

# **OPERATING MANUAL**

# Conveyor belts CB-/B-Conveyor





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# Please note!

# GENERAL INFORMATION

Validity of this manual and required compliance

#### Machine designations

B conveyor Belt conveyor

CB conveyor Slat chain

#### **Contents**

This operating manual refers exclusively to the machine types listed above. It is intended to help in proper installation, operation and adjustment of the machine.

For information about the required qualification: See chapter.

For technical questions that are not addressed in this Operating manual, please contact the manufacturer, NOVEXX Solutions.

→ Request a service technician.

NOVEXX Solutions customer service department is available especially for configuration settings and malfunctions.

#### Liability

NOVEXX Solutions reserves the right:

- To make changes in design and components, and to use equivalent other parts than those specified in line with technological progress.
- · To change information in this manual.

Any obligation to extend these changes to machines previously delivered is excluded.

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### How information is represented

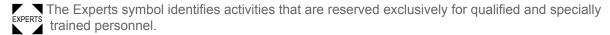
#### **Explanation of symbols**

To enhance readability and make information easier to find, different types of information are identified:

- → Instruction with no order of tasks assigned
- 1. Numbered instructions introduced by preceding text
- 2. The specified order must be followed!

Special note for action that must be performed!

- · Enumeration of features
- · Other feature



#### Notes about hazards and risks

Important safety instructions that must be strictly followed are specially highlighted:



#### WARNING!

A warning symbol refers to risks that can result in severe or fatal injuries! The note contains safety measures to protect affected persons.

→ Instructions must be followed without exception.

#### CAUTION!

A caution symbol refers to risks that can result in property damage or personal injury (minor injuries). The note contains instructions for preventing damage.

→ Instructions must be followed without exception.

#### Illustrations

Normally the machine is shown as the right version. The left version is only shown if there is a need to make a distinction.



## FOR YOUR SAFETY

#### Use

#### Intended use



#### WARNING!

The device described here is an incomplete machine as defined by MRL 2006/42EC!

→ Do not place the device in operation until it has been determined that the machine in which the machine component (device) will be installed meets the requirements of directive 2006/42 EC, appendix IIA.

The B conveyor and CB conveyor are belt conveyors with conveyor belts ("belts" for short) with electric drive. The belts are designed for industrial labelling applications. Products with a maximum weight of 10 kg (B conveyor) or 30 kg (CB conveyor) per belt can be transported on the belts for labelling purposes. The belt conveyors can be combined with further NOVEXX Solutions conveyors, such as wrap-around conveyor or hold-down conveyor.

The power supply and control must be provided by an external controller supplied by the operating company. NOVEXX Solutions offers switch cabinets for the control of complete belt units.

#### **Misuse**

Any other type of or more extensive application will be considered non-intended use.

Animals or persons must not be transported on the belts.

The belts must not be operated in potentially explosive atmospheres.

NOVEXX Solutions shall assume no liability for damage resulting from non-intended use of the machine.

# Information and qualification

#### **Ensuring the necessary qualification**

- → Only fully trained and authorised personnel are permitted to operate, adjust and maintain the machine.
- → Service work must only be performed by qualified and appropriately trained technical specialists (service technicians) or the customer service department.
- → Areas of responsibilities for operating and servicing the machine must be clearly defined and consistently observed.
- → Personnel must also be regularly instructed in on-the-job safety and environmental protection.

#### Qualification for operation

The instruction provided for the operating personnel must ensure,

- that the operating personnel can use the machine independently and without danger.
- that the operating personnel can rectify minor operating faults (for example a paper jam) independently.

Therefore:

→ At least 2 persons should be instructed in operation.



#### Qualification for system integrators and service technicians



■ Installation of the machine and service work on the machine require appropriate qualification. Only service personnel with technical training are able to assess the tasks to be performed and recognise potential dangers.

- · Knowledge acquired through technical training in mechanics and electronics (for example in Germany the training to become a mechatronics engineer)
- Participation in a technical training course for the corresponding machine offered by the manufactur-
- The service personnel must be acquainted with the function of the machine
- · The system integrator must be acquainted with the functionality of the system into which the machine is being integrated

Tasks	System integrator	Operator	Service technician
Installing the machine	X		
Connecting the machine	X		
Adjusting the machine	X		
Switching the machine on/off	X	Χ	X
Rectify minor operating faults	X	Χ	X
Clean the machine		X	X
Rectify major operating faults			X
Settings to the electronics/mechanics			X
Repairs			X
Manual:	Installation/service manual	Operating manual	Service manual, spare parts catalogue

Tab. 1: An example of the distribution of tasks among different qualified personnel.

#### Making note of information



#### WARNING!

The machine can only be operated safely and efficiently if all the necessary information is observed!

- → Before beginning operation, read this operating manual and follow all of the instructions.
- → Observe all additional safety and warning information given on the machine.
- → Allow only technically qualified persons to operate and adjust the machine.

Any product liability and warranty claims will not be valid unless the machine is operated according to the instructions in the operating manual.

#### Keep product information at hand

This operating manual

- → must remain readily available for operating personnel at a location near to the machine.
- → must be kept in legible condition.



- → If the machine is sold, it must be made available to the new owner.
- → The safety and warning symbols and messages on the machine must be kept in a clean and legible state. Replace any signs that are damaged or missing.

# Operating safety of the machine

#### Intended use

→ The machine must only be used in accordance with the specifications in section "Intended use" on page 5.

#### Installation, repair



#### WARNING!

Improper use of the machine can result in accidents, property damage and loss of production!

- → Do not install the machine in potentially explosive environments.
- → Ensure that the machine cannot tip over.
- → Install the belt conveyor in such a way that the products do not fall off at the end of the belt.
- → If hazardous products are transported: Ensure that the products do not fall off (using additional protective equipment, if necessary).
- → Provide a mains isolation system and emergency stop device during installation.
- → Install mains isolation system, emergency stop device and operating elements so that they are easily accessible.
- → Lay the connection cables so that no one can trip over them.
- → Check the effectiveness of all safety functions.
- → Operate the machine only when it is in a technically flawless condition.
- → Put the machine into operation only after at least one successful test run has been carried out.
- → Make changes or modifications to the machine only after consultation with the NOVEXX Solutions Customer Service department.
- → Use only OEM spare parts.



#### WARNING!

Risk of shearing and crushing between product and stationary parts of the machine, e.g. label dispenser!

→ Prevent access to the machine during operation by installation of higher-level protective equipment (movable, separating protective device in accordance with EN 953).

#### After all maintenance and repair work



#### WARNING!

Risk of accidents from moving or loose parts!

- → Install all covers and protective equipment again.
- → Check all bolted connections loosened or removed during work for tightness again.
- → Remove all tools and other equipment used for the maintenance or repair work from the working area of the machine.
- → Check the effectiveness of all safety functions.





#### WARNING!

Contacting electrically live components can cause lethal electrical shocks and burns!

→ After assembly, check the machine according to the applicable regulations of the relevant country (for Germany: DIN VDE 701-702 "Recurrent test and test after repair and modification of electrical equipment")

#### Warning of injuries due to electrical shock



#### WARNING!

This machine operates at mains voltage!

Contacting electrically live components can cause lethal electrical shocks and burns.

- → Be sure to observe the precautionary measures described in this section!
- → Only operate the machine when the enclosure is properly installed.
- → The machine must only be connected by an authorised technician who is acquainted with the associated dangers.
- → Keep the machine's On/Off switch accessible.
- → Switch the machine off before cleaning and servicing.
- → Keep the machine dry.
- → If a liquid gets into the machine, switch off the machine immediately and unplug the mains contactor. Notify a service technician.
- → In case of emergency switch off the machine.

#### CAUTION!

If the supply voltage is too high or too low, the machine may be damaged.

→ Only operate the unit at the mains voltage given on the type plate.

#### Warning of injury hazards from mechanical components



#### WARNING!

Danger of injury due to moving and rapidly rotating parts!

- → Maintain a safety clearance from the machine when it is in operation.
- → Never reach into a machine that is running.
- → Switch off the machine before making any mechanical adjustments.
- → Keep clear of the area around moving parts even when the machine is stopped if there is any possibility of the machine starting up.
- → Do not exceed the maximum permitted belt speed.
- → (CB conveyor) Replace broken slat chains immediately to avoid injuries due to shearing or entanglement points.



#### WARNING!

Entanglement hazard

- → Do not wear ties, loose clothing, jewellery, wrist watches or similar objects when working in the vicinity of the running machine, especially when inspecting the belt conveyor.
- → Long hair must be kept in a hair net and must not be worn loose.





#### WARNING!

Crushing hazard at the belt due to products on the conveyor equipment!

- → Never reach between the product and the belt when the machine is running or ready for operation.
- → Never remove or bypass the protective equipment to prevent reaching in while the machine is in operation.



#### WARNING!

Tripping hazard!

→ Lay the connection cables so that no one can trip over them.

Observe also when installing and operating the belt conveyors the provisions of DIN EN 619, Safety and EMC requirements for equipment for mechanical handling of unit loads.

## Every time before starting production

#### Due diligence of the operator and service personnel

- → Ensure that the following requirements are met in accordance with details specified in the service manual:
- The machine must be set up and configured to meet applicable requirements
- · All necessary safety equipment must be installed
- The machine must have successfully completed at least one test run
- The machine must be connected to the energy supply
- → The operating personnel must be provided with the necessary personal protective equipment, e.g. safety shoes. Ensure that the protective equipment is used for its intended purpose.



#### Due diligence of the operating personnel

- → Check the safety equipment to ensure it is working correctly.
- → Check the machine for visible damage. Report defects that are discovered immediately.
- → Use personal protective equipment properly, for example wearing safety shoes.
- → Remove material and objects that are not required from the working area of the machine.
- → Ensure that only authorised persons remain in the working area of the machine.
- → Ensure that no one can be endangered by the machine starting up.

# Warning symbols on the machine

#### CAUTION!

Warning symbols on the machine provide important information for the operating personnel.

- → Do not remove warning symbols.
- → Replace missing or illegible warning symbols.

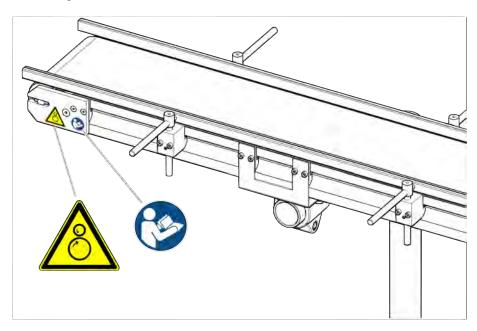


Fig. 1: Warning symbols on the B conveyor.



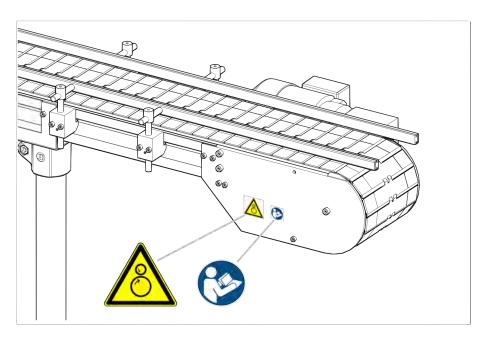


Fig. 2: Warning symbols on the CB conveyor

Warning symbol	Meaning	Order No.
	The warning symbol "Entanglement hazard" warns of dangerous movements of the device that could lead entanglement. Switch off the device previously.	A5346
	The "Read manual" symbol prompts the user to read the Operating manual.	A5331

Tab. 2: Meaning of the warning symbols.



# **Product description**

# **B CONVEYOR**

#### Overview

The *conveyor* is available in various widths and lengths. The specified width pertains to the width of the conveyor belt. The length is the axial distance between the drive and the deflector roller. The entire length of the conveyor unit is approx. 76 mm larger than this dimension.

The *conveyor belt* is available in smooth (white) or profile (green) versions for the various conveyor sizes. The green profile belt is intended for applications where increased belt grip is required, the white belt is intended for applications in the food or healthcare sector.

The *drive* consists of a three-phase motor with a flange-mounted gearbox and two toothed wheels and a toothed belt that transmits force to the conveyor unit. For three-phase motors operated directly from the mains, the conveyor reaches a speed of approx. 40 m/min.

Alternatively, operation in combination with a frequency converter is possible. Here, the speed can be varied continuously in the range of 2- 40 m/min. For details please contact your NOVEXX Solutions sales representative.

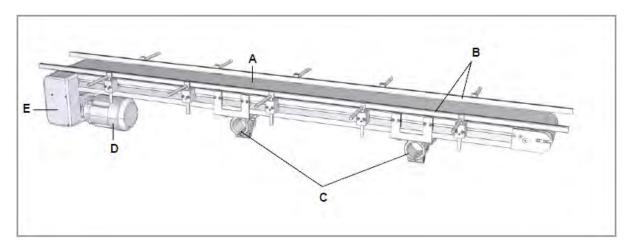


Fig. 3: Functional elements of the B conveyor (A = Conveyor belt, B = Lateral guide rails, C = Mounting clamps for fixing the belt, D = Drive motor, E = Belt drive)

#### **Variants**

The conveyor is available in different length, 100 mm or 200 mm wide, and with green or white conveyor belt. For details about available combinations please refer to the product catalog or your NOVEXX Solutions sales representative.

#### Technical data on B conveyor

Specification	Value	Connection variant
Transport speed	Depending of controller:	
	approx. 2 - 40 m/min	Frequency converter
	approx. 40 m/min	Motor protecting switch



Specification	Value	Connection variant
Dimensions (W x H x D)	Depending on the version 1076 - 3076 mm x 300 mm x 300 - 600 mm	
Weight	approx. 80 kg	
Protection class	IP 43	
Operating conditions	Indoors 5 - 40°C (storage 0 - 70°C) 30 - 80% relative humidity, non-condensing	
Power consumption	0.37 kW	
Power factor	cos phi = 0.76	
Power supply voltage	Delta circuit:  • 220 - 240 VAC / 50 Hz  • 240 - 266 VAC / 60 Hz	Frequency converter
	Star circuit  • 3/PE 380 - 415 VAC / 50 Hz  • 3/PE 415 - 460 VAC / 60 Hz	Motor protecting switch
Motor current	Delta circuit:  • max. 2.15 A / 50 Hz  • max. 1.95 A / 60 Hz	Frequency converter
	Star circuit  • max. 1.24 A / 50 Hz  • max. 1.12 A / 60 Hz	Motor protecting switch
Noise emissions	< 70 dB(A)	
Permissible load	Max. 10 kg total weight of all products on the belt	

Tab. 3: Technical data on B conveyor

# Certificates & Markings

CE, EAC.



# **CB CONVEYOR**

#### Overview

The *conveyor* is available in various widths and lengths. The specified width pertains to the width of the slat chain links. The length is the axial distance between the drive and the deflector roller. The entire length of the conveyor unit is approx. 175 mm larger than this dimension.

The slat chains are available in acetal or stainless steel.

The *drive* consists of a 3-phase AC motor with flanged gearbox. For three-phase motors operated directly from the mains, the conveyor reaches a speed of approx. 30 m/min.

Alternatively, operation in combination with a frequency converter is possible. Here, the speed can be varied continuously in the range of 11-30 m/min. For details please contact your NOVEXX Solutions sales representative.

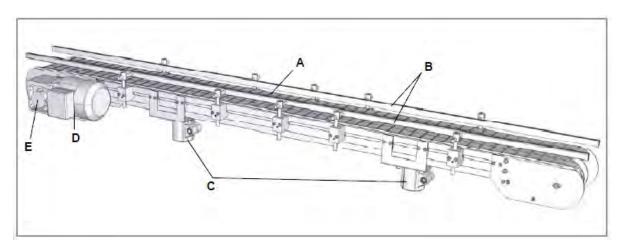


Fig. 4: Functional elements of the CB conveyor (A = Conveyor belt, B = Lateral guide rails, C = Mounting clamps for fixing the belt, D = Drive motor, E = Belt drive).

#### **Variants**

The conveyor is available in different length, 114 mm or 190 mm wide, and with slat chains made of acetal or stainless steel. For details about available combinations please refer to the product catalog or your NOVEXX Solutions sales representative.

#### Technical data on CB conveyor

Specification	Value	Connection variant
Transport speed	Depending of controller	
	approx. 11 - 30 m/min	Frequency converter
	approx. 30 m/min	Motor protecting switch
Dimensions (W x H x D)	Depending on the version 1675 - 3175 mm x 300 mm x 300 - 450 mm	
Weight	approx. 80 kg	
Protection class	IP 43	
Operating conditions	Indoors 5 - 40°C (storage 0 - 70°C) 30 - 80% relative humidity, non-condensing	



Specification	Value	Connection variant
Power consumption	0.37 kW	
Power factor	cos phi = 0.76	
Power supply voltage	Delta circuit (standard):  • 220 - 240 VAC / 50 Hz  • 240 - 266 VAC / 60 Hz	Frequency converter
	Star circuit  • 3/PE 380 - 415 VAC / 50 Hz  • 3/PE 415 - 460 VAC / 60 Hz	Motor protecting switch
Motor current	Delta circuit (standard):  • max. 2.15 A / 50 Hz  • max. 1.95 A / 60 Hz	Frequency converter
	Star circuit  • max. 1.24 A / 50 Hz  • max. 1.12 A / 60 Hz	Motor protecting switch
Noise emissions	< 70 dB(A)	
Permissible load	Max. 30 kg total weight of all products on the belt.	

Tab. 4: Technical data on CB conveyor

# **Certificates & Markings**

CE, EAC.



# Installation and settings

# INSTALLATION AND COMMISSIONING

#### General information on installation

The belt conveyors are normally installed using system components from NOVEXX Solutions.

If the support stand is not supplied by NOVEXX Solutions, please note the necessary tube dimensions:

• Tube outside diameter: 60 mm

· Wall thickness: at least 5 mm

#### Installation of B conveyor

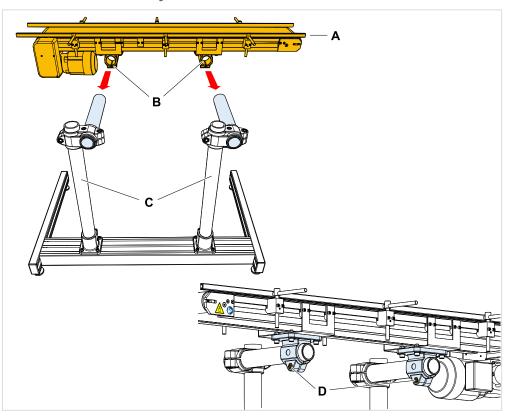


Fig. 5: Installation example for B conveyor (A = Belt conveyor, B = Clamps for alignment and fixing of the belt conveyor, C = Support stand, D = Clamping bolts).

Use only system components from NOVEXX Solutions for installation, as these are optimised for sturdy installation and optimum alignment.

Pay attention to secure anchoring of the belt conveyor. Give consideration also to the maximum permissible load (depending on belt type).

Align the belt conveyor using the support stand clamps. Observe the tightening torque for the clamping bolts (70 Nm).



#### Installation of CB conveyor

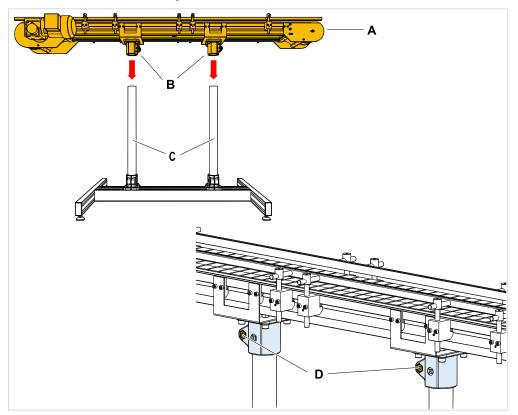


Fig. 6: Installation example for CB conveyor (A = Belt conveyor, B = Clamps for alignment and fixing of the belt conveyor, C = Support stand, D = Clamping bolts).

Use only system components from NOVEXX Solutions for installation, as these are optimised for sturdy installation and optimum alignment.

Pay attention to secure anchoring of the belt conveyor. Give consideration also to the maximum permissible load (depending on belt type).

Align the belt conveyor using the support stand clamps. Observe the tightening torque for the clamping bolts (70 Nm).



#### Installation of the guide rails

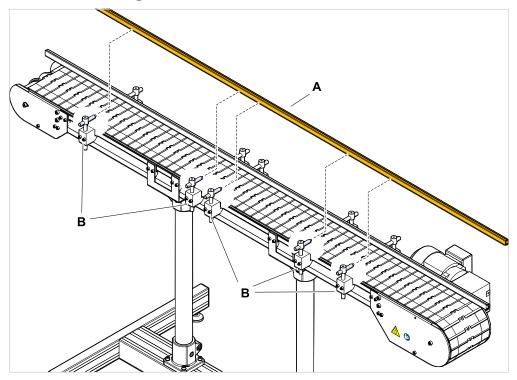


Fig. 7: Installation example for guide rail (A = Guide rail, B = Clamping blocks with stud bolt for fixing the guide rail)

Please note that two of the clamping blocks supplied do not contain a stud bolt. These are intended for installation of a light barrier by the customer.

Due to the widely differing demands on the belt conveyor, the guide rail has to be installed by the operating company.

The following steps are necessary:

- 1. Cut the guide rail to the required length.
- 2. Position the clamping blocks on the belt conveyor.
- 3. Drill 10 mm deep holes with a diameter of 5 mm in the guide rail at the position of the stud bolts.
- 4. Cut M 6 threads in the blind holes.
- **5.** Fasten the guide rail to the stud bolts. Place plastic washers (DIN 125-A 6.5 PA) under the stud bolts during installation.



#### **Connection and operation**



#### WARNING!

This unit operates at mains voltage! Contacting electrically live components can cause lethal electrical shocks and burns.

- → The machine must only be connected to the mains power supply by an authorised specialist. This person must be acquainted with the associated dangers.
- → Only operate the unit at the mains voltage given on the type plate.

The electrical connection is made to a switch cabinet provided by the operating company. NOVEXX Solutions offers switch cabinets for control.

There are basically the following two possibilities for connecting to the building installation:

- *Three-phase*, the motor is operated here in a star circuit, the belt has a fixed speed (connection e.g. with NOVEXX Solutions motor protection switch AMC-21).
- Single-phase, the motor is operated in a delta circuit via a frequency converter, the belt speed can be varied (connection e.g. with NOVEXX Solutions belt conveyor controller AMC-20).

See also chapters "Technical data on B conveyor" on page 12and "Technical data on CB conveyor" on page 14.

#### Dismantling and disposal

The system must be dismantled by qualified personnel. Observe the safety instructions in this manual during dismantling.

Observe the local regulations on material separation and environmental protection during disposal.

# MECHANICAL SETTINGS ON THE B CONVEYOR

# Adjusting / replacing conveyor belt

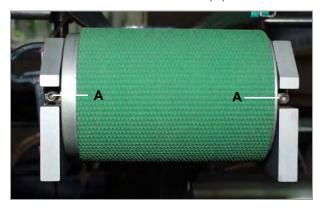
After replacement of the conveyor belt or after a very long period of operation, it has to be adjusted as follows. The conveyor belt replacement is described here first, then the adjustment of the conveyor belt.

#### **Procedure**

1. Switch off the belt conveyor at the main switch and lock the main switch to prevent accidental restarting.



2. Loosen the two tensioner screws (A) to relieve the conveyor belt tension.

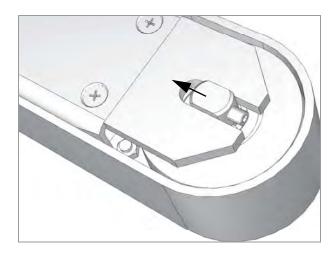


The tensioner roller moves inwards, the conveyor belt tension is relieved and the belt can be removed.

- 3. Install a new conveyor belt (use only OEM spare parts).
- 4. Tighten the two tensioner screws (figure below, arrow) uniformly to tension the belt again.

Pay attention during tensioning that the two screws are tightened uniformly. If they are not tightened uniformly, the conveyor belt will run off-centre (check by turning manually).

If the conveyor belt runs off-centre, tighten the screw on the side towards which the conveyor belt runs until it is running in the middle. Alternatively, the opposite screw can be loosened if the belt tension is already very high.





# Adjusting upper protection rail

#### **About this task**

The distance (A) between protection rail (B) and return pulley (C) must be parallel on both sides of the belt conveyor and must not exceed 5 mm.

Check both protection rails at regular intervals and adjust them, if necessary.



Fig. 8: Upper protection rail.

#### **Procedure**

1. For adjustment, loosen the two mounting screws of the protection rail (A).



- **2.** After adjusting the distance, tighten the two mounting screws again.
- 3. Ensure that the distance between the protection rail and the return pulley is parallel and does not exceed 5 mm, and the rail does not contact the return pulley.



# Adjusting lower protection rail

The lower protection rail is located under the belt conveyor. Proceed as follows to check and adjust the distance from the conveyor belt.

#### About this task

The distance between protection rail (B) and conveyor belt (C) must be parallel on both sides of the belt conveyor (A) and must not exceed 5 mm.

Check both protection rails at regular intervals and adjust them, if necessary.

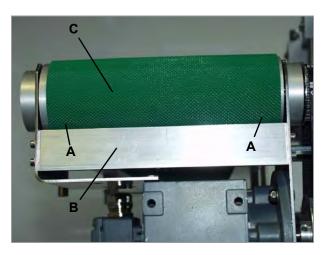
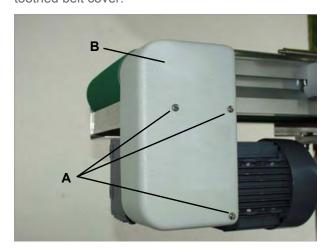


Fig. 9: Lower protection rail.

#### **Procedure**

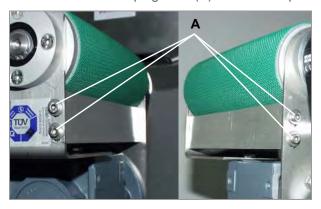
1. To adjust, loosen the three mounting screws (A) of the toothed belt cover (A) and remove the toothed belt cover.



2. After adjusting the distance, tighten the two mounting screws again.



3. Loosen the four clamping bolts (A) of the lower protection rail.



- **4.** Adjust the protection rail so that the distance between the protection rail and the conveyor belt is parallel and does not exceed 5 mm, and the rail does not contact the return pulley.
- 5. Tighten the four clamping bolts.
- 6. Install the toothed belt cover again.

# MECHANICAL SETTINGS ON THE CB CONVEYOR

## Adjusting / replacing slat chain

#### About this task

After replacement of the slat chain or after a very long period of operation, it has to be adjusted as follows. The slat chain replacement is described here first, then the adjustment of the slat chain:

#### **Procedure**

- 1. Switch off the belt conveyor at the main switch and lock the main switch to prevent accidental restarting.
- 2. Loosen the two clamping bolts (A) on either side so that you can remove or tension the slat chain.



3. Install a new slat chain (use only OEM spare parts).



4. Tighten the two clamping bolts uniformly to tension the chain (fig.).



#### 5. Tighten the two clamping bolts.

Pay attention during tensioning that both side of the chain are tensioned uniformly. If it is not tensioned uniformly, the slat chain will run off-centre (check by turning manually).

If the slat chain runs off-centre, tighten the screw on the side towards which the slat chain runs until the belt is running in the middle. Alternatively, the opposite screw can be loosened if the slat chain tension is already very high.

# Adjusting protection rail

#### About this task

Check the protection rail on the underside of the belt conveyor at regular intervals and adjust, if necessary.

The distance (A) between protection rail (B) and slat chain (C) must be parallel on both sides of the belt conveyor and must not exceed 5 mm.

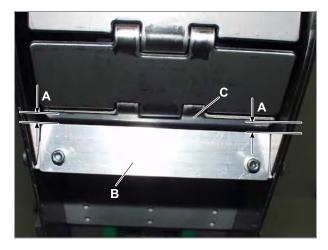


Fig. 10: Protection rail.



#### **Procedure**

1. For adjustment, loosen the two mounting screws of the protection rail (A).



- 2. After adjusting the distance, tighten the two mounting screws again.
- **3.** Ensure that the distance between the protection rail and the slat chain is parallel and does not exceed 5 mm, and the rail does not contact the slat chain.



# Cleaning & Maintenance

# **CLEANING INSTRUCTIONS**

#### Safety



#### WARNING!

Dangerous situations may arise during maintenance and cleaning work. Accidents may occur due to mechanical or electrical effects if the relevant safety instructions are not observed!

- → Switch off the machine before starting cleaning or maintenance work!
- → Never allow liquid to get into the machine!
- → Do not spray the machine with spray bottles or sprays! Use a cloth wetted with cleaning agent!
- → Repairs to the machine must only be made by trained service technicians!

#### Cleaning agent

#### CAUTION!

Strong cleaning agents may damage the conveyor belt.

- → Do not use cleaning agents that could damage or destroy the conveyor belt.
- → Do not use any scouring cleaning agents or any cleaning agents that could dissolve plastic.
- → Do not use acid or alkaline solutions.

Part to be cleaned	Cleaning agent
Housing	Standard commercial neutral cleaning agent
Conveyor belt, slat chain	Cleaning solvent, alcohol, isopropyl alcohol

Tab. 5: Recommended cleaning agents

#### **Cleaning interval**

→ Clean the conveyor belt at regular intervals.

The frequency depends on the following factors:

- Operating conditions
- Daily operating duration



# **MAINTENANCE**

Carry out the following maintenance operations at regular intervals:

	Measure	See
Damage	→ Inspect the conveyor belt for damage.  → Damaged slat chains, in particular, must be replaced immediately.	
Belt tension	→ Check the belt tension.  The belt tension must always be such that personnel cannot reach into the unit.	Belt conveyor: "Adjusting / replacing conveyor belt" on page 19 Slat chain: "Adjusting / replacing slat chain" on page 23
Belt running	→ Check whether the belt runs in the centre.	
Contact protection	→ Check the correct adjustment of the contact protection strips.  The distance between the contact protection strips and the conveyor belt must not exceed 5 mm.	Belt conveyor: "Adjusting upper protection rail" on page 21 or "Adjusting lower protection rail" on page 22 Slat chain: "Adjusting protection rail" on page 24

