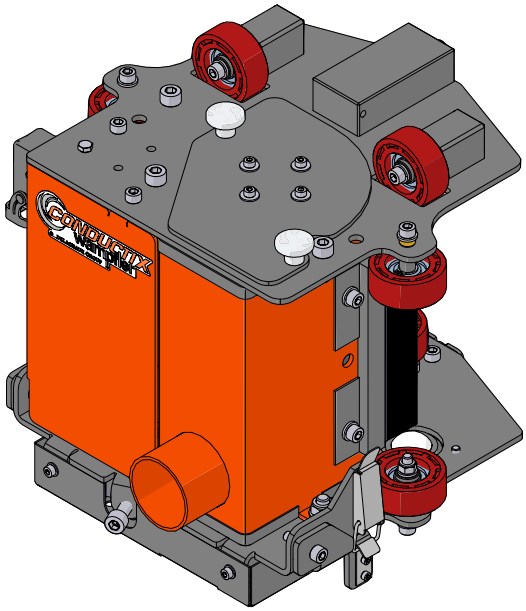
Operating Instructions

Rail Cleaner 180 x 60, 180 x 80 and 240 x 80

System description



Contents

1 General information about the operating instructions

The rail cleaner is used for suction and optional brushing of the EMS support profile. The brush can be used in case of heavy pollution. When using barcode labels, the bristles around the barcode label must be removed (avoid damage to the barcode label).
The rail cleaner can be adapted to the EMS suspension and can be supplied and controlled by the EMS suspensions (permanent installation). Alternatively, the rail cleaner can be completed by the optional current collector trolley and the control unit and used for cleaning the rail in stand-alone operation (without EMS suspensions). The stand-alone unit can be removed from the rail and reinstalled in less than a minute due to its own running gear with quick mounting system.
The rail cleaner has two DN 50 mm pipe sockets for connecting an industrial vacuum cleaner or a customer's vacuum unit with filter according to the fine dust class H or the operator's safety requirements.

These operating instructions apply to the following sizes (EMS support profiles):

	EMS support profile		
Component	**180 x 60**	**180 x 80**	**240 x 80**
	Order Number		
Cleaning head	08-G023-0138	08-G023-0135	08-G023-0183
Current collector housing (optional)	08-G023-0139	08-G023-0136	on inquiry
Control unit (optional)	08-S210-0261	08-S210-0261	08-S210-0261
Connector plate (optional)	08-B020-7145	08-B020-7145	08-B020-7145 mounted to the current collector housing

1.1 Intended use

Due to abrasion of the carbon brushes and particles of dirt in the air, undesirable deposits will be developed in the conductor rail and in the EMS support profile in the course of time. These deposits can lead to electrical and mechanical faults in the system and to contamination of the products to be transported.
The task of the rail cleaner (cleaning head) is to remove loose and slightly adhesive contaminations from the conductor rail and the EMS support profile. EMS support profiles 180 x 60 are generally used with a number of poles from 4 to 8 and the conductor rail type 0811 and 0815. Rail cleaners for other EMS support profiles are available upon request.
The cleaning head and the current collector trolley are guided on the corresponding EMS support profile during the cleaning process. The non-driven unit is pushed or pulled by the EMS running gear. The coupling is effected via an auxiliary mechanism (bracket, push rod or similar) to be designed according to the installation conditions. Appropriate connection points are provided on the trolley for this purpose (eye screw or roller screw connection on the housing).
The particles located on the conductor rail and the rail are extracted by an appropriate suction flow by means of a hose attached to the nozzle (outer diameter 50 mm) and leading to an industrial vacuum cleaner (not included in the scope of delivery). When used in the EC, the industrial vacuum cleaner must be equipped with a filter and a dust collector according to dust class H as per EN 60335-2-69. In track sections with switches, expansion joints or similar track parts, restrictions of the suction power must be expected.

1.2 Safety rules

The safety regulations and country-specific regulations for working on electrical systems (e.g. VDE/UVV/VBG4) known from the relevant bodies of regulation apply.
The safety regulations established by the system operator apply for entering to and working on the systems. The system operator must ensure that any works on the conductor rail may only be carried out by appropriately trained specialists in accordance with the relevant technical standards, regulations and laws. Also, works on the electrical system of the equipment may only be carried out by qualified electricians in accordance with the relevant electrical engineering standards (e.g. VDE, IEC) and country-specific regulations and laws.

1.3 Symbols used

Warning of general risks of injury and damage to property.

Warning of crushing hazards.

Warning of injury from electric shock.

Instructions for proper operation.

1.4 Warnings

Danger of injury due to electric shock!
Before working on the current collector trolley, the system must be disconnected from power using the main switch, and secured against unauthorized, unintentional, and/or erroneous activation. In special cases where there is no main switch, the power disconnection must be carried out according to the specifications of the system manufacturer. Check parts disconnected from power, then ground and short-circuit them. Insulate neighboring parts that are connected to power!
Before each commissioning, an insulation test must be carried out in accordance with the local technical standards, guidelines, and laws.

Danger of crushing between fixed and moving parts of the system!
Before working on the conductor rail, the system must be turned off at the main switch.

Abrasion of the carbon brushes collects in the conductor rails and the driving profile. This dust is very fine and is categorized as a health risk.

- When working on the conductor rail system, particularly during cleaning, the use of personal protective gear (safety glasses, dust mask, safety gloves, disposable coverall) is required.
- Gloves and safety glasses must be worn while inspecting the current collectors. Avoid contact with the mucous membranes; do not inhale dust.

Clean skin surfaces with soap and water after work. In case of contact with eyes, rinse with clear water.

2 System description

Depending on the selected version, the rail cleaner consists of a cleaning head, a current collector trolley, a connector plate which connects the cleaning head to the current collector trolley and a control unit (dimensions: approx. 300x200x155 mm).
The control unit represents the electrical interface to the vehicle control system (optional automatic mode) and, and allows both the operation in manual mode (vacuum cleaner "ON/OFF" and brush "ON/OFF"), and the connection of an industrial vacuum cleaner via a 3-phase power connection.
The industrial vacuum cleaner with a filter can be purchased from various providers.
Via the standardized interfaces:

- 3-phase power connection
- 50 mm (diameter of connection piece) for suction hose

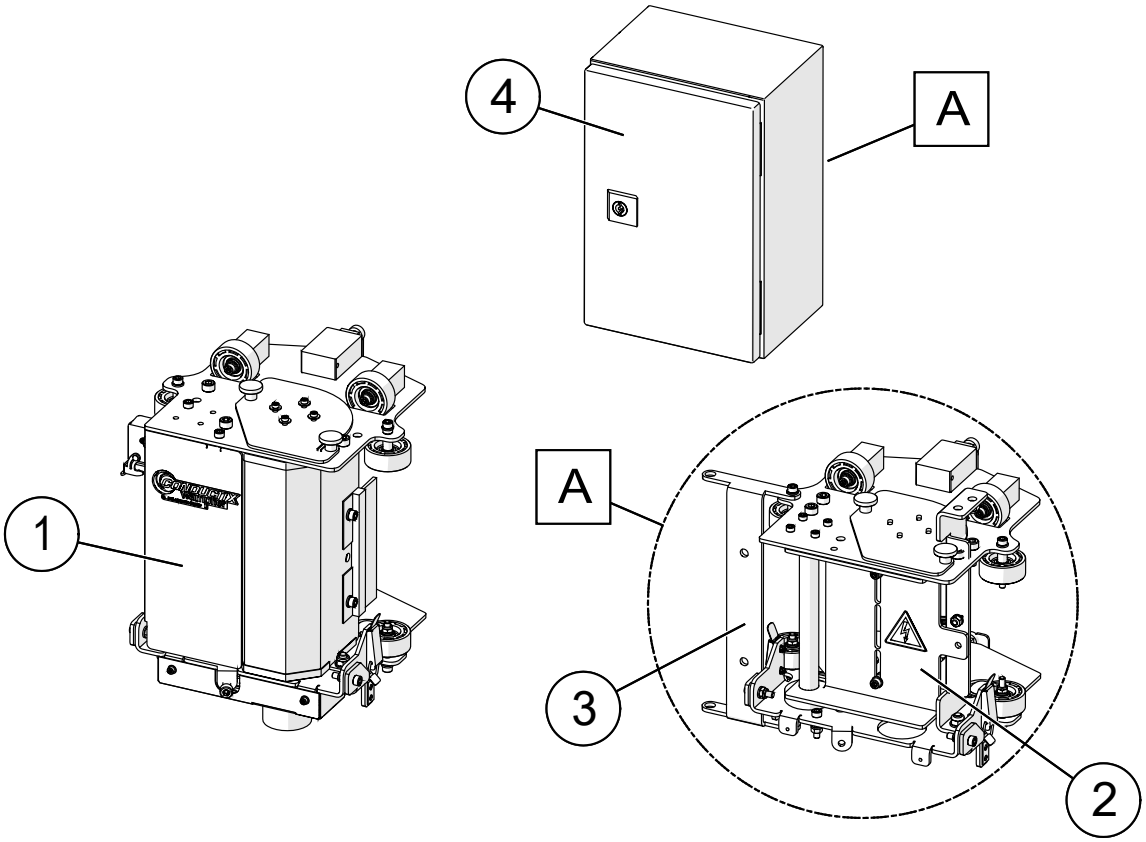
the industrial vacuum cleaner can be freely selected in either a compact and a modular design according to the structural situation, factory specifications of the end customer or national specifications for suction and cleaning devices.

Before starting work, read these operating instructions completely in all relevant sections. Please contact Conductix-Wampfler if anything is unclear!

3 Transport, storage, and preparation for the installation

- Cleaning head, current collector trolley and the control unit are pre-packed for transport and storage. They must be protected from moisture.
- Do not unpack them before arriving at the installation site. All required parts are included in the corresponding quantity!

4 Components of the rail cleaner



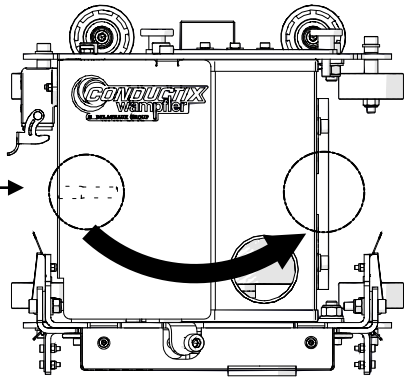
Item	Designation
1	Rail cleaner cleaning head
2	Current collector trolley (optional)
3	Connector angle (optional)
4	Control unit (optional)
A	For stand-alone use

The installation of the individual components is dealt with in the installation instructions for the rail cleaner!
[MV0800-0007-DE]

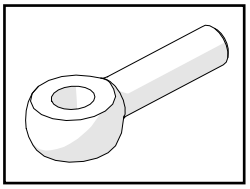
4.1 Cleaning head

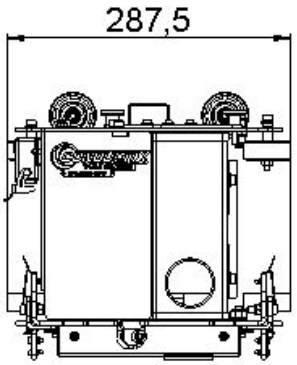
The cleaning head has an integrated and fold-down running gear. The unit includes a rotating brush for cleaning the conductor rails and the connection for the power supply of the brush drive. The connections for the suction hose of the industrial vacuum cleaner are located on the side or underneath the cleaning housing (for the installation see installation instructions MV0800-0007-EN).

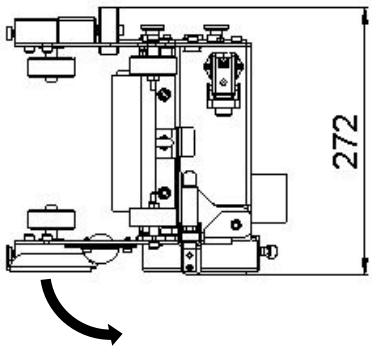
Here an adaptation is possible using the **eye bolt DIN 444 B** (d_i = 8 H9).
This can also be mounted on the opposite side.



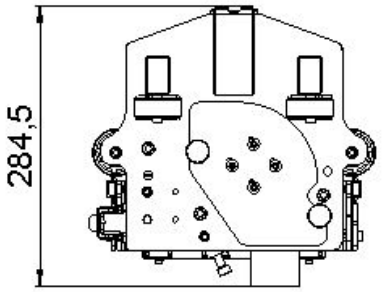
Eye bolt DIN 444 B





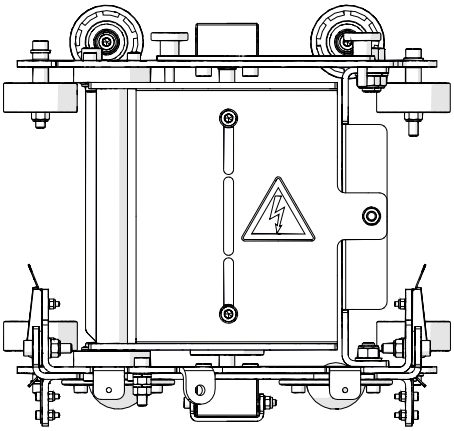


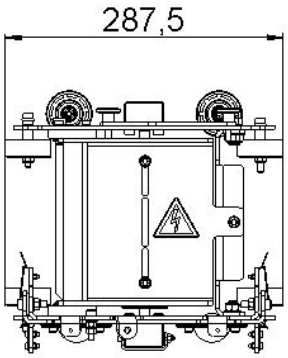
Lower part of the running gear can be folded down

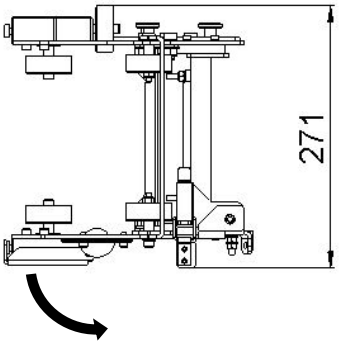


4.2 Current collector trolley

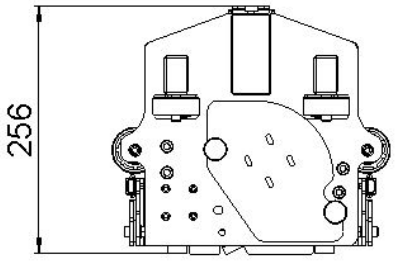
The current collector trolley is a housing with separate running gear. The trolley is equipped with an opening flap for maintenance and replacement of the corresponding current collector units. The current collector units must be ordered additionally, depending on the type of conductor rail and pole assignment. The current collector trolley is not necessarily required if the control unit can be supplied with power from an external source (suspension of the EMS system) (for installation see installation instructions MV0800-0007-EN).







Lower part of the running gear can be folded down



4.3 Control unit

The control unit is a terminal box (dimensions: L= 300 mm / W, D=155 mm / H= 200 mm), which can be attached to the suspension of the EMS system or between the cleaning head and the current collector trolley (assembly by means of connector plate, see 4.5)

4.3.1 Integration into the EMS control

When integrated into the EMS control, the cleaning head is usually supplied directly from the suspension. The current collector trolley and the attachments (connector plate) are not required here.

4.3.2 Stand-alone operation

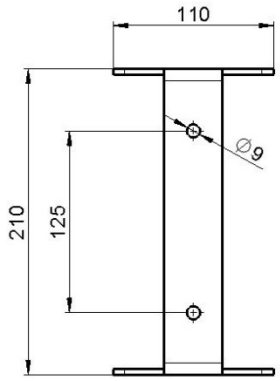
In stand-alone operation, the unit consisting of cleaning head, current collector trolley and control unit can be operated independently of the EMS suspension on the EMS support profile.
The control unit receives power from the current collector trolley. The motor of the cleaning head and the industrial vacuum cleaner are supplied with power and controlled by the control unit (for the installation, see installation instructions MV0800-0007-EN).

4.3.3 Stand-alone operation with external feed

In this operating mode, the cleaning head, control unit and industrial vacuum cleaner are supplied externally via a supply cable. An advantage of this operating mode is the cleaning with switched-off conductor rail. Recommended for heavily polluted systems or for cleaning parallel to assembly works on the conductor rail.

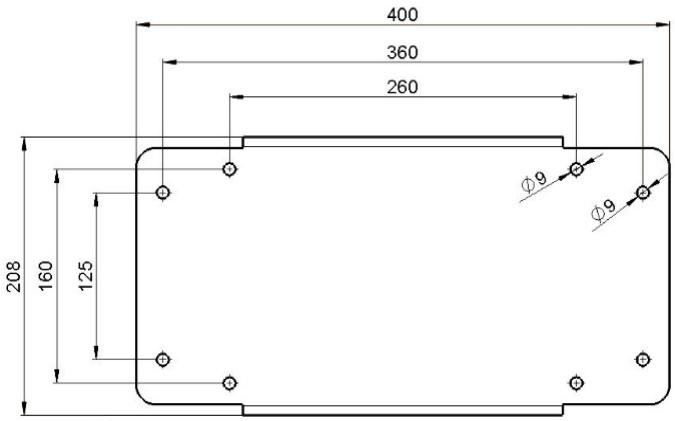
4.4 Connector angle

The connecting angle (a bracket) connects the cleaning head directly to the current collector trolley (for the installation see installation instructions MV0800-0007-EN)



4.5 Connector plate

The connector plate, if available, connects the cleaning head to the current collector trolley and is also the holder for the control unit. This is connected to the connector plate by means of screws (for the installation see installation instructions MV0800-0007-EN).



4.6 Industrial vacuum cleaner (not included in the delivery)

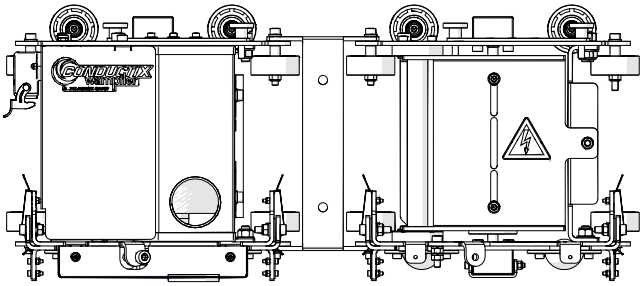
For cleaning, the customer requires an industrial vacuum cleaner with an appropriate filter stage for fine dust of filter category H or higher. The classification of the filter category is based on regional or local work health requirements. Information on this can be obtained from the safety officer on site or the trade associations. The hose connection has a nominal diameter of DN50.

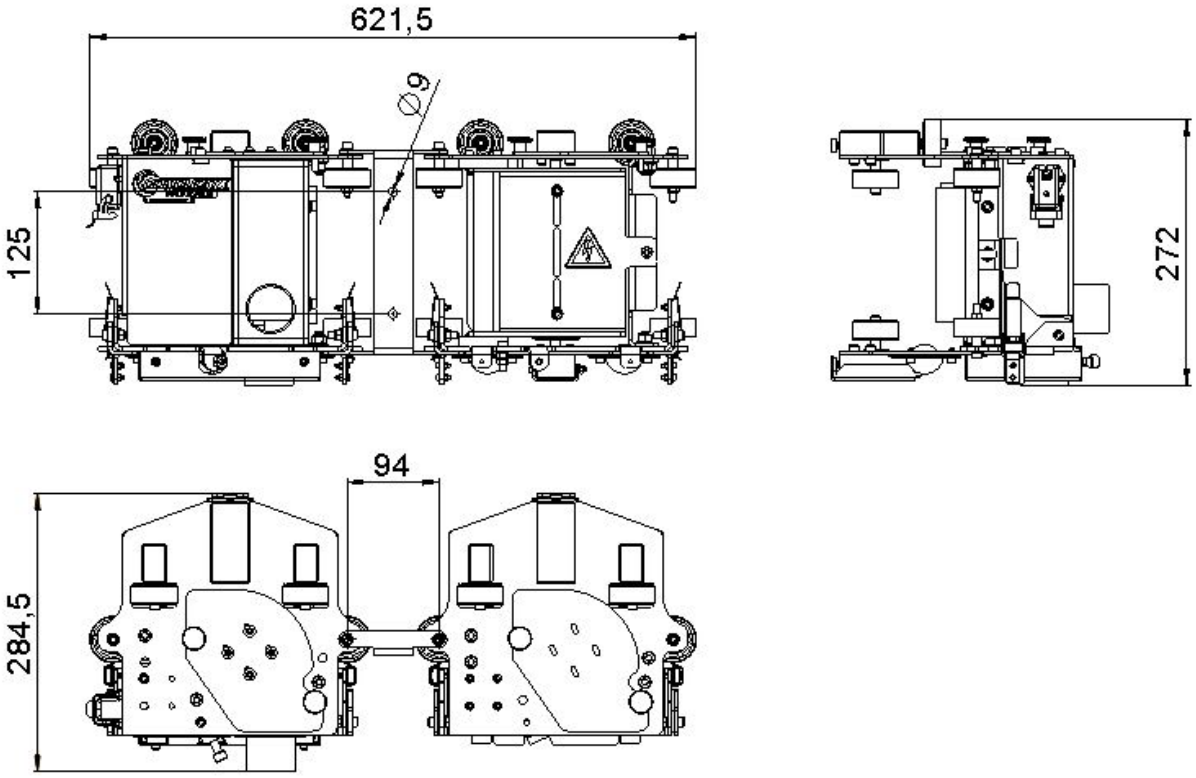
4.7 Cleaning brush (Note on operation)

The cleaning head is equipped with lateral brushes for sealing and a rotating, removable cleaning brush. The rotating brush can be easily removed via the upper cover (see chapter 8.2.2) and is only required for the removal of firmly adhering impurities. The brush is not required in "suction" mode.

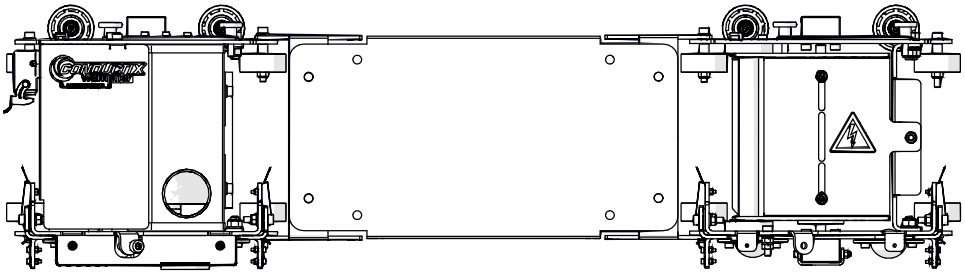
When using leakage waveguide and/or bar code tape, the brushes must be cut out according to the installation instructions MV0800-0011-EN. Leaky waveguide and / or barcode tape must not be damaged by the brushes!

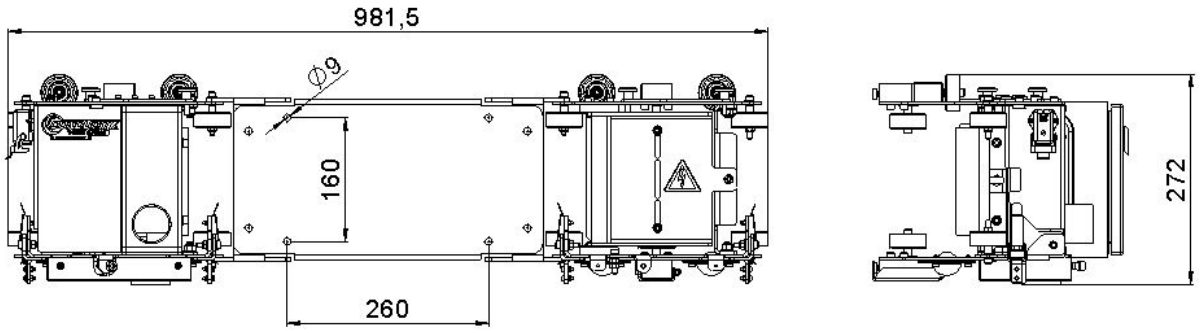
4.8 Assembly by means of a connector angle

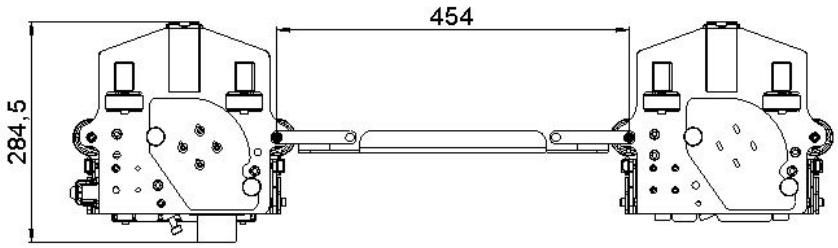




4.9 Assembly by means of a connector plate







5 Commissioning and operation

CAUTION! Machine/property damage!

Commissioning may only be carried out by trained personnel.

5.1 Commissioning

Prior to commissioning, the following points must be checked (example with control unit):

- Are all components completely mounted?
- Are damaged components installed?
- Professional electrical connection of all components?

The round brush will only work if the industrial vacuum cleaner is turned on!

- Is the vacuum cleaner working? (Turn on vacuum cleaner)
- Is the indicator light "vacuum cleaner" illuminated?
- Is the round brush rotating? (Turn on round brush)
- Is the indicator light “round brush" illuminated?

- No collision of the cleaning head and/or the current collector trolley during all operating conditions?
- Is the rail cleaner connected to the running gear?

When driving manually or “with slow speed", observe the movement of the rail cleaner over a longer driving range (curves and crossings) (installation tolerances) and eliminate any collisions that may occur.

After completion of commissioning, the rail cleaner can be operated with the following parameters:

- Rated voltage: max. 400 V (50 Hz) / 460 V (60 Hz)
- Permissible ambient temperatures depending on the system (from -10 to +55 °C)
- Max. travel speed without cleaning function along the segment: 100 m/min
- Max. travel speed with cleaning function: 10 m/min

6 Maintenance

6.1 General information

CAUTION! Machine/property damage!

Regular and sufficient maintenance is necessary for the intended function of the rail cleaner. It prevents any risk to operational safety and is a prerequisite for maintaining the warranty. In case of particular events, intermediate maintenance may be necessary.

Maintenance interval: 3 months
(for permanent use we recommend a maintenance interval of 1 or 2 months)

Scope of maintenance:

- Visual inspection of the contact pressure rollers (wear/diagonal abrasion) (replace rollers, if required).
- Check the connection between the connection piece and industrial vacuum cleaner (hose) (correct if necessary).
- Check round brush (replace round brush in case of heavy wear).
- [see chapter 8.2.2]
- Check screw connections on the two housings (tighten screws if necessary).
- Check electrical connections (correct if necessary).
- Check toothed belt (re-tension if necessary).
- [see chapter 8.2.1]

6.2 Safety rules

The safety regulations and country-specific regulations for working on electrical systems (e.g. VDE/UVV/VBG4) known from the relevant regulations apply for carrying out maintenance.
The safety regulations issued by the respective system operator for entering and working on the systems apply.

Maintenance and repair works of the rail cleaner may only be carried out by appropriately trained specialists in accordance with the relevant technical standards, regulations and laws.
Maintenance and repair works of the electrical components of the system may only be carried out by qualified electricians in accordance with the relevant electro-technical standards (e.g. VDE, IEC) and country-specific regulations and laws.

The rail cleaner is part of the electrical system and must therefore be checked repeatedly and regularly in accordance with the accident prevention regulations (e.g. VBG4).

6.3 Warnings

CAUTION! Risk of injury from electric current!

Prior to inspection, maintenance, repair or disassembly of the rail cleaner, the system must be disconnected from the power at the main switch and secured against unauthorized, unintentional and/or accidental reconnection. If, in special cases, there is no main switch, the voltage must be disconnected according to the specifications of the system manufacturer. First check that the disconnected parts are off-circuit, then ground and short circuit them. Isolate adjacent parts that are connected to power!
Prior to each commissioning an insulation test must be carried out in accordance with the local technical standards, regulations and laws.

CAUTION! Risk of crushing injury between fixed and moving parts of the system!

Prior to inspection, maintenance, repair or disassembly of the rail cleaner, the system must be switched off by the main switch!

CAUTION! Health risk from coal dust!

Abrasion from the carbon brushes collects in the conductor rail system, in the cleaning head and on the floor. This dust is very fine and is categorized as a health risk. Personal protective equipment such as safety goggles, dust mask and gloves is mandatory for all works on the cleaning suspension gear, especially for the cleaning process. Avoid contact with the mucous membranes. Do not inhale dust. Clean skin surfaces with water and appropriate cleaning agents after work. In case of contact with the eyes, rinse with clear water.
During maintenance works, dust deposits may be whirled up and inhaled. It is mandatory to wear a dust mask!

6.4 Tools and aids

Standard tools (metric) and measuring equipment are used for the maintenance of the rail cleaner.
For maintenance of the current collectors, please refer to the maintenance instructions for conductor rails.

7 Cleaning

7.1 General information

Cleaning is a part of the maintenance of the rail cleaner. Cleaning prevents both a risk for work safety and a danger for persons. The purpose of cleaning is to:

- Remove dust on the carbon brushes
- Remove dust adhering in the current collector trolley
- Remove dust adhering in the cleaning head

7.2 Safety rules

CAUTION! Risk of injury from electric current!

The safety rules for working on electrical installations listed in the relevant regulations apply.
The safety rules defined by the respective system operator for entering and working in/on the systems apply.
The safety data sheets and processing guidelines associated with the use of cleaning agents apply.

7.3 Description of the individual cleaning steps / cleaning agents

- Vacuum and remove coarse residues.
- Use a damp cloth without cleaning agents.
- Cleaning concentrate "Rivolta B.W.R. 210". 210“:
  Weakly alkaline, biodegradable, non-flammable, physiologically safe cleaning concentrate, pleasant smell/insulating residue.
- High-performance cleaner „Rivolta S.L.X.-Top“:
  Penetration resistant, evaporating without residue, free from halogenated hydrocarbons, odorless, no labelling according to "GefStoffV", versatile cleaning concentrate.
- „Rivolta O.X.X. Oxidation solver“:
  Dissolves oxide and sulfide layers, resinous oils, greases and mineral abrasion, must always be cleaned with S.L.X. Top.

7.4 Environmental compatibility/risks

	B.W.R 210	S.L.X- Top	O.C.X. Oxidation solver
Biodegradable	Up to 97%	-	-
Flash point	Non combustible	> 55°C – class A III	> 65°C - class A III
Labelling acc. to. „GefStoffV“	Not required	Not required	Not required
Storage	In plastic containers at room temperature.	In sufficiently ventilated rooms at room temperature; close containers tightly!	In sufficiently ventilated rooms at room temperature; close containers tightly!

7.5 Application and use

Every cleaning should first be carried out with the weakest possible cleaning agent for the contamination (see table at the bottom, left column). Only if this does not give a satisfactory result, you should use the cleaning agent of the following column.

Cleaning agent/contamination	Moistened cloth	B.W.R. 210	S.L.X- Top	O.C.X. Oxidation solver
Dust, carbon dust, or light pollution	Housing inside and outside	Housing inside and outside		
Greases, oily, sooty or other pollution		Housing inside and outside	Housing inside and out, carbon brushes	
Corrosion				Housing inside and outside
Other		Approval for food industry; Cold processing only!	Attacks plastics! Only for cleaning metallic parts.	Attacks plastics! Only for cleaning metallic parts.

7.6 Packaging / processing / sources

	B.W.R 210	S.L.X- Top	O.C.X. Oxidation solver
Packaging	Loose items	Loose items/spray bottle	Loose items/spray bottle
Processing	Mixing 1:50 / processing via spray method or high-pressure cleaner (lance distance > 0.7 m). Rinse cleaned area with water	Undiluted with air-free, electrical spray guns/ airless high-pressure cleaner	Spraying when using aerosol cans/ undiluted with air-free, electrical spray guns/ 15 - 20 min. exposure time **Caution:** Always cleaning up with S.L.X. Top.
Source	**Bremer & Leguil GmbH**; Am Burgacker 30 - 42; 47051 Duisburg / Germany Tel.: +49 (0) 203 99 230 Fax.: +49 (0) 203 25 901		

8 Troubleshooting and repair

8.1 Troubleshooting

Errors that may occur in practice are listed in the table below, as far as they are known, together with repair measures.

Repairs may only be carried out by qualified technicians.

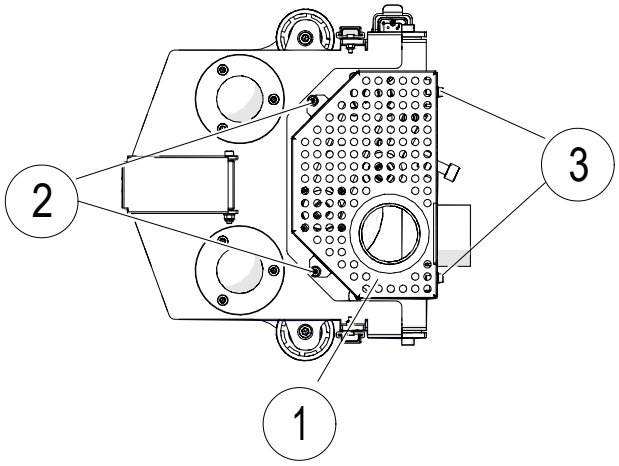
Fault	Troubleshooting	Repair
Travel behavior of the rail cleaner on the rail not ideal	Diagonal abrasion of the pressure rollers	Replace damaged rollers
	Pressure force of the pressure rollers too low	Replace tension springs
Vibration noises a the rail cleaner	Some screw connections have come loose	Tighten loose screw connections
	Imbalance at brush drive - Motor with toothed pulley runs off-center	Contact manufacturer
	Imbalance at brush drive - Toothed pulley under the round brush runs off-center	Contact manufacturer
Rail cleaner no longer cleaning	Round brush worn	Replace round brush (see 8.2.2.)
	Air flow from the suction fan is too weak or non-existent.	Re-establish the connection between connection piece and hose.
		Check electrical connection to the suction fan.
		Maintain the suction fan according to the manufacturer's instructions, contact the manufacturer of the suction fan, if necessary.
Round brush does not rotate any longer	Electrical power disconnected	Reconnect the electrical components.
	Toothed belt skipping teeth - Tension on toothed belt set too low	Re-tension the toothed belt (see 8.2.1)
	Toothed belt skipping teeth - Toothed belt defective	Replace toothed belt
	Toothed belt broken	Replace toothed belt

8.2 Repair

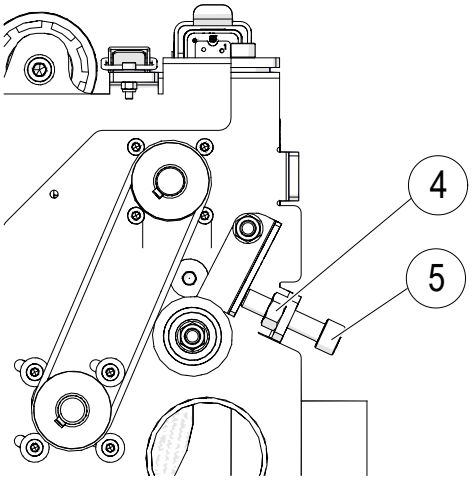
8.2.1 Toothed belt

Tighten the toothed belt: The toothed belt can be tensioned or loosened using a countered cylinder screw [5] with hexagon socket.

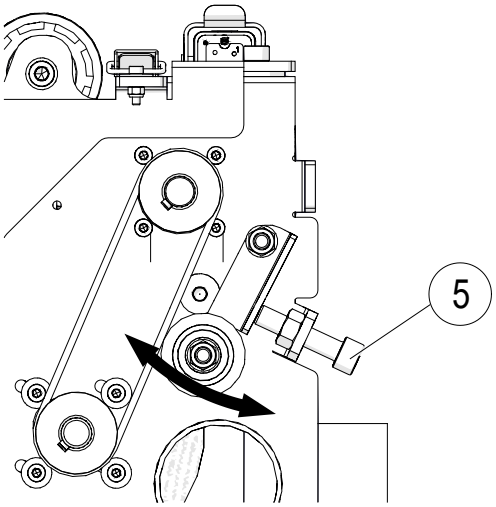
a) Remove protection plate [1] (cylinder screws [M4] with hexagon socket).
   To do this:
   1. Slightly loosen screw [2] and
   2. Remove screws [3].



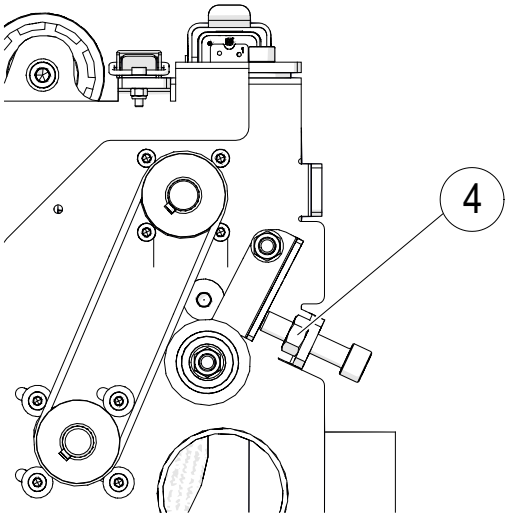
b) Loosen counter nut (M8) [4]



c) By turning the cylindrical screw (M8) [5], tighten or loosen the toothed belt.



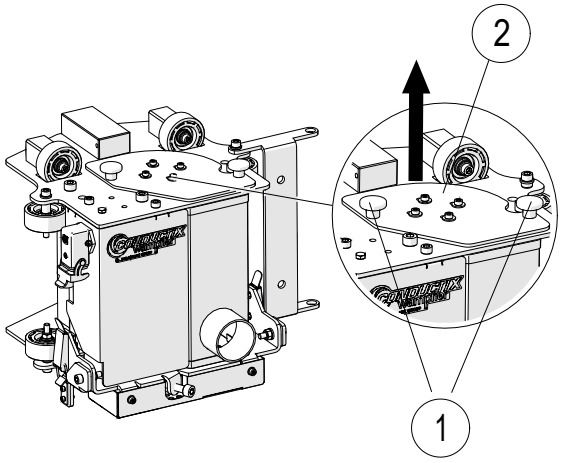
d) Tighten the lock nut [4] after tightening or loosening the tension belt.



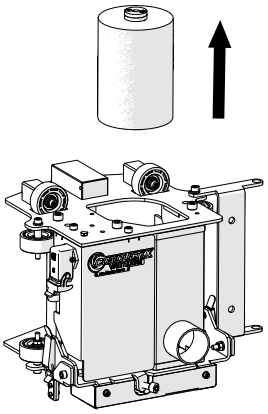
8.2.2 Round brush

Replacing the round brush:

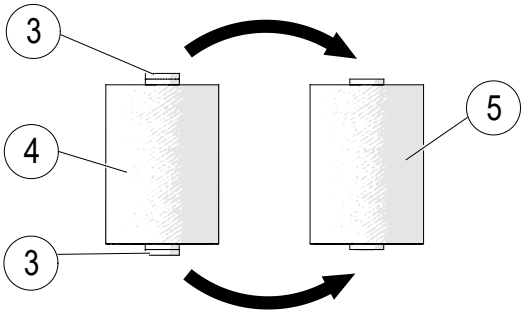
a) 1. Remove knurled screw [1] (2 pieces).
2. Remove cover with retaining bolt for the round brush [2].



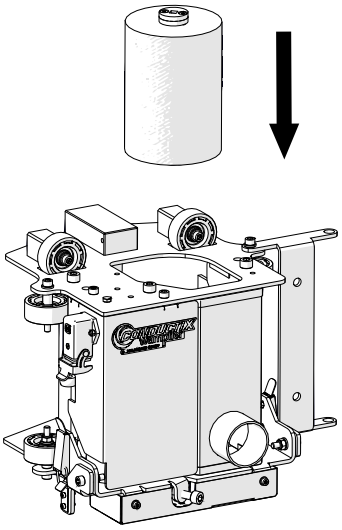
b) Take out round brush.



c) Remove the adapter plates [3] (at the top and bottom of the round brush) from the worn circular brush [4] and fit them to the new circular brush [5].

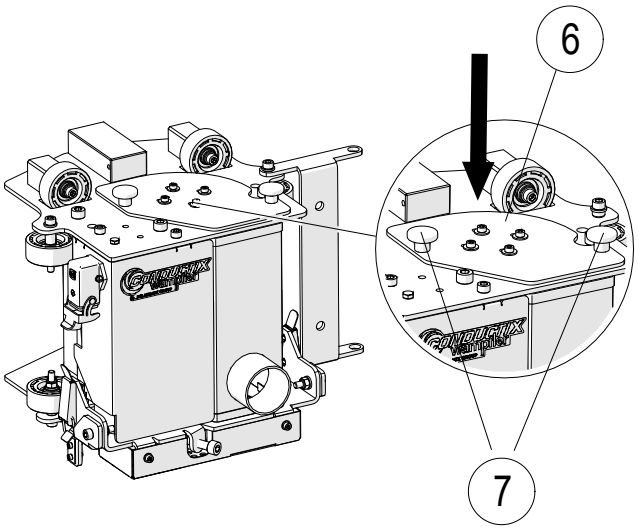


d) Insert new round brush.



Circular brush must be guided easily onto the pin and then turned into the correct position.

e) 1. Put on the cover with holding bolts for the round brush [6].
2. Secure the cover with the two knurled screws [7].



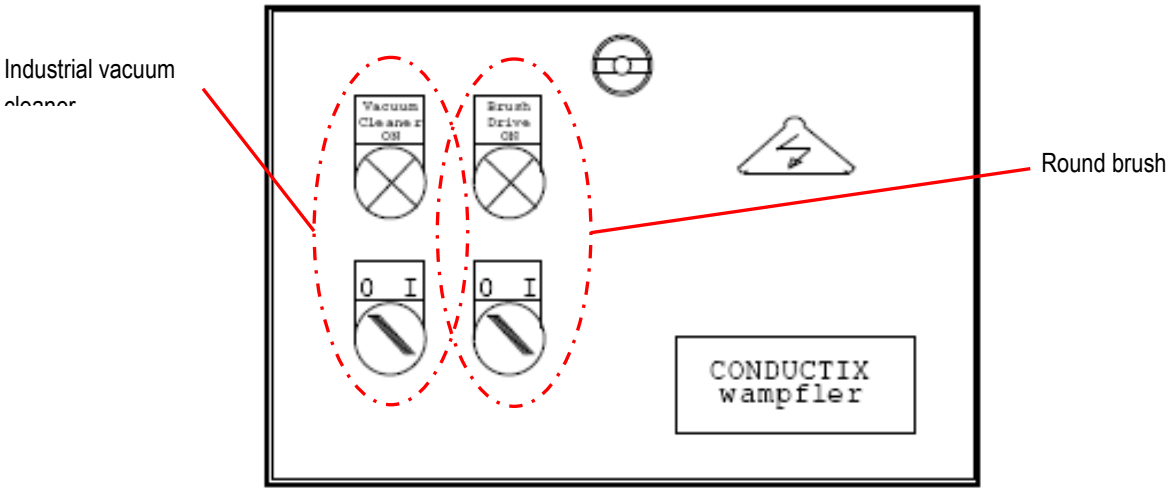
When using leakage waveguide and/or bar code tape, the brushes must be cut out according to the installation instructions MV0800-0011-EN. Leaky waveguide and / or barcode tape must not be damaged by the brushes!

9 Switching on the rail cleaner (example with optional control unit)

The following steps must be taken for the operation:

- Switch on industrial vacuum cleaner
- Switch on round brush

The round brush will only work if the industrial vacuum cleaner is switched on!



Note: All illustrations are intended as an aid. They may not show the current status of a component or assembly!

Advice: Conductix-Wampfler does not assumes any liability or warranty for operational disturbances or damage as a result of a non-observance of with these installation instructions!

10 Implementation/decommissioning/disassembly and disposal

10.1 Implementation

For operation, e.g. stand-alone operation, it may be necessary to remove the unit consisting of cleaning head and optional current collector trolley/control unit from the EMS-profile for a short time to allow vehicles to pass or to place the unit back on the EMS-profile at another location. For the implementation, the suction hose is disconnected from the cleaning head, the system is released and the current collector is separated from the conductor rail by means of the opening flap on the current collector trolley. As a next step, the quick fasteners on the lower chassis are opened by the cleaning head and current collector trolley and the lower rollers are folded down. Now the unit can be taken off the rail and put on again at another place. Commissioning is carried out in reverse order.

10.2 Short-term decommissioning

If the rail cleaner is not used for a maximum period of 3 weeks, no measures are required. The system is ready to use.

10.3 Decommissioning/Disassembly

Thorough cleaning of all components of the rail cleaner is recommended prior to the disassembly (carbon dust).

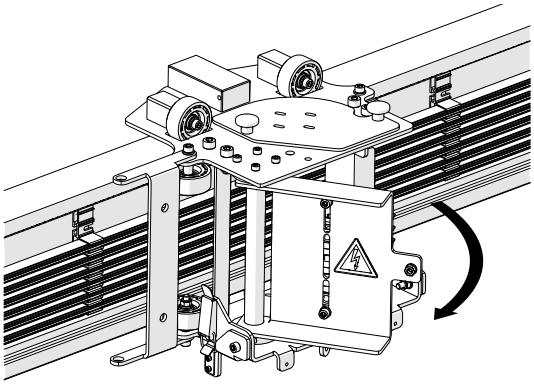
CAUTION! Danger to health from carbon dust!

Abrasion of the carbon brushes collects in the conductor rail system, in the cleaning head and on the floor. This dust is very fine and is classified as harmful to health. Personal protective equipment such as safety goggles, dust mask and gloves is mandatory for all work on the cleaning suspension gear, especially during the cleaning process. Avoid contact with mucous membranes. Do not inhale dust. Clean skin surfaces with water and appropriate cleaning agents after work. In case of eye contact, rinse with clean water.
Dust deposits can be whirled up and inhaled during the disassembly. It is mandatory to wear a dust mask!

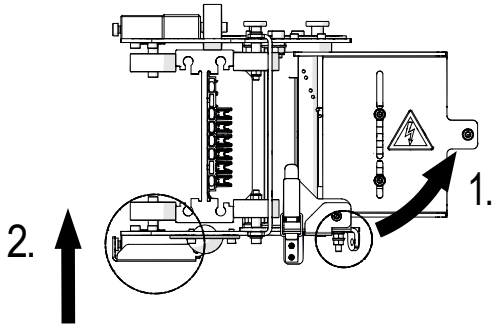
It is recommended to carry out the disassembly in the following order.

1. **Disconnect the connection of the industrial vacuum cleaner (connection pieces with outer diameter 50 mm) and the cleaning head.**
2. **Disconnect all electrical components.**
3. **Dismount the control unit.**
4. **Dismount the connector plate (between the cleaning head and the current collector trolley) (if existing).**
5. **Remove the current collector from the EMS support profile.**

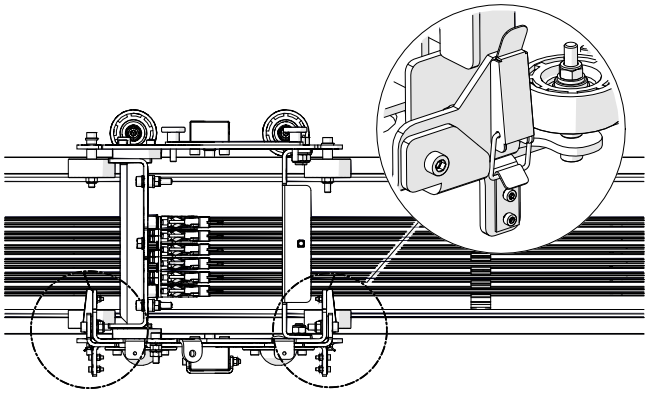
    a) Open flap with current collectors.



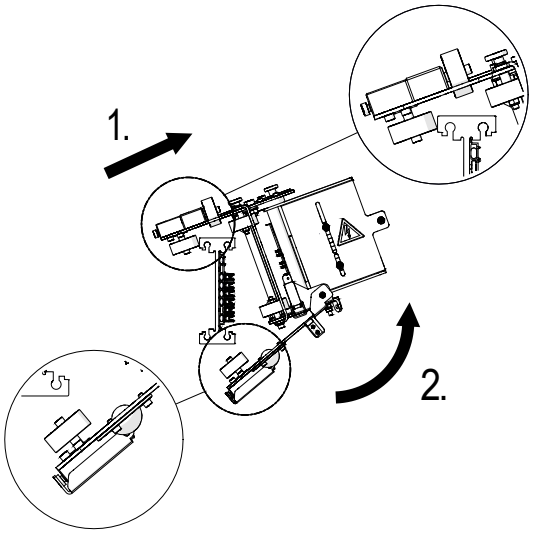
b) Grip the bottom of the trolley and pull it away from the support profile against the spring force [1.] and at the same time attach the safety device on the lower pressure roller [2.].



c) Open the lower flap of the trolley using the two fasteners (right and left on the trolley).

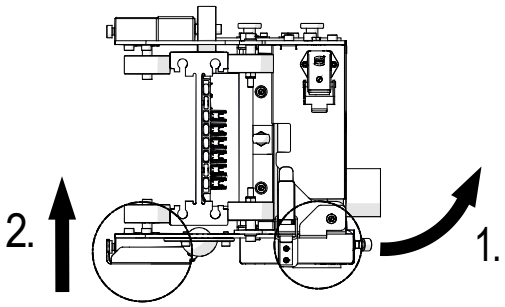


d) Remove the trolley upwards from the EMS support profile. To do this, pull against the spring force of the pressure roller [1.] and at the same time the trolley tip the trolley around the EMS support profile

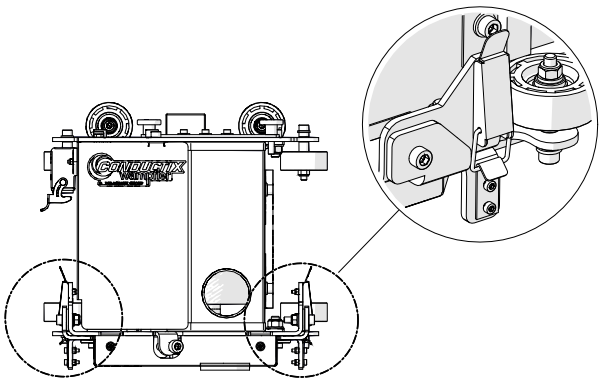


6. Remove the cleaning head from the EMS support profile.

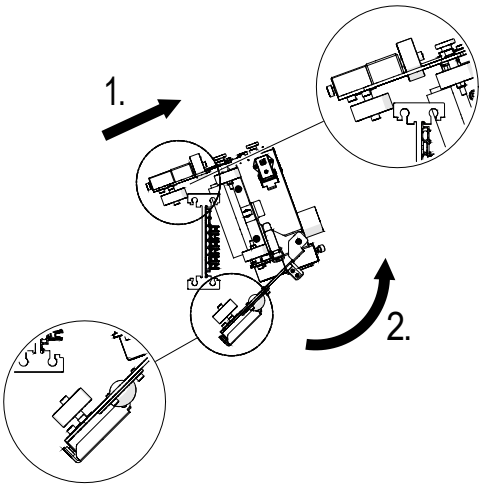
a) Hold the cleaning head at the bottom (at the connection piece) and pull it away from the support profile against the spring force [1.] and at the same time attach the securing device for the lower pressure roller [2.].



b) Open the lower flap of the cleaning head using the two clamping locks (on the right and left of the trolley).



c) Remove the trolley upwards from the EMS support profile. To do this, pull against the spring force of the pressure roller [1.] and at the same time tip the trolley around the EMS support profile



10.4 Disposal

The disposal of packaging and the rail cleaner is the responsibility of the operator and must be carried out according to the applicable national or regional law of the place of installation.

Most components can be disassembled and reused (recycled).

Components	Material	Disposal
Components (steel)	Steel	Steel scrap - recycling
Components (aluminum)	Aluminum	Non-ferrous metal - recycling
Round brush with carbon dust	Plastic + carbon dust	Hazardous waste
Strip brush with carbon dust	Aluminum + plastic + carbon dust	Hazardous waste
Current collector (arm)	Plastic	Plastic + recycling
Current collector (head)	Composite material	Hazardous waste
Motor	-	Electrical scrap - recycling
Toothed belt	Plastic	Plastic + recycling
Roller with ball bearing	Plastic + steel	Residual waste
Terminal box	Plastic + electrical components	Electrical scrap - recycling
Electrical components	-	Electrical scrap - recycling

11 Spare parts list

Designation	Material number
Round brush (D = 100 mm)	3092327
Pressure roller	3021284
Toothed belt	3092363
Brush set 240x80	3117765
Brush set 180x60, 180x80	3117766
Ball roller	3092365
Pressure spring VD-207J-39	86236
DC Motor (24V)	3092362
Clamp connector	3092367

Comment:
All illustrations are intended as aids. They may not show the current status of a component or assembly!

Conductix-Wampfler GmbH
Rheinstraße 27 + 33
79576 Weil am Rhein - Märkt
Germany

Phone: +49 (0) 7621 662-0
Fax: +49 (0) 7621 662-144
info.de@conductix.com
www.conductix.com

Importer for the United Kingdom:
Conductix-Wampfler Ltd.
1, Michigan Avenue
Salford
M50 2GY
United Kingdom

Phone: +44 161 8480161
Fax: +44 161 8737017
info.uk@conductix.com
www.conductix.com