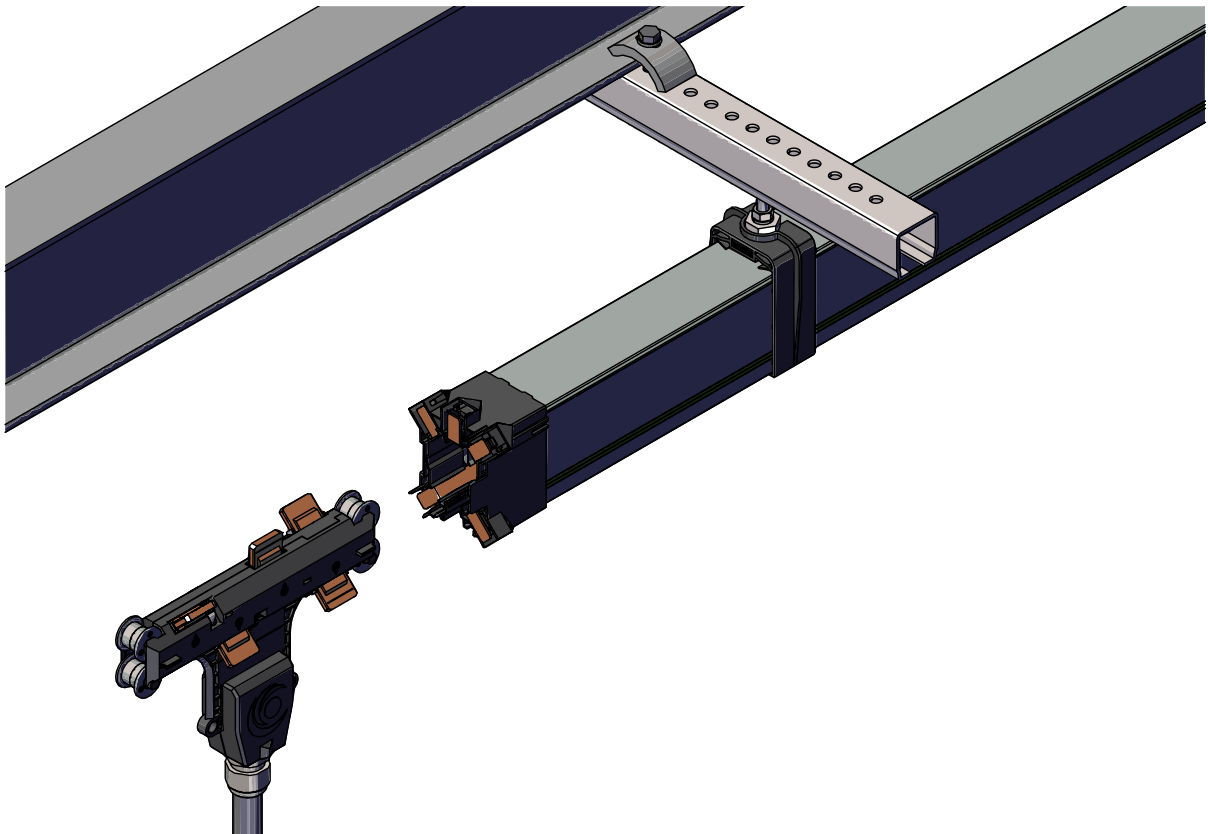


Operating Instructions



Enclosed Conductor Rail System Xline Program 0843

Order Number:
0843xx-...



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1 General Information

1.1 About this document

This document facilitates the safe and efficient handling of the conductor rail system.

This document is a component of the conductor rail system and must be kept accessible to personnel and in close proximity to the conductor rail system at all times. Personnel must read this document carefully and understand it before starting any work. Compliance with all safety and handling instructions given in this document is a basic prerequisite for safe working.

Local accident protection regulations and general safety guidelines for the area of use of the conductor rail system also apply.

The illustrations in this document are provided for basic understanding and may deviate from the actual implementation of the system.

In addition to these operating instructions, the instructions located in the Appendix for the individual assembled components also apply.

1.2 Limitation of Liability

All data and information in these operating instructions have been compiled while taking the valid standards and regulations as well as the state of the art and our many years of experience and knowledge into consideration.

The manufacturer accepts no liability for damages resulting from:

- Failure to comply with these operating instructions
- Improper use
- Use by untrained personnel
- Unauthorized modifications
- Technical changes
- Use of unauthorized replacement parts or accessories

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 equipment has been ordered, or is 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 regulations applicable at the time the contract was concluded.

We reserve the right to technical changes within the context of improvement of function and further development.

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1.3 Copyright

This document is protected by copyright and is exclusively intended for internal use by customers.

Provision of these operating instructions to third parties, reproduction in any form — even in part — as well as the reuse and/or disclosure of its content, except for the customer's internal use, are not permitted without the written approval of the manufacturer.

Breach or infringement will result in liability for damages. Our right to further claims remains unaffected.

1.4 Replacement parts



WARNING!

Incorrect replacement parts are a safety hazard!

Incorrect or faulty replacement parts can impair safety and result in damage, malfunctions or complete failure.

→ Always use original replacement parts from the manufacturer!

Order replacement parts from your contracted dealer or directly from the manufacturer.

Contact information: See the last page of this document.

Replacement parts list: see Section 12.1 Other applicable documents.

1.5 Material defects

The terms governing material defects can be found in the General Terms and Conditions of Business.

1.6 Technical support

Our Customer Support staff is available for technical support.

We are also always interested in new information, experiences and feedback from the field that can help us improve our products.

2 Safety Instructions

2.1 Explanation of symbols

Safety and hazard information is identified in these operating instructions using symbols. The safety information is introduced using signal words that indicate the degree of the hazard. Always observe safety information and work carefully to avoid accidents, bodily injury and material damage!



DANGER!

... indicates an immediately hazardous situation, which if not avoided, may result in death or serious injury.



DANGER!

... indicates an immediately hazardous situation due to electricity, which if not avoided, may result in death or serious injury.



WARNING!

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



WARNING!

... indicates a potentially hazardous situation due to electricity, which if not avoided, may result in death or serious injury.



CAUTION!

... indicates a potentially hazardous situation, which if not avoided, may result in moderate or minor injury.



Tips and recommendations:

... refers to useful tips and recommendations as well as information for efficient and trouble-free operation.



ATTENTION!

... indicates actions that will help you prevent material damage.

2.2 Personnel requirements

2.2.1 Qualifications



Inadequately trained persons are at risk of injury!

Improper use can result in serious injury to persons and material damage.

→ All activities must only be performed by qualified personnel

- Only persons who can be expected to perform their work reliably are acceptable personnel. Persons whose reactions are impaired by, e.g. drugs, alcohol or medications are not authorized.
- When selecting personnel, all age- and occupation-specific regulations applicable at the location of use must be observed.

The following qualifications are specified in the operating instructions for certain fields of activity.

■ Specialist personnel

Consists of persons capable of performing assigned tasks and independently identifying dangers and avoiding potential hazards based on their specialist training, knowledge and experience as well as their understanding of the applicable standards and regulations.

Personnel are considered qualified if they have successfully completed training as a master electrician, apprentice electrician, electrical engineer or electrical technician. Personnel are also considered qualified, who have been employed correspondingly for several years, have been educated in theory and practice during that time and whose knowledge and skills in the trade required have been tested.

The machine or system operator must document that the appropriate certifications or other proofs of qualification are available or have been previously submitted.

The installation, maintenance and commissioning of electrical equipment may only be carried out by qualified personnel (electricians) in accordance with local regulations. Work conducted at higher installation positions typically requires additional qualifications and certificates for the use of lifting devices and protective equipment. Professional and proper handling of components on the part of the manufacturer is required. It is recommended that the installation personnel be trained by the manufacturer or that accompaniment of the installation by specialist fitters/supervisors be scheduled.

■ Users

Have been instructed in a training session by the operator with respect to the tasks assigned to them and the potential dangers arising from improper actions.

The operator of the machine or facility must document that the corresponding training has taken place.

■ Transport personnel

Are trained persons who transport the material indoors and outdoors in accordance with safety regulations.

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2.2.2 Unauthorized persons



Danger due to unauthorized persons!

Unauthorized persons who do not meet the requirements described here are not acquainted with the dangers in the work area.

- Keep unauthorized persons away from the work area.
- In case of doubt, address the persons and direct them away from the work area.
- Stop working as long as unauthorized persons are in the work area.

2.2.3 Training

Before commissioning the equipment, personnel must be trained by the operator. Log the implementation of the training for better traceability.

Example of instruction log:

Date	Name	Type of Training	Training given by	Signature
05.11.2009	John Doe	First safety training for personnel	Horst Müller	

2.3 Personal protective equipment

Always wear

for all tasks:



Protective headgear

For protection against falling or flying parts and materials.



Protective gloves

For the protection of hands against friction, scrapes, puncture or deeper wounds, as well as against contact with hot surfaces.



Protective clothing

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



Protective footwear

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

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To be worn for special tasks

Specific protective equipment is required when conducting special tasks. Separate reference to this is made in the individual sections.



Protective eyewear

For eye protection against harmful influences such as strong light, chemicals, dust, splinters or weather effects.



Hearing protection

For protection against loud noises and to prevent acoustic trauma.



Breathing mask (FFP-3—according to country-specific requirements)

For protection against materials, particles and organisms. In this case, for protection against the dust produced by the abrasion of sliding contacts and the PVC insulation of the conductor rail.

2.4 Intended use

The equipment is exclusively designed and built for the use described here (its intended use).



WARNING!

Danger due to improper use!

Any application that deviates from or goes beyond the intended use of the equipment can result in hazardous situations.

- Strictly adhere to all information in these operating instructions.
- Refrain from improper use of the system.
- Observe the instructions regarding improper use in Section 2.5.

Claims of any type due to damages from improper use are excluded.

The operator bears sole liability for all damage that results from improper use.

Intended use

The Xline Conductor Rail System 0843 is an operating resource for the customer's installation of an electrical energy supply system indoors and in areas that are inaccessible to the public. The conductor rail is electrical operating resource and thus has no actual operating mode since this is determined by the application. Risks are limited only to the failure of mechanical components (e.g. falling components) and the danger from electrical current.

The Xline Conductor Rail System 0843 is used to supply electrical energy to mobile electrical consumers.

A typical application is, for example, the power supply of standard hoists or workshop cranes, which can also be in protected outdoor areas.

Use other than in the application approved by the manufacturer must be examined by the system engineer as part of a risk assessment for the final product and is under the responsibility of the system engineer.

An extended approval by the manufacturer for the application is possible in certain cases and requires written approval after examination of the use case and ambient conditions.

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Compliance with these technical conditions is mandatory for the installation:

- The maximum permissible travel speed of the consumer is up to 150 m/min depending on the system.
- The conductor rail must only be installed horizontally.

Electrical-technical operating conditions

- The electrical system must be secured in compliance with the locally applicable regulations.
- Ensure safety through distance (see DIN VDE 0100-410 / IEC 60364-4-41 Appendix B)

2.5 Improper use

Claims of any type due to damage incurred during use that deviates from the intended use described above ("improper use") are excluded. The operator bears sole liability for all damage that results from improper use.

Improper use particularly includes the following forms of use:

- Operation under unsuitable/unauthorized environmental conditions (see Section 3.3). The conductor rail system must **only** be operated under the environmental conditions specified in Section 3!
- Installation in an area accessible to the public.
- Operation within manual reach.
- Use in non-industrial applications.
- Overloading of the conductor rails due to excessive current or voltage.
- Overloading of individual current collectors due to excessive current or voltage.
- Operation at excessively high or low temperatures.
- Operation under ambient influences that cause lasting damage to the materials used or drastically reduce insulating properties (e.g. chemical substances or gases).
- Operation under prohibited ambient conditions (see the prescribed ambient conditions depending on the product range)
- Operation in areas where flammable or explosive gases or dusts prevail.
- Operation in areas that require a higher protection class than IP2X.
- Use as a stepping or climbing aid.
- Stepping on the conductor rail.
- Use of unsuitable cleaning agents (e.g. silicone oils or aromatic compounds).
- Use of the system with accessories that are not approved and not authorized by the manufacturer.
- Use of the system by untrained personnel.

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2.6 Protective measures by the operator/user

The equipment is designed for use in an industrial setting. The operator of the equipment is therefore subject to compliance with the legal obligations concerning workplace safety. In addition to the safety information in these operating instructions, all safety, accident protection and environmental regulations valid in the place of operation of the equipment must also be observed. This particularly applies to the following:

- Work on electrical components of the system **may only be carried out when disconnected from voltage**.
- The operator must inform their self of applicable workplace safety guidelines and identify any additional hazards that may arise under the specific working conditions at the location of use of the equipment. This knowledge must be expressed in the form of operating instructions for the operation of the equipment.
- During the entire time the equipment is in use, the operator must check that these operating instructions still correspond to the current state of regulations and adapt them as necessary.
- The operator must clearly regulate and define responsibilities for installation, operation, troubleshooting and maintenance.
- The operator must ensure that all personnel involved with the equipment have read and understood these operating instructions. In addition, the operator must also train the personnel at regular intervals and inform them of dangers.
- The operator must provide personnel with all required protective equipment (protective shoes, hearing protection, protective gloves, protective headgear, protective eyewear, breathing mask).
- The operator must keep the keys for the switching cabinets in a safe place. "Safe" means that only explicitly authorized personnel may have access to the keys. The keys may only be issued to technical personnel as described in Section 2.2.1.

Furthermore, the operator is responsible for ensuring that the equipment is always in perfect working order.

- The operator must ensure that the service intervals described in these operating instructions are observed.
- The operator must have all safety systems regularly inspected for functionality and completeness. If possible, this inspection should be carried out once a year, but at least as often as required under the applicable national regulations.
- If the equipment or system has been changed, the safety systems must be inspected again and adapted to the changed conditions in such a way that the equipment or system is safe again.

2.7 5 Safety Rules for working on electrical systems



Disconnect the entire system from the power supply and secure against unintentional switching on!

Work on electrical systems must only be carried out when they are disconnected from the power supply. Observe the 5 Safety Rules (see DIN VDE 0150-100:2009-10/EN 50110-1:2004-11).

Observe before starting work:

- Disconnect the system from power at the main switch.
- Secure the main switch against being turned on again.
- Verify disconnection from power through measurements.
- Ground and short-circuit parts of the system on which work will be done.
- Cover or block off adjacent energized parts.

→ Only electricians or personnel trained in electrical work may disconnect power or approve reconnection of power after the work is carried out in the disconnected state!

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2.8 Special hazards

The following section lists residual risks determined on the basis of a risk assessment.

- Observe the safety instructions and the warnings in these operating instructions in order to reduce health hazards and avoid dangerous situations.
- A detailed risk analysis must be prepared for the system in which the conductor rail is integrated. The resulting measures must be implemented by the system manufacturer.

2.8.1 Electrical hazards and sources of danger



DANGER!



Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. There is also a risk of injury from a shock reaction, falling or being thrown across the room as a result of an electrical shock.

Work on the following components is dangerous:

- Main power supply
- Live parts: Line feed, cables, connections, conductor rail, connectors, current collectors, devices and connections within switching cabinets, control systems, etc.
- Parts that have become live due to a fault.

Before working on the parts listed above:

- Switch off the conductor rail system in accordance with the 5 Safety Rules **and secure it against being switched on again** (see Section 2.7)

During work:

- Use insulated tools

Before switching on:

- Every time before the equipment or system is started, test the insulation resistance according to locally applicable technical standards, directives and legal regulations.
- Carry out locally required electrical tests.

Maintain electrical safety:

- Regularly test and maintain electrical equipment.
- If dangerous deficiencies are identified, take measures to correct the deficiencies without delay. Inform the system operator immediately.
- If it is not possible to correct the dangerous defect, block off/secure the area involved or turn the operating resource off and secure it against switching on again. Inform the system operator immediately!
- Immediately secure loose cables and replace damaged cables.
- Always replace blown fuses with fuses of the same rating.

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DANGER!

Fire hazard due to overload or sparking!

Fire hazards occur due to overloaded cables, electrical arcs, short circuits or sparking. Sparking can occur with poorly serviced, soiled conductor rails or if installation does not comply with the required tolerances.

- Always comply with the permissible current values!
- Comply with tolerances during installation.
- Design and dimension the systems in accordance with the permissible system load capacity and provide appropriate protection devices.
- Do not store combustible and/or easily ignited materials near conductor rails.
- Check, service and clean conductor rails regularly and as prescribed. See Sections 8 and 9.

2.8.2 Mechanical hazards and sources of danger



DANGER!

Risk of injury due to ensnarement or impact!

An ensnarement and/or impact with moving conductor rails (slip ring) or current collectors connected to the machine and other components must be prevented.

- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, housings, control devices) have been removed or disabled!
- Use caution when working in the vicinity of the danger zone, particularly below the conductor rail!
- Wear personal protective equipment!



NOTE!

Secure components against falling!

Possible falling components must be determined in the customer analysis as part of the operator's risk and hazard analysis.

- The operator must take appropriate measures.

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2.8.3 Danger due to dust and vapors



WARNING!



DANGER!

Danger of sensitization, mucous membrane irritation and respiratory disease due to dust!

Abrasion from the sliding contacts collect in the conductor rails and the track profile. This dust is very fine and is a health hazard. Frequent handling can result in sensitization. Persons who frequently spend longer periods in a heavily used system without protective equipment must reckon with the **following consequences**:

- Irritations of the mucous membranes
- Respiratory diseases
- Cancer

These consequences must also be expected if accumulations of dust are handled without proper care (e.g. removal of dust using compressed air).

- In workplaces with long-term exposure and frequently visited systems, take effective measures to protect employees from the dust.
- Wear personal protective equipment during all work on the conductor rail system in which collected dust can be stirred up. In particular, wear personal protective equipment when cleaning the system.
 - Protective eyewear
 - Dust mask, Class FFP3
 - Protective gloves
 - Disposable coveralls
- For soiled and dusty conductor lines, clean them as prescribed before starting work. There are special instructions for this task; see Section 9
- During cleaning operations, protect the surrounding area, e.g. by covering or removing stored materials and cordoning off areas in which dust could fall down on persons.
- **Do not blow out dust with compressed air**, but rather vacuum it away. The vacuum must be equipped with a Class H fine filter.
- Do not eat, drink or smoke during the work!

Poisonous gases during fire!

In case of fire in the facility, the plastic parts of the conductor rail system emit poisonous gases (HCL).

- The building must be evacuated immediately.
- Notify the fire department.

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2.8.4 Dangers related to the operational environment

The following factors can give rise to hazards if the conductor rail is installed in such an operational environment:

- Dusts
- Gases
- Chemical substances
- Liquids
- Radiation
- Strong temperature variations

The **most important measure** to protect against these hazards is to only install the conductor rail system where **the appropriate operating conditions prevail**. See Section 2.4.

The system must be designed and operated in accordance with the prevailing ambient conditions.



DANGER!

Danger of components being damaged and losing functionality due to environmental influences!

Environmental influences (gases, substances, liquids, radiation, etc.) can damage the components, particularly the plastic parts. E.g. hanger clamps can break and the conductor rail system can fall down.

- Check the influencing factors of temperature, exposure time, concentration and interactions.
- Use in chemical works, galvanizing plants, electroplating plants, composting plants or in warehouses or installations where chemical substances (e.g. aromatics, benzene) are stored or processed must be verified in advance by Conductix-Wampfler.

The resistance of plastic parts is critical when in contact with oils, greases or various cleaning agents.

Strong temperature variations can cause large expansions in the conductor rail system, particularly for long systems. E.g. hanger clamps can break and the conductor rail system can fall down.

The system must be designed and operated in accordance with the prevailing ambient conditions as part of the permissible operating conditions!



DANGER!

Fire hazard due to sparking!

Highly flammable dusts, substances or gases in the vicinity of the conductor rail can be ignited by sparks! These substances must not be present in the vicinity of the conductor rail.

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DANGER!

Danger due to energy storage!

If consumers with energy storage are supplied via the conductor rail, these must be disconnected from the conductor rail or the energy-storage system must be discharged according to the manufacturer's specifications before starting work and the system must be checked for the absence of voltage.

2.9 Conduct in the event of accidents and malfunctions

Measures to be taken in the event of accidents:

- Shut down the system and secure it against unauthorized, unintentional and/or erroneous reactivation.
- Secure the danger zone.
- Remove persons from the danger zone.
- Initiate first aid measures.
- Alert the rescue services.
- Inform responsible parties at the operating site.
- Make access available to rescue vehicles.

Measures in the event of malfunctions:

- Shut down the system and secure it against unauthorized, unintentional, and/or erroneous reactivation.
- Secure the work area against entry.
- Consult qualified personnel when analyzing the fault.
- Check for disconnection from power.
- Remove the equipment and replace it with new equipment.
- Determine the cause of fault and repair the equipment.

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3 Technical Data

System	Enclosed conductor rail system for use in dry indoor and weather-protected outdoor areas
Scope of application	Industrial indoor applications and protected outdoor areas with straight track layout (e.g. crane systems with crane operating modes S1–S9*).
Installation orientation	Horizontal. Current collector insertion from below.
Conductor rail length	4 m (at 20° C)
Hanger spacing	Nominal 2 m (see hanger clamps table)
Maximum system length	100 m (without expansion element)
Travel speed	Max 150 m/min (straight routes without interruption)
Operating temperature range	-5 to +55° C with limited properties below 5° C (generally reduced impact resistance and long-term insulation properties for plastics at low temperatures.)
Maximum temperature difference	ΔT 40 K
Maximum insulation temperature	85° C
Protection class	IP2X (rail system, current collectors inserted)
Transport	-25° C to +55° C (without condensation), short-term (<24h) +70° C
Storage temperature	-25° C to +55° C (without condensation), short-term (<24h) +70° C
Minimum installation temperature	-5° C (recommended installation temperature: above 0° C)
Local approvals	UL/CSA/EAC
Max. humidity at +40° C	50 % rel. H
Altitude above sea level	\leq 2000 m
Direction of travel	Forward and backward (reversing)

At temperatures below -5° C, the mechanical load must be limited through physically restricting the breaking strength.

Conductor material	
Rated current for overall system	10 mm ² (63 A crane operating mode S1–S9* and 20° C) 16 mm ² (80 A crane operating mode S1–S9* and 20° C)
Rated current for current collectors*	34 A (100% ED)
Rated voltage	690 VAC (50 Hz)
Ohmic resistance at 35° C	0,0019 Ω /m at 10 mm ² 0,0011 Ω /m at 16 mm ²
Number of poles	4-pole (5-pole optional)
Conductor rail cross section	10 mm ² and 16 mm ²
Conductor material	Copper
Protection class	IP2X

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* S1 Continuous operation at full rated current, without cool-down phases (no crane application) <20°C duty cycle = 100%
 >20°C application of the correction factors and recommended reduction to 80% duty cycle
 S2 Short-term operation under full rated current, recommended reduction: 80% duty cycle (crane usually 20-30% duty cycle)
 S4 Intermittent operation at full rated current, recommended reduction 80% of the duty cycle (crane usually 20-30% duty cycle)
 S9 (non-periodic load and speed curve) Load with rated current up to the equivalent of 80% duty cycle



NOTE!

Dimensioning the system

Various circumstances must be taken into account when designing a system. Information on crane operating modes, calculation of the voltage drop, temperature correction factors etc. can be found in catalog KAT0843-0001



NOTE!

Current collector capacity:

The current collector capacity is defined by the connected cable and is generally lower (see catalog)! Ambient temperatures and operating modes result in reduced current collector capacity (e.g. operating at a standstill, operating at elevated temperatures).

Chemical resistance	
Insulating material	PVC: Good general chemical resistance
Installation material	PC, PA, PBT: Good general chemical resistance, partly limited
Conductor material	Copper: Limited resistance

Information regarding resistances are general notes and depend on the temperature, exposure time, concentration and interactions and must be verified in individual cases. For applications in critical environmental conditions such as chemical operations, galvanizing plants, electroplating plants, compost works, warehouses and locations for the processing of aromatic compounds, benzene and other substances from these material groups, we ask that you please contact us for the purpose of alternative installation positions and materials and possible necessary additional components.

Insulation profile	
Material	Stabilized rigid PVC; color light grey (RAL 7035)
Dielectric strength	35 kV/mm according to DIN IEC 60243
Leakage current resistance	400 ≤ CTI ≤ 600 Insulation material group II according to DIN EN 60112
Combustibility	Compliant with requirements for insulating materials in accordance with UL 94 V-1; Flame retardant and self-extinguishing (IEC 60695-11-10), halogen-free PPE-SB

Note: Under certain framework conditions, individual data is only valid to a limited extent.

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3.1 Installation orientation



WARNING!

Danger due to increased wear or damage!

- Install the current collector with its central axis exactly on the central axis of the conductor rail.
- The mean distance between the outrigger axis and the contact surface must be precisely complied with.



WARNING!

Loss of contact or increased heating!

Danger due to loss of contact or increased heating if the current collector is operated outside the permissible installation position.

3.2 Tolerances

The conductor rail must be installed flush with the crane runway.
The conductor rail must be installed within the following tolerances.

Height and side tolerance: +/-5 mm

Conductix-Wampfler does not guarantee the trouble-free function of the conductor rails if these tolerances are not observed. In such a case, Conductix-Wampfler does not accept any liability for disadvantages that arise if the conductor rail system is not functioning correctly.

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3.3 Unsuitable ambient conditions

The conductor rail must **not be installed** and **not operated under these ambient conditions** (see also Section 2.5, Section 2.8.4 and Section 3):

- Operation at excessively high or low temperatures.
- In environments containing chemical substances or gases that can potentially permanently damage the materials used (corrosion) or drastically deteriorate on the insulation profile.
- In ambient air that contains solvent vapors or aromatic compounds.
- In ambient air that contains combustible or explosive gases or dusts.
- With highly combustible or explosive materials in the vicinity, particularly below the conductor rail.
- In dusty environments.
- Outdoors with free weathering.
- Relative humidity above 50 % rel. H at 40° C.
- In close proximity to splashing water.
- In environments that require a higher protection class than IP2X.



WARNING!

Malfunctions due to incorrect operating conditions!

If the operating conditions change or are no longer within the specified range, the conductor rails can malfunction due to short circuits, premature aging and damage to electrical and mechanical components.

- The conductor rail must be switched off if the operating conditions are no longer within the permissible range described above.
- The conductor rail must be switched off if it is wet or soiled. Clean or dry as prescribed.
- Take the relevant measures to restore suitable operating conditions.

4 Product Description and Operating Principle

4.1 Brief description

Insulated enclosed conductor rails consist of individual insulation profiles in which 4 or 5 copper conductor strips are inserted as poles. One or more current collectors are roller-guided and moved linearly by the mobile consumer with a towing device. The towing device is attached to the mobile consumer. The mobile consumers move along the guideway in a linear, track-guided manner. The towing device follows the movement of the mobile consumer and compensates for guideway deviations between the mobile consumer and the conductor rail (horizontally and vertically).

The electrical energy is transferred through the line feeds in the conductor rail and then supplied to the current collector. The sliding contacts of the current collector are pressed against the conductor strips with a permanently present contact force. The electrical energy is transferred to sliding contact through the contact point and to the mobile consumer through a connection cable on the current collector.

The Xline Conductor Rail System 0843 is a modular conductor rail system for customer installation of an electrical energy supply for moving, rail-guided parts.

Examples of applications are:

- Energy supply for overhead cranes and hoists (workshop and assembly cranes)
- In indoor and non-public areas
- Areas that are out of manual reach
- In weather-protected outdoor areas
- Industrial sector
- Commercial sector

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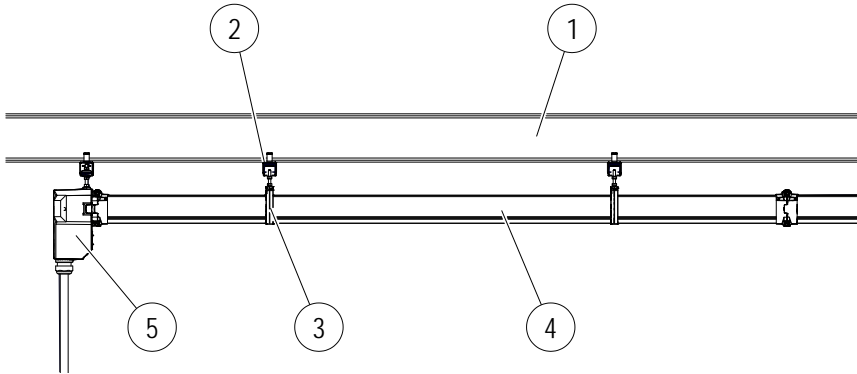


Fig. 1: System arrangement

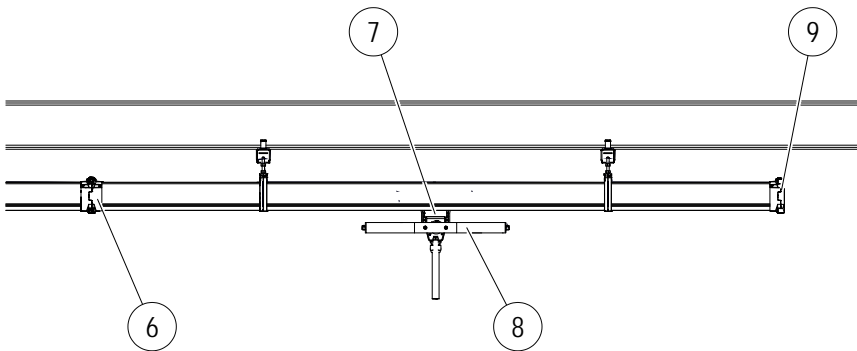


Fig. 2: System arrangement

Pos.	Name
1	Support profile (customer side)
2	Support arm
3	Hanger clamp
4	Conductor rail
5	End feed incl. anchor point
6	Connector cap incl. clamps
7	Current collector
8	Towing device
9	End cap



Use the QR code ("click" or "scan") to see our animation
System Overview Xline 0843.

Enclosed Conductor Rail System Xline Program 0843

4.2 Interfaces



All details are in the catalog and the installation instructions and when applicable, in the system-specific layout.

Mechanical interfaces:

- The current collector must be fastened to the mobile consumer of the machine. The manufacturer/operator of the machine/system must comply with the required installation clearances and tolerances throughout the entire guideway. The fastenings are generally secured by screws.
- The hanger clamp must be attached to the support profile of the machine. The manufacturer/operator of the machine/system must take into account the required suspension intervals, fastening positions and loads. The fastenings are generally secured by screws or snap-fit connections.

Electrical interfaces:

- The sliding contact of the current collector is connected to the electrical system of the mobile consumer via a flexible connection cable. The connection cable can be supplied. The manufacturer/operator of the machine/system must observe the required conductor cross sections and when applicable, the design of the cable and ensure that it is installed flexibly and free of directional forces. The electrical layout and integration into the overall electrical network are the responsibility of the system manufacturer/operator. The connections are made via screw terminals or plug connectors.
- The conductor rail is fed with electrical energy from the network or from the machine/system via the line feed. A single-core cable is connected to the line feed. Fastening is carried out using cable lugs and screw connections, and occasionally using plugs. The connection cable is not included in this delivery. The electrical layout and integration into the overall electrical network are the responsibility of the system manufacturer/operator.

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4.3 Component descriptions

The Xline Conductor Rail System consists of:

- Current collector (interface to the system engineer/operator's machine)
- Conductor rails
- Connector
- Anchor point holder (optional)
- Hanger clamp (interface to the system engineer/operator's machine)
- Line feed (interface to the system engineer/operator's machine)
- End caps for conductor rails
- Accessories (support arm, support arm bracket) depending on program

The conductor rails are fastened to a straight, smooth installation surface provided by the customer using hanger clamps. The conductor rails are electrically and mechanically coupled using connectors. The conductor rail is supplied through line feeds with electrical energy that mobile consumers can continuously tap using current collectors.

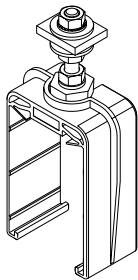


Fig. 3: Hanger clamp

■ Hanger clamp

Hanger clamp for supporting the conductor rail. The hanger clamps are designed for mounting on, e.g. a support arm. The hanger clamps are supplied with a hexagon nut and a square nut.

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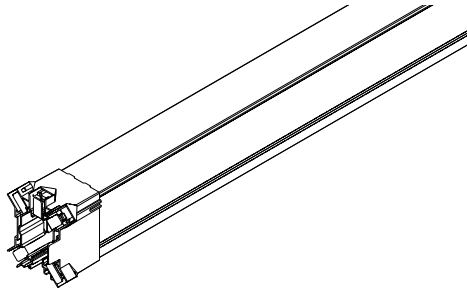


Fig. 4: Conductor rail

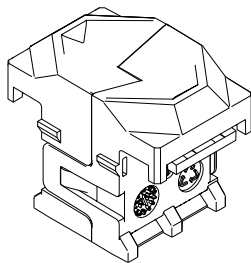


Fig. 5: Clamp

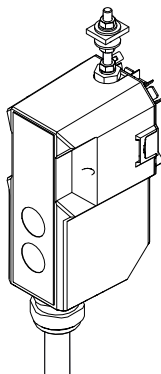


Fig. 6: Line feed

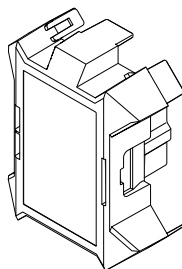


Fig. 7: End cap

- **Conductor rail (insulation profile, connector caps, conductor strips)**

Conductor rail with insulation profile in 4000 mm. The PE is marked green/yellow.

The drawn-in conductor strips are made of copper. There are different rated current strengths.

- **Clamp**

For mechanical and electrical connection of the individual conductor rails (plug technology). Each connection point is protected against contact by a plastic clamp.

- **Line feed incl. anchor point**

The line feed occurs at the beginning or end of the conductor rail system. The connection is made using crimping cable lugs for a 16 mm² conductor cross section.

The line feed also mechanically fixes the conductor rail to the installation structure.

- **End cap**

The end cap is used as a termination and as protection against contact with a free conductor rail end.

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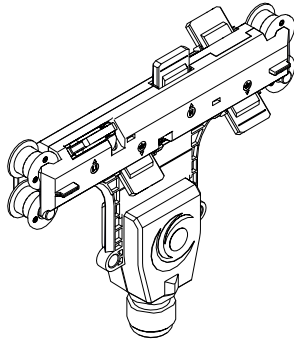


Fig. 8: Current collector

■ Current collector

The current collector is roller-guided and serves as a sliding electrical connection between the conductor rail and the mobile consumer. The current collector has 4 poles and can be expanded to 5 poles.

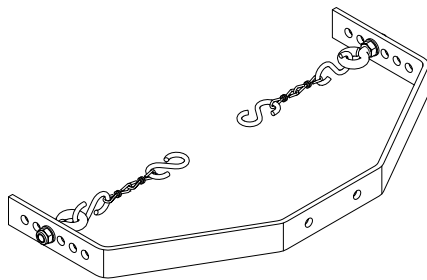


Fig. 9: Towing device

■ Towing device

The towing device is used to tow the current collector. It is fastened to mobile consumers using the current collector console.

It takes over the decoupling of lateral forces and the positioning of the current collector.

4.4 Accessories

The following accessory parts are specific, special components and can be additionally ordered from the manufacturer (see manufacturer catalog):

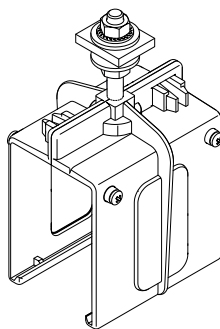


Fig. 10: Anchor point holder

■ Anchor point holder (optional)

The anchor point mechanically fixes the conductor rail to the installation structure. It is used for the mechanical fixing of expanding sections in long systems.

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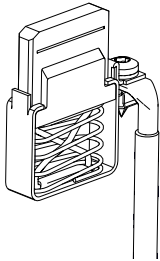


Fig. 11: 5-pole (neutral) sliding contact upgrade set

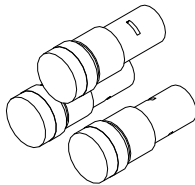


Fig. 12: LED phase control upgrade set

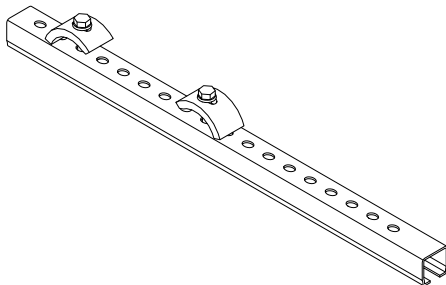


Fig. 13: Fastening set (standard)

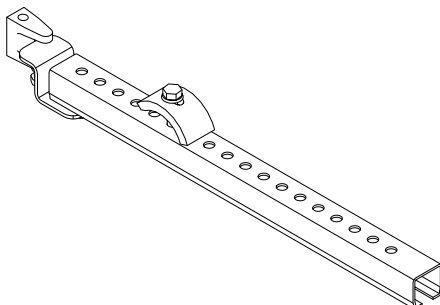


Fig. 14: Fastening set (near-wall)

- **5-pole (neutral) sliding contact upgrade set**

The standard current collector is 4-pole. The current collector can be expanded to 5-pole with the upgrade set. It includes an additional sliding contact.

- **LED phase control upgrade set**

LED installation kit for checking the phases.

The upgrade set for the line feed consists of three LEDs. They indicate which pole is energized. The required wiring material is also included.

- **Fastening set (for Standard carrier 084395-03)**

The fastening set can be used for fastening to the customer's support profile. The support arm is fastened to the customer's support profile using clamping brackets.

- **Fastening set (for near-wall carrier 084395-05)**

The fastening set for near-wall carriers can be used for fastening to the customer's support profile where there is little space for installation. The support arm is fastened to the customer's support profile using clamping brackets and support clamps.

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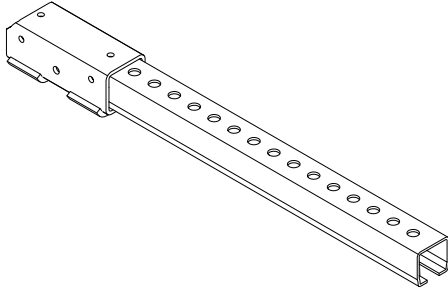


Fig. 15: Weld-on bracket for support arm

■ Weld-on bracket for support arm

The fastening set can be used for welding a fastening to the customer's support profile. The support arm is fastened to the customer's support profile using a welded-on bracket.

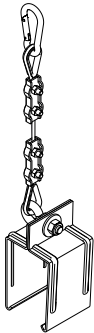


Fig. 16: Fall arrest device

■ Fall arrest device

The fall arrest device prevents the conductor rail from falling. The fall arrest device is attached directly to the customer's support profile.

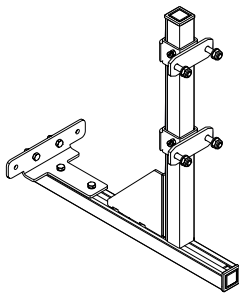


Fig. 17: Current collector console

■ Current collector console

The current collector console is an adjustable holder for the towing device and is fastened to the mobile consumer.

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4.5 Modules

Name	Description	Order No.
Basic module	Contains all components required for the installation of Conductor Rail System 0843. The conductor rails with hanger clamps are not included.	084312-XxX
Standard route module	Includes preassembled conductor rails in 4 m, 12 m or 24 m with the corresponding clamps and hanger clamps. The conductor rail and clamps are available in 63 or 75 A.	084311-XX-X-XX
Parcel route module	Includes conductor rails in 12 m with the corresponding clamps and hanger clamps. The conductor rail is not preassembled and is 2 m long The conductor rail and clamps are available in 63 or 75 A.	084311-XX-X-XXP

4.5.1 Sets

Name	Description	Order No.
Maintenance and service sets		
Maintenance set	Used for maintenance. It contains all components that are required for the various maintenance intervals (see Section 9).	084395-04
Service set	Used for service. It contains components for service, maintenance and replacement parts.	084395-06
Replacement parts sets		
Small parts set basic module	Includes replacement parts suitable for the basic module, such as clamps for connecting the conductor rail and cable lugs for connecting the line feed.	084395-01
Clamp set	Includes clamps for contacting the conductor strips and fixing the connector caps.	084395-06
Tool kit	Includes tool for bending conductor strips. This is required for installation of the parcel route module.	084395-07
Sliding contact set 4-pole	Contains the sliding contacts for the current collector.	081007-115

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5 Transport, Packaging and Storage

5.1 Safety

Required protective equipment:



Risk of death due to suspended loads!

Falling or uncontrolled swinging loads can lead to severe injury or even death.

- Never walk under suspended loads.
- Only use the attachment points provided; do not fasten lifting accessories to projecting machine parts or components built onto eyes.
- Ensure that lashing components are properly seated.
- Use only authorized lifting accessories and lashing components with sufficient load capacity.
- Do not use torn or damaged ropes or straps; replace them with new ones
- Do not attach ropes or straps to sharp corners and edges and do not knot or twist them.
- Only move loads under supervision.
- Set down the load before leaving the work area.
- Cordon off the work area.
- Use caution when working in the vicinity of, and particularly below, the conductor rail system.



Risk of injury due to crushing of skin and limbs!

Skin and limbs can be crushed:

- when packing components and handling long loads
 - if transport crates are dropped
 - with incorrect suspension points for transport crates
 - with incorrect and unauthorized loading of transport crates
- Wear protective gloves!

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DANGER!

Risk of injury due to conductor rails sliding out!

Risk of injury due to conductor rails sliding out when the packaging units are held at an angle or through carelessness with long items.

- Wear personal protective equipment!
- Cordon off the work area!
- Use caution when working in the vicinity, particularly below the conductor rail.



DANGER!

Risk of injury due to cutting and severing!

Cutting and severing can occur:

- On the packaging material (e.g.: cartons, bands, etc.).
- On sharp edges of the conductor rail.

- Wear personal protective equipment!



CAUTION!

Risk of injury due to puncture wounds and stabs!

The packaging material can contain sharp objects such as nails and wood splinters that can cause injury to limbs.

- Wear personal protective equipment!



ATTENTION!

Damage due to improper transport!

Improper transport can result in significant material damage.

- When unloading packaged parts upon delivery and during internal transport, proceed with caution and observe the symbols and information on the packaging.
- Only use the attachment points provided.
- Only remove packaging shortly before installation.

5.2 Transport

Immediately check the delivery for completeness and transport damage upon delivery.

In case of visible damage proceed as follows:

- Do not accept delivery, or accept it only with reservations.
- Note the scope of damage on the transport documents or on the transporter's delivery note.
- Initiate a complaint with photos of the damage, if possible.



NOTE!

File a complaint on each defect as soon as it is detected. Damage compensation claims may only be made within the applicable claim periods.

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5.3 Packaging

The individual packages are packed appropriately for the expected transportation conditions.

The packaging has the function of protecting the individual components against transport damage, corrosion and other damage until they are installed. Hence, do not destroy the packaging; remove it only shortly before installation.

Handling packaging materials:

Dispose of packaging material according to applicable legal regulations and local guidelines.



WARNING!

Environmental damage due to improper disposal!

Packaging materials are valuable resources and can be reused or usefully processed and recycled in many cases.

- Dispose of packaging materials in an environmentally appropriate manner.
- Comply with locally applicable disposal guidelines; if necessary, engage a specialist to handle the disposal.

5.4 Storage of packaged parts

Store packaged parts under the following conditions:

- Do not store outdoors.
- Store in a dry, dust-free area.
- Do not expose to aggressive media.
- Protect from direct sunlight.
- Avoid mechanical vibrations.
- -25° C to +55° C (without condensation), short-term (<24h) +70° C.
- Relative air humidity: Maximum 60% without condensation
- When storing for more than 3 months, check the general condition of all parts and the packaging at regular intervals. If necessary, refresh or replace the preservative.



NOTE!

In some cases, there may be instructions for storage on the packaged parts that go beyond the requirements listed here!

- Comply with the instructions accordingly.

6 Installation

6.1 Safety

- Installation and commissioning may only be carried out by specially trained technicians!

Required protective equipment:



Risk of death due to suspended loads!

Falling loads can cause serious injuries or even death.

- Never walk under suspended loads.
- Only move loads under supervision.
- Set down the load before leaving the work area.
- Wear personal protective equipment!



Risk of injury due to improper installation!

Improper installation can result in serious injury to persons or material damage.

- Before starting work, ensure there is sufficient space for the installation.
- Handle open, sharp-edged components carefully.
- Ensure that the installation area is clean and tidy! Loosely stacked or scattered components and tools are a source of hazards.
- Install components properly. Comply with the specified screw tightening torques.



Poisonous gases during fire!

In the event of fire in the facility, the plastic parts (PVC) of the conductor rail system will emit poisonous gases (HCL).

- The system operator must take this into account accordingly when planning and take the appropriate protective measures.
- The building must be evacuated immediately.
- Notify the fire department.

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DANGER!

Risk of injury due to crushing of skin and limbs!

There is a risk of crushing of skin and limbs:

- Spring force/gravity (stored energy)
- Current collector (spring force) during installation, disassembly and maintenance.
- Falling conductor rail system components, if they have not been properly installed or if operated under inappropriate operating conditions (e.g. environment that contains solvents).

- Only allow installation to be conducted by trained technicians.
- Observe the instructions when changing the sliding contacts (see Section 11.2.1).
- Only install the conductor rail system where suitable operating conditions prevail. See Section 3.3
- Wear personal protective equipment!



DANGER!

Risk of injury due to ensnarement or impact!

An ensnarement and/or impact with moving conductor rails (slip ring) or current collectors connected to the machine and other components must be prevented.

- Cordon off the work area.
- Use caution when working in the vicinity of the danger zone, in particular if protective devices (covers, housings, control devices) have been removed or disabled.
- Use caution when working in the vicinity of the danger zone, particularly below the conductor rail.
- Wear personal protective equipment!



DANGER!

Risk of injury due to cutting and severing!

Cutting and severing can occur:

- On sharp edges of the general components.
- On sharp edges of the conductor rails.
- On the cut edges when trimming the conductor rails to length.
- On packaging materials (cartons, straps, etc.).

- Wear personal protective equipment!



CAUTION!

Risk of injury due to puncture wounds and stabs!

The packaging material can contain sharp objects such as nails and wood splinters that can cause injury to limbs.

- Wear personal protective equipment!
- Cordon off the work area!

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DANGER!

Risk of injury due to conductor rails sliding out!

Risk of injury due to conductor rails sliding out when the packaging units are held at an angle or through carelessness with long items.

- Wear personal protective equipment!
- Cordon off the work area!



DANGER!

Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. Risk of injury due to shock reactions, falling or being thrown across the room due to electrical shock.

- The main power supply (from the building) must be disconnected in the installation area and secured against switching on again.
- Disconnect all line feeds from the power supply.
- Observe the 5 Safety Rules (see Section 2.7)!
- Check whether a voltage is still present in the components and take measures where necessary.
- Attach a sign stating "Risk of Death by Electrocutation" with the relevant hazard symbol in all areas with live components.
- The customer must ground metallic components.
- The customer must provide protective devices.
- Ensure that there is sufficient stability in the environment.



WARNING!

The system must be designed and operated in accordance with the prevailing ambient conditions!



WARNING!

Secure components against falling!

Possible falling components must be determined in the customer analysis as part of the operator's risk and hazard analysis.

- The operator must take appropriate measures.

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6.2 Installation of mechanical components

6.2.1 Required tools

- Standard tools:
 - Measuring tape
 - Calipers
 - Scribe
 - Wrench SW10 and SW13
 - Cross-tip screwdriver PH 3.9 and PZ 2
 - Screwdriver set (Torx)
 - Cutting tool (e.g. cordless angle grinder): For producing short lengths.
 - File for deburring cut edges after trimming
 - Cordless drill and countersink
 - Cable stripper
 - Crimping tool
- Special tools:
 - Installation tool for bending the conductor strips

Personnel:

- Installation only by technical personnel
- At least 2 people

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6.2.2 Sticker sheet

The sticker sheet contains the labels for the end feed, the current collector and the end cap.



Fig. 18: Sticker sheet

Position	Sticker	Description
1	End feed type plate	Type plate for the end feed. Fill in the number of poles, rated current and voltage with a waterproof pen. Affix the type plate to the end feed cover (see 6.2.4.3.2)
2a	"Installation" inspection sticker	The inspection sticker shows the date of installation. Mark the date of installation with a waterproof pen. Affix the inspection sticker to the space provided on the type plate.
2b	"Next Inspection" inspection sticker	The inspection sticker shows the date of the next maintenance. Mark the date of the next maintenance with a waterproof pen. Affix the inspection sticker to the space provided on the type plate.
3	PE marking	The PE marking indicates the position of the PE. Indicate the position of the PE on the end feed cap clamp with the PE marking (see 6.2.4.3.2).
4	Electric flash	Affix the "Electric Flash" warning symbol to the end cap (see 0).
5	Current collector type plate	Type plate for the current collector. Affix the type plate to the current collector cover (see 6.2.4.8.1).

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6.2.3 Cut conductor rail to length

The customization of components is limited to the trimming of the conductor rail.



NOTE!

Do not trim the conductor rail when it is installed, but rather conduct the work at a separate workstation!

The cutting of the conductor rail must be conducted away from the installation area!

The conductor rails have a standard length of 4000 mm. Shorter lengths are produced on site.

Required tools:

- Cutting tool (e.g. jigsaw with fine-toothed metal blade 1 mm, cutting grinder): For producing the short lengths
- Half-round file #3, small: for deburring the conductor rail after trimming
- Cross-tip screwdriver PZ 2

Work steps:

- Saw the conductor rail with the cutting tool from the closed side of the profile to the open side. Start at an upper corner point.
- Deburr the sawn end of the conductor rail with a half-round file.
- Pull the conductor strips (Pos. 1) from the sawn-off conductor rail that is being removed and dispose of them.

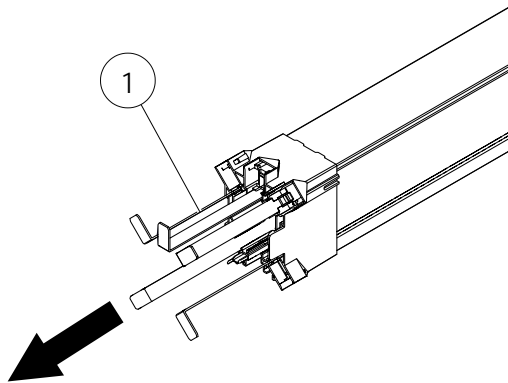


Fig. 19: Remove conductor strips (Pos. 1)

- Slide the connector cap (Pos. 2) from the insulation profile (Pos. 3) and attach to the sawn conductor rail (Pos. 4).

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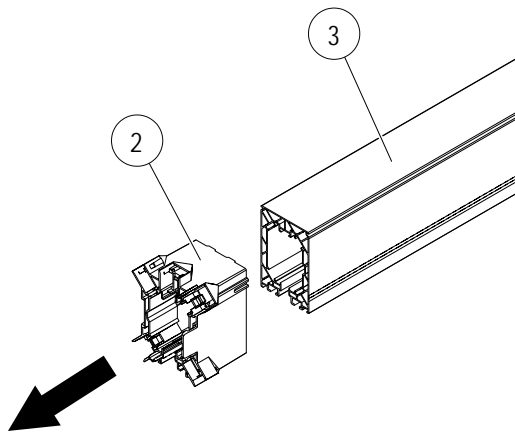


Fig. 20: Slide off connector cap (Pos. 2)

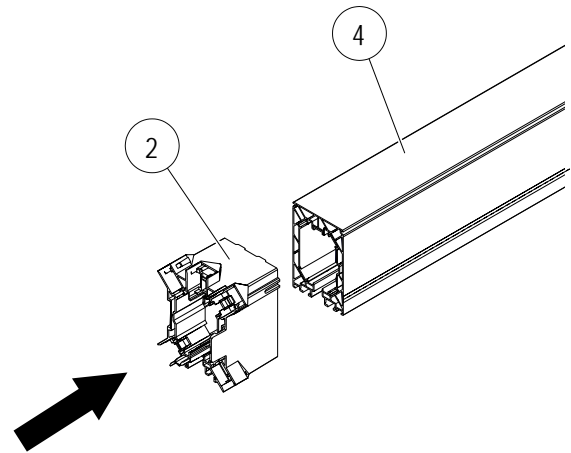


Fig. 21: Slide on connector cap (Pos. 2)

→ Fasten the connector caps (Pos. 2) to both ends of the sawn conductor rail with 2 screws (Pos. 5).

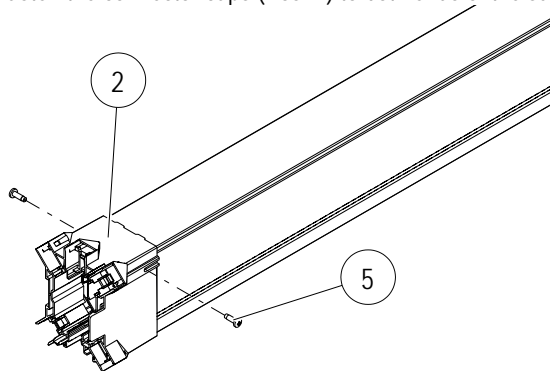


Fig. 22: Screw connector cap (Pos. 2)

→ Install the end cap of sawn conductor rail end (see Section 6.2.4.9)



Use the QR code ("click" or "scan") to see our animation
Cutting Conductor Rails.

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6.2.4 Install conductor rail system

Procedure during installation:

It is sensible to start the installation with the line feed and install the conductor rail along the route.

Work steps:

- Mark the installation locations for the line feed, customer anchor points, junction boxes and guideway profile on the installation structure in accordance with the layout and layout plan.
- Prepare the line feed.
- Install the hanger clamp (see Section 6.2.4.2).
- Install the conductor rail sections including cut sections, lifters and anchor points.
- Check the mechanical installation.

Test steps to be conducted during installation:

- Check the design against the layout and layout plan.
- Maintain the hanger clamp intervals; the conductor rails must be properly engaged in the hanger clamp.
- The cabling must be checked (routing, marking, etc.).

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6.2.4.1 Install support arm

Required tools:

- Wrench SW13

Installation of the support arms is available in different versions. As standard, the support arm is fastened with clamping brackets. Alternatively, there is an installation version if the support profile is too close to the wall or if the bracket for the support arm is welded to the support profile.

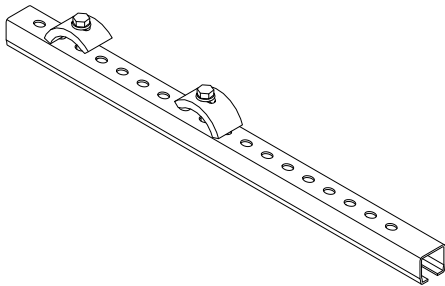


Fig. 23: Standard support arm

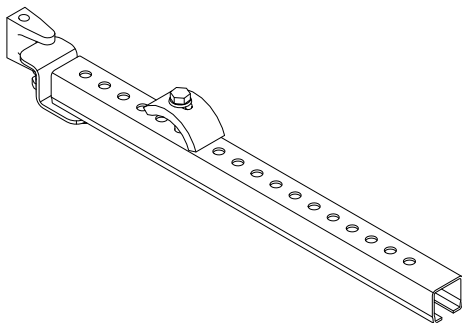


Fig. 24: Near-wall support arm

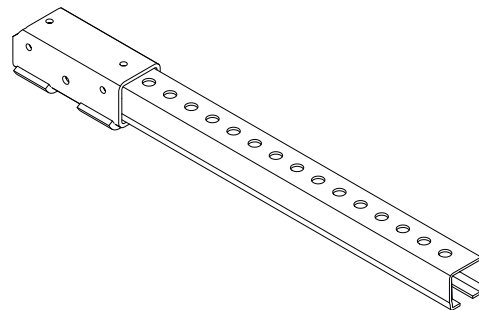


Fig. 25: Support arm with weld-on bracket

Distance between hanger clamps:

Hanger clamp for line feed with anchor point: 1000 mm

Hanger clamp to hanger clamp: 2000 mm

Work steps:

- Mark the distance between the support arms (Pos. 1) on the support profile.
- Slide the square nut (Pos. 2) into the support arm (see Fig. 26).
- Tighten the square nut (Pos. 2) with the screw and tighten the clamping bracket (Pos. 3) on both sides of the support profile with 25 Nm (see Fig. 27).

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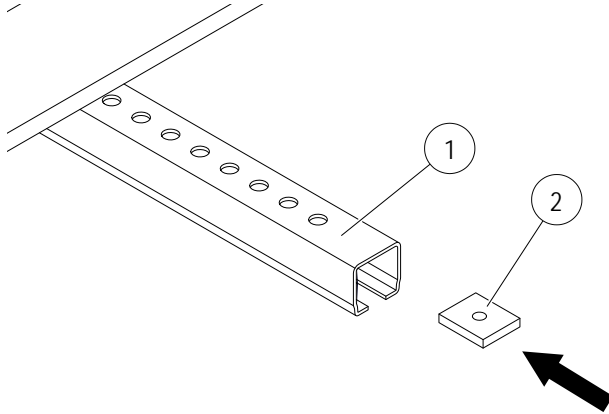


Fig. 26: Slide square nut (Pos. 2) into support arm (Pos. 1)

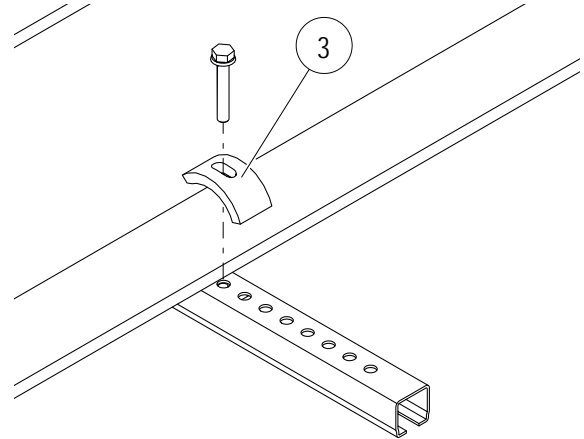


Fig. 27: Screw clamping bracket (Pos. 3)



Use the QR code ("click" or "scan") to see our animation
Mounting Support Arm (near-wall).

Enclosed Conductor Rail System Xline Program 0843

6.2.4.2 Install hanger clamps

Requirement:

The support structure (e.g. support arm) must be fastened to the customer's support profile using the appropriate dimensions.

The hanger clamp can be used for different support structures. Depending on the support structure, e.g. support arm, the square nut (Pos. 3) or the hexagon nut with washer (Pos. 4) must be removed (see Fig. 28).

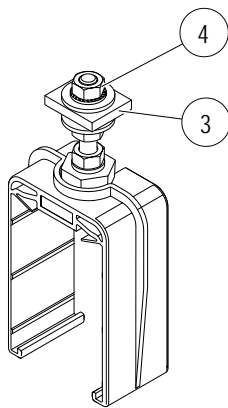


Fig. 28: Remove square nut (Pos. 3) or hexagon nut with washer (Pos. 4)

Distance between hanger clamps:

Hanger clamp for end feed with anchor point: 1000 mm

Hanger clamp to hanger clamp: 2000 mm

The distance of the hanger clamps to the connectors, end caps and line feeds (without anchor point), must be at least 250 mm to max. 500 mm in order not to hinder expansion.

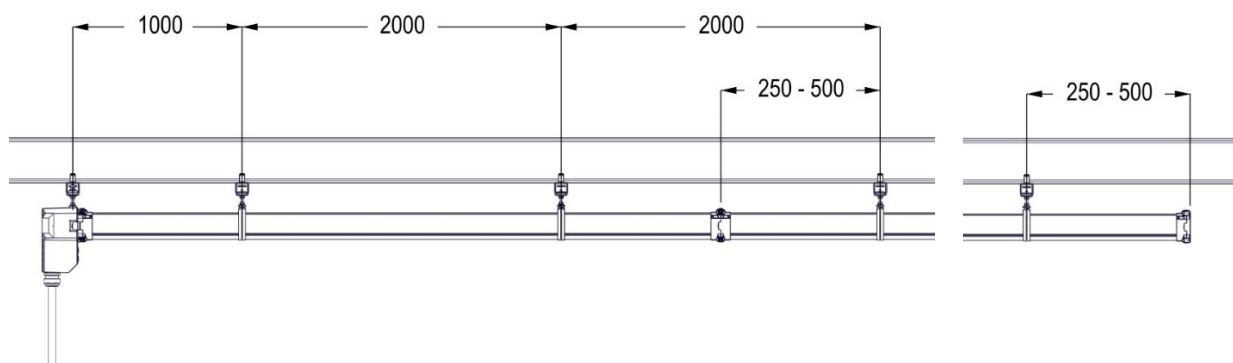


Fig. 29: Distance between hanger clamps

Enclosed Conductor Rail System Xline Program 0843

Required tools:

- Wrench SW13

Work steps:

→ Slide the hanger clamp with square nut (Pos. 1) into the support arm (Pos. 2) and **tighten** the M8 hexagon nut (Pos. 5) with a wrench SW13 (7 Nm) (see Fig. 30).

Or:

→ Install the hanger clamp (Pos. 1) with the hexagon nuts (Pos. 4) and washer (Pos. 6) on the support structure, e.g. an angle plate, and lock with 2 wrenches SW13 (7 Nm) if necessary (see Fig. 31).

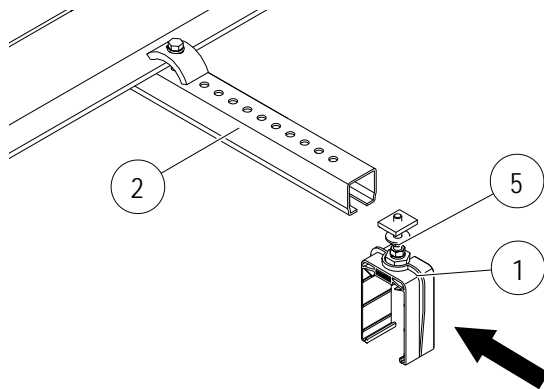


Fig. 30: Install hanger clamp with square nut (Pos. 1)

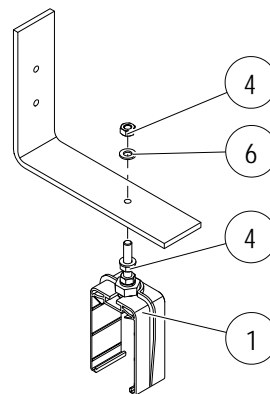


Fig. 31: Install hanger clamp with hexagon nut (Pos. 4)



Use the QR code ("click" or "scan") to see our animation
Mounting Hanger Clamps.

Enclosed Conductor Rail System Xline Program 0843

6.2.4.3 Install line feed

6.2.4.3.1 Install LED phase control upgrade set

Required tools:

- Cable stripper
- Crimping tool

Work steps:

→ Disengage the wide clips on the side of the end feed (2x) with a screwdriver (see Fig. 32).

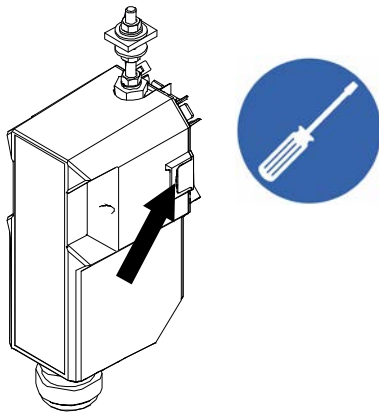


Fig. 32: Disengage wide clips

→ Disengage the screws (2x) in the housing cover. The screws are anti-loss.

→ Slide off the cover (Pos. 1) (see Fig. 33).

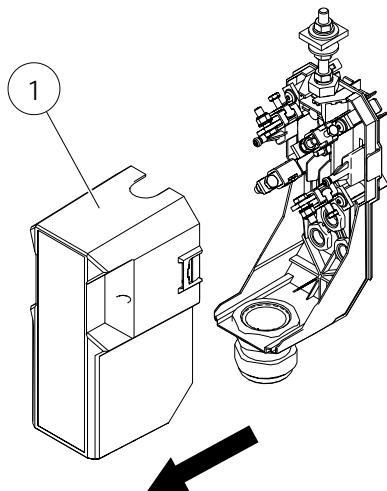


Fig. 33: Slide cover off (Pos. 1)

Enclosed Conductor Rail System Xline Program 0843

→ Remove the plug (Pos 2) and insert the LEDs (Pos. 3) into the housing (see Fig. 34 and Fig. 35).

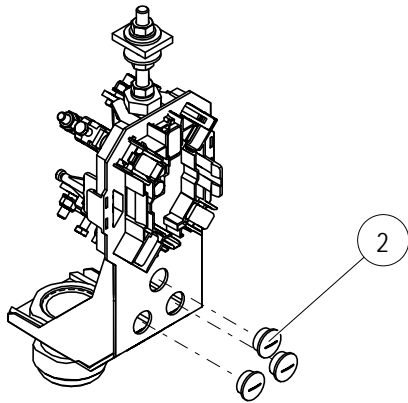


Fig. 34: Remove the plug (Pos.2)

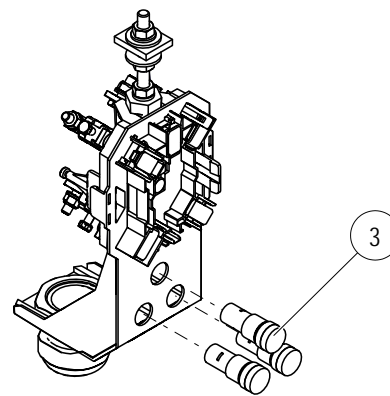


Fig. 35: Insert LEDs (Pos. 3)

→ Fit the plug link (Pos. 4) and tighten the screw connection with 11,3 Nm (see Fig. 36).

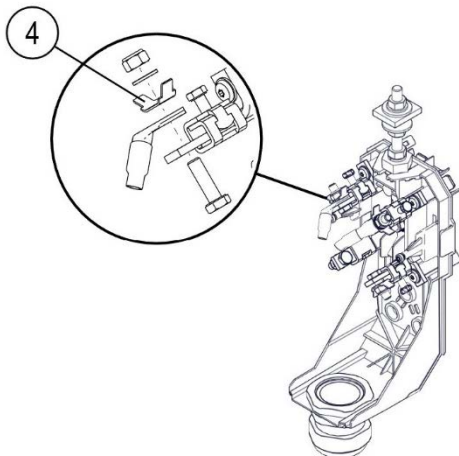


Fig. 36: Screw on plug link (Pos. 4)

→ Connect the cables to the line feed according to wiring diagram (see Abb. 37).

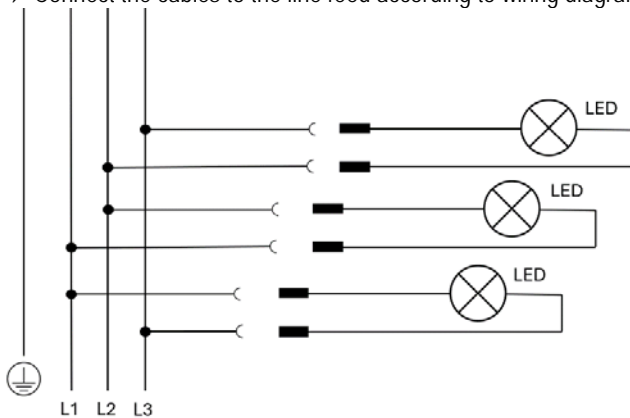


Abb. 37: LED wiring diagram

Enclosed Conductor Rail System Xline Program 0843

6.2.4.3.2 Install end feed

Requirement:

All hanger clamps are installed at the correct distances on the support structure (see Section 6.2.4.2).

Required tools:

- Wrench SW13
- Cable stripper
- Crimping tool

Work steps:

→ Disengage the wide clips on the side of the end feed (2x) with a screwdriver (see Fig. 38).

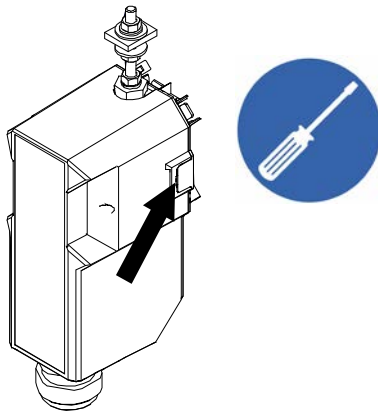


Fig. 38: Disengage wide clips

→ Disengage the screws (2x) in the housing cover. The screws are anti-loss.

→ Slide off the cover (Pos. 1) (see Fig. 39).

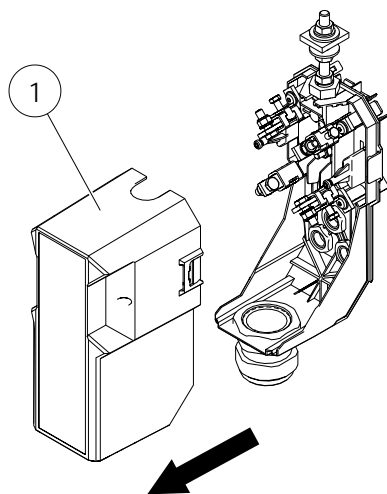


Fig. 39: Slide cover off (Pos. 1)

Enclosed Conductor Rail System Xline Program 0843

- Strip the connecting cables (Pos. 2) with a cable stripper and crimp with cable lug (Pos. 3) (see Fig. 40).
- Install the shrink sleeve (Pos. 4) (see Fig. 41).

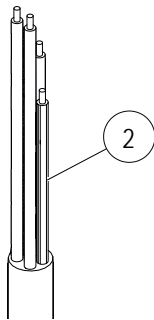
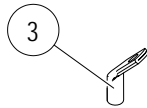


Fig. 40: Crimp cable lug (Pos. 3)

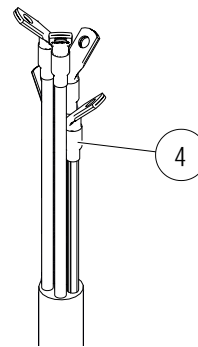


Fig. 41: Install shrink sleeve (Pos. 4)

- Lead the connecting cables (Pos. 2) through the cable screw connection (Pos. 5) and tighten the cable screw connection (Pos. 5) (see Fig. 42 and Fig. 43).

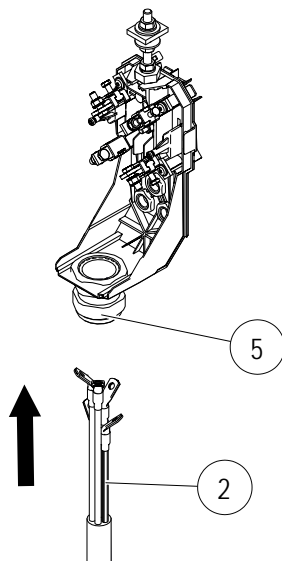


Fig. 42: Lead connection cable (Pos. 2) through cable screw connection (Pos. 5)

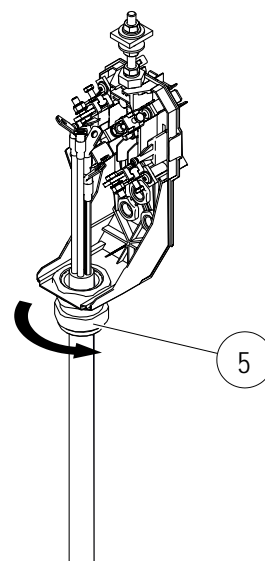


Fig. 43: Tighten cable screw connection (Pos. 5)



NOTE!

Fixing of the cable routing provides strain relief!

The cables to the clamp are routed without tension and the cable screw connection (Pos. 5) is tightened.

Enclosed Conductor Rail System

Xline Program 0843

→ Lay the ends of the customer-side connecting cable with the ring cable lugs at the clamping points of the end feed and screw them together with 11,3 Nm (see Fig. 44).

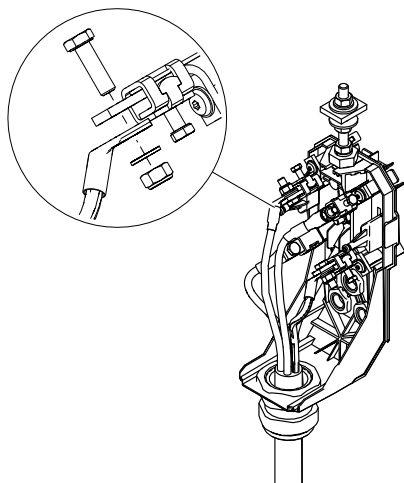


Fig. 44: Screw connecting cables



NOTE!

Pay attention to the position of the PE cable!

→ Indicate the position of the PE on the cap clamp with a PE marking (see Fig. 45 and Fig. 46). Take the PE marking from the sticker sheet (see Section 6.2.2).

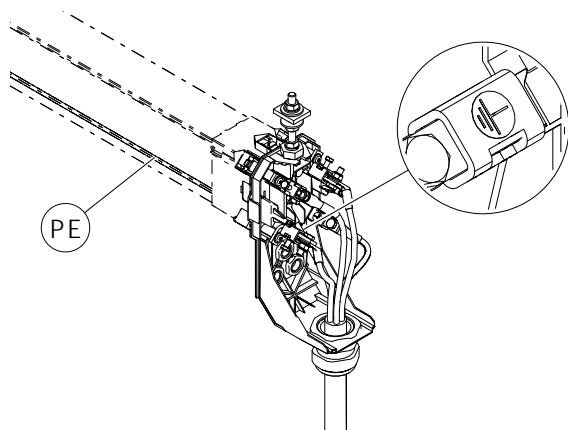


Fig. 45: PE marking on left

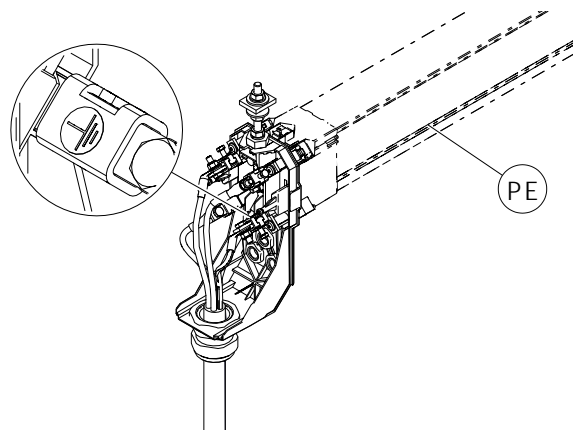


Fig. 46: PE marking on right

→ Check the cable connections with a continuity and insulation measurement (see MV0800-0019).

→ Slide the cover (Pos. 1) onto the end feed and tighten the screws in the cover with 1,8 Nm (see Fig. 47).

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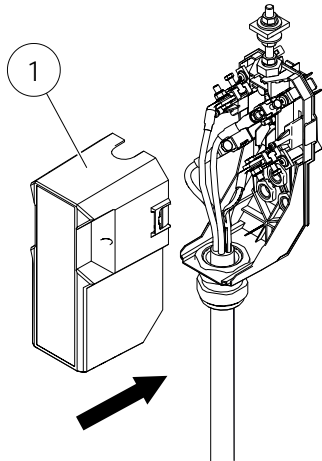


Fig. 47: Slide cover on (Pos. 1)

→ Take the type plate for end feed with stickers for installation and next inspection date (Pos. 6) from the sticker sheet and affix on the end feed cover (see Fig. 48 and Section 6.2.2).

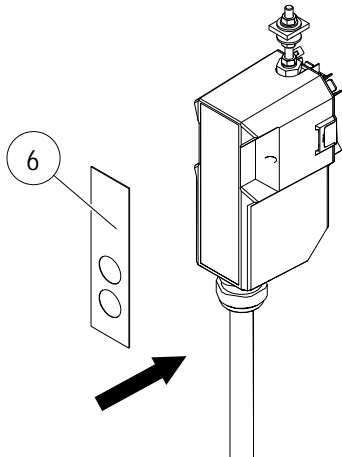


Fig. 48: Affix type plate (Pos. 6)

→ The end feed can be used for different support structures. Depending on the support structure, e.g. support arm, remove the square nut (Pos. 7) or the hexagon nut with washer (Pos. 8) (see Fig. 49).

Enclosed Conductor Rail System

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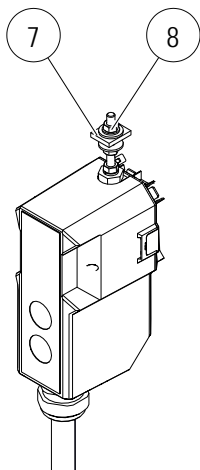


Fig. 49: Remove square nut (Pos. 7) or the hexagon nut with washer (Pos. 8)

→ Slide the end feed (Pos. 9) with square nut (Pos. 7) into the support arm (Pos. 10) and tighten the M8 hexagon nut (Pos. 11) with a wrench SW13 (7 Nm).

Or:

→ Install the end feed (Pos. 9) with the hexagon nuts (Pos. 12) and washers (Pos. 13) on the support structure, e.g. an angle plate, and lock with 2 wrenches SW13 (7 Nm) if necessary (see Fig. 51).

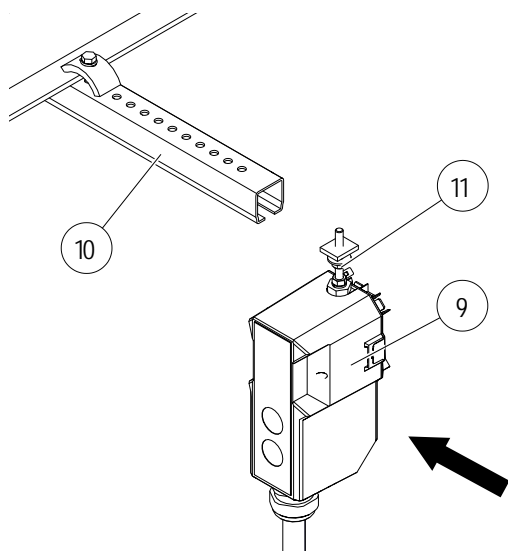


Fig. 50: Install end feed (Pos. 9) with square nut

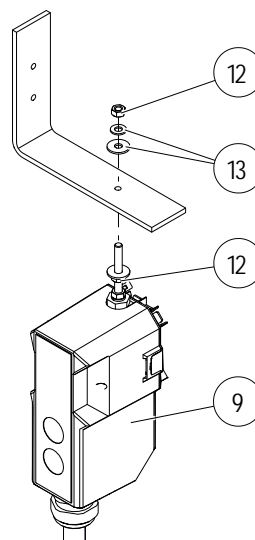


Fig. 51: Install end feed (Pos. 9) with hexagon nut



NOTE!

The end feed also has the function of an anchor point!

The conductor rail system is secured through fixing the end feed to the support structure.

Enclosed Conductor Rail System Xline Program 0843

- Hook the conductor rail into the hanger clamps (see Section 0)
- Slide the conductor rail (Pos. 14) onto the end feed (Pos. 9) so that the connector caps audibly click into place (see Fig. 52 and Fig. 53).

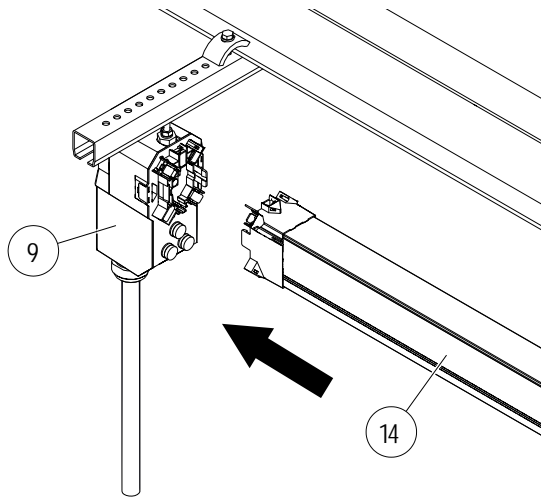


Fig. 52: Slide conductor rail (Pos. 14) onto end feed (Pos. 9)

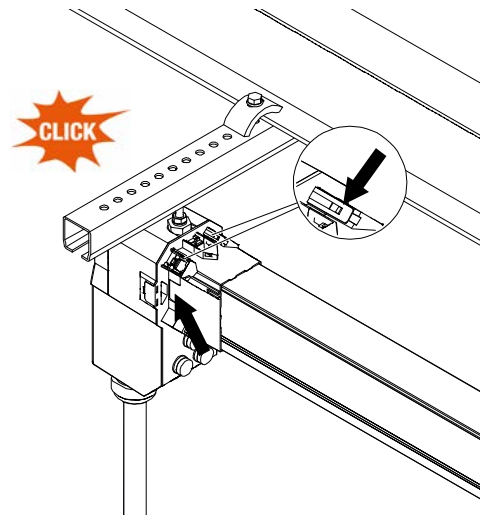


Fig. 53: Click connector caps into place



ATTENTION!

The clamps are available in different versions!

Clamps 80 A are always used for the end feed.

→ Use the orange clamp 80 A.

- Place the 5 clamps (Pos. 15) in the connector cap recesses (Pos. 16) and press in as far as the click-in point (see Fig. 54 and Fig. 55).

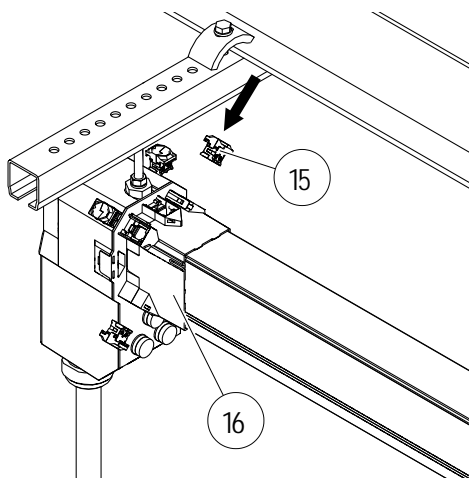


Fig. 54: Install clamps (Pos. 15)

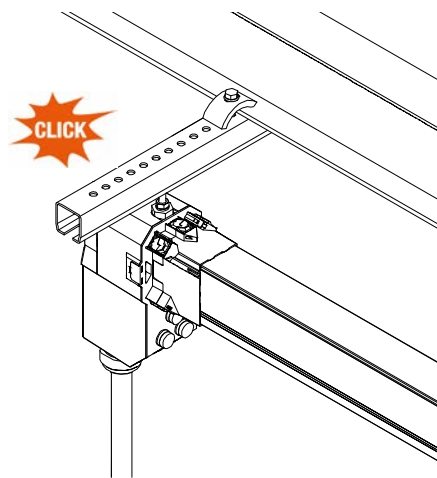


Fig. 55: End feed is connected

Enclosed Conductor Rail System

Xline Program 0843



ATTENTION!

The clamps are intended for single use:

If the clamps are disassembled, they must not be reused. A replacement parts set with additional clamps is included in the basic module (see Section 4.5.1).



Use the QR code ("click" or "scan") to see our animation
Mounting End Feed with Anchor Point.

6.2.4.4 Install anchor point (optional)

Requirement:

The support structure (e.g. support arm) must be fastened to the customer's support profile using the appropriate dimensions.

The anchor point is integrated in the line feed. If this anchor point cannot be used, an optional anchor point can be installed. The optional anchor point can be used for different support structures. Depending on the support structure, e.g. support arm, the square nut (Pos. 3) or the hexagon nut with washer (Pos. 4) must be removed (see Fig. 56).

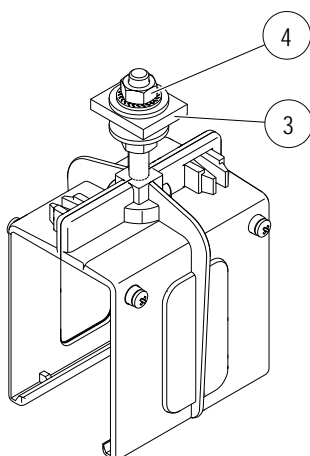


Fig. 56: Remove square nut (Pos. 3) or hexagon nut with washer (Pos. 4)

Enclosed Conductor Rail System Xline Program 0843

Distances:

Anchor point to line feed: 250-500 mm

Anchor point to hanger clamp: 2000 mm

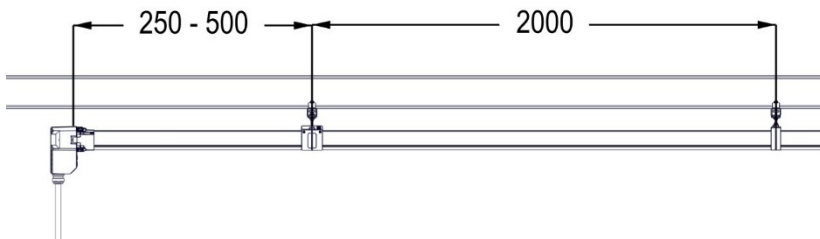


Fig. 57: Distances to anchor point

Required tools:

- Wrench SW13
- Cross-tip screwdriver PH 3.9

Work steps:

→ Preassemble carriage bolt (Pos. 1) on the support structure (see Fig. 58). Do not yet screw the carriage bolt (Pos. 1) firmly to the supporting structure so that it remains rotatable for the next installation steps. Set the height to the insulation profile of the conductor rail.

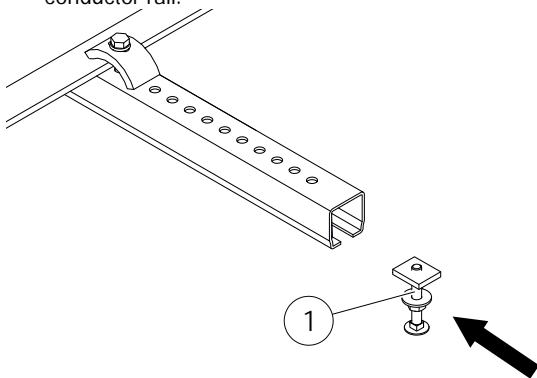


Fig. 58: Preassemble carriage bolt (Pos. 1)

→ Hook the conductor rail into the hanger clamps (see Sections 0 and 6.2.4.6)

→ Hook the caps (Pos. 2) to the bottom of the insulation profile and clip together so that the carriage bolt (Pos. 1) is integrated at the top center.

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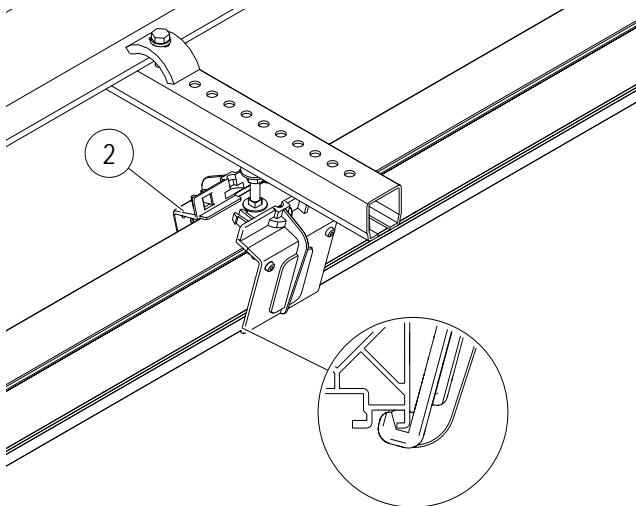


Fig. 59: Install caps (Pos. 2)

→ Tighten the four self-tapping screws (Pos. 3) with a cross-tip screwdriver PH 3.9. The anchor point is firmly connected to the insulation profile.

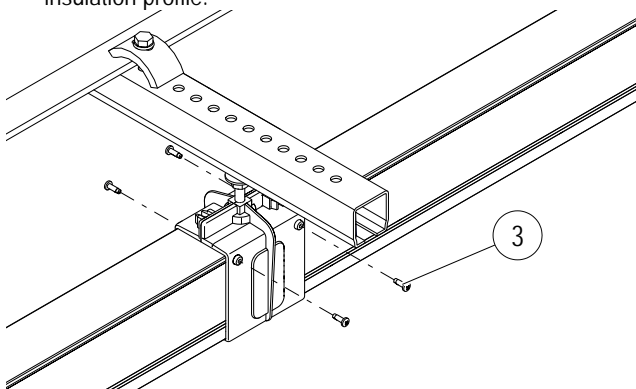


Fig. 60: Tighten self-tapping screws (Pos. 3)



NOTE!

Installation conditions are cramped!

The use of two self-tapping screws (Pos. 3) is permissible.

→ Tighten the carriage bolt M8 nut (Pos. 1) on the support structure with a wrench SW13 (7 Nm).

Enclosed Conductor Rail System

Xline Program 0843

6.2.4.5 Hook in conductor rail

Requirement:

All hanger clamps are installed at the correct distances on the support structure (see Section 6.2.4.2).

Work steps:

→ Hook all preassembled conductor rails (Pos. 2) from below into the hanger clamps (Pos. 1) so that they audibly click (see Fig. 61 to Fig. 63).



ATTENTION!

The PE marking is always on the same side!

→ Attention must be paid to the installation position of the PE during installation.

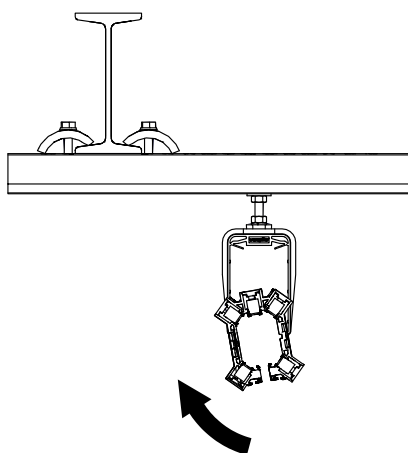


Fig. 61: Hook conductor rail into hanger clamps

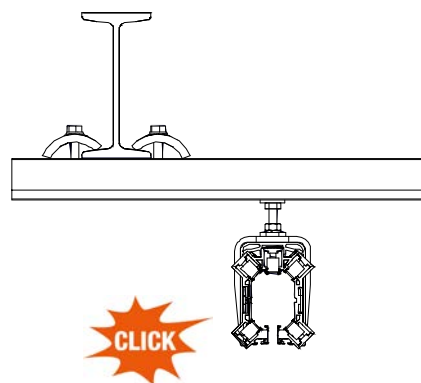


Fig. 62: Conductor rail audibly clicks

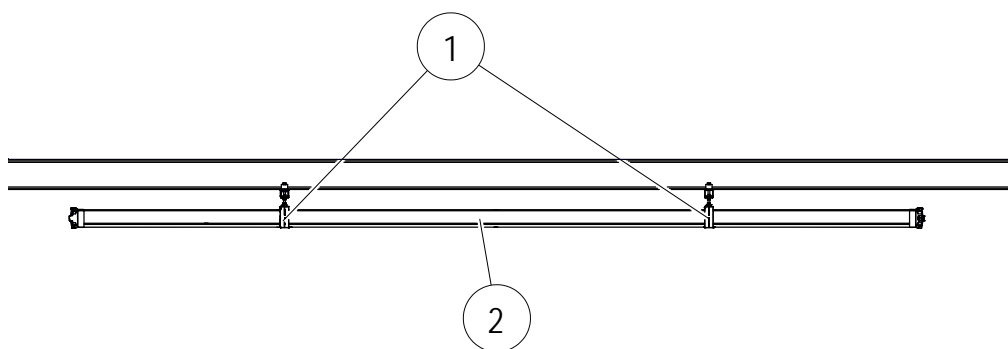


Fig. 63: Hook conductor rail into hanger clamp

Enclosed Conductor Rail System Xline Program 0843

6.2.4.6 Connect conductor rail

Requirement:

All preassembled conductor rails are correctly hooked into the hanger clamps (see Section 0).



ATTENTION!

The clamps are available in different versions!

The clamps are dependent upon the current used in the conductor rail system.

→ Use the gray clamp for 63 A.

→ Use the orange clamp for 80 A.

Work steps:

→ Slide the conductor rails together so that the connector caps audibly click into place (see Fig. 64 and Fig. 65).

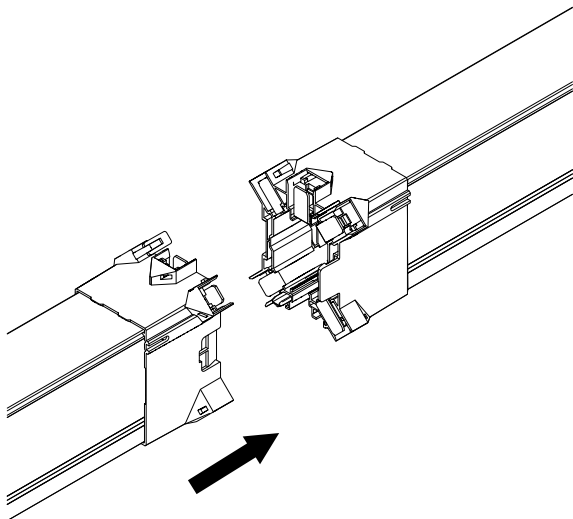


Fig. 64: Slide conductor rails together

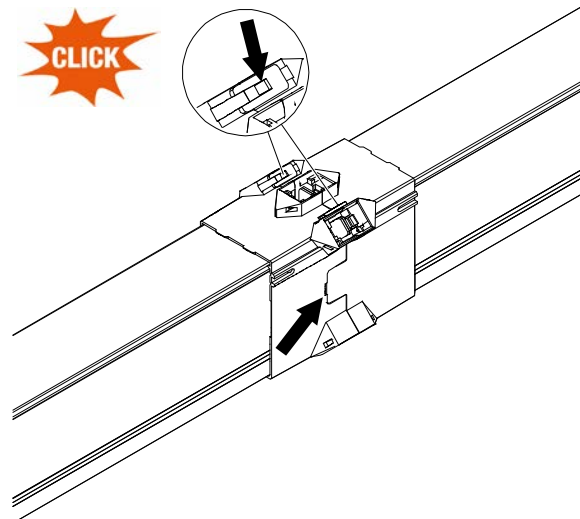


Fig. 65: Conductor rails are slid together

→ Place the 5 clamps (Pos. 2) in the connector cap recesses (Pos. 1) and press in as far as the click-in point (see Fig. 66 and Fig. 67).

Enclosed Conductor Rail System Xline Program 0843

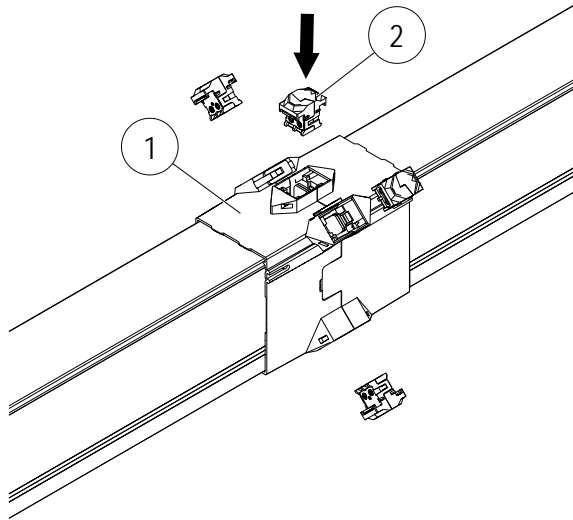


Fig. 66: Install clamps (Pos. 2)

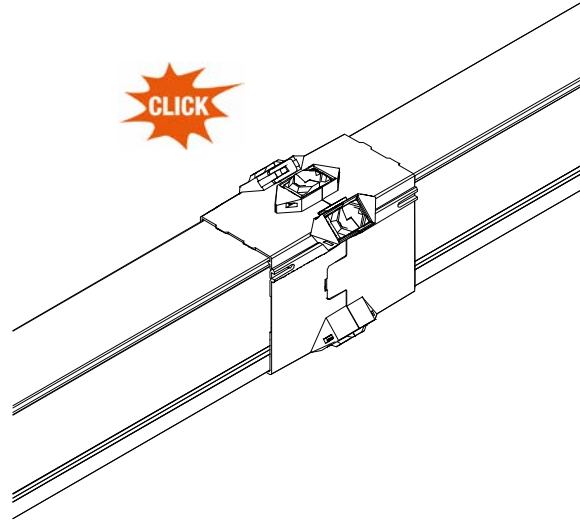


Fig. 67: Conductor rails are connected



ATTENTION!

The clamps are intended for single use:

If the clamps are disassembled, they must not be reused. A replacement parts set with additional clamps is included in the basic module (see Section 4.5.1).



Use the QR code ("click" or "scan") to see our animation
Connecting Conductor Rails.

6.2.4.7 Install parcel route module

Required tools:

- Cross-tip screwdriver PZ 2
- Plastic hammer
- Installation tool

Enclosed Conductor Rail System Xline Program 0843

Work steps:

→ Align two insulation profiles with each other (see Fig. 68).

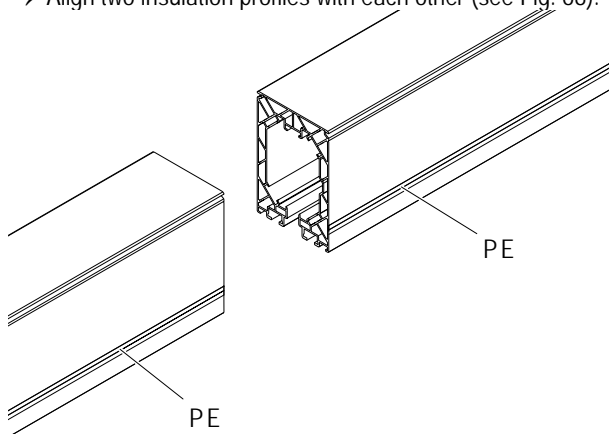


Fig. 68: PE marking



NOTE!

The PE marking must always be continuous on one side of the insulation profile!

→ On the left insulation profile, slide on the connector cap (Pos. 2) on the left-hand side (see Fig. 69).

→ On the right insulation profile, slide on the connector cap (Pos. 2) on the right-hand side (see Fig. 70).

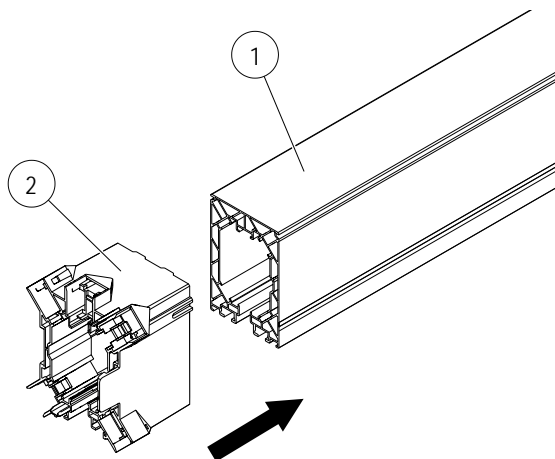


Fig. 69: Slide connector cap (Pos. 2) onto left side

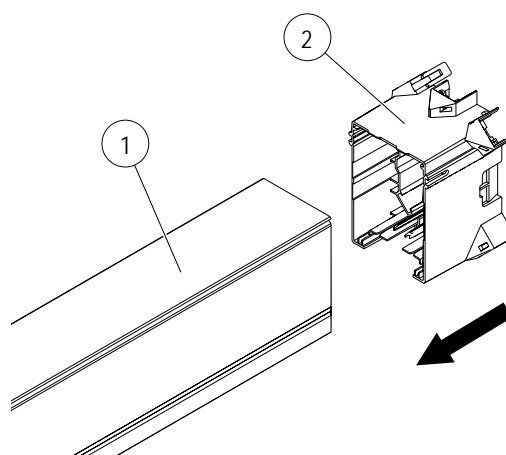


Fig. 70: Slide connector cap (Pos. 2) onto right-hand side

→ Slide the connector cap 2+2 (Pos. 4) onto the free ends of the insulation profile (Pos. 1) (see Fig. 71 and Fig. 72).

Enclosed Conductor Rail System
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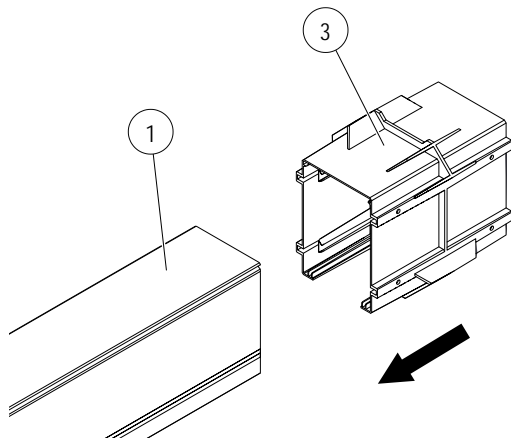


Fig. 71: Slide on connector cap 2+2 (Pos. 3)

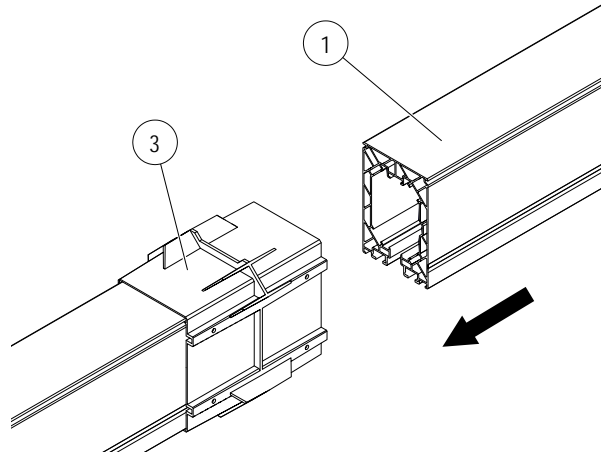


Fig. 72: Plug insulation profile (Pos. 1) into connector cap 2+2 (Pos. 3)

→ Fasten the connector cap 2+2 (Pos. 3) with four screws (Pos. 4) to the insulation profiles (see Fig. 73).

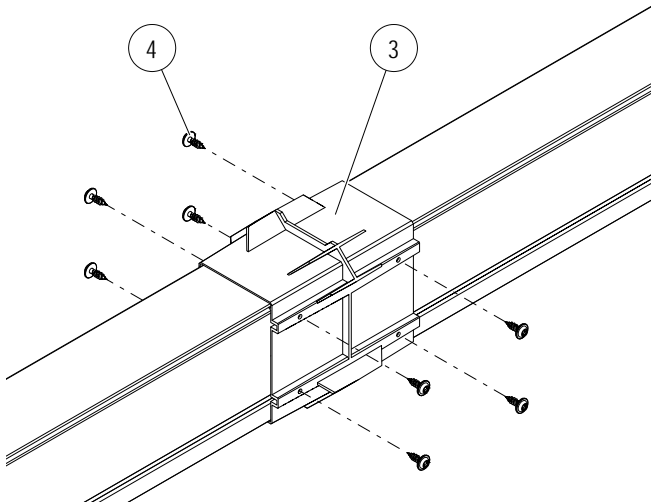


Fig. 73: Screw connector cap 2+2 (Pos. 3)

→ Slide the conductor strips (Pos. 5) individually into the insulation profile with the straight end first (see Fig. 74).

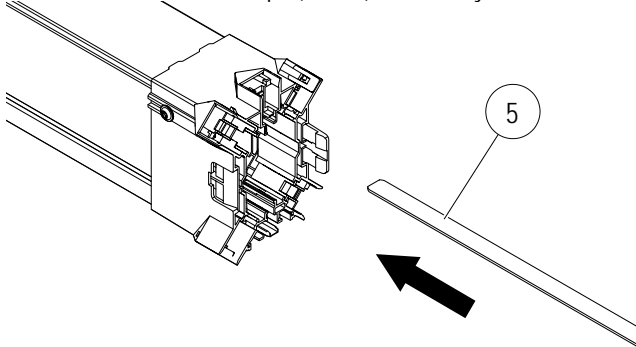


Fig. 74: Slide in conductor strip (Pos. 5)

Enclosed Conductor Rail System Xline Program 0843

→ Bend the conductor strips outward by 90° using the installation tool (see Fig. 75).

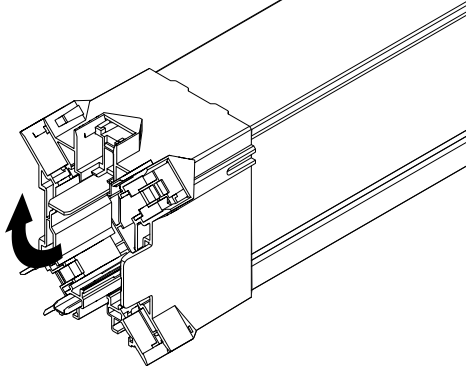


Fig. 75: Bend conductor strip

6.2.4.8 Install current collector



Use the QR code ("click" or "scan") to view our animation
Current Collector.

6.2.4.8.1 Connect current collector

Required tools:

- Screwdriver set (Torx)

Work steps:

→ Remove the cover (Pos. 2) and the two screws (Pos. 3) from the current collector (Pos. 1) with a Torx screwdriver (see Fig. 76).
The screws are anti-loss.

Enclosed Conductor Rail System
Xline Program 0843

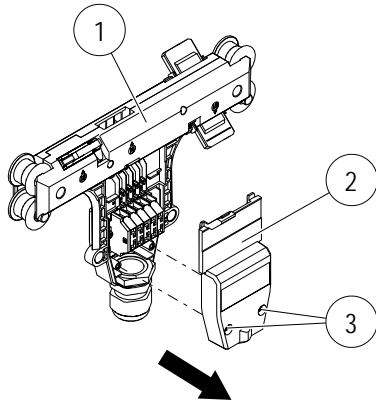


Fig. 76: Remove cover (Pos. 2)

→ Remove the cable screw connection (Pos. 4) and take it from the U-shaped seating (see Fig. 77 and Fig. 78).

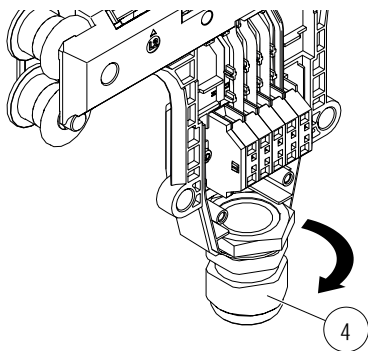


Fig. 77: Remove cable screw connection (Pos. 4)

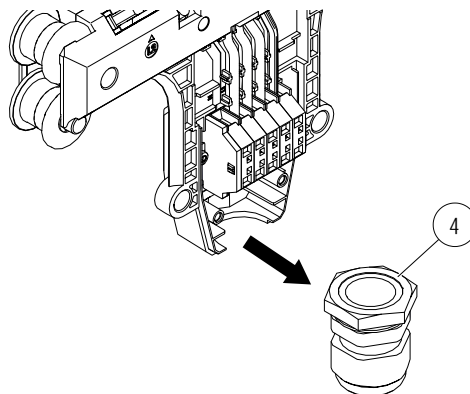


Fig. 78: Take cable screw connection (Pos. 4) from housing

→ Thread the stripped connecting cable (Pos. 5) (4 strands) through the cable screw connection (Pos. 4) (see Fig. 79).

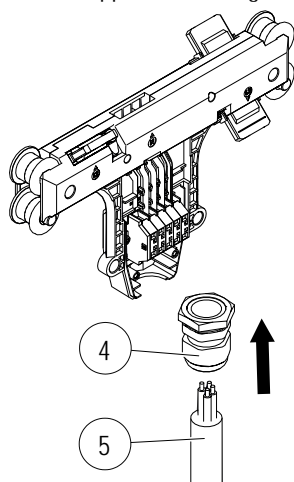


Fig. 79: Stripped connection cable (Pos. 2) threaded through cable screw connection (Pos. 4)

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→ Connect the individual cable strands (Pos. 5) in the terminal strip (Pos. 6) and check the electrical connection of the cables to the clamps (Pos. 6) (see Fig. 80).

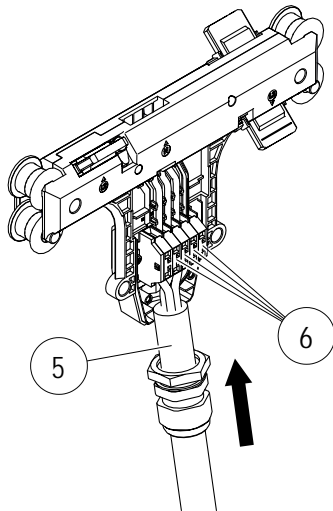


Fig. 80: Connect cable strands (Pos. 5)

→ Insert the cable screw connection (Pos. 4) into the current collector seating and screw loosely (see Fig. 81).

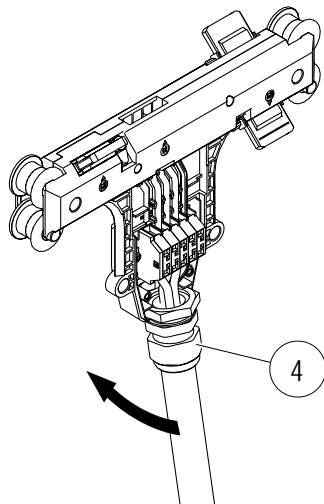


Fig. 81: Insert cable screw connection (Pos. 4)

→ Screw the cover (Pos. 2) with the two screws (Pos. 3) to the current collector (Pos. 1) with a screwdriver Torx (1,8 Nm) (see Fig. 82).

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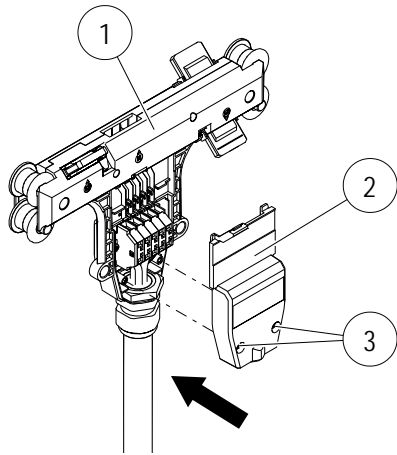


Fig. 82: Screw on cover (Pos. 2)

→ Fix the cable screw connection (Pos. 4) (see Fig. 83).

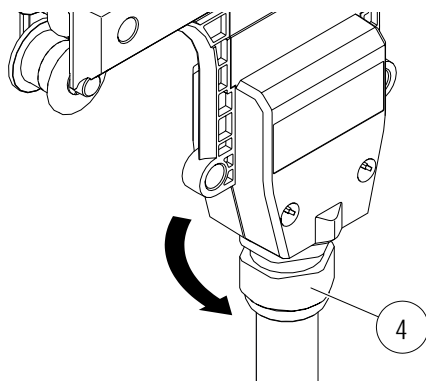


Fig. 83: Fix cable screw connection (Pos. 4)



Fixing of the cable routing provides strain relief!

The cables to the clamp are routed without tension and the cable screw connection (Pos. 4) is tightened.

The connection cable must not cause any forces on the current collector. The connection cable must therefore be installed without any directional or tensile forces. Allow enough space below the current collector for the cable guide (see Fig. 84)

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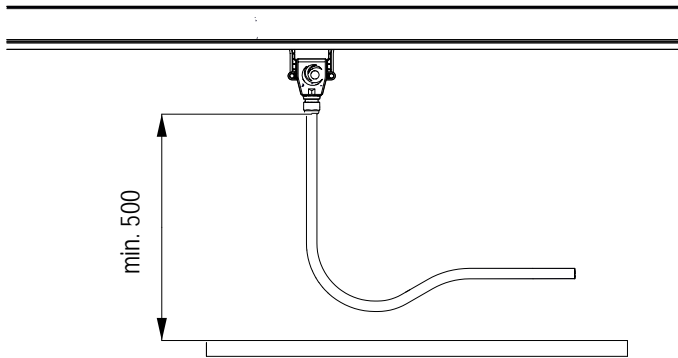


Fig. 84: Allow enough space below the current collector

→ Take the type plate for current collector (Pos. 7) from the sticker sheet and affix on the current collector cover (see Fig. 85 and Section 6.2.2).

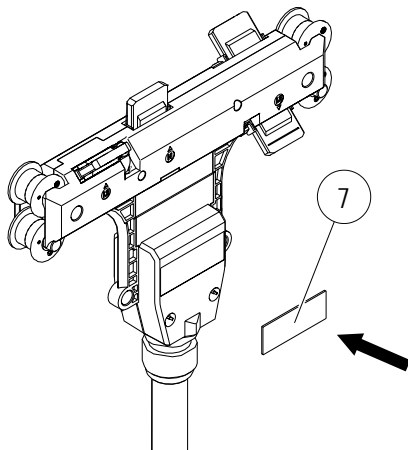


Fig. 85: Affix type plate (Pos. 7)

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6.2.4.8.2 Install 5-pole (neutral) sliding contact upgrade set

The basic module contains a 4-pole current collector. The 5th pole in the 5-pole (neutral) sliding contact upgrade set is modified for use in a 5-pole system.

Required tools:

- Screwdriver set (Torx)

Work steps:

→ Remove the cover (Pos. 2) and the two screws (Pos. 3) with a Torx screwdriver and take it from the current collector (Pos. 1) (see Fig. 86). The screws are anti-loss.

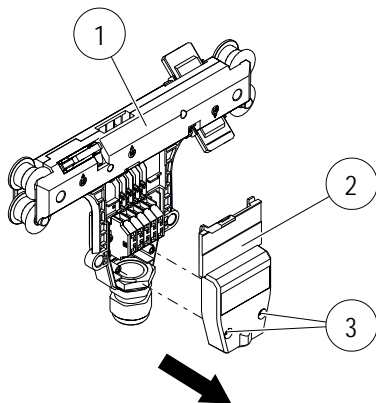


Fig. 86: Remove cover (Pos. 2)

→ Remove the cable screw connection (Pos. 4) and take it from the U-shaped seating (see Fig. 87 and Fig. 88).

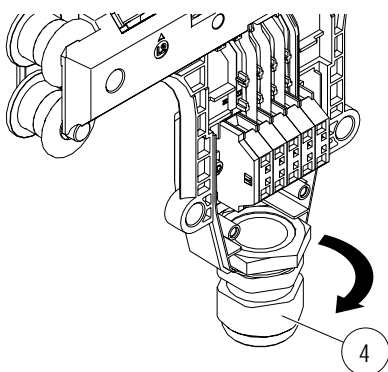


Fig. 87: Remove cable screw connection (Pos. 4)

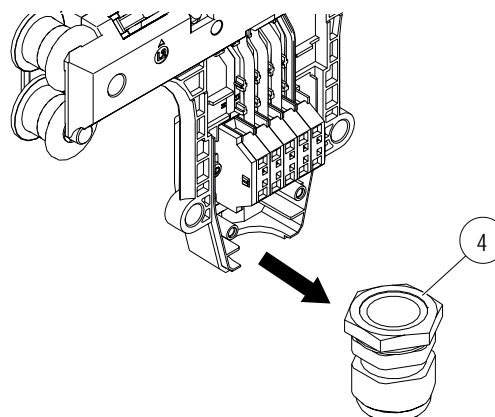


Fig. 88: Take cable screw connection (Pos. 4) from housing

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→ Strip the cable for the 5th pole (Pos. 6) and insert into clamp (Pos. 5) (see Fig. 89).

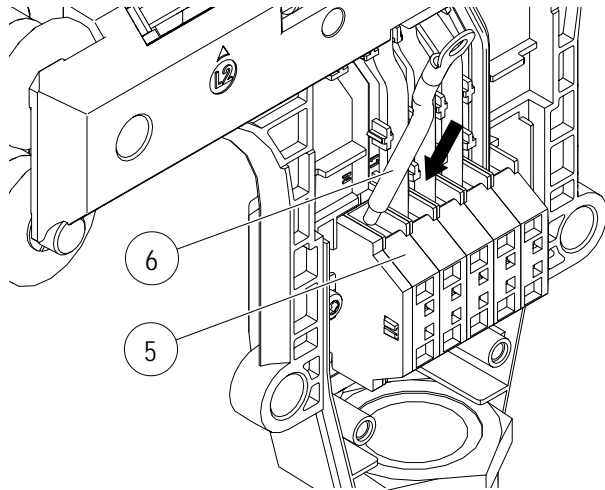


Fig. 89: Insert stripped cable (Pos. 6) into clamp (Pos. 5)

→ Insert the seating clip (Pos. 7) in the recess (see Fig. 90).

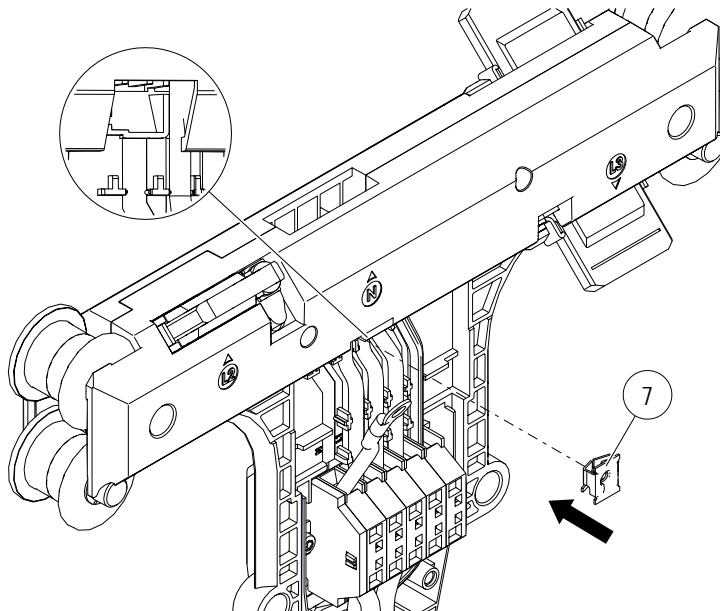


Fig. 90: Insert seating clip (Pos. 7)

→ Lay the cable with cable lug (Pos. 6) on the seating clip (Pos. 7) (see Fig. 91).

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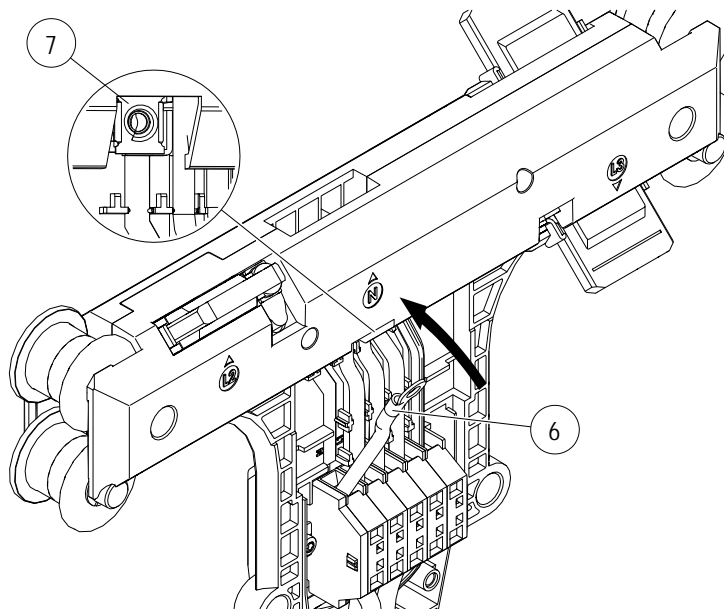


Fig. 91: Lay cable with cable lug (Pos. 6) on seating clip (Pos. 7)

→ Place the sliding contact (Pos. 8) into the recess from above so that the cable lug (Pos. 9) is seated between the seating clip (Pos. 7) and contact plate of the sliding contact (Pos. 10) (see Fig. 92 and Fig. 93).

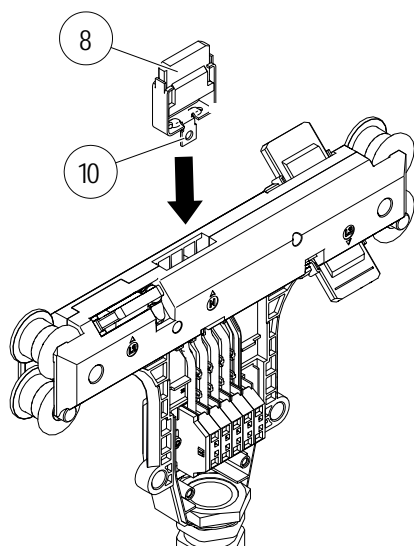


Fig. 92: Place sliding contact (Pos. 8) in current collector

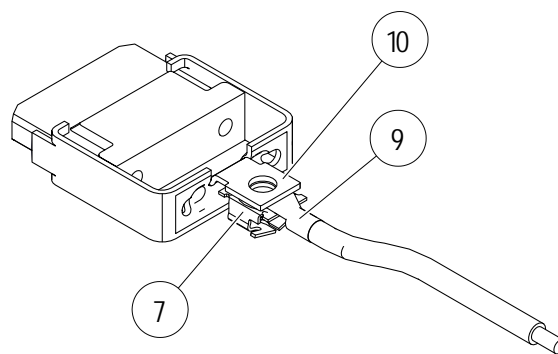


Fig. 93: Place seating clip (Pos. 7) and contact plate of sliding contact (Pos. 10) and cable lug (Pos. 9)

→ Screw sliding contact with self-tapping screw and lock washer (Pos. 11) with a screwdriver Torx (2,5 Nm) (see Fig. 94).

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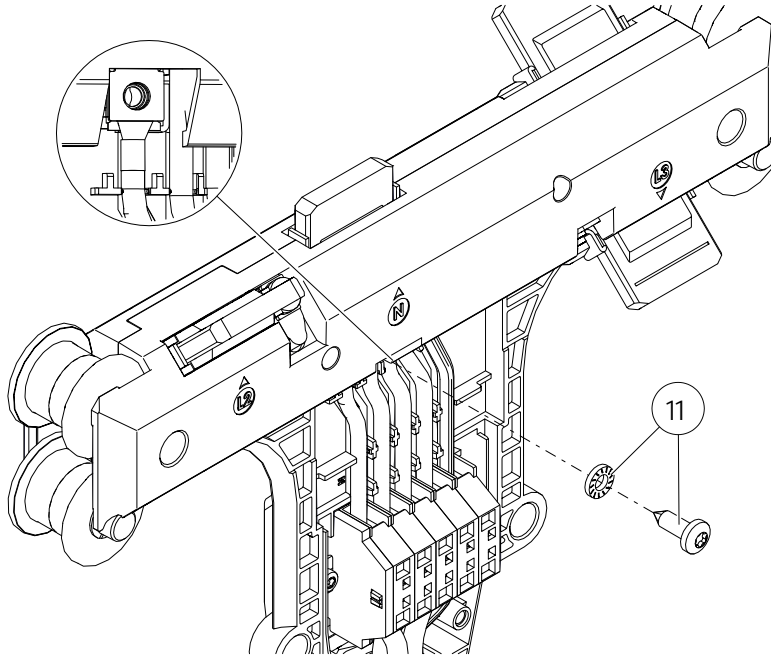


Fig. 94: Screw sliding contact



ATTENTION!

The sliding contact spring mechanism must be able to move freely!

Check the sliding contact spring mechanism for freedom of movement and, if necessary, loosen and correct the screw connection.

→ Connect the connection cable as described in Section 6.2.4.8.1.

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6.2.4.8.3 Insert current collector into conductor rail

Requirement:

The connecting cable is connected to the current collector (see Section 6.2.4.8.1).

Work steps:

→ Manually press sliding contacts (Pos. 1) down (see Fig. 95).

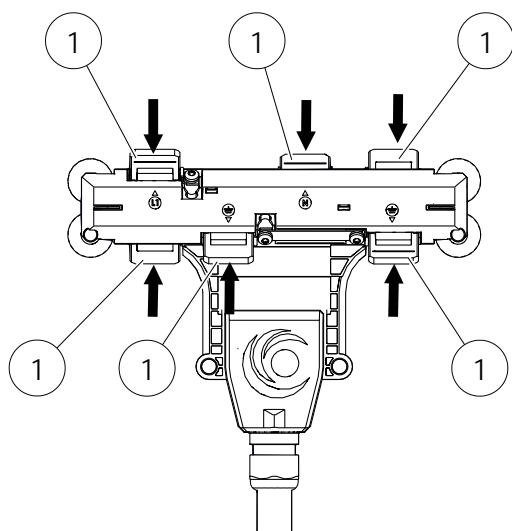


Fig. 95: Press down sliding contacts (Pos. 1)

→ Align the current collector (Pos. 2) correctly with the conductor rail.



NOTE!

Pay attention to reverse polarity protection (Pos. 3) on the cover of the current collector!

The reverse polarity protection prevents incorrect insertion of the current collector (see Fig. 96 and Fig. 97).

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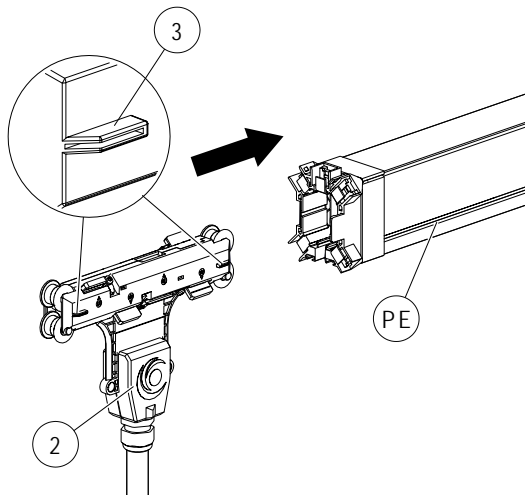


Fig. 96: Align current collector (Pos. 2)

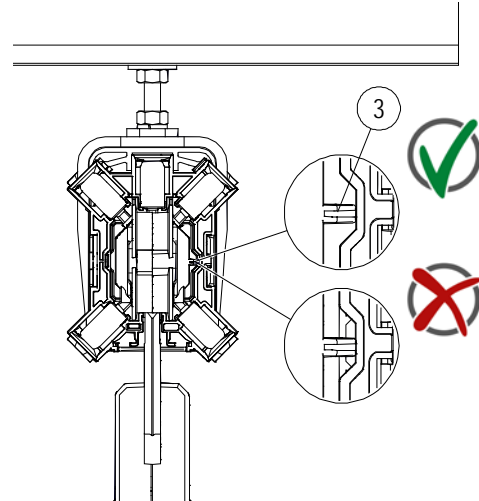


Fig. 97: Polarity reversal protection (Pos. 3) Correct and Incorrect

→ Insert the current collector (Pos. 2) into the conductor rail (see Fig. 98).

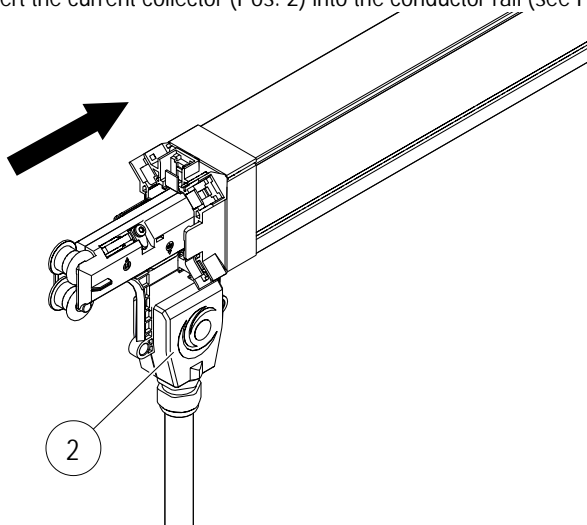


Fig. 98: Insert current collector (Pos. 2)

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6.2.4.8.4 Connect current collector to towing device

Required tools:

- Wrench SW13

Requirement:

The current collector is inserted into the conductor rail (see Section 6.2.4.8.3) and the console is attached to the customer's vehicle.

The towing device is available as a single and double towing device (see Fig. 99 and Fig. 100).

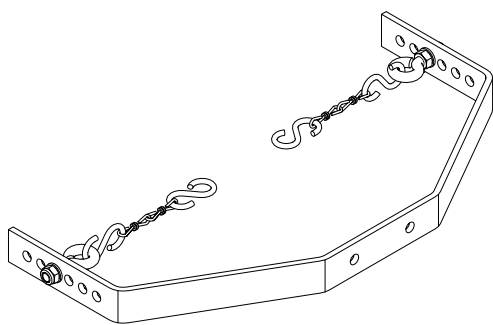


Fig. 99: Single towing device

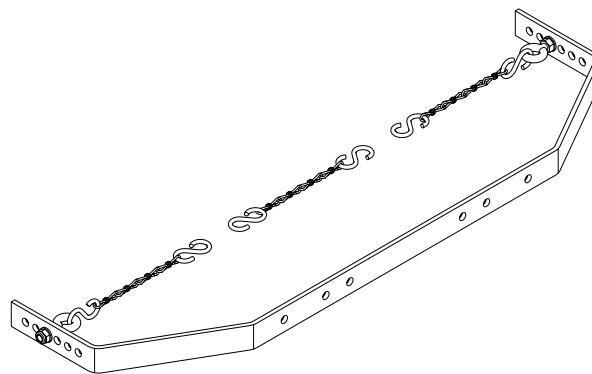


Fig. 100: Double towing device

Work steps:

- Position the current collector in the conductor rail at the customer's vehicle.
- Install towing device (Pos. 1) on the console (Pos. 2) Attach fastening elements (Pos. 3) with a screwdriver (27.3 Nm) (see Fig. 101).

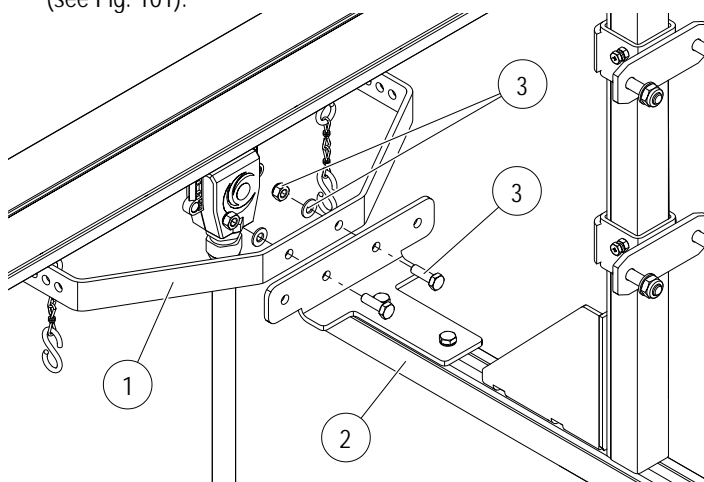


Fig. 101: Install towing device (Pos. 1) on console (Pos. 2)

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→ Set console (Pos. 2) correctly (see Fig. 102 and Fig. 103). The dimensions must be observed.

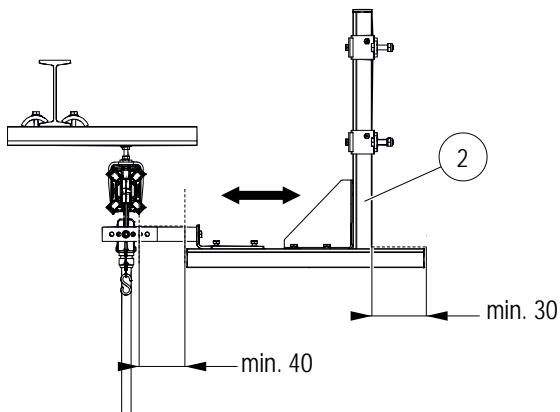


Fig. 102: Set console horizontally

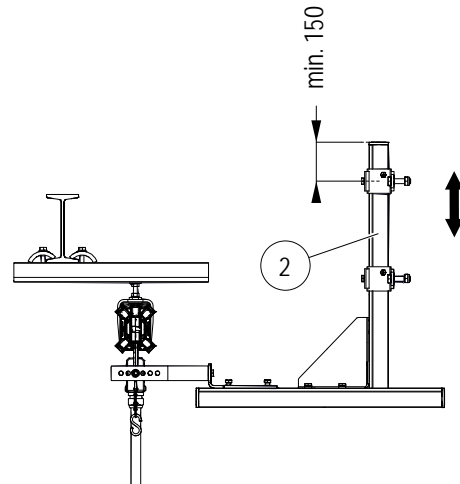


Fig. 103: Set console vertically

→ Fasten the towing device chains (Pos. 5) on the current collector (Pos. 4) (see Fig. 104)

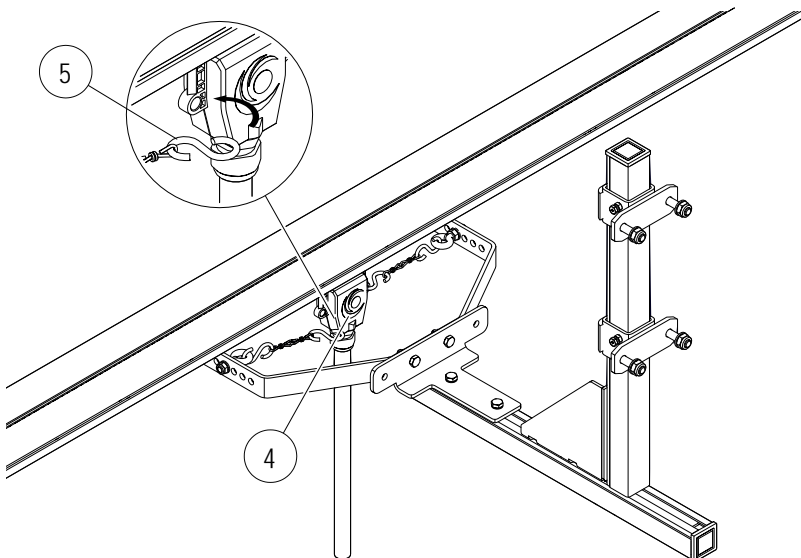


Fig. 104: Fasten towing device chain (Pos. 5)



Use the QR code ("click" or "scan") to see our animation
Connect Current Collector to Towing device.

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6.2.4.9 Install end cap

Requirement:

The connecting cable of the current collector is connected correctly and the current collector is inserted into the conductor rail (see Section 6.2.4.8).

Work steps:

→ Take electric flash (Pos. 2) from the sticker sheet and affix on the end cap (Pos. 1) (see Fig. 105 and Section 6.2.2).

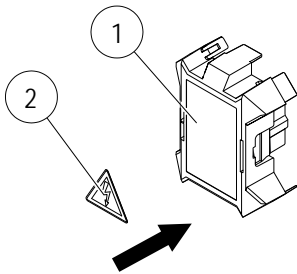


Fig. 105: Affix electric flash (Pos. 2)

→ Slide the end cap (Pos. 1) onto the last conductor rail so that the end cap audibly clicks into place (see Fig. 106 and Fig. 107).

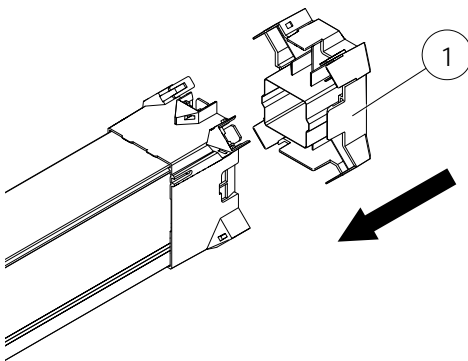


Fig. 106: Slide on end cap (Pos. 1)

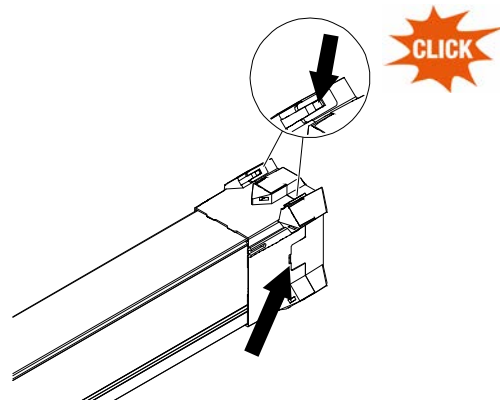


Fig. 107: End cap clicks into place



Use the QR code ("click" or "scan") to see our animation
Mounting End Cap.

6.3 Further documents



Read and observe the additional operator instructions!

You can find further information on the installation of conductor rail systems in the following instructions:

- WV0800-0002 Conductor Rail Maintenance Plan
- MV0843-0001 Conductor Rail System 0843 Quick Guide
- MV0800-0019 Conductor Rail Insulation Measurement

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7 Commissioning

7.1 Safety

Personnel:

- The conductor rail system must only be commissioned and operated for the first time after a repair by qualified electricians!
- These qualified electricians must meet the requirements described in Section 2.2.1.

Required protective equipment:



Requirement:



WARNING!

Risk of injury due to improper commissioning!

Improperly conducted commissioning can lead to dangerous situations for personnel (see Section 7.2.1).

- Before commissioning, carry out the inspections on the manufacturer's checklist.
- Always measure the insulation resistance before commissioning the system. Observe the locally applicable technical standards, guidelines and laws.
- Always ensure that all of the assembly and installation work has been fully completed before commissioning the system!
- Always ensure that all of the components have been properly installed before commissioning the system!



CAUTION!

Ensure a free travel path before beginning the commissioning!



CAUTION!

Contact problems or increased heating!

- Clean the sliding surfaces of the sliding contacts before commissioning and remove soiling, oxidation, pitting corrosion and other impurities using a brass brush or abrasive paper (320 Grit)!
- Avoid standstill operation with high currents during commissioning as much as possible. The sliding contacts are not yet ground and can therefore heat up more.

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DANGER!

Risk of injury due to crushing of skin and limbs!

There is a risk of crushing of skin and limbs:

- Do not stand directly below the conductor rail system.
- Do not enter the danger zones of the system during operation. The operator/system manufacturer must ensure the technical protective measures are taken (covers, protection by distance, control technology, etc.).
- Operation is only permitted in areas inaccessible to the public and out of manual reach. The danger zone must be enclosed by the customer or protection ensured by distance.



DANGER!

Fire hazard due to overload or sparking!

Fire hazards occur due to overloaded cables, electrical arcs, short circuits or sparking. Sparking can occur with poorly serviced, soiled conductor rails or if installation does not comply with the required tolerances.

Take the following measures:

- Before commissioning, ensure that all installation work has been completed and all the components have been properly installed.
- Conduct electrical testing as prescribed!
- Always comply with the permissible current values!
- Comply with tolerances during operation!
- Dimension according to permissible system load capacity and provide for appropriate electrical protective devices!
- Do not remove the prescribed electrical safety devices and protective devices!
- Do not store easily combustible materials in the vicinity of conductor rails!
- Check, service and clean conductor rails regularly and as prescribed. See Section 12.



DANGER!

Risk of injury due to ensnarement or impact!

An ensnarement and/or impact with moving conductor rails (slip ring) or current collectors connected to the machine and other components must be prevented.

- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, housings, control devices) have been removed or disabled!
- Use caution when working in the vicinity of the danger zone, particularly below the conductor rail!
- Be aware of falling parts of the conductor rail system in the event of improper installation or in unsuitable operating conditions (e.g. in an environment containing solvents)!
- Wear personal protective equipment!

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DANGER!

Risk of injury due to impacts and punctures/stabs!

Risk of injury due to impacts and punctures/stabs from sliding conductor rails as the result of holding packaging units at an angle, damaged packaging or carelessness with long goods/transport crates.

Risk of injury due to impacts and punctures/stabs from the conductor rail sliding out when in areas with pedestrian traffic.

- Wear personal protective equipment!
- Cordon off the work area!
- Use caution when working in the vicinity, particularly below the conductor rail!
- Do not step under suspended loads!
- Before lifting, ensure that the packaging/transport crate is undamaged!



WARNING!

Risk of injury due to puncture wounds and stabs!

Risk of moving or falling parts during maintenance/servicing.

- Wear personal protective equipment!
- Cordon off the work area!



WARNING!

Risk of burns from hot surfaces!

Components can become hot during operation.

- Operation is only permitted in areas inaccessible to the public and out of manual reach.
The danger zone must be enclosed by the customer or protection ensured by distance!
- Protective devices are to be provided by the customer!
- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, enclosures, control devices) have been removed or are not activated!
- Wear personal protective equipment!



CAUTION!

Before switching the system on!

- Ensure that all installation work has been completed and all the components have been properly installed!
- Each time before the equipment or system is started, measure the insulation resistance according to locally applicable technical standards, directives and legal regulations!
- Carry out locally required electrical tests!
- Ensure adequate stability on the product/system for the commissioning engineer!

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DANGER!

Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. Risk of injury due to shock reactions, falling or being thrown across the room due to electrical shock.

- Customer-side grounding of metallic components must be present!
- Customer-side protective devices must be present!
- Ensure secure footing!
- Wear personal protective equipment!

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7.2 Inspection and initial commissioning

7.2.1 Checklist



Risk of death due to electrical shock!

WARNING!

Inspect	Checked
Are all conductor rails correctly engaged in the hanger clamps and have the hanger clamps been properly secured (all screws tightened and checked)?	
Have the hanger clamps been installed at the correct distance (see Section 6.2.4.2)?	
Was the correct type of clamp used (see Section 6.2.4.6)?	
Note: 10 mm ² / 63 A clamps are gray, 16 mm ² / 80 A clamps are orange.	
Are all sliding contacts movable and not jammed (finger pressure test)?	
Has the current collector on a 5-pole system been fitted with the 5-pole (neutral) sliding contact upgrade set?	
Are the cables to the current collector connected and the cable screw connection tightened?	
Are the current collector, anchor point, line feed and end cap correctly installed?	
Can the current collector be moved in the profile without resistance?	
Has the towing device for the current collector been installed, have all chains been hooked in and has the cable been laid without tension or collision?	
Are all line feed clamp connections tightened and is the strain relief functioning properly? The cable to the clamp is laid without tension and the cable screw connection is tightened (see Section 6.2.4.3.2).	
Are all electrical protection devices installed, tested and functioning? Are covers and barriers present?	
Is the line feed electrically connected properly?	
Have the protective devices been designed and integrated in accordance with crane and standard requirements?	
Has the insulation resistance* of the conductor rail system been measured according to local technical standards, guidelines and laws?	
Is the installation position outside the collision area (e.g. forklift traffic, lifting area)?	
Are the installation and general conditions for Protection Class IP 23 fulfilled?	
Has a test run been carried out to check the function and freedom from collision over the entire route?	
Has the type plate been added and affixed to the line feed and current collector?	



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Have the prescribed national electrical tests been carried out and have the stickers for commissioning and the next periodic inspection been affixed?	
Has the operating personnel been trained?	

*Note: Insulation resistance test according to EN 60204-1: 2006 $\geq 1 \text{ M}\Omega$ with measuring voltage 500V DC. Exception for conductor bars, conductor rails and slip rings $\geq 50 \text{ k}\Omega$ (EN 60204-1/18.3: 2006)

.....
Date

.....
Signature

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7.2.2 Initial commissioning of the conductor rail system

→ Carry out a complete run along the conductor rail (walking pace).



ATTENTION!

The current collectors must not become caught, stick or scrape!
Where necessary, repair any faults and carry out settings tasks.

After initial commissioning, a further review must be conducted to detect any damage or problems in the system.

Visual inspection of the device/system after initial commissioning:

- Current collector undamaged and without signs of heavy wear.
- Conductor rail components undamaged and in the proper location. No displacements or distortions. Check hanger clamps, end caps and anchor points in particular!
- Check that there are no visible signs of heavy wear (chips, plastic parts, etc.). Signs of heavy wear indicate that installation clearances and their tolerances are not complied with. This can sometimes also be the case for individual sections of the route.

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8 Operation

The only operations required to operate the conductor rail system are switching the power supply on and off to stop/activate the system, see Section 8.2.

The safety information in Section 8.1 must be observed to ensure the system's safety during operation.

8.1 Safety



DANGER!

Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. Risk of injury due to shock reactions, falling or being thrown across the room due to electrical shock.

The conductor rail must not be operated under the following conditions:

- If the conductor rail is heavily soiled.
- If the conductor rail becomes wet.
- If electrically live parts are exposed (insulation profile or the insulation of the connection cable are damaged).
- If the hanger clamp or insulation profile fail.
- If the conductor rail falls down and comes into contact with conductive material.

Take the following measures:

- Install the conductor rail in an area that is inaccessible to the public and out of manual reach!
- Ensure proper electrical protection at all times!
- The danger zone must be enclosed by the customer or protection ensured by distance!
- Ensure customer grounding of metallic components at all times!
- Ensure the function of the customer's protective devices at all times!
- Regularly check, maintain and clean the conductor rail, repair if necessary!



DANGER!

Risk of injury due to cutting and severing!

Cutting on sharp edges must be avoided.

- Wear personal protective equipment!
- The operator/system manufacturer must ensure the technical protective measures are taken (covers, protection by distance, control technology, etc.)!
- Operation is only permitted in areas inaccessible to the public and out of manual reach!
The danger zone must be enclosed by the customer or protection ensured by distance!

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DANGER!

Risk of injury due to ensnarement, punctures/stabs and/or impacts!

An ensnarement and/or impact with moving conductor rails (slip ring) or current collectors connected to the machine and other components must be prevented.

Risk of injury due to impacts and punctures/stabs from the conductor rail sliding out when in areas with pedestrian traffic.

- Cordon off the work area!
- Do not enter the system danger zones during operation. The operator/system manufacturer must ensure the technical protective measures are taken (covers, protection by distance, control technology, etc.)!
- Operation is only permitted in areas inaccessible to the public and out of manual reach! The danger zone must be enclosed by the customer or protection ensured by distance!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, housings, control devices) have been removed or disabled!
- Use caution when working in the vicinity of the danger zone, particularly below the conductor rail!
- At an installation height of 3 m or more in areas with pedestrian traffic, the conductor rails must be secured against falling!
- Be aware of falling parts of the conductor rail system in the event of improper installation or in unsuitable operating conditions (e.g. in an environment containing solvents)!
- Wear personal protective equipment!



WARNING!

Unauthorized personnel are at risk!

Unauthorized personnel are not familiar with the hazards in the work area.

- The system must only be operated by trained personnel!
- Keep unauthorized persons away from the work area!
- In case of doubt, address the persons and direct them away from the work area!
- Stop working as long as unauthorized persons are in the work area!

To comply with the **most important measures** for protection against hazards, the measures in Section 2 and 3 must be observed. For information on foreseeable incorrect applications or unsuitable ambient conditions see especially Sections 2.5 and 3.3.



DANGER!

Risk of injury due to falling conductor rails!

The conductor rail hanger clamps can fail and the conductor rail can fall down. Components can be damaged if the following or similar materials are stored in the vicinity of the conductor rail:

- Solvents that contain aromatic compounds and evaporate.
- Coating compounds and varnishes.
- Separating agents or coolants and lubricants.
- See Sections 3.3 and 2.8.4
- Do not store any of the above or similar substances in the vicinity of the conductor rails.

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DANGER!

Fire hazard due to overload or sparking!

Fire hazards occur due to overloaded cables, electrical arcs, short circuits or sparking. Sparking can occur with poorly serviced, soiled conductor rails or if installation does not comply with the required tolerances.

Take the following measures:

- Conduct electrical testing as prescribed before commissioning!
- Always comply with the permissible current values!
- Comply with tolerances during operation!
- Dimension according to permissible system load capacity and provide for appropriate electrical protective devices!
- Do not remove the prescribed electrical safety devices and protective devices!
- Do not store easily combustible materials in the vicinity of conductor rails!
- Check, service and clean conductor rails regularly and as prescribed. See Section 12.



WARNING!

Risk of injury due to dust and abrasion!

Breathing difficulties and eye irritation can occur due to dust thrown up and abrasion of the sliding contacts, copper conductor bars and plastic. There is a health hazard due to the respirable dust that is thrown up. **Cancer, inflammation of the mucous membranes and respiratory diseases** can be a consequence of frequent and prolonged exposure without protective equipment in a heavily used facility.

Observe the following measures:

- Clean regularly! As needed and before starting the work, clean the conductor rail according to regulations (observe WV0800-0001). See Section 12.1
- Prevent inhalation of dust from the conductor rail!
- Do not store or consume open food in the immediate vicinity of the conductor rail!
- See Section 2.8.3 for further information!



WARNING!

Risk of burns from hot surfaces!

Components can become hot during operation.

- Operation is only permitted in areas inaccessible to the public and out of manual reach. The danger zone must be enclosed by the customer or protection ensured by distance!
- Protective devices are to be provided by the customer!
- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, housings, control devices) have been removed or disabled!
- Wear personal protective equipment!

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8.2 Normal operation

The Conductor Rail System 0843 is protected against accidental contact and is suitable for use in areas that are inaccessible to the public, and out of manual reach, e.g. for standard hoists or workshop cranes.

8.3 Stopping the system



DANGER!

Risk of injury due to electrical shock!

→ Switch off the conductor rail system according to the the 5 Safety Rules and secure it against being switched on again! 5 Safety Rules see Section 2.7.



8.4 Continuing operation



WARNING!

Risk of injury if safety equipment and protective devices are disabled!

→ Before switching the system on again, ensure that all covers, safety systems and protective devices are installed and working properly.

Before switching the system on again, ensure that:

- The full length of the sliding contacts is in contact with the conductor rail and the prescribed contact force is present.
- No coarse soiling or objects in the conductor rails:
→ Conduct a visual inspection.
- The insulation resistance corresponds to the applicable technical guidelines:
→ As needed, before the product is started, measure the insulation resistance according to locally applicable technical standards, directives and legal regulations.
- Visual inspection of the product/system:
→ Current collector undamaged and without signs of heavy wear.
→ Conductor rail components undamaged and in the proper location. No displacements or distortions. Check hanger clamps, end caps and anchor points in particular!
→ Check that there are no visible signs of heavy wear (chips, plastic parts, etc.). Signs of heavy wear indicate that installation clearances and their tolerances are not complied with. This can sometimes also be the case for individual sections of the route.

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9 Maintenance and Service

9.1 Safety

Recommended protective equipment:



DANGER!

Risk of injury due to electrical shock!

→ Switch off the conductor rail system according to the 5 Safety Rules and secure it against being switched on again! 5 Safety Rules see Section 2.7.



DANGER!

Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. Risk of injury also due to shock reactions, falling or being thrown across the room due to electrical shock.

- Disconnect all line feeds from the power supply!
The main power supply and heater voltage supply must be disconnected and secured against switching on again!
- Check whether a voltage is still present in the components and take measures where necessary!
- The customer must ground metallic components!
- The customer must provide protective devices!
- Conduct prescribed electrical testing!
- Observe the 5 Safety Rules (see Section 2.7)!
- Ensure secure footing!



WARNING!

Risk of injury due to improperly executed maintenance and/or servicing tasks!

Improper or omitted maintenance or servicing work can result in serious injury to persons and/or material damage. Loosely stacked or scattered components and tools that are left lying around are a source of danger. They are a tripping hazard and improperly stored components can topple or fall to the ground.

- The system must only be serviced and maintained by specialist personnel!
- Before starting work, ensure there is sufficient space for the tasks.
- Ensure that the installation area is clean and tidy!
- If components have been removed, be careful to reinstall them properly, replace all fastening elements and comply with screw tightening torques!

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CAUTION!

Risk of damage when cleaning the conductor rail!

When cleaning, only loose or lightly adhering dust or foreign substances may be removed.

- Do not use contact spray (formation of silicon carbide/abrasive and/or damage of plastic parts)!
- Only use abrasives or brushes as a tool only partially to remove strong adhesion of the minor burn points! This work must only be carried out by qualified personnel.
- The lubricant layer on the guideway must not be removed, this will damage the rail (see also WV0800-0001 and WV0800-0004).



DANGER!

Risk of injury due to dust and abrasion!

Breathing difficulties and eye irritation can occur due to dust thrown up and abrasion of the sliding contacts, copper conductor bars and plastic. There is a health hazard due to airborne respirable dust. Sensitization may occur if handling the conductor rail frequently and / or carelessly handling dust accumulation. **Cancer, mucous membrane irritation and respiratory diseases** can be a consequence of frequent and prolonged exposure in a heavily used facility without protective equipment.

Observe the following measures:

- Clean regularly! Before starting work, clean the conductor rail according to regulations (observe WV0800-0001). See Section 12.1.
- Wear personal protective equipment:
 - Protective eyewear
 - Dust mask Class FFP3 (observe local regulations)
 - Protective gloves
 - Disposable coveralls
- Prevent contamination of the environment (e.g. people, goods, production facilities etc.) while cleaning by taking appropriate measures (use covers, barriers, filter systems)!
- Do not blow out dust with compressed air, but rather vacuum it away. The vacuum must be equipped with a HEPA Class H fine filter.
- Do not eat or drink during work! Do not store or consume open food in the immediate vicinity!
- Do not smoke during work!
- See Section 2.8.3 for further information!

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DANGER!

Risk of injury due to ensnarement, punctures/stabs and/or impacts!

An ensnarement, punctures and stabs and/or impact with moving conductor rails (slip ring) or current collectors connected to the machine and other components must be prevented.

Risk of injury from impacts and punctures/stabs from the conductor rail sliding out when holding the rails at an angle, from carelessness with long goods or from falling conductor rails in areas with pedestrian traffic.

- Cordon off the work area!
- The main power supply (from the building) must be disconnected in the installation area and secured against switching on again!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, housings, control devices) have been removed or disabled!
- Wear personal protective equipment!



WARNING!

Risk of injury due to impacts, puncture wounds and cuts!

Risk of moving or falling parts during maintenance/servicing.

- Wear personal protective equipment!
- Cordon off the work area!
- Use caution when working in the vicinity, particularly below the conductor rail



WARNING!

Fire hazard due to overload or sparking!

A fire hazard can occur due to overloads of the cable, electrical arcing or short-circuits.

- Before recommissioning, ensure that all work has been completed and all components have been properly installed!
- Conduct prescribed electrical testing!
- Always comply with the permissible current values!
- Install electrical protection as prescribed!
- Warn against misuse!
- Do not store easily combustible materials in the vicinity of conductor rails!
- Dimension according to permissible system load capacity and provide for appropriate electrical protective devices!

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WARNING!

Risk of burning on hot surfaces!

Components can become hot during operation.

- Operation is only permitted in areas inaccessible to the public and out of manual reach!
The danger zone must be enclosed by the customer or protection ensured by distance.
- Protective devices are to be provided by the customer!
- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, enclosures, control devices) have been removed or are not activated!
- Allow components to cool before servicing!
- Wear personal protective equipment!



CAUTION!

The functioning and availability of the conductor rail system are dependent on the quality of the contact surface!

Copper conductor rails are dependent on a lubricant-patina guideway that builds up during operation and should not be removed (no sanding or brushing off). Observe the maintenance instructions WV0800-0004!



DANGER!

Risk of explosion!

Airborne dust, open flames or other sources of ignition can result in explosion.

Conducting maintenance work on the current collectors



DANGER!

Risk of injury due to crushing of skin and limbs!

There is a risk of crushing of skin and limbs:

- Current collector (spring force) during installation, disassembly and maintenance.
- Only allow the work to be conducted by trained technicians.
- Wear personal protective equipment!
- When changing the sliding contact, observe the separate documentation. See Section 12.1

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Replacing conductor rails



DANGER!

Risk of injury due to cutting and severing!

The ends of the conductor bars can have sharp edges, particularly if they were cut to size at the installation site and have not been deburred.

- Wear protective gloves and protective footwear!
- Carefully deburr the insulation profile and conductor bars after sawing!
- During disassembly: Sawed through, disassembled conductor rails must be handled carefully and properly stored (container or transport box)!
- Watch for sharp edges near the installation surface and avoid contact!

9.2 Tools and materials

The service work on the conductor rail must be conducted using commercially available metric tools.

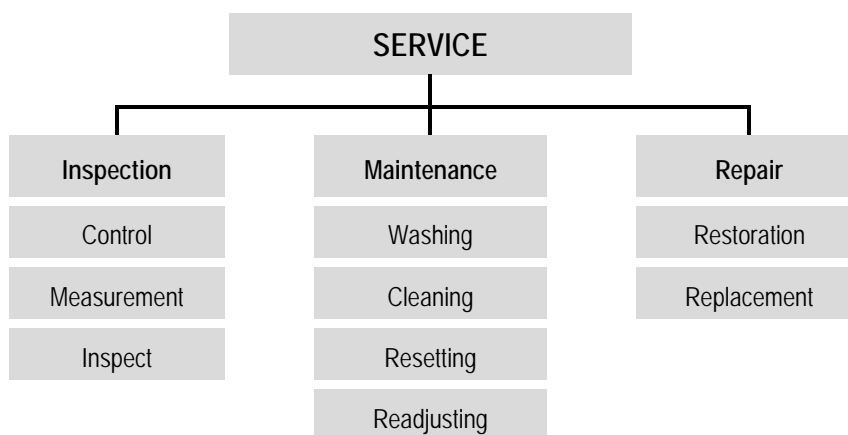
Maintenance work	Tool
Measure height of sliding contacts	Calipers
Determine contact force of sliding contacts	Spring scale with a measuring range of 0 to 20 N

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9.3 Maintenance plan

The following tasks fall under the "Service" category:



The following sections describe the maintenance work required for optimal, trouble-free operation. The work carried out according to the maintenance plan must be logged.

If signs of heavier wear are revealed during regular inspections, reduce the maintenance intervals according to the actual signs of wear.

Contact the manufacturer in case of any questions regarding maintenance tasks and intervals. See the service address on the last page. The operator must take responsibility for organizing the following maintenance measures in order to comply with warranty requirements and for general prevention of damage.

- Inspection, maintenance and repair work must only be carried out by trained, qualified technicians!
- Inspection, maintenance and repair measures must always be documented!
- Always observe the safety instructions in Section 9.1 !

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The following table covers the most usual inspection steps. You can find details for cleaning and maintenance in WV0800-0001 and WV0800-0002. The cleaning interval is individual and depends on the degree of soiling and the intensity of the use of the system.

Interval	Service work	To be conducted by
Daily	Visual inspection <ul style="list-style-type: none"> ■ Check the conductor rail for soiling and foreign objects. ■ Check the functionality of all 3 phases. Only with optional LED phase control upgrade set 	Users
As part of the periodic inspection of the crane	Visual inspection <ul style="list-style-type: none"> ■ Check for damage, foreign objects or restricted or deviating movement/malfunctions. ■ Check cables. → Cables are laid without tension. → Guidance occurs via the chain and not via the cable. 	Specialist technician
	Functional inspection <ul style="list-style-type: none"> ■ Check insulation resistance. ■ Check sliding contacts for free movement. → Remove abrasion dust if necessary. ■ Check the function of the rollers. ■ Check towing device fastening and whether all chains are hooked in. ■ Check current collector. → Trolley runs without jamming and catching at the insulation sections. ■ No noticeable noise development. 	

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10 Troubleshooting

10.1 Safety

Recommended protective equipment:



WARNING!

Risk of injury due to improper fault correction!

Improper fault correction can result in serious injury to persons or material damage.

→ Contact the manufacturer in case of faults!

→ Only allow fault correction to be conducted by personnel from or authorized by the manufacturer!

The faults that, to Conductix-Wampfler's best knowledge, tend to arise are listed in the following table (see Section 10.2) together with their corresponding remedial measures.



CAUTION!

Before working on these components!

→ **Switch off the conductor rail system** according to the 5 Safety Rules and secure it against being switched on again. 5 Safety Rules see Section 2.7.



DANGER!

Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. Risk of injury also due to shock reactions, falling or being thrown across the room due to electrical shock.

→ Disconnect all line feeds from the power supply!

→ When decommissioning, check whether a voltage is still present in the components and take measures where necessary!

→ The danger zone must be enclosed by the customer or protection ensured by distance!

→ The customer must ground metallic components!

→ The customer must provide protective devices!

→ Ensure that there is sufficient stability in the environment!

→ If conductor rail heating is available, this must also be disconnected from the power supply. Care must be taken to ensure that each individual heating circuit is voltage-free.

→ Wear personal protective equipment!

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DANGER!

Risk of injury due to crushing of skin and limbs!

There is a risk of crushing of skin and limbs:

- Current collector (spring force) during installation, disassembly and maintenance.
- Falling conductor rail system components, if they have not been properly installed or if operated under inappropriate operating conditions (e.g. environment that contains solvents).



DANGER!

Risk of injury due to dust and abrasion!

Breathing difficulties and eye irritation can occur due to dust thrown up and abrasion of the sliding contacts, copper conductor bars and plastic. There is a health hazard due to airborne respirable dust. Sensitization may occur if handling the conductor rail frequently and / or carelessly handling dust accumulation. **Cancer, mucous membrane irritation and respiratory diseases** can be a consequence of frequent and prolonged exposure in a heavily used facility without protective equipment.

Observe the following measures:

- Clean regularly! Before starting work, clean the conductor rail according to regulations (observe WV0800-0001). See Section 12.1.
- Wear personal protective equipment:
 - Protective eyewear
 - Dust mask Class FFP3 (observe local regulations)
 - Protective gloves
 - Disposable coveralls
- Prevent contamination of the environment (e.g. people, goods, production facilities etc.) while cleaning by taking appropriate measures (use covers, barriers, filter systems)!
- **Do not blow out dust with compressed air**, but rather vacuum it away. The vacuum must be equipped with a HEPA Class H fine filter!
- Do not eat or drink in the work area! Do not store or consume open food in the immediate vicinity!
- See Section 2.8.3 for further information!



DANGER!

Risk of injury due to cutting and severing!

Cutting and severing can occur on:

- Sharp edges of the general components.
- On sharp edges of the conductor rails.
- On the cut edges when trimming the conductor rails to length.
- Packaging materials (cartons, bands, etc.).

→ Wear personal protective equipment!

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DANGER!

Risk of injury due to ensnarement, punctures/stabs and/or impacts!

An ensnarement and/or impact with moving conductor rails (slip ring) or current collectors connected to the machine and other components must be prevented.

Risk of injury from impacts and punctures/stabs from the conductor rail sliding out when holding the rails at an angle, from carelessness with long goods or from falling conductor rails in areas with pedestrian traffic.

- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, housings, control devices) have been removed or disabled!
- Wear personal protective equipment!



WARNING!

Fire hazard due to overload or sparking!

Fire hazards due to overloaded cables, electrical arcs, short circuits or sparking.

- Before recommissioning, ensure that all work has been completed and all components have been properly installed!
- Conduct prescribed electrical testing!
- Always comply with the permissible current values!
- Install electrical protection as prescribed!
- Warn against misuse!
- Do not store easily combustible materials in the vicinity of conductor rails!
- Dimension according to permissible system load capacity and provide for appropriate electrical protective devices!



CAUTION!

Before switching the system on!

- Each time before the equipment or system is started, measure the insulation resistance according to locally applicable technical standards, directives and legal regulations!
- Carry out locally required electrical tests!



WARNING!

Risk of injury from hot surfaces!

Components can become hot during operation.

- Operation is only permitted in areas inaccessible to the public and out of manual reach!
The danger zone must be enclosed by the customer or protection ensured by distance.
- Protective devices are to be provided by the customer!
- Cordon off the work area!
- Use caution when working in the vicinity of the danger zone, particularly if protective devices (covers, enclosures, control devices) have been removed or are not activated!
- Wear personal protective equipment!
- Allow hot surfaces to cool before fault correction!

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DANGER!

Hazard due to improperly completed maintenance work!

- Before recommissioning, ensure that all work has been completed and all components have been properly installed!
- Conduct prescribed electrical testing!
- Install electrical protection as prescribed!

10.2 Troubleshooting table

Fault observed	Source	Correction
Sliding contacts are unevenly worn.	Freedom of movement of the sliding contacts is restricted.	Loosen the sliding contact, straighten the cage and tighten it again or replace the sliding contact.
Sliding contacts wear out too fast.	Damage to the conductor strip due to overload/short circuit or jammed/worn sliding contacts.	Replacement of the damaged conductor strips.
Power supply not continuous, phase failure.	Sliding contacts worn.	Check current collector and replace sliding contacts. Check conductor tapes for possible burn traces.
	Clamps not properly installed or missing.	Check the rail connection. Install new clamps.
	Check supply side (protective device triggered) or line interruption in the supply line.	Check supply.
Hanger clamp broken.	Conductor rail has not been properly installed.	Click in the insulation profile, check components, replace if necessary.
	Use of damaged components.	Replace damaged components.
	Damage due to accident.	Replace damaged components.
	Material damage due to aggressive environmental influences.	Replace damaged components using metal holders if necessary.

11 Disassembly and Disposal

11.1 Safety

Personnel:

- Must only be conducted by trained technicians. Recommended: At least 2 people.

Required protective equipment:



Requirement:



DANGER!

Prior to starting the disassembly:

- Completely disconnect the conductor rail system from the power supply and secure it against being switched on again!



DANGER!

Risk of death due to electrical shock!

Contact with energized components can lead to death or severe injury due to electrical shock. Risk of injury also due to shock reactions, falling or being thrown across the room due to electrical shock.

- The main power supply (from the building) and the heater voltage supply must be disconnected in the disassembly area and secured against switching on again!
- Disconnect all line feeds from the power supply!
- Observe the 5 Safety Rules (see Section 2.7)!
- When decommissioning, check whether a voltage is still present in the components and take measures where necessary!
- Ensure secure footing!

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WARNING!

Risk of injury due to improper disassembly!

Stored residual energy, sharp components, and points and edges on and in the product or the required tools can cause injuries.

- Ensure that there is sufficient space before starting work!
- Handle open, sharp-edged components carefully!
- Ensure that the work area is tidy and clean! Loosely stacked or scattered components and tools are a source of accidents.
- Disassemble components properly! Be aware of the dead weights of the components. If necessary, use lifting gear.
- Secure components so they cannot fall or topple!



DANGER!

Risk of injury due to cutting and severing!

Cutting and severing can occur on:

- On sharp edges of the conductor rails.
 - On the cut edges when trimming rails:
- Wear personal protective equipment!
 - Cordon off the work area!
 - Use caution when working in the vicinity, particularly below the conductor rail!



DANGER!

Risk of injury due to crushing of skin and limbs!

There is a risk of crushing of skin and limbs:

- Current collector (spring force) during installation, disassembly and maintenance.
- Falling parts of the conductor rail system in the case of improper dismantling.



DANGER!

Risk of injury due to impacts and punctures/stabs from the conductor rails sliding out!

Risk of injury due to impacts and punctures/stabs from conductor rails sliding out when holding the rails at an angle or carelessness with long goods.

- Wear personal protective equipment!
- Cordon off the work area!
- Use caution when working in the vicinity, particularly below the conductor rail!

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DANGER!

Risk of injury due to dust and abrasion!

Breathing difficulties and eye irritation can occur due to dust thrown up and abrasion of the sliding contacts, copper conductor bars and plastic. There is a health hazard due to airborne respirable dust. One result may be cancer.

- Clean regularly! If necessary, clean the system according to the instructions before starting work. See Section 12.1.
- Wear personal protective equipment:
 - Protective eyewear
 - Dust mask Class FFP3 (observe local regulations)
 - Protective gloves
 - Disposable coveralls
- Prevent contamination of the environment (e.g. people, goods, production facilities etc.) while cleaning by taking appropriate measures (use covers, barriers, filter systems)!
- **Do not blow out dust with compressed air**, but rather vacuum it away. The vacuum must be equipped with a HEPA Class H fine filter!
- See Section 2.8.3 for further information!



WARNING!

Risk of injury when removing the connector!

The connector is very large compared to the insulation profile and the conductor bars and e.g. a saw blade could easily become trapped in it. The saw could also jump and injure the installer.

- When separating the 4-m rail segments, keep at a distance of at least 100 mm from the end of the insulation profile.



CAUTION!

Reusing disposable components can create hazards!

If, for example, a clamp is reused, this can have consequences:

- The clamp is not trouble-free and reliable.
 - Clamp: High-resistance connection, heating, fire hazard, reduced performance.
- Dispose of dismantled clamps and replace with new clamps. Do not reuse!

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11.2 Disassembly

When the equipment has reached the end of its useful life, disassemble it and dispose of it in an environmentally appropriate manner.

- Remove operating and auxiliary materials, as well as residual processing materials, and dispose of them in an environmentally appropriate manner.
- Clean the assemblies and components properly and disassembly and dispose of them in compliance with locally applicable occupational safety and environmental protection regulations.

11.2.1 Replace sliding contact

Personnel

- May only be carried out by trained technicians

Required tools

- Screwdriver set (Torx)

Work steps:

- Loosen the screw (Pos. 1) with a screwdriver. Remove the screw (Pos. 1) and the washer (Pos. 2) (see Fig. 108).

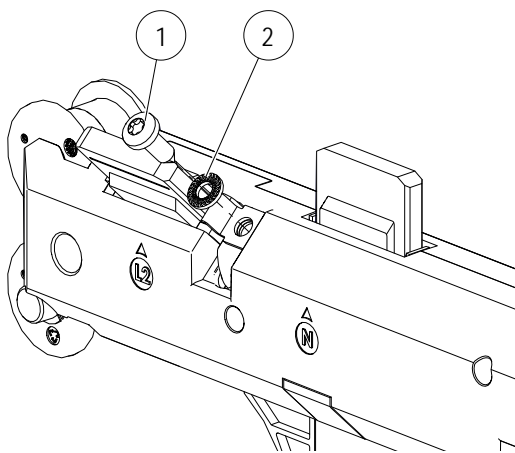


Fig. 108: Loosen the screw (Pos. 1) and the washer (Pos. 2)

- On the PE also remove the contact plate (Pos. 3) (see Fig. 109).

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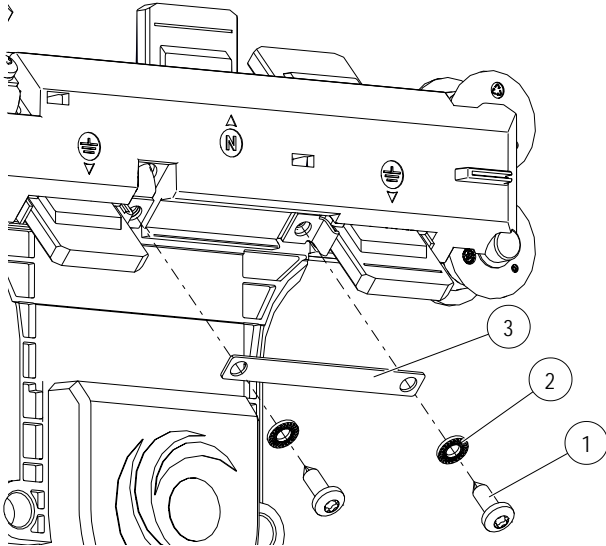


Fig. 109: Remove the contact plate (Pos. 3)

→ Remove the sliding contact (Pos. 4) and insert a new sliding contact (Pos. 5) (see Fig. 110 and Fig. 111).

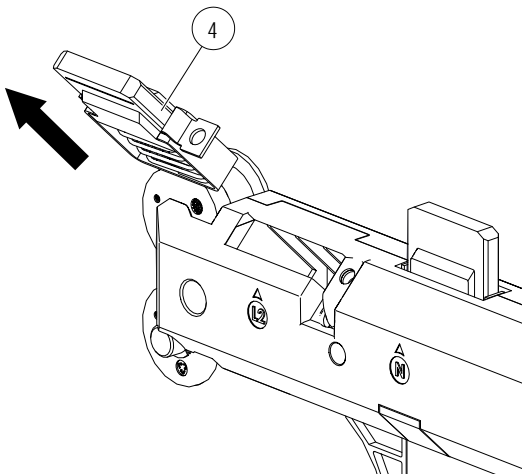


Fig. 110: Remove the sliding contact (Pos. 4)

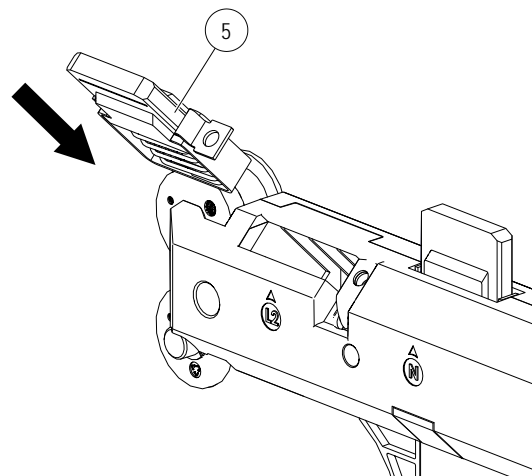


Fig. 111: Insert a new sliding contact (Pos. 5)

→ On the PE also reinsert the contact plate (Pos. 3) (see Fig. 112).

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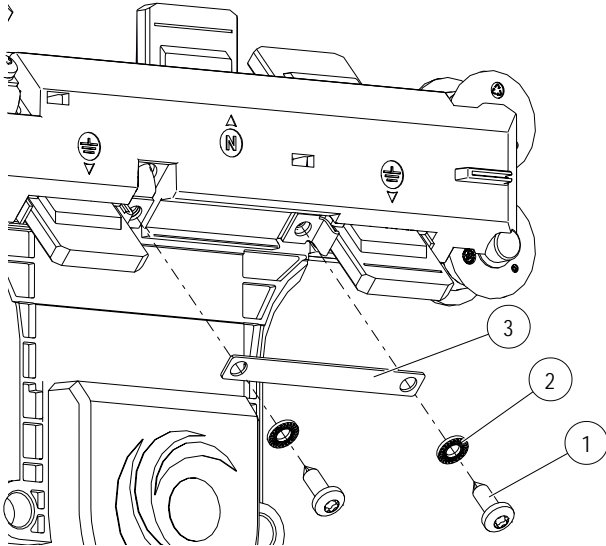


Fig. 112: Insert the contact plate (Pos. 3)

→ Put on the washer (Pos. 2) and tighten the screw (Pos. 1) with a screwdriver (2,5 Nm) (see Fig. 113).

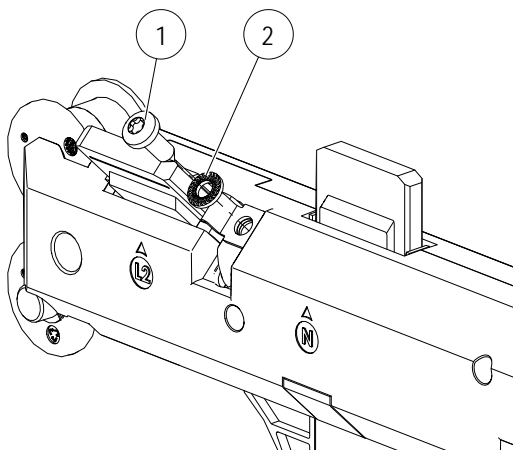


Fig. 113: Tighten the screw (Pos. 1)

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11.2.2 Disassemble clamps

Personnel

- May only be carried out by trained technicians

Required tools

- Slotted screwdriver
- Tools for securing

Work steps:

→ Lever the clamps (Pos. 1) out of the notch in the connector caps on the sides (see Fig. 114).

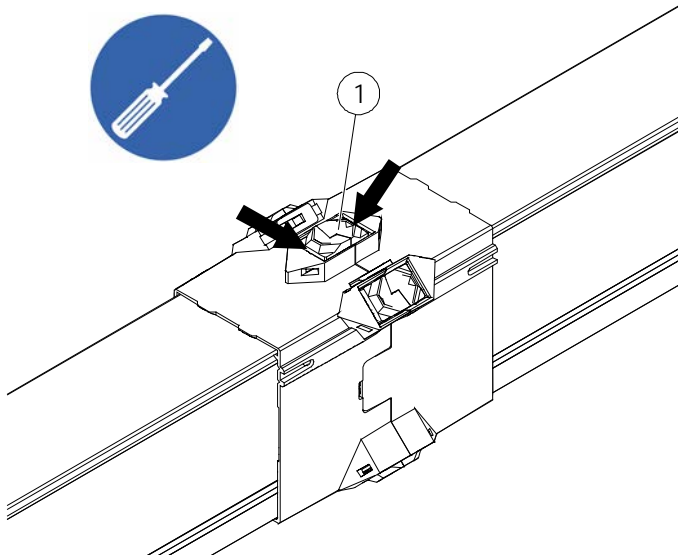


Fig. 114: Lever out clamps (Pos. 1)



ATTENTION!

The clamps are intended for single use:

If the clamps are disassembled, they must not be reused. A replacement parts set with additional clamps is included in the basic module (see Section 4.5.1).

11.2.3 Disassemble connector caps

Personnel

- May only be carried out by trained technicians

Required tools

- Slotted screwdriver
- Tools for securing

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Work steps:

- Remove the clamps (see Sections 11.2.2)
- Disengage the wide clips on the side (2x) with a screwdriver (see Fig. 115).
- Disengage the narrow clips in the upper area (see Fig. 116).

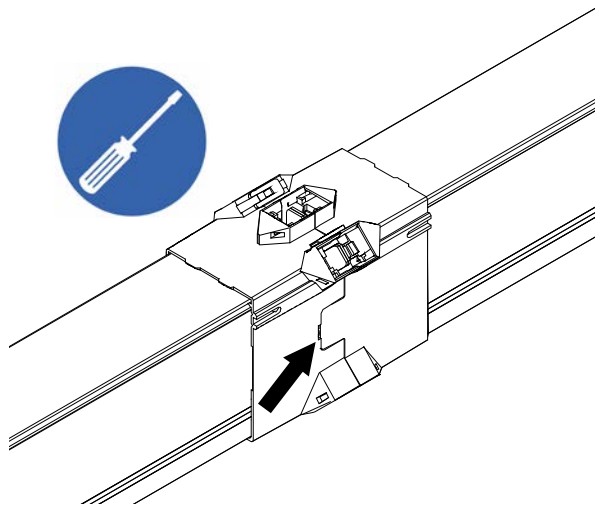


Fig. 115: Disengage wide clips

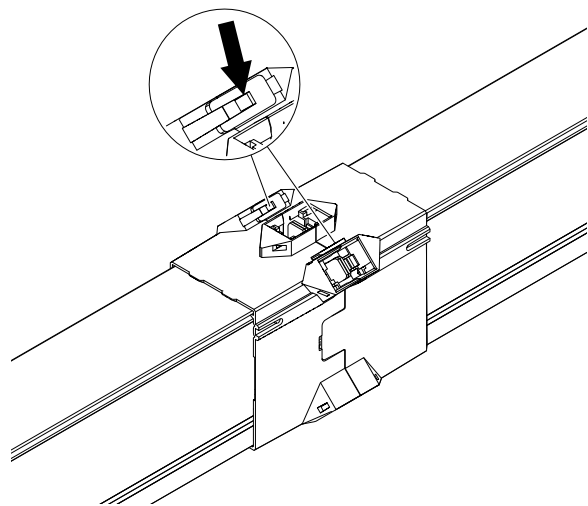


Fig. 116: Disengage narrow clips

- Slide the conductor rails apart (see Fig. 117).

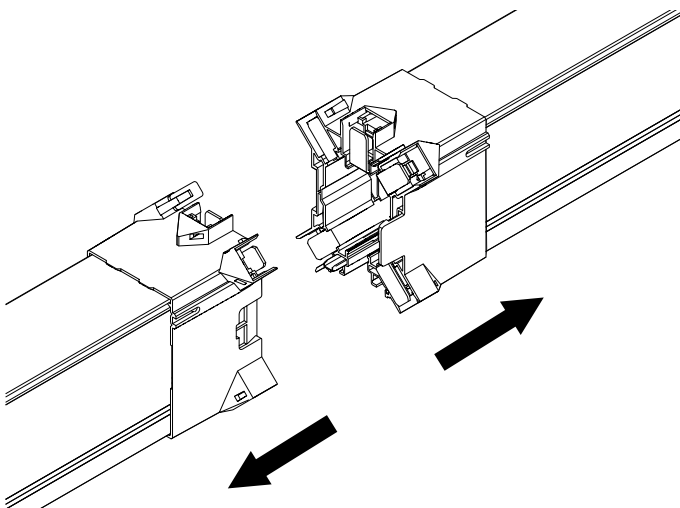


Fig. 117: Slide conductor rails apart

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11.2.4 Disassemble end cap

Personnel

- May only be carried out by trained technicians

Required tools

- Slotted screwdriver
- Tools for securing

Work steps:

- Disengage the wide clips on the side (2x) with a slotted screwdriver (see Fig. 118).
- Disengage the narrow clips in the upper area (see Fig. 119).

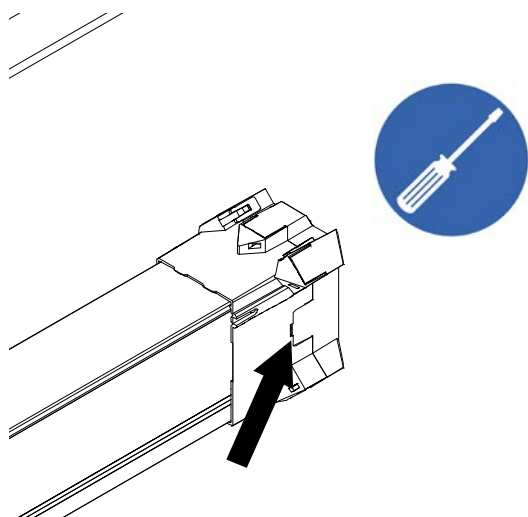


Fig. 118: Disengage wide clips

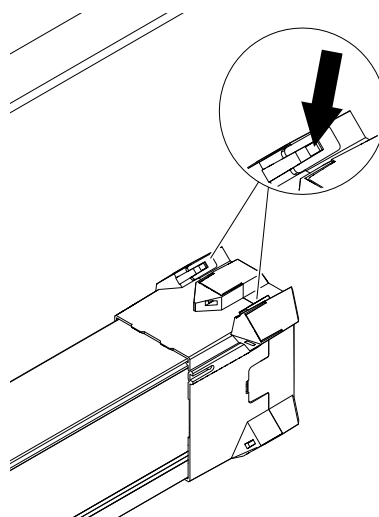


Fig. 119: Disengage narrow clips

- Slide off the end cap (Pos. 1) (see Fig. 120).

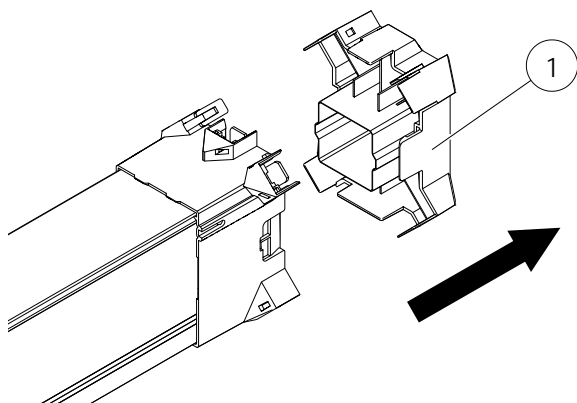


Fig. 120: Slide off end cap (Pos. 1)

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11.2.5 Disassemble end feed

Personnel

- May only be carried out by trained technicians

Required tools

- Slotted screwdriver
- Tools for securing

Work steps:

- Remove the clamps from the connection point (see Section 11.2.2).
- Disengage the wide clips on the side of the end feed (2x) with a slotted screwdriver (see Fig. 121).

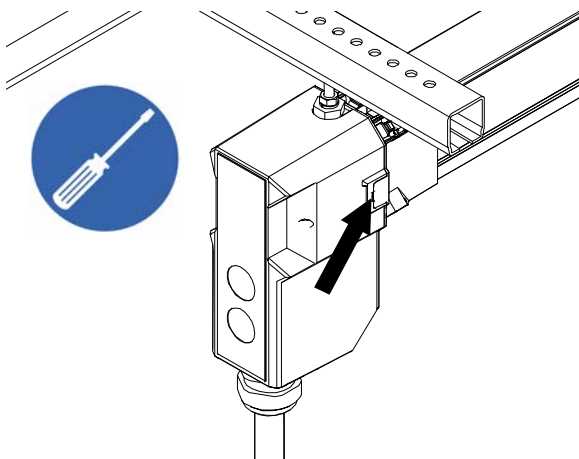


Fig. 121: Disengage wide clips

- Disengage the screws (2x) in the housing cover. The screws are anti-loss.
- Slide off the cover (Pos. 1) (see Fig. 122).

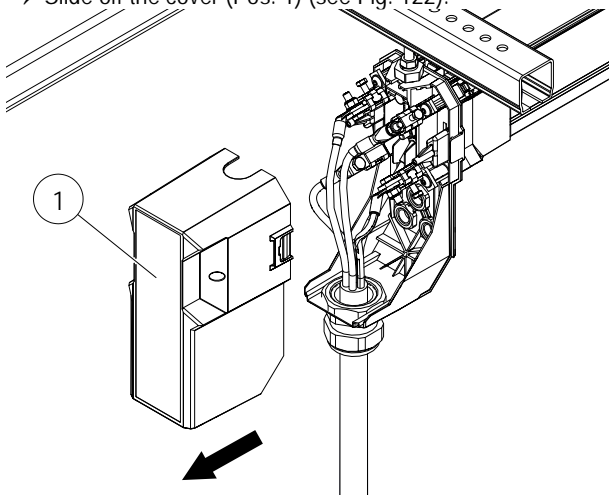


Fig. 122: Slide off cover (Pos. 1)

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→ Disengage the wide clips on the side (2x) with a slotted screwdriver (see Fig. 123).



NOTE!

One of the wide clips on the side must be disengaged from behind through the end feed housing (see Fig. 124)!

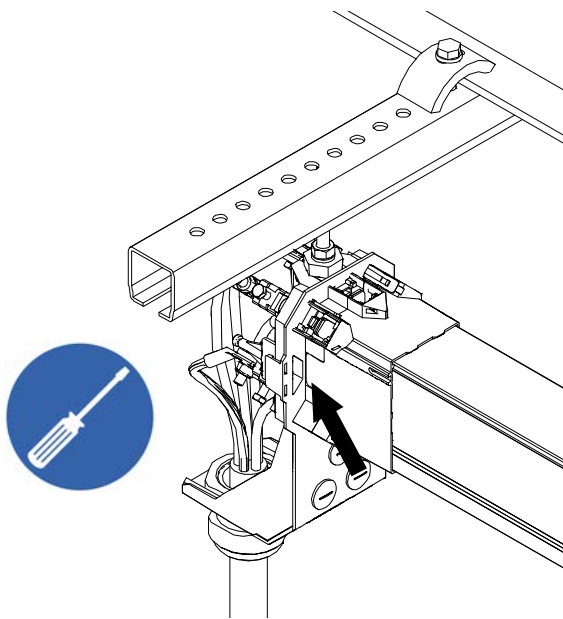


Fig. 123: Disengage wide clips

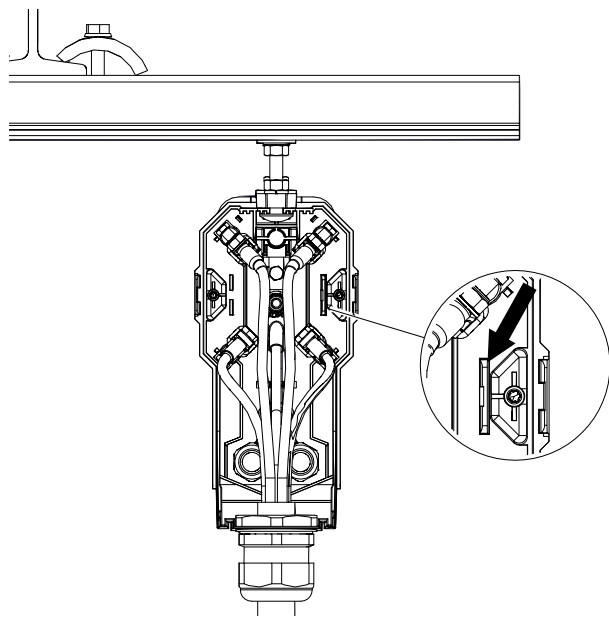


Fig. 124: Disengage clip from inside of end feed

→ Disengage the narrow clips in the upper area (see Fig. 125).

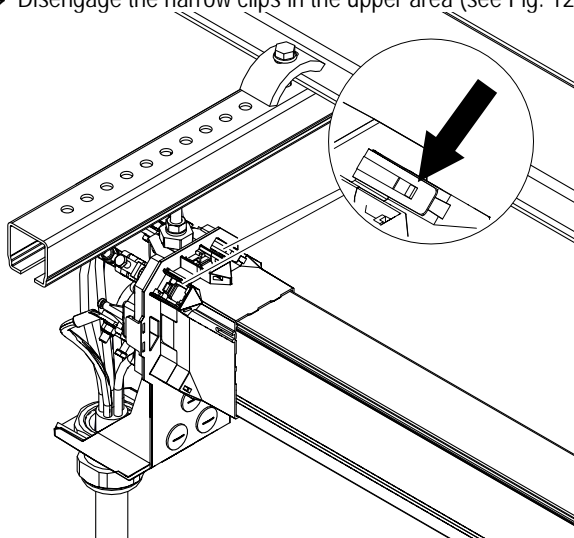


Fig. 125: Disengage narrow clips

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→ Slide off the conductor rail (Pos. 2) (see Fig. 126)

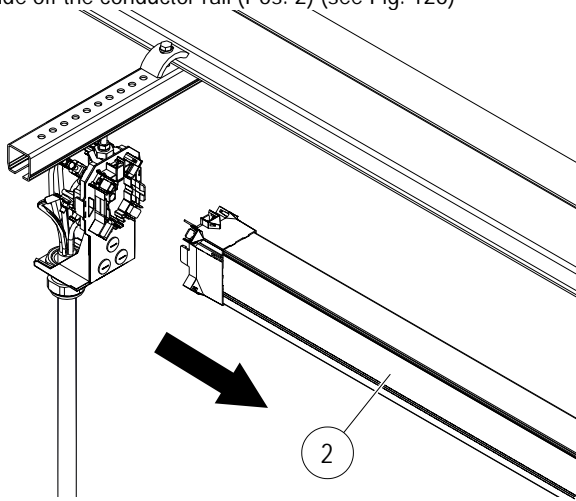


Fig. 126: Slide off conductor rail (Pos. 2)

→ Remove the end feed (Pos. 3) from the support structure (see Fig. 127).

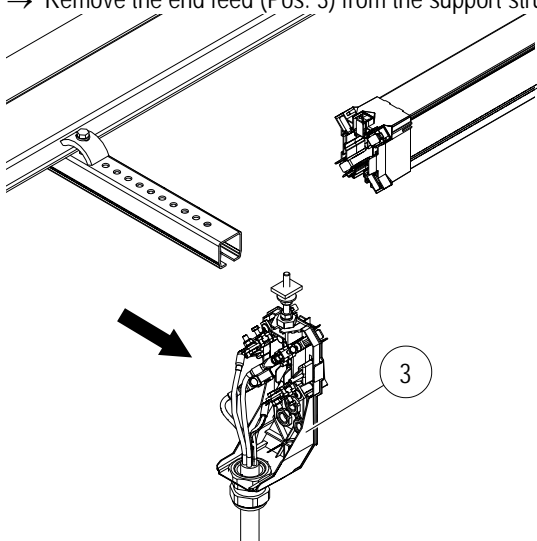


Fig. 127: Remove end feed (Pos. 3)

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11.3 Disposal

In the absence of return and disposal agreements, recycle the disassembled components:

- Metal components must be sent for recycling.
- Plastic components must be sent for recycling.
- All other components are to be disposed of according to their material composition.



CAUTION!

Environmental damage due to improper disposal!

Electrical scrap, electronic components, lubricants, and other auxiliary materials are subject to hazardous waste treatment and may only be disposed of by authorized specialists!

Local authorities or disposal specialists can provide information regarding environmentally appropriate disposal.

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12 Further Documents

12.1 Other applicable documents

Seq.No.	Document Number	Document Name
01	WV0800-0001	Cleaning of Conductor Rails
02	WV0800-0002	Conductor Rail Maintenance Plan
03	MV0800-0019	Conductor Rail Insulation Measurement
04	MV0843-0001	Xline Conductor Rail System 0843 Quick Guide
05	KAT0843-0001	Catalog Enclosed Conductor Rail System 0843 with dimensioning instructions

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