link or scan the QR code to see the animation:

➦ *Follow here for connecting the conductor rail*

7.5.4 Mounting the end caps

Preparations

Personnel:

- Specialist personnel
- Minimum 2 persons

Protective equipment:

- Protective gloves (mechanical)
- Protective clothing
- Protective footwear
- Safety vest

Tool:

- Device (Order No.: 08-V015-0463)
- Rubber mallet
- Torque wrench (hexagon wrench): SW2.5

Requirement:

- The conductor rail system is connected down to the last conductor rail and hooked into the hanger clamps.
- The last connector cap is fitted at the last connector point.
- The last two hanger clamps are mounted at the system end.

Mounting the end caps

At the end piece (750 mm), the conductor bar is aligned flush with the insulation profile.

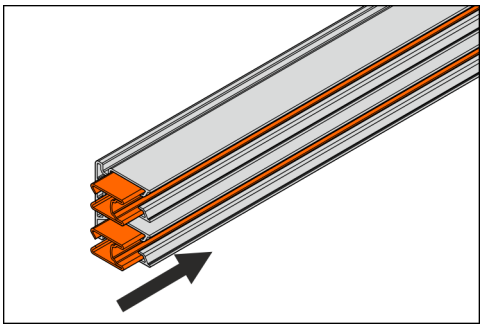

Fig. 59: Slide the conductor bar flush with the insulation profile.

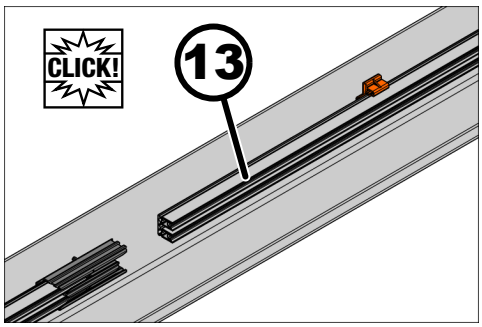

Fig. 60: Hook the second end piece into the hanger clamps.

⑬ End piece

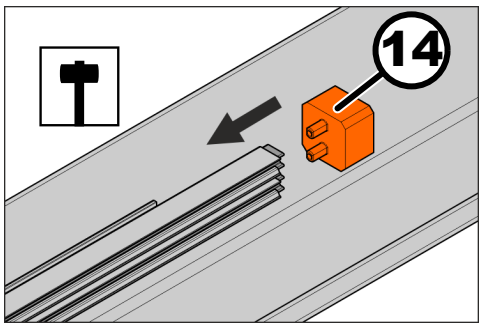

Fig. 61: Tap the mounting cap with a hammer to connect the second end piece.

⑭ Mounting cap

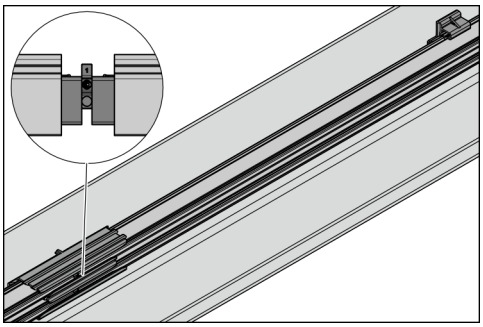

Fig. 62: The connector pins must have a gap of approx. 2.5 mm.

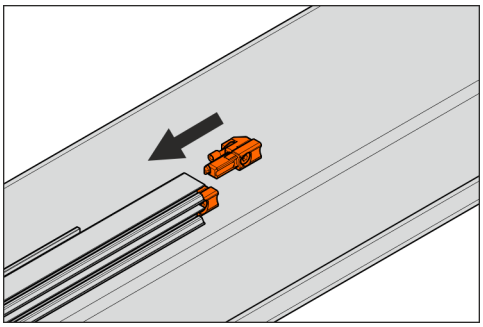

Fig. 63: Slide the power feed terminals without connection cable into the conductor bars.

Check the position of the conductor bar and the power feed terminal (see *Fig. 64* and *Fig. 65*).

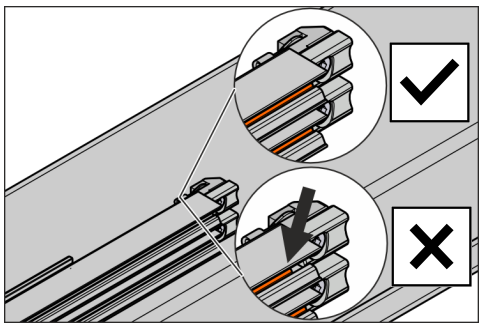

Fig. 64: The connector must lie flush with the conductor bar.

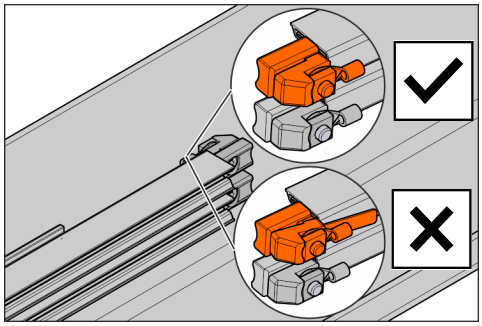

Fig. 65: The power feed terminal must not protrude.

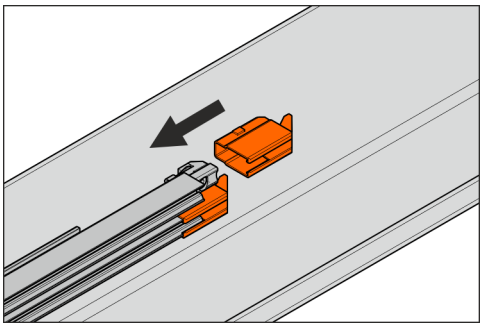

Fig. 66: Slide the end caps over the conductor rail end.

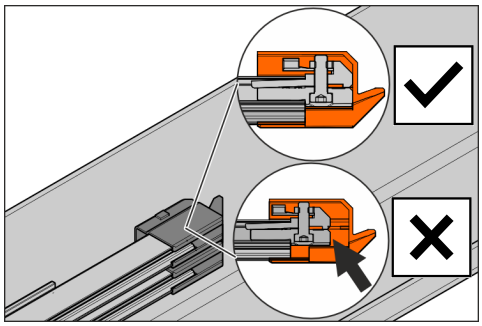

Fig. 67: Check the seating of the end caps and check that the power feed terminal and end cap are firmly seated.

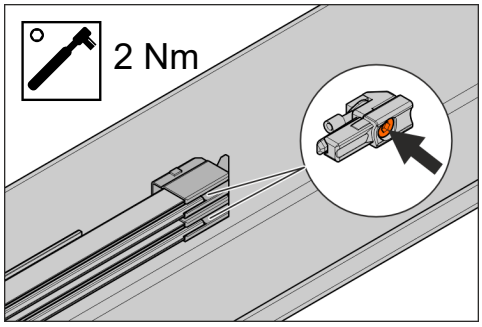

Fig. 68: Tighten the power feed terminal.

NOTE: Material damage due to forgotten installation aids. Remove all required installation aids once the installation is complete.

Follow the link or scan the QR code to see the animation:

➦ *Follow here for mounting the end caps*

7.5.5 Installing the current collector

Preparations

Personnel:

- Qualified electrician

Protective equipment:

- Protective clothing
- Protective footwear
- Safety vest

Tool:

- Hexagon screwdriver SW5

Requirement:

- The conductor rail system is fully assembled.

Work steps

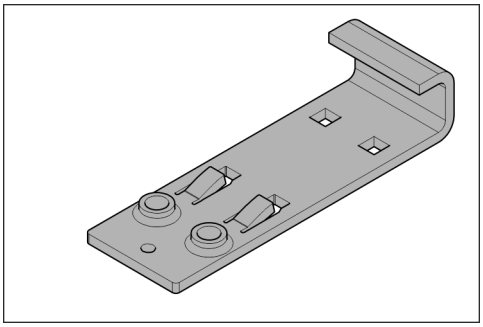

Fig. 69: Towing plate without notch

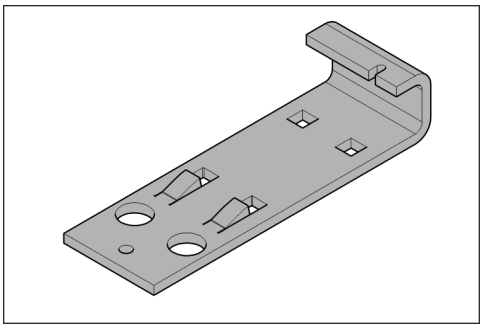

Fig. 70: Towing plate with notch

Check PE current collectors for old systems

The PE current collector cam have a polarity error protection function. PE current collectors without cams must therefore be replaced in old systems.

➦ *Chapter 11.3 “Replacing the current collector” on page 67*

Always include redundancy for PE current collectors

For standard-compliant use (DIN EN 61140-2016-7.3.5.1 and DIN EN 60204-1-2018), Conductix-Wampfler recommends always including a redundancy for PE current collectors.

Further measures must be taken depending on the applications and the results of the operator's risk assessment.

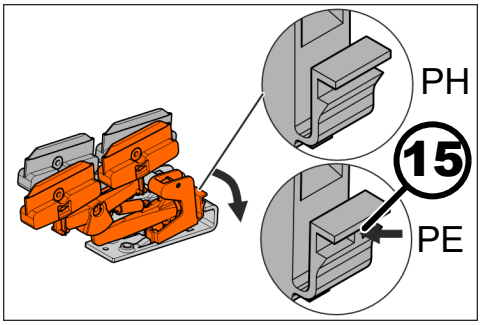

Fig. 71: Hook the current collectors into the towing plate. Ensure that the PE current collector cam engages in the towing plate cam.

⑮ Cam

DANGER: The position of the green PE current collector must not be reversed. The green PE current collector may only be engaged in the PE conductor rail. The PE conductor line is identified by a green stripe on the insulation profile.

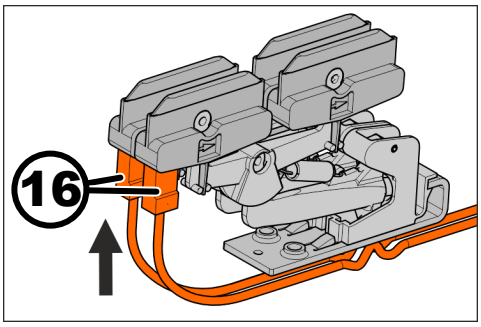

Fig. 72: Insert the insulation sleeves with the connection cables into the current collector head.

⑯ Insulation sleeve

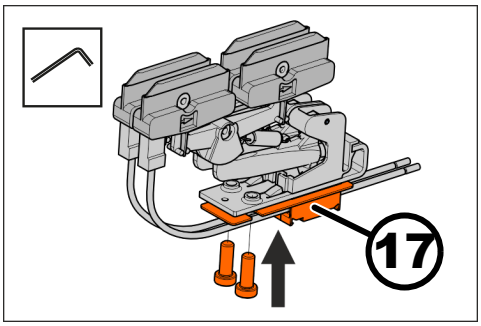

Fig. 73: Screw the tension relief to the towing plate.

⑰ Tension relief

NOTICE

Current collector connection cables

- No tensile forces and/or directional forces may have affect on connection cables.
- Connection cables must not be exposed.
- Do not compress or kink connection cables.
- Connection cables must be free of tensile force and directional force.
- Do not fix or bundle connection cables with cable ties.
- Do not provide connection cables with identification labels.
- Do not transpose or twist the connection cables.
- Use connection cables from Conductix-Wampfler or highly flexible connection cables similar to Conductix-Wampfler cables.

Follow the link or scan the QR code to see the animation:

➦ *Click here for the current collector tolerance ranges*

8 Commissioning

8.1 Product-specific safety instructions

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Risk of injury due to impact

Moving components of the conductor rail system can cause injuries to limbs.

- Point out this risk to specialist personnel during instruction.
- The conductor rail system is not suitable for an environment with solvents.

DANGER

Risk of injury due to ensnarement

There is a risk of being ensnared by moving parts when the system is in operation.

- Do not enter the danger zones of the system during operation.
- Point out this risk to specialist personnel during instruction.

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

- Wear a FFP3 protective mask when working with very high levels of dust.

8.2 Check list

Preparations

Personnel:

- Specialist personnel
- Qualified electrician

Protective equipment:

- Protective headgear
- Protective clothing
- Protective footwear
- Safety vest

8.2.1 Checking the system

Check points:

1. Ambient conditions correspond to the planned design (ambient temperature, humidity, etc.).

   ➦ *"Ambient conditions" on page 18*
2. The system has been checked against the installation plan (power feeds, anchor points, etc. are complete and in the correct position).
3. The installation position of the conductor rail and current collector is correct (e.g. height, phase spacing).
4. Installed components are correctly unmounted, undamaged, clean and dry.
5. There are no interfering contours or parts in the working area of the current collectors.
6. PE is in the correct position.
7. The necessary covers and barriers are available.
8. The connection cables are dimensioned according to the loads and ambient conditions and/or installation conditions.

Consequences of non-compliance:

- The system is not operational.

8.2.2 Checking the conductor rail

Check points:

1. There is no visible change in height on straight sections.
2. There is no lateral displacement on straight sections.
3. No "waves" are visible on the installed conductor rails.
4. Conductor rail runs parallel to the current collector section.
5. There is no lateral displacement from the conductor rail to the current collector.
6. The insulation profile is fully hooked into the hanger clamps.
7. The conductor bar may only be visible at the access opening for the current collector.
8. Contact surfaces of the conductor bars are clean and free of soiling, oxidation and pitting corrosion.
9. Transitions between conductor rail and other components (power feed, end caps, connectors, etc.) are checked for secure connection.
10. The conductor bar and insulation profile are burr-free at the ends.
11. The current collector heads do not jam and slide through the conductor rail without obstruction.

Consequences of non-compliance:

- Uneven wear of sliding contacts and conductor rail.
- Poor electrical contact.
- Conductor rails can come loose from the hanger clamps if they are not fully hooked into the hanger clamps.
- Risk of electric shock and fire hazard.

8.2.3 Checking the hanger clamps

Check points:

1. The hanger clamps are installed with the correct spacing from each other and from the connector caps in accordance with the installation plan.
2. The hanger clamps are aligned at right angles to the conductor rail.

3. The conductor rail can slide freely in the hanger clamps.

Consequences of non-compliance:

- Damage to the conductor rail system such as e.g. waves in the conductor rail, bent conductor rail, pulled connectors, broken hanger clamps.

8.2.4 Checking the connectors

Check points:

1. The conductor bar at the connection point are aligned to each other without displacement.
2. Care was taken to ensure that the insulation profile and conductor bar were free of burrs if the conductor bars were trimmed on site.
3. The gap between the 2 conductor bars at the connection point is approx. 2.5 mm.
4. The insulation profile is completely enclosed by the connector cap.
5. The specified tightening torques were observed.

Consequences of non-compliance:

- Increased wear of the sliding contacts.
- Risk of electric shock and fire hazard.
- Poor electrical contact.

8.2.5 Checking the end cap base

Check points:

1. The conductor rails are fully hooked into the end cap base.
2. The end cap base is firmly connected to the support profile.
3. The specified tightening torques have been checked.
4. Only one end cap base is screwed on one side.

Consequences of non-compliance:

- Correct linear expansion of the conductor rail is not ensured.

8.2.6 Checking the power feeds

Check points:

1. The power feeds and cables are professionally installed and connected in accordance with the instructions.
2. The screws of the power feed terminals are tightened to the specified tightening torques.
3. The power supply connection cables are flexibly laid.
4. The cap is fitted correctly and completely covers the power feed.
5. The distance from the system end (where the end cap base **is not seated**) to the end of the customer-side support profile is ≥ 200 mm. This means that the connection cables can compensate for the movement of the conductor rail during expansion.

Consequences of non-compliance:

- Risk of electric shock and fire hazard.
- Disconnection of the electrical connection and damage to the connection cables.
- Optimal current transmission cannot be ensured.
- The power feed terminals can become detached from the conductor rail.

- Poor electrical contact.
- Damage to the conductor rail system such as e.g. waves in the conductor rail, bent conductor rail, broken hanger clamps.

8.2.7 Checking the current collectors

Check points:

1. The current collectors (not engaged) are visually and mechanically in order (without damage, movements are smooth).
2. The current collectors are correctly attached and aligned.
3. The installation spacing for the current collectors (engaged) are correct according to the specification.
4. The connection cables of the current collector are laid free of directional and tensile forces. The cables must not pull on, press against or cause the current collector heads to twist.
5. The freedom of movement of the current collector heads is not restricted.
6. The current collector heads do not jam and slide through the conductor rail without resistance.

Consequences of non-compliance:

- The sliding contacts wear unevenly.
- The current collectors can break off.

8.2.8 Electrical checking of the system

Check points:

1. The insulation resistance of the conductor rail system was measured in accordance with the locally applicable technical standards, directives and laws (insulation resistance test in accordance with EN 60204-1) ≥ 1 MΩ with measuring voltage 500 VDC. Exception for busbars, conductor rails and slip rings ≥ 50 kΩ (EN 60204-1/18.3:

   ➦ *Chapter 9.3 "Measuring insulation resistance" on page 55*
2. All metal components (e.g. substructure / supporting construction) were earthed in accordance with regulations.
3. All electrical protective devices are installed, tested and functional.
4. The specified national electrical tests have been conducted.

Consequences of non-compliance:

- Risk of electric shock and fire hazard.

8.2.9 Other system checks

Check points:

1. A test travel was carried out at low speed in compliance with the safety regulations. Damage to the system can be detected in good time before operation.
2. Current collector slides well over the connection and disconnection points.
3. All safety symbols and type plates have been attached.
4. All tools and aids have been removed.
5. The operating personnel have been instructed.

Consequences of non-compliance:

- Damage to the system.
- Collisions during operation.

9 Operation

9.1 Product-specific safety instructions

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

➥ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Fire hazard due to overload or sparking

Fire hazards occur due to overloading the system or individual components (e.g.: Cables, current collectors, etc.), arcing, short circuits or spark formation.

- Comply with permissible current ratings.
- Easily combustible materials may not be stored near the product.
- Observe installation tolerances.
- Check, service and clean the product regularly.

DANGER

Risk of injury due to ensnarement

There is a risk of being ensnared by moving parts when the system is in operation.

- Do not enter the danger zones of the system during operation.
- Point out this risk to specialist personnel during instruction.

WARNING

Risk of injury due to impact

Moving components of the conductor rail system can cause injuries to limbs.

- Point out this risk to specialist personnel during instruction.
- The conductor rail system is not suitable for an environment with solvents.

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

- Wear a FFP3 protective mask when working with very high levels of dust.

9.2 Normal operation

Personnel:

- Users

1. Normal operation is the uninterrupted power supply to the mobile end consumer.
2. If faults occur, the conductor rail system must be switched off and secured against being switched on again.

   ➦ *Chapter 1.8 “5 Safety Rules for working on electrical systems” on page 12*

   ➦ *Chapter 10.2 “Troubleshooting” on page 58*
3. If normal operation has been interrupted and operation must be resumed, the following points must be observed:
   - There must be no coarse soiling or objects in the conductor rails.

     ➦ *Chapter 11.6 “Cleaning the conductor rail” on page 76*
   - The full length of the sliding contacts must be in contact with the conductor bar.
   - Measure insulation resistance.

     ➦ *Chapter 9.3 “Measuring insulation resistance” on page 55*

9.3 Measuring insulation resistance

Preparations

Personnel:

- Qualified electrician

Protective equipment:

- Protective gloves (mechanical)
- Protective clothing
- Protective footwear
- Safety vest

Tool:

- Resistance meter according to IEC / EN 61010-1

1. Switch off the system according to the 5 Safety Rules.

   ➦ *Chapter 1.8 “5 Safety Rules for working on electrical systems” on page 12*

2. Before switching on again, measure the insulation resistance at the power feed position from conductor rail to conductor rail using an ohmmeter in accordance with IEC / EN 61010-1.

   Insulate the conductor rail system at power feeds, current collectors and terminal boxes. The current collector remains in contact with the conductor bar.

   If there are several PE conductor rails, each additional PE conductor rail must be measured against a phase conductor rail.

   After installing the conductor rail, ensure that no short-circuits are caused by already connected cables.

   - ➡ For systems with a rated voltage ≤ 500 V , the insulation resistance ≥ 0.5 MΩ and the DC voltage measurement must be 500 V .
   - ➡ For systems with a rated voltage > 500 V, the insulation resistance ≥ 1.0 MΩ and the DC measurement voltage must be 1000 V.
   - ➡ Special regional regulations apply to high-voltage systems (rated voltage < 1000 V).
   - ➡ Document the measured values including a sketch of the measured sections in the corresponding measurement log.

10 Faults

10.1 Product-specific safety instructions

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

➥ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Fire hazard due to overload or sparking

Fire hazards occur due to overloading the system or individual components (e.g.: Cables, current collectors, etc.), arcing, short circuits or spark formation.

- Comply with permissible current ratings.
- Easily combustible materials may not be stored near the product.
- Observe installation tolerances.
- Check, service and clean the product regularly.

WARNING

Risk of injury due to crushing of skin and limbs

The spring force of the current collector can lead the the crushing of skin and limbs.

- Wear personal protective equipment for all work.

WARNING

Risk of injury due to impact

Moving components of the conductor rail system can cause injuries to limbs.

- Point out this risk to specialist personnel during instruction.
- The conductor rail system is not suitable for an environment with solvents.

WARNING

Risk of injury due to sharp edges

When working on the conductor rail, skin and limbs may be cut or severed.

- Wear personal protective equipment for all work.

DANGER

Risk of injury due to ensnarement

There is a risk of being ensnared by moving parts when the system is in operation.

- Do not enter the danger zones of the system during operation.
- Point out this risk to specialist personnel during instruction.

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

– Wear a FFP3 protective mask when working with very high levels of dust.

10.2 Troubleshooting

Preparations

Personnel:

- Qualified electrician

Protective equipment:

- Protective gloves (mechanical)
- Protective clothing
- Safety vest

Switch off the system according to the 5 Safety Rules.

➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

10.2.1 Faults on the current collector and sliding contacts

Sliding contacts are unevenly worn.

Possible cause	Solution
The current collector head's range of movement is restricted.	• Check the connection cables of the current collector for directional, torsional and tensile forces. • Lay connection cables without affecting forces. • Allow the current collector to move freely e.g. e.g. Remove attachment using cable ties.
Contact force is too high or low.	• Check whether the correct connection cables of class 6 (according to DIN VDE 0295) have been used. • Check and correct the installation dimensions of the current collector. ➦ *Chapter 7.4 "Installation dimensions" on page 30* • Check the tolerance range of the overall system on the X-axis and Y-axis. ➦ *"Mount the end cap base with anchor point and hanger clamp" on page 32* • Check the current collector for parallelism to the conductor rail and correct. see *Fig. 20*

Sliding contact insulation is worn away on the side down to the sliding contact.

Possible cause	Solution
The height of the current collector is not correctly adjusted to insertion from the side.	• Replace the current collector heads and align the height correctly. ➦ *Chapter 11.4 "Replacing the current collector head" on page 70*

Sliding contacts wear out too fast.

Possible cause	Solution
Sharp edges on power feed terminals, conductor rails and/or at the connection points of the individual conductor rails.	• Deburr sharp edges.
Conductor rail is soiled or has burnt areas.	• Check the system, e.g. for excessive current values. ➦ *Chapter 3 "Technical Data" on page 17* • Clean the conductor rail. ➦ *Chapter 11.6 "Cleaning the conductor rail" on page 76* • If the sliding surfaces of the conductor rail are damaged, replace the affected section. ➦ *Chapter 11.5 "Replacing conductor rail in a section" on page 74*
Contact force too high.	• Check whether the correct connection cables of Class 6 (according to DIN VDE 0295) have been used. • Check and correct the installation dimensions of the current collector. ➦ *Chapter 7.4 "Installation dimensions" on page 30* • Check the tolerance range of the overall system on the X-axis and Y-axis. ➦ *"Mount the end cap base with anchor point and hanger clamp" on page 32* • Check the current collector for parallelism to the conductor rail and correct. ➦ *Chapter 7.4 "Installation dimensions" on page 30*

Energy supply is not continuous.

Possible cause	Solution
The end and section power feeds are not installed according to the manufacturer's specifications.	• Tighten the cylinder screws with a torque wrench 2 Nm . ➦ *Chapter 7.5.1 "Mounting the hanger clamp, end segment, and power feed" on page 31* ➦ *Chapter 7.5.4 "Mounting the end caps" on page 43* • Mount power feed terminal correctly. ➦ *Chapter 7.5.1 "Mounting the hanger clamp, end segment, and power feed" on page 31* ➦ *Chapter 7.5.4 "Mounting the end caps" on page 43* • Check crimp connection between cable lug and connection cable and re-crimp if necessary. ➦ *Chapter 7.5.1 "Mounting the hanger clamp, end segment, and power feed" on page 31*
Contact force too low.	• Check whether the correct connection cables from Class 6 (according to DIN VDE 0295) have been used. • Check and correct the installation dimensions of the current collector. ➦ *Chapter 7.4 "Installation dimensions" on page 30* • Check the tolerance range of the overall system on the X-axis and Y-axis. ➦ *"Mount the end cap base with anchor point and hanger clamp" on page 32* • Check the current collector for parallelism to the conductor rail and correct. ➦ *Chapter 7.5.5 "Installing the current collector" on page 47*
Collision with system components.	• Examine the system layout. • Attach affected components for collision-free operation. • Replace damaged components. • Check the lateral clearance of 4 mm between the conductor rail and metallic components and correct if necessary.
Abrasion of the sliding contacts has accumulated at the end points of the section.	• Clean the conductor rail. ➦ *Chapter 11.6 "Cleaning the conductor rail" on page 76*

Possible cause	Solution
Oblique removal of sliding contacts	• Check the current collector for parallelism to the conductor rail and correct. • Check the contact force approx. 6 N. • Check whether the current collector head needs to be replaced. ➦ *Chapter 11.4 "Replacing the current collector head" on page 70*

10.2.2 Faults on the conductor rail

Insulation profile is not hooked into the hanger clamps.

Possible cause	Solution
Improper installation of the hanger clamp and/or the conductor rail.	• Check the hanger clamp and conductor rail for damage and check that they have been correctly installed. Replace damaged components if necessary. ➦ *"Mount the end cap base with anchor point and hanger clamp" on page 32*

10.3 Handling unknown faults

Conductix-Wampfler must be contacted if unknown faults occur.

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D – 79576 Weil am Rhein – Märkt
Email: info.de@conductix.com
➦ *www.conductix.de*
Country of origin: Germany

Worldwide sales and service location addresses:

➦ *www.conductix.contact*

11 Service and Maintenance

11.1 Product-specific safety instructions

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Risk of injury due to crushing of skin and limbs

The spring force of the current collector can lead the the crushing of skin and limbs.

- Wear personal protective equipment for all work.

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

- Wear a FFP3 protective mask when working with very high levels of dust.

11.2 Maintenance schedule

CAUTION

Individually adapt maintenance intervals to real conditions

The maintenance intervals specified in the maintenance schedule presume ideal conditions.

➦ *Chapter 11.2 "Maintenance schedule" on page 62*

- The specialist personnel must make a recommendation for the individual maintenance intervals of the system, otherwise the system performance will be affected.
- Depending on experience, the operator must adjust the maintenance intervals so that the operating conditions and system status are taken into account.
- Contact Conductix-Wampfler with any questions regarding service and maintenance work.

➦ *Chapter 2.6 "Customer service" on page 14*

- Document service and maintenance work.

Chap.	Task to perform	4 weeks after commissioning	Every 3 months	1 month after commissioning	Interval depending on the operating conditions and system status	Page
11	**Service and Maintenance**					62
11.2	**Maintenance schedule**					62
11.2.1	Visual inspection of the current collector after commissioning	X				63
11.2.2	Visual inspections of the current collector		X			64
11.2.3	Visual inspection of the sliding contacts			X	X	64
11.2.4	Visual inspections of the conductor rail		X			66
11.2.5	Current collector functional check		X			66

11.2.1 Visual inspection of the current collector after commissioning

Personnel:

- Qualified electrician
- Specialist personnel

1. Check the sliding contacts in the contact area for wear.

   ➦ *Chapter 11.2.3 "Visual inspection of the sliding contacts" on page 64*

2. Check sliding contact insulation for cracks and scraping.

   ➡ Replace the current collector if the sliding contact insulation is damaged.

   ➦ *Chapter 11.3 "Replacing the current collector" on page 67*

3. Check the connection cables for damage.
4. Check the routing of the connection cables.

11.2.2 Visual inspections of the current collector

Personnel:

- Qualified electrician
- Specialist personnel

1. Check the sliding contacts in the contact area for wear.

   ➦ *Chapter 11.2.3 "Visual inspection of the sliding contacts" on page 64*

2. Check sliding contact insulation for cracks and scraping.

   ➡ Replace the current collector if the sliding contact insulation is damaged.

   ➦ *Chapter 11.3 "Replacing the current collector" on page 67*

3. Check the connection cables for damage.

   ➡ Check insulation or braids.

   ➡ Check cable routing.

   ➡ Check plug connectors.

   ➡ Check screw connections.

   ➡ Check the braid cross-sections at the screw terminal points of the current collector heads.

4. Check the routing of the connection cables.
5. Ensure freedom of movement of the current collector heads.

11.2.3 Visual inspection of the sliding contacts

Personnel:

- Qualified electrician
- Specialist personnel

1. Check the wear level of the running surface:

   PE current collector: 2 mm (see *Fig. 74* and *Fig. 75*)

   PH current collector: 1 mm (see *Fig. 76* and *Fig. 77*)

   ➡ Replace the current collector head if the wear level of the running surface has been exceeded.

   ➦ *Chapter 11.4 "Replacing the current collector head" on page 70*

   WARNING: Current collectors that have fallen below the wear limit damage the patina, which leads to roughening of the conductor rail (see *Fig. 97*). Check sliding contacts regularly for wear. The sliding contact of the PE current collector in particular must be regularly monitored. The maintenance interval depends on the operating conditions and system status.

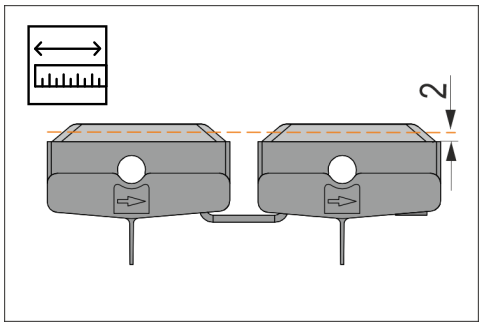

Fig. 74: PE double current collector wear limit

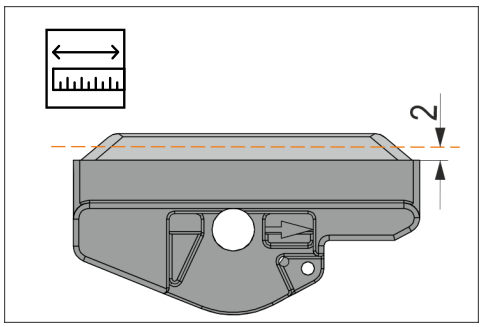

Fig. 75: PE single current collector wear limit

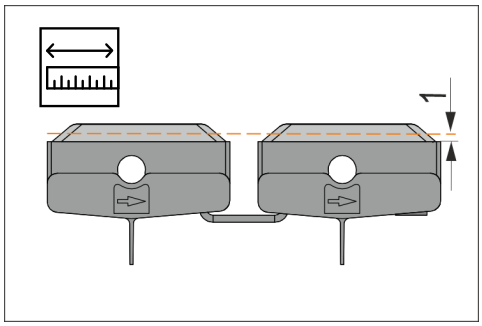

Fig. 76: PH double current collector wear limit

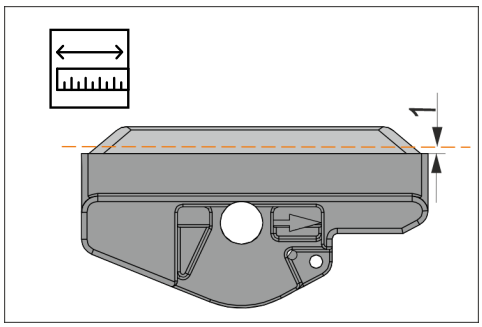

Fig. 77: PH single current collector wear limit

2. Check sliding contacts for drifting.
   ➡ Replace the current collector head if the sliding contacts are worn at an angle.
   ➦ *Chapter 11.4 “Replacing the current collector head” on page 70*
3. Check the connection cables of the current collector heads in the event of heavy drifting.

11.2.4 Visual inspections of the conductor rail

Personnel:

- Qualified electrician
- Specialist personnel

1. Check the insulation for wear, soiling and burn marks.
   - ➡ Clean the insulation profile with a cleaning agent.
     - ➦ *Chapter 11.6 “Cleaning the conductor rail” on page 76*
   - ➡ Replace the damaged conductor rail.
     - ➦ *Chapter 11.5 “Replacing conductor rail in a section” on page 74*
2. Check the individual conductor bars for bottlenecks e.g. caused by abrasion or adherent soiling.
   - ➡ Clean the conductor bars.
     - ➦ *Chapter 11.6 “Cleaning the conductor rail” on page 76*
3. Check all connecting elements e.g. screws, rivets, nuts, split pins, etc. .
4. Check conductor rail for corrosion.
   - ➦ *“Clean regularly” on page 80*

11.2.5 Current collector functional check

Personnel:

- Qualified electrician
- Specialist personnel

Tool:

- Caliper
- Spring scale with a measuring range of 0 to 20 N

1. Check spring between current collector arm and current collector head.
   - ➡ Replace the current collector if the spring is missing and/or damaged.
     - ➦ *Chapter 11.3 “Replacing the current collector” on page 67*
2. Check the installation dimensions of the current collector.
   - ➦ *Chapter 7.5.5 “Installing the current collector” on page 47*
3. Check the attachment position of the current collector.
4. Check the freedom of motion of each individual current collector arm.
   - ➡ Clean the current collector arm if it is heavily soiled.
     - ➦ *Chapter 11.6 “Cleaning the conductor rail” on page 76*
   - ➡ Replace the current collector if the current collector arm can no longer be moved easily after intensive cleaning.
     - ➦ *Chapter 11.3 “Replacing the current collector” on page 67*
5. Check the contact force of the current collector with a spring balance.
   - ➡ The contact force must be approx. 6 N.
     - ➦ *Chapter 7.4 “Installation dimensions” on page 30*

6. Check the working stroke limits of the current collector to the conductor rail.

   ➦ *Chapter 7.4 “Installation dimensions” on page 30*

7. Check the lateral tolerance of the current collector to the conductor rail.

   ➦ *Chapter 7.4 “Installation dimensions” on page 30.*

11.3 Replacing the current collector

Preparations

Personnel:

- Qualified electrician

Protective equipment:

- Protective gloves (mechanical)
- Protective clothing
- Safety vest

Requirement:

- Sliding contacts have reached the wear limit:
  PE current collector wear limit: 2 mm (see *Fig. 74* and *Fig. 75*)
  PH current collector wear: 1 mm (see *Fig. 76* and *Fig. 77*)
- Sliding contact insulation shows heavy wear.
- Switch off the system according to the 5 Safety Rules.

➦ *Chapter 1.8 “5 Safety Rules for working on electrical systems” on page 12*

Work steps

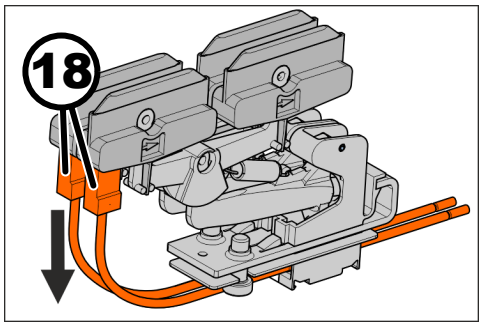

Fig. 78: Remove the insulation sleeves and connection cables from the current collector head. Do not pull on the connection cables.

⑱ Insulation sleeve

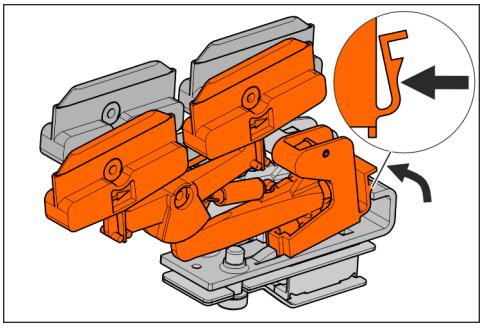

Fig. 79: Unhook the current collectors.

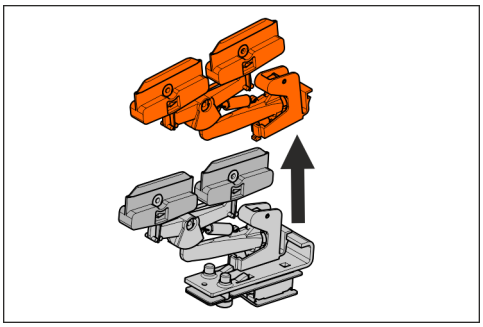

Fig. 80: Remove the first current collector from the towing plate.

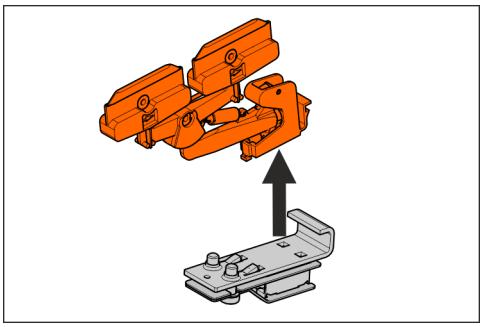

Fig. 81: Remove the second current collector from the towing plate.

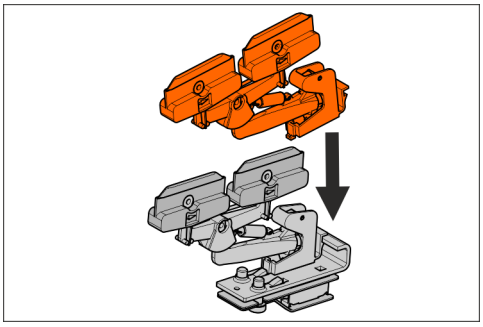

Fig. 82: Mount the new current collectors on the towing plate.

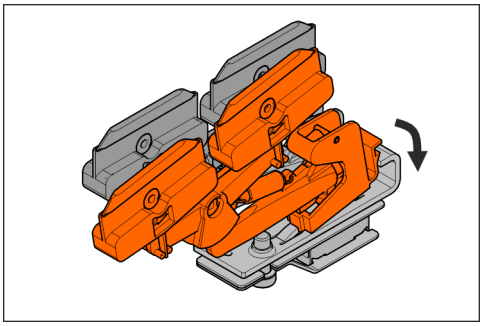

Fig. 83: Hook the current collectors into the towing plate.

DANGER: The position of the green PE current collector must not be reversed. The green PE current collector may only be engaged in the PE conductor rail. The PE conductor line is identified by a green stripe on the insulation profile.

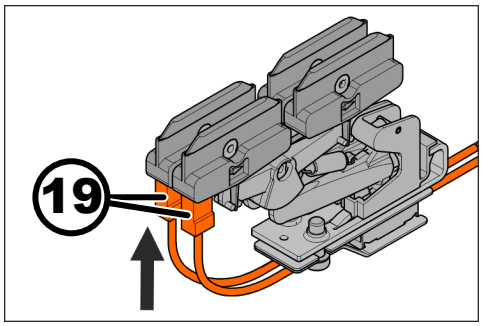

Fig. 84: Remount the insulation sleeves and connection cables.

⑲ Insulation sleeve

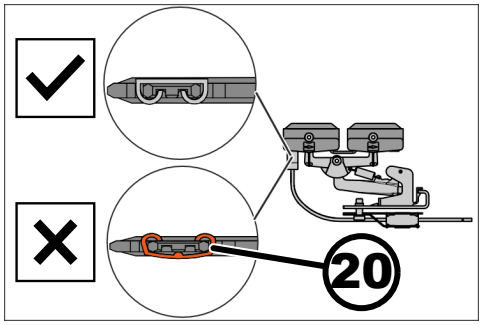

Fig. 85: Check the plug-socket connection to the sliding contact for correct seating and function after each plugging process.

⑳ Plug-socket connection to sliding contact

NOTE: A loose plug-socket connection to the sliding contact will lead to current transfer losses. The plug-socket connection ⑳ after the 5th Replace the current collector to ensure full current carrying capacity in continuous operation.

After replacement:

1. Connect the connection cables.
2. Check insulation sleeves for tight fit. Ensure correct plug-socket connection

   (see *Fig. 85*).
3. Observe the installation dimensions when aligning.

   ➦ *Chapter 7.4 “Installation dimensions” on page 30*

   ➡ In the event of excessive tolerance deviations, contact the service partner or Conductix-Wampfler.

   ➦ *Table on page 61*
4. Measure and record the insulation resistance.

   ➦ *Chapter 9.3 “Measuring insulation resistance” on page 55*

NOTICE

Current collector connection cables

- No tensile forces and/or directional forces may have affect on connection cables.
- Connection cables must not be exposed.
- Do not compress or kink connection cables.
- Connection cables must be free of tensile force and directional force.
- Do not fix or bundle connection cables with cable ties.
- Do not provide connection cables with identification labels.
- Do not transpose or twist the connection cables.
- Use connection cables from Conductix-Wampfler or highly flexible connection cables similar to Conductix-Wampfler cables.

11.4 Replacing the current collector head

Preparations

Personnel:

- Qualified electrician

Protective equipment:

- Protective gloves (mechanical)
- Protective clothing
- Safety vest

Tool:

- Aids such as folding ruler or large screwdriver

Requirement:

- Current collector heads are no longer sufficiently fastened to the balance.
- Current collector head shows visible damage.
- Individual components have too much play.
- Sliding contacts have reached the wear limit:
  PE current collector wear limit: 2 mm (see *Fig. 74* and *Fig. 75*)
  PH current collector wear: 1 mm (see *Fig. 76* and *Fig. 77*)
- Sliding contact insulation shows heavy wear.
- The system is switched off according to the 5 Safety Rules.

➦ *Chapter 1.8 “5 Safety Rules for working on electrical systems” on page 12*

Work steps

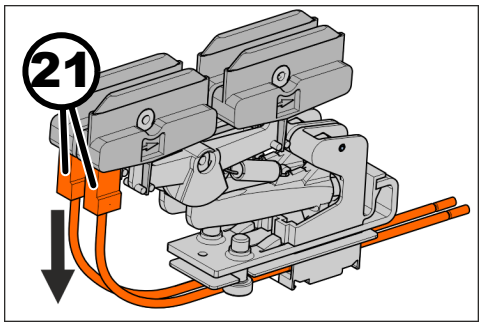

Fig. 86: Remove the insulation sleeves and connection cables from the current collector.

21 Insulation sleeve

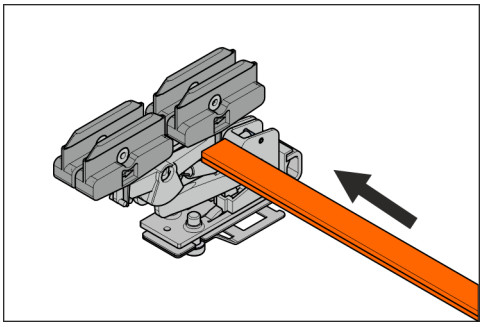

Fig. 87: Insert an aid (e.g. two layers of a folding ruler) into the hollow space between the balance and the current collector head.

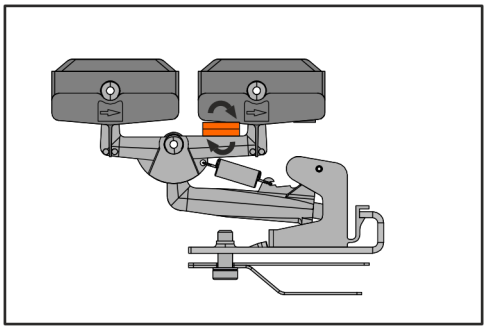

Fig. 88: Loosen the first current collector head by turning the aid.

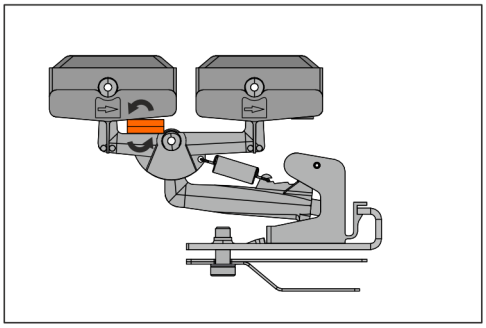

Fig. 89: Loosen the second current collector head with a rotary movement of the aid to be able to remove the first double sliding contacts.

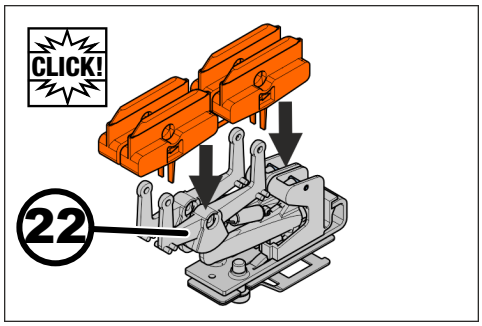

Fig. 90: Slide the new current collector heads onto the balance until an audible engagement into place is heard. The current collector heads must be firmly connected to the balance.

22 Balance

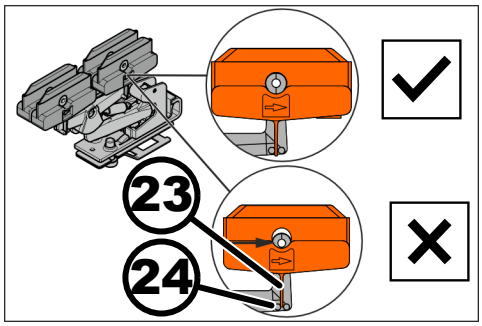

Fig. 91: Check the position of the bases: The sliding contact insulation base must sit completely between the pins.

23 Sliding contact insulation base
24 Pin on balance

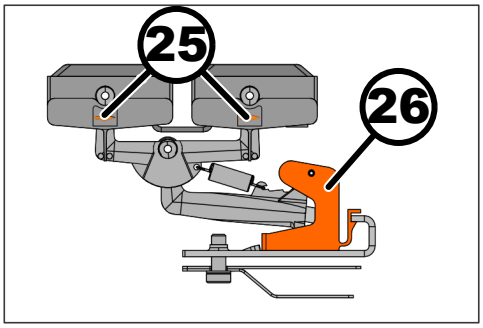

Fig. 92: The arrows on the sliding contact insulation must point in the direction of the current collector bearing.

25 Arrows on sliding contact insulation
26 Current collector bearing

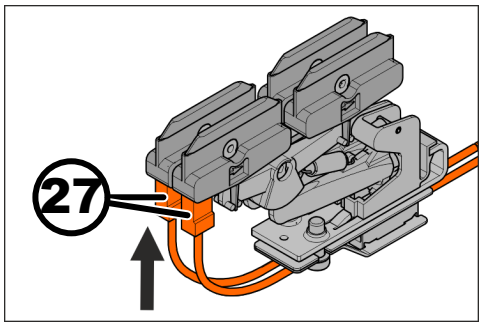

Fig. 93: Remount the insulation sleeves and connection cables.

27 Insulation sleeve

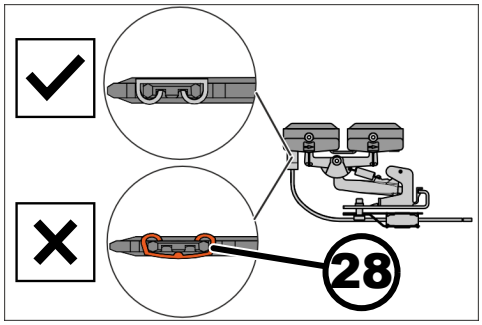

Fig. 94: Ensure correct plug-socket connection to sliding contact.

28 Plug-socket connection to sliding contact

After replacement:

1. Connect the connection cables.
2. Check insulation sleeves for tight fit. Ensure correct plug-socket connection (see *Fig. 85*).
3. Observe the installation dimensions and tolerances when aligning.

   ➦ *Chapter 7.4 “Installation dimensions” on page 30*

   ➡ In the event of excessive tolerance deviations, contact the service partner or Conductix-Wampfler.

   ➦ *Table on page 61*
4. Measure and record the insulation resistance.

   ➦ *Chapter 9.3 “Measuring insulation resistance” on page 55*

NOTICE

Current collector connection cables

- No tensile forces and/or directional forces may have affect on connection cables.
- Connection cables must not be exposed.
- Do not compress or kink connection cables.
- Connection cables must be free of tensile force and directional force.
- Do not fix or bundle connection cables with cable ties.
- Do not provide connection cables with identification labels.
- Do not transpose or twist the connection cables.
- Use connection cables from Conductix-Wampfler or highly flexible connection cables similar to Conductix-Wampfler cables.

11.5 Replacing conductor rail in a section

Preparations

Personnel:

- Qualified electrician
- Minimum 2 persons

Protective equipment:

- Protective gloves (mechanical)
- Protective clothing
- Safety vest

Tool:

- Measuring equipment
- Cutting tool
- Rubber mallet
- File
- Device (Order No.: 08-V015-0463)

Requirement:

- Switch off the system according to the 5 Safety Rules.

➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

Work steps

NOTE: Conductor rails bend easily. Plan at least 1 person per conductor rail end.

1. Measure the length of the defective section and mark it on the insulation profile.
2. Cut the new piece of rail to the measured length.

   ➦ *Chapter 7.5.2 "Trimming the conductor rail" on page 38*

   NOTE: Sharp edges lead to loss of contact with the sliding surface. Chamfer the conductor bar and insulation profile.

   ➡ Deburr all cut surfaces and running surfaces with a file.
3. Remove the conductor rail from the hanger clamp.

   NOTE: Pointed and/or sharp disassembly tools damage the insulation profile. Do not use pointed and/or sharp disassembly tools.

   ➡ The conductor rail must no longer be engaged in the hanger clamps on the right and left 20 m around the defective track section.
4. Slide the insulation profile of the defective track section in one direction of the connectors so that the conductor bar protrudes 15 mm on the other side of the rail.
5. Cut the defective track section with a cutting tool on the side where the conductor bar protrudes 15 mm .

   NOTE: Sharp edges lead to loss of contact with the sliding surface. Chamfer the conductor bar and insulation profile.

   ➡ Deburr all cut surfaces and running surfaces with a file.
6. Slide the insulation profile of the defective track section to the other side so that the insulation profile protrudes 15 mm on the cut side.
7. Cut the defective track section with a cutting tool on the other side.

   ➡ Deburr all cut surfaces and running surfaces with a file.

8. Hammer the connector pins into the conductor bar of the first conductor rail end with light hammer taps up to the mechanical stop of the connector pins.
9. Slide the connector cap over the connector point.

   ➡ The insulation profile must be completely enclosed by the connector cap.
10. Slide the conductor bar of the new rail section flush with the insulation profile.
11. Hammer the new rail section onto the connector pins with light hammer taps using the mounting cap.
12. Slide the connector pins into the conductor bar of the new rail section.
13. Slide the connector cap over the connector point.

    ➡ The insulation profile must be completely enclosed by the connector cap.
14. Insert the second conductor rail end into the new rail section.
15. Audibly hook the conductor rail into all hanger clamps.
16. Remove the end cap at the end of the lane.

    On the opposite side, secure the conductor bar with a mechanical stop and screw clamp so that the mounting cap can be pushed into the conductor rail (see).*Fig. 51*).

    ➡ At the end of the lane, tap the mounting cap with a rubber mallet to mount the new rail piece.
17. Remount the end cap to the rail end of the lane end.

    ➦ *Chapter 7.5.4 “Mounting the end caps” on page 43*

    NOTE: Material damage due to forgotten installation aids. Remove all required installation aids once the installation is complete.
18. Measure and record the insulation resistance.

    ➦ *Chapter 9.3 “Measuring insulation resistance” on page 55*

11.6 Cleaning the conductor rail

Preparations

Personnel:

- Qualified electrician
- Electrically trained person

Protective equipment:

- FFPE protective mask
- Protective gloves (mechanical)
- Protective clothing
- Safety vest

Tool:

- Brush
- Sandpaper grit 180
- Sandpaper grit 400
- Spatula

Material:

- Cleaning agent
- Absorbent cloth
- Vacuum cleaner with a Class H fine filter

Requirement:

1. Switch off the system according to the 5 Safety Rules.

   ➦ *Chapter 1.8 “5 Safety Rules for working on electrical systems” on page 12*

2. Measure the insulation resistance with a resistance meter in accordance with IEC / EN 61010-1 to determine whether cleaning is necessary.

   ➦ *Chapter 9.3 “Measuring insulation resistance” on page 55*

   ➡ Cleaning is necessary if the permissible reference values are not reached.

Suitable cleaning agents

Coordinate the cleaning project with Conductix-Wampfler

Contact Conductix-Wampfler for the appropriate cleaning methods and cleaning agents before cleaning.

Additional service and maintenance work must also be coordinated with Conductix-Wampfler.

➦ *Chapter 2.6 "Customer service" on page 14*

An inspection of the system by Conductix-Wampfler personnel is recommended before cleaning.

Current safety data sheets and product documentation for the cleaning agents

In order to view current safety data sheets and product documentation in the personal customer area, it is necessary to register with the Bremer & Leguil manufacturer.

Cleaning agent:	B.W.R 210
Component:	Insulation profile
Soiling:	Dust, sliding contact abrasion or light soiling Greasy, oily, sooty or other soiling
Application:	Mix with water. Mix ratio: 1:5 to 1:50 Spray onto the absorbent cloth with a sprayer.
Biodegradable:	more than 97 %
Flash point:	Non-flammable
Labeling according to GefStoffV:	See safety data sheet
Packaging:	Loose goods or in canisters
Storage:	Store in plastic containers at room temperature.

Cleaning agent:	S.L.X- Top
Component:	Sliding contact Conductor bar Insulation profile Hanger clamp Connector cap Power feed cap
Soiling:	Greasy, oily, sooty or other soiling
Application:	Spray undiluted onto an absorbent cloth with a spray bottle or apply directly to the absorbent cloth.
Note:	Plastics are not degraded. Approved for the food industry. Cleaning agent may only be used cold. NFS labeling
Flash point:	> 55 °C - Class A III
Labeling according to GefStoffV:	Not required
Packaging:	Loose goods or in spray bottle
Storage:	Close container tightly and store in sufficiently ventilated rooms at room temperature.

Cleaning agent:	O.C.X. Oxide solvent
Component:	Power feed terminal Connector pins Conductor bar
Soiling:	Corrosion
Application:	Spray from aerosol cans.
Note:	Always reclean with S.L.X. Top. Only suitable for cleaning metallic parts. Degrades plastics after prolonged exposure and is therefore only suitable for cleaning plastics that are resistant to mineral oils and solvents. NFS labeling
Flash point:	> 65 °C - Class A III
Labeling according to GefStoffV:	Not required
Packaging:	Loose goods or in spray bottle
Storage:	Close container tightly and store in sufficiently ventilated rooms at room temperature.

Unsuitable cleaning agents

These substances wear or damage the sliding contacts, conductor bar, plastic parts and other components when applied:

- Contact cleaners
- Contact sprays
- Degreasing sprays
- Engine cleaners
- Moisture-displacing cleaning agents
- Solvents
- Abrasive fabrics with or without polishing agent

Clean regularly

The surface quality of the conductor bar is very important for the trouble-free functioning of the conductor rail system.

The following images show symbolic examples of different surface finishes:

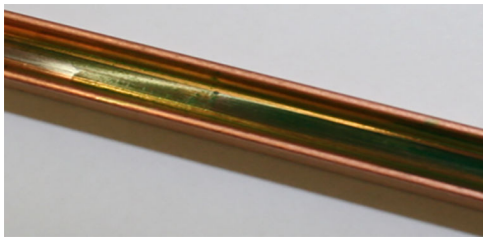

Fig. 95: Copper conductor bar with verdigris formation

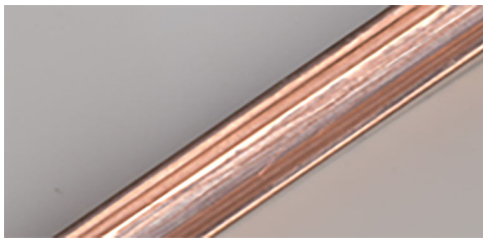

Fig. 96: Cleaned copper conductor bar with rough surface

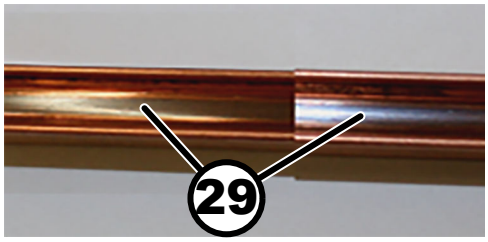

Fig. 97: Copper conductor bar with patina

29 Patina

NOTE: Power and signal transmission or system failure due to heavy soiling. Remove dust accumulations, foreign bodies, strong oxidation and foreign substances in the conductor bar.

The following work steps will help maintain the operational safety and the system's protection against contact:

1. **Abrasion on the conductor rail.**

   Use a vacuum cleaner with a Class H fine filter to remove abrasion from the conductor rail.

   Apply undiluted S.L.X.-Top cleaning agent to an absorbent cloth and remove any other adherent residues on the conductor rail.

   Wipe with clean water.

   Allow the water to evaporate.

2. **Adherent soiling on insulation profile.**

   Brush off adherent soiling from the insulation profile with a brush.

   Vacuum the remaining loose soiling with a fine filter Class H vacuum cleaner.

3. **Coarse soiling on insulation profile.**

   Apply a mixture of water and the cleaning agent B.W.R. to an absorbent cloth. 210 spray on and remove adherent foreign substances such as oil and grease or similar substances from the insulation profile.

   ➦ *"Suitable cleaning agents" on page 77*

   Apply the cleaning agent sparingly to prevent the cleaning agent from penetrating the gaps in the insulation profile.

   In the event of major soiling, dismount the affected track section so the components can be individually cleaned.

   ➦ *Chapter 11.5 "Replacing conductor rail in a section" on page 74*

   After cleaning, wipe with clean water and blow out the gaps in the insulation profile with compressed air.

4. **Insulating layers on the conductor bar.**

   Remove verdigris and burn marks with sandpaper (coarse sanding): Grain size 180 and fine sanding: Grain size 400).

   NOTICE

   Faults caused by removing the patina from copper conductor bars

   The patina (29) is an iridescent steel-blue to black colored run mark in the conductor bar. The patina forms through normal operation and oxidation and has a positive effect on the service life of the current collector heads and the performance of the overall system.

   Current collectors that have fallen below the wear limit damage the patina, which leads to roughening of the conductor rail.

   (see *Fig. 74*, *Fig. 75*, *Fig. 76* and *Fig. 77*)

   Removing the patina can change the running performance or the overall system performance.

   Apply undiluted S.L.X.-Top cleaning agent to an absorbent cloth and remove any other adherent residues on the conductor bar.

   Place the absorbent cloth with the applied cleaning agent around a plastic spatula so it can evenly penetrate the sanding surface of the conductor bar.

   Run the spatula through the access opening of all conductor rail poles. Also change the work angle to be able to evenly clean the lower and upper areas of the conductor bar.

   Also clean the hanger clamps when wiping across the individual poles.

5. Remount dismounted components.

   ➦ *Chapter 7.1 "Installation" on page 25*

6. Measure the insulation resistance with a resistance meter according to IEC / EN 61010-1. Compare the new measured values with the previously measured values to determine whether cleaning has improved the performance of the conductor rail system.

   ➦ *Chapter 9.3 "Measuring insulation resistance" on page 55*

   ➡ Do not put the system back into operation until the valid reference value has been reached.

   ➡ Do not put the system back into operation until the evaporation of all water is ensured.

12 Disassembly and Disposal

12.1 Product-specific safety instructions

DANGER

Risk of death due to electric shock

Contact with electrical components can lead to death or severe injury.

- Do not touch the energized current collector.
- Do not use damaged electrical components and/or cables.
- Observe the 5 Safety Rules

➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

WARNING

Risk of injury due to crushing of skin and limbs

The spring force of the current collector can lead the the crushing of skin and limbs.

- Wear personal protective equipment for all work.

WARNING

Risk of injury due to sharp edges

When working on the conductor rail, skin and limbs may be cut or severed.

- Wear personal protective equipment for all work.

WARNING

Risk of injury due to impact

Moving components of the conductor rail system can cause injuries to limbs.

- Point out this risk to specialist personnel during instruction.
- The conductor rail system is not suitable for an environment with solvents.

DANGER

Health hazards due to dust

The abrasion from the sliding contacts is harmful to health. Frequent handling of the conductor rail system and/or careless handling of dust accumulations can lead to sensitization, mucous membrane irritation, respiratory diseases and cancer.

- Wear a FFP3 protective mask when working with very high levels of dust.

12.2 Disassembly

Preparations

Personnel:

- Specialist personnel

Protective equipment:

- FFPE protective mask
- Protective footwear
- Protective gloves (mechanical)
- Safety vest

Tool:

- Wrench, SW7
- Slotted screwdriver
- Cutting tool

Requirement:

- Switch off the system according to the 5 Safety Rules.
  ➦ *Chapter 1.8 "5 Safety Rules for working on electrical systems" on page 12*

Work steps

1. Loosen all screw connections.
2. Slide and turn the slotted screwdriver between the clip of the hanger clamp and the conductor rail so that the conductor rail can be removed from the hanger clamp.
3. Remove power feeds, connectors and end caps from the conductor rail.
4. Separately dispose of all disassembled components according to their respective material group.

   ➦ *"Material groups relevant for disposal" on page 84*
5. Remove the hanger clamps from the support profile.

CAUTION: Risk of injury when sawing the connector due to the saw jumping. When disconnecting the conductor rail, maintain a distance of at least 100 mm from the end of the insulation profile.

12.3 Disposal

Preparations

Personnel:

- Specialist personnel

Protective equipment:

- FFPE protective mask
- Protective eyewear
- Protective gloves (mechanical)
- Protective headgear
- Protective clothing
- Protective footwear
- Safety vest

Material groups relevant for disposal

When the system has reached the end of its service life, the disassembled components must be separated and disposed of in an environmentally friendly manner.

- Insulation profile: Plastic
- Conductor bar: Copper or steel
- Hanger clamp: Plastic
- Connector cap and power feed cap: Plastic
- Connector pins, connector terminals and power feed terminals: Copper alloy or steel
- Current collector: Ultramid, aluminium, steel
- Sliding contacts: Copper graphite or graphite

ENVIRONMENT

Environmental damage due to improper disposal!

Valuable raw materials can be reused through environmentally friendly disposal.

- Observe locally applicable disposal regulations.
- Have a specialized company carry out the disposal if necessary
- Comply with the Hazardous Substances Ordinance, particularly the regulations on handling hazardous substances.
- Dispose of materials marked for recycling using the respective recycling process.

13 Approvals and standards

The Declaration of Conformity for this product can be requested from Conductix-Wampfler.

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14 Animations overview

System overview

➦ *Follow here for the system overview*

Mounting the hanger clamp, end segment, and power feed

➦ *Follow here for mounting the hanger clamps and end segment with the anchor point*

Trimming the conductor rail

➦ *Follow here for trimming the conductor rail*

Connecting the conductor rail

➦ *Follow here for the conductor rail connector*

Mounting the end cap

➦ *Follow here for mounting the end caps*

Current collector tolerance ranges

➦ *Click here for the current collector tolerance ranges*

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