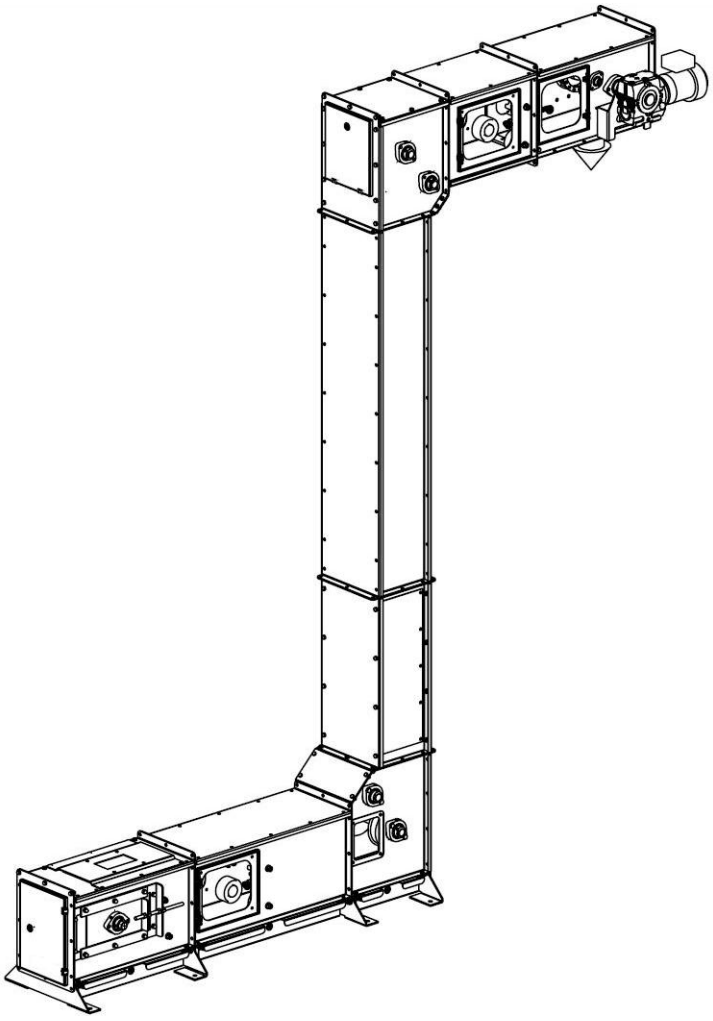
OPERATING INSTRUCTIONS

Item No.	:	11200
Machine	:	**Angular bucket elevator WB 250**
Machine-No.	:	
Part-No.	:	K8101-3795
Order-No.	:	79278 / 13
Date of delivery	:	2013

These operating instructions are meant for those persons, who operate, maintain, and repair the machine, if necessary.
For this reason, these instructions should always be at the disposal of the operating and maintenance staff, and the indications should be observed and followed carefully

SEB Continuous bucket conveyor

Operation and maintenance manual



Title	Operation and maintenance manual
Product	SEB Continuous bucket conveyor

Contents

Information for the reader

Operation and maintenance manual's objective

The continuous bucket conveyor is state of the art. It is safe to operate. Nevertheless there are risks associated with using the continuous bucket conveyor. This operation and maintenance manual contains information and instructions for using the continuous bucket conveyor. Please read the operation and maintenance manual carefully before start up. Keep the operation and maintenance manual at hand for everybody who works with the continuous bucket conveyor.

To operate the continuous bucket conveyor effectively, the operation and maintenance manual provides information on the following topics:

- Transporting, setting up and putting the continuous bucket conveyor into operation.
- Using the continuous bucket conveyor.
- Caring for and carrying out maintenance on the continuous bucket conveyor.

Notes/symbols in text

The different notes and symbols in the text will be explained below.

1. This is an action to be carried out by the user (first step.)

2. This is an action to be carried out by the user (second step.)

↪ This is how the result of a step taken is shown.

➔ This is a step to be carried out by the user.

✓ **This shows the completion of action taken. The objective has been achieved.**

CAUTION

This is safety information!
The aim of the safety information to help identify hazards and to avoid any negative consequences that may result.
➔ The arrow points to a precautionary measure you will have to take to avoid the hazard.

TIP

Additional, useful information is marked like this.

Relevance

This operation and maintenance manual applies to:

- The operator.
- Everybody working with the continuous bucket conveyor.

Because of the number of designs possible, this operation and maintenance manual describes one particular type of continuous bucket conveyor. The figures show the continuous bucket conveyor in a simplified version.

Safety

Declaration of compliance

For declaration of compliance, see the documents provided with the product.

Proper usage

The continuous bucket conveyor may only be used for conveying the bulk material listed in the order confirmation. Any other type of usage is not authorised.

The type and form of the goods conveyed are clearly listed in the order confirmation. The conveyor is not designed to carry unit goods. If you wish to convey other bulk material, please consult WIESE Förderelemente GmbH beforehand.

Improper usage is as follows:

- Changing the design of the continuous bucket conveyor without the authorisation of the manufacturer.
- Using components other than those listed in the parts list.
- When goods are conveyed other than those listed in the order confirmation.
- When you operate the continuous bucket conveyor without safety devices.

Safety information

Please note the following information:

- Keep this operation and maintenance manual ready to hand for everybody who operates the continuous bucket conveyor.
- Ensure that everybody operating the continuous bucket conveyor is aware of and complies with the safety information in this operation and maintenance manual.
- Check at regular intervals that work is carried out safely on the continuous bucket conveyor.
- Only operate the continuous bucket conveyor if it is working properly
- At regular intervals check the safety devices work properly.
- Check the condition of the conveyor and carry out maintenance work at the intervals stipulated.

- Do not add any further components to or reconstruct the continuous bucket conveyor without approval from the manufacturer.
- Comply with all the current legislation and regulations that apply to the continuous bucket conveyor, as well as the safety regulations, even if they are not mentioned here explicitly.

Personnel

All persons working on or with the continuous bucket conveyor must be properly trained.

Minimum skills

Personnel	Qualifications
Operating personnel	Appropriate instruction in way device works and is operated
	Knowledge of responsibilities involved as regards job to be carried out
Maintenance personnel	In-depth knowledge of mechanical engineering, electrical engineering and pneumatic systems
	Authorisation to commission, earth and mark equipment in line with technical safety standards
	In-depth knowledge of how the continuous bucket conveyor works and is set up

The operator of the continuous bucket conveyor must ensure that everybody concerned with setting up, operating, maintaining or repairing the continuous bucket conveyor has read this operation and maintenance manual.

Signs on the continuous bucket conveyor

In accordance with DIN 4844 and BGV A8 (VBG 125) signs have been applied to the continuous bucket conveyor.

Signs applied to the continuous bucket conveyor

Sign	Meaning	Place applied
	Warning: before starting up, you must install the protective casing	On the continuous bucket conveyor's steel casing
	Information that the product fall height must be less than 200 mm.	At the inlet

Signs applied to the continuous bucket conveyor (cont.)

Sign	Meaning	Place applied
	Warning about hazardous section: Only open the maintenance doors when the continuous bucket conveyor is at a complete standstill.	On the maintenance doors.
	Shows the motor's correct direction of rotation.	On the gear box

Safety devices

Safety devices are protective devices that are absolutely vital for proper operation. They are not however always part of the standard delivery package. The operator is responsible for fitting the additional safety devices.


DANGER

Risk of injury!
If any of the safety devices are modified, removed or taken out of operation, severe injury can occur as a result.
➔ Do not modify the safety devices.
➔ Do not remove the safety devices.
➔ Do not stop using the safety devices.
➔ Ensure access to all safety devices at all times.

Make sure you are familiar with the safety devices and the way they work before you work on the continuous bucket conveyor.

Safety switch

The continuous bucket conveyor is supplied without a safety switch. Safety switches, for example for the emergency stop, are to operate the continuous bucket conveyor safely. Before starting up, the operator must fit safety switches to the continuous bucket conveyor.

Hand protection device

A hand protection device at each inlet and discharge point is vital for safe operation of the continuous bucket conveyor. The continuous bucket conveyor is supplied without a hand protection device. The operator must fit a hand protection device to each inlet and discharge point.

Torque arm overload control

Some continuous bucket conveyor models have torque arm overload control in the gear box motor's torque arm. For details please see the chapter "Torque arm overload control" (page 31).

Speed monitor

Some types of the continuous bucket conveyor have a speed monitor. The speed monitor monitors the speed of the shafts and therefore the speed of the buckets.

After switching on the continuous bucket conveyor, it takes 5 seconds before the speed monitor is activated (start override.)If during operation the speed drops beneath the minimum speed stipulated, e.g. because of an error, the customer must apply a control to ensure the continuous bucket conveyor stops immediately. For details please see the chapter "Monitoring speed" (page 33).

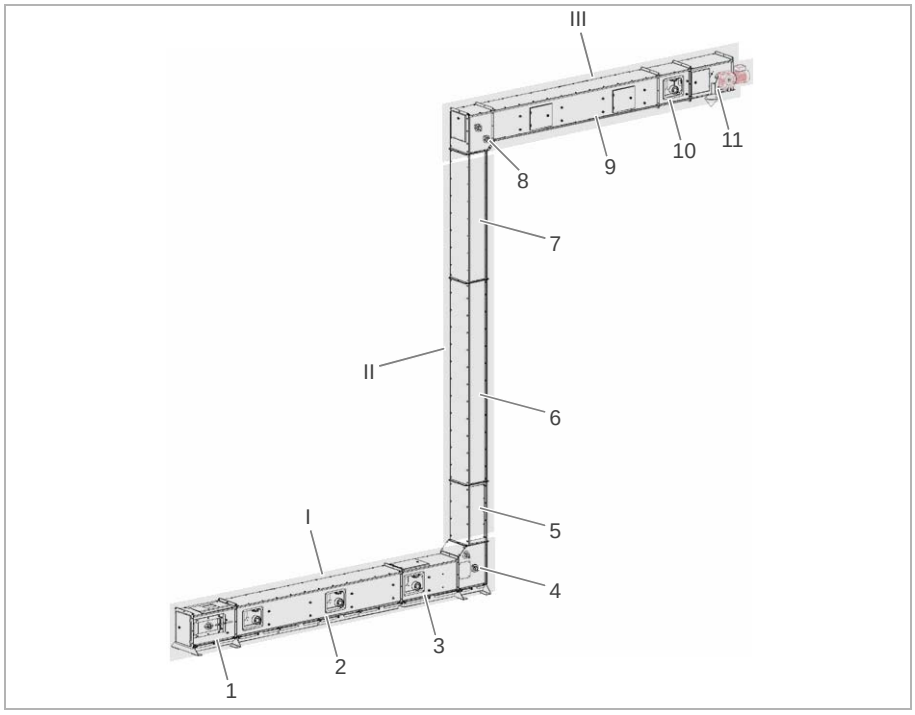
Description of the continuous bucket conveyor

The continuous bucket conveyor is manufactured by WIESE Förderelemente GmbH according to customer specifications. Each and every continuous bucket conveyor is a customised product.

Continuous bucket conveyor segments

The continuous bucket conveyor has a modular structure. It comprises:

- Standard segments
- Fitting segments



An example of a continuous bucket conveyor

Key

No.	Designation
I	Foot
II	Vertical section
III	Head
1	Inlet segment incl. inlet seal
2	Horizontal segment, foot
3	Horizontal fitting segment, foot

Key (cont.)

No.	Designation
4	Corner segment, bottom
5	Maintenance segment
6	Vertical segment
7	Vertical fitting segment
8	Corner segment, top
9	Horizontal segment, head
10	Horizontal fitting segment, head
11	Drive and discharge segment incl. knocker

Some of the specifications and position of some segments on the continuous bucket conveyor can vary from the drawings in the documents supplied with the product. Detailed information about your continuous bucket conveyor can be found in the drawings supplied with the product.

Inlet seal

The inlet seal is located between the inlet flange and the bucket belt. It prevents bulk goods from spilling over and into the continuous bucket conveyor's body.

The following types of inlet seals are available:

- Brush bars
- Brush plate
- Silicone sealing strips

Knocker

The knocker is located in the outlet section. It is suspended in the continuous bucket conveyor's body on both sides.

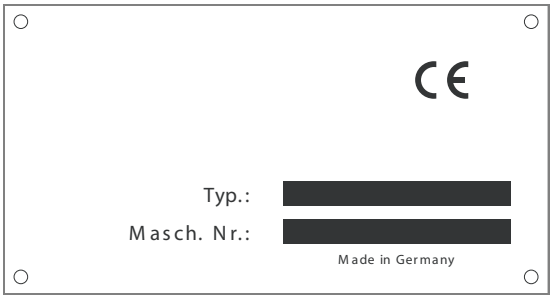
The knocker is lifted by the back of the buckets. Afterwards its own weight makes it fall onto the next bucket that follows. Consequently, it supports the buckets emptying.

Type plate

The continuous bucket conveyor is clearly marked with a type plate.

The type plate includes the following information:

- Company logo and address
- CE-designation
- Type designation
- Machine number and year manufactured



Continuous bucket conveyor's type plate (in this case blank)

TIP

If you have any questions or want to order spare parts, state the continuous bucket conveyor's type, machine number and delivery date.

Technical data

Each and every continuous bucket conveyor is a customised product. For technical data, see the documents provided with the product.

Installation and set-up

WIESE Förderelemente GmbH would be pleased to commission the continuous bucket conveyor at a charge.

The continuous bucket conveyor was manufactured according to customer specifications. The installation of the continuous bucket conveyor is shown below, taking a possible design as an example.

It is vital that a base is available that is safe and the right size. An individual plan for the base is available from WIESE Förderelemente GmbH on request and at a charge.

Transporting the continuous bucket conveyor

The continuous bucket conveyor's segments are pre-fitted. For detailed information see the drawings and packing lists in the delivery documents provided.

When transporting, please note the following:

- Take into account the segments' centres of gravity.
- Always transport the horizontal segments horizontally.
- Secure the lifting equipment from shifting.
- Avoid one-sided load on the segments.

When transporting additional general, national and company safety regulations apply.

Unpacking the continuous bucket conveyor

The continuous bucket conveyor is ready for fitting and has no extra protection from corrosion.

Carry out the following steps:

1. Remove all transport packaging from the segments.
2. Dispose of the transport packaging in an environmentally-friendly manner.

✓ **Done. Continuous bucket conveyor has been unpacked.**

Assembling segments

Depending on on-site conditions, the continuous bucket conveyor can be fitted in one of the following orders:

- "Assembling the segments from the bottom to the top"
- "Assembling the segments from top to bottom" (page 17)

Assembling the segments from the bottom to the top

Condition:

✓ There is free access to the place it is set up in.
✓ At least two mechanics carry out the fitting.
✓ A scaffold that is big enough is available.
✓ Suitable hoisting equipment is available.
✓ Tools are available
✓ Please see the assembly drawings for the position and installation position, see delivery documents.

Carry out the following steps:


DANGER

Risk of injury from parts that fall or tip over!
➔ During fitting, secure all segments with suitable hoisting equipment.

Fit foot

➔ Screw the "Inlet segment incl. inlet seal" [1], "Horizontal segment, foot" [2] and "Horizontal fitting segment, foot" [3] in turn to one another.

✓ Done, continue …

Fit the corner segment

➔ Screw on the "Corner segment, bottom" [4] with the foot's segments that have been pre-fitted.

✓ Done, continue …

Align the segments

➔ Adjust the "Corner segment, bottom" and the foot's segments so they are horizontal. Use the sheets supplied to put underneath.

✓ Done, continue …


TIP

The foot's segments must remain adjustable so that the remaining segments can be fitted. Therefore do not affix the foot's segments to the floor.

Fit the vertical section.

1. Set up the scaffold.
2. Screw on the "Corner segment, bottom" [4] "Maintenance segment" [5], "Vertical segment" [6] and"Vertical fitting segment" [7] in turn to one another.

✓ Done, continue …

Before fitting the head's segments, check the assembly drawings and the situation on site:

➔ If the fully-fitted head segments are so short, that they can be hoisted by crane, continue reading the chapter "Pre-fitting the head segments".

➔ If the fully-fitted head segments are so long, that they can be hoisted by crane, continue reading the chapter "Fitting the head segments individually".

Pre-fitting the head segments

1. Lying on the ground, on the "Corner segment, top" [8] successively screw the "Horizontal segment, head" [9], "Horizontal fitting segment, head" [10], and "Drive and discharge segment incl. knocker" [11] with one another.
2. Lift the pre-fitted segments with the crane.
3. Screw the "Corner segment, top" [8] to the topmost pre-fitted vertical segment.

✓ Done. Continue on and read the chapter "Adjusting and affixing the continuous bucket conveyor" (page 16).

Fitting the head segments individually

1. Screw the "Corner segment, top" [8] to the topmost pre-fitted vertical segment.
2. On the "Corner segment, top" [8] screw the "Horizontal segment, head" [9], "Horizontal fitting segment, head" [10] and "Drive and discharge segment incl. knocker" [11] in turn to one another.

✓ Done, continue …

Adjusting and affixing the continuous bucket conveyor

1. Align the segments. Use the sheets supplied to put underneath.
2. Affix the foot's segments to the floor using the fixation materials supplied.

✓ Done.

✓ **The segments are fitted.**

Assembling the segments from top to bottom

This procedure is only possible if on-site conditions are suitable.

Condition:

- ✓ The crane must be able to hoist the entire vertical section.
- ✓ There is free access to the place it is set up in.
- ✓ At least two mechanics carry out the fitting.
- ✓ A scaffold that is big enough is available.
- ✓ Suitable hoisting equipment is available.
- ✓ Tools are available
- ✓ Please see the assembly drawings for the position and installation position, see delivery documents.

Before you fit the head's segments, check the assembly drawings and the conditions on site:

- ➔ If the fully-fitted head segments are so short, that they can be hoisted by crane, continue reading the chapter "Pre-fitting the head segments".
- ➔ If the fully-fitted head segments are so long, that they can be hoisted by crane, continue reading the chapter "Fitting the head segments individually".

Carry out the following steps:

DANGER

Risk of injury from parts that fall or tip over!

➔ During fitting, secure all segments with suitable hoisting equipment.

Fitting corner segment

➔ Screw the "Corner segment, bottom" [4] to the vertical section's pre-fitted segments.

✓ Done, continue …

Pre-fitting the head segments

1. Lying on the ground, successively screw the "Horizontal segment, head" [9], "Horizontal fitting segment, head" [10], and "Drive and discharge segment incl. knocker" [11] to one another.
2. Lift the pre-fitted segments with the crane.
3. Fit the pre-fit segments on the prepared supports.

✓ Done, continue …

Fitting vertical sections

1. Set up the scaffold.
2. Insert the "Corner segment, top" [8] in the crane.
3. In turn screw the "Vertical fitting segment" [7], "Vertical segment" [6] and "Maintenance segment" [5] to one another, by getting the crane to pull the vertical section upwards piece by piece.

4. Place the vertical section on the aligned foot.
5. Connect the "Corner segment, top" [8] with the head.

✓ Done. Continue reading the chapter "Fitting the foot" (page 18) …

Fitting the head segments individually

1. Set up the scaffold.
2. Insert the "Corner segment, top" [8] in the crane.
3. In turn screw the "Vertical fitting segment" [7], "Vertical segment" [6] and "Maintenance segment" [5] to one another, by getting the crane to pull the vertical section upwards piece by piece.
4. Place the vertical section on the aligned foot.
5. On the "Corner segment, top" [8] screw the "Horizontal segment, head" [9], "Horizontal fitting segment, head" [10] and "Drive and discharge segment incl. knocker" [11] in turn to one another.

✓ Done, continue …

Fitting the foot

➔ On the "Corner segment, bottom" [4] screw the "Horizontal fitting segment, foot" [3], "Horizontal segment, foot" [2] and "Inlet segment incl. inlet seal" [1] in turn to one another.

✓ Done, continue …

Adjusting and affixing the continuous bucket conveyor

1. Align the segments. Use the sheets supplied to put underneath.
2. Affix the foot's segments to the floor using the fixation materials supplied.

✓ Done.

✓ **The segments are fitted.**

Rubber chains

You can find the following information below:

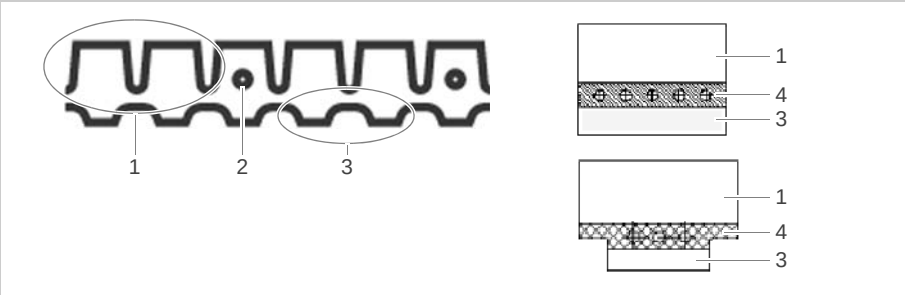
- Basic information
- Fitting rubber chains with link connectors (page20)
- Fitting rubber chains with endless vulcanisation (page21)
- Tensioning rubber chains (page22)

Basic information

The continuous bucket conveyor can be operated with two types of rubber chains:

- Rubber chains with link connectors
- Rubber chains with endless vulcanisation.

The structure of rubber chains is as follows:



Key

No.	Designation	
1	Upper block	
2	Chain bush	
3	Lower block	
4	Steel cable	Caution: Never cut the steel cable!

Fitting rubber chains with link connectors

Rubber chains are always fitted from top to bottom. Carry out all steps simultaneously for both rubber chains.

Condition:

- ✓ Maintenance doors are open.
- ✓ Safety devices are in proper working condition.
- ✓ Suitable hoisting equipment is available.

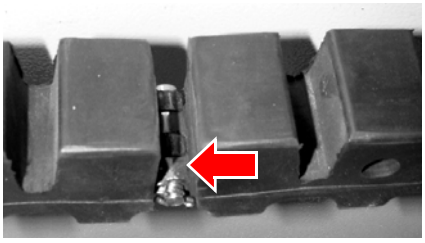
Carry out the following steps:

CAUTION

Uneven chain tracking damages rubber chains and buckets!

- ➔ After having been stored for a longer period of time, hang up the rubber chains for about two days, before you insert them.
- ➔ Use suitable hoisting equipment.
- ➔ Never drop the rubber chains on the ground.
- ➔ Never bend and twist the rubber chains.
- ➔ When inserting the rubber chains, do not damage any components on the continuous bucket conveyor.
- ➔ Align the rubber chains with one another so that the link connectors face one another exactly.

1. If necessary open the link connectors on the rubber chains.
2. Place the rubber chains with the lower block around the drive wheels in the continuous bucket conveyor's head.
   ↪ The chain bushes must always point towards the inside.
3. Guide the ends of the rubber chains through the continuous bucket conveyor.
4. Check that the rubber chains lie in the centre on all the support rollers.
5. Connect the link connector of the rubber chains with the link connector bolts.



6. Secure the link connector bolts with the plain washer and a new locking pin.

✓ **Done. Rubber chains with link connectors are fitted.**

TIP

Only ever use the locking pin once.

Fitting rubber chains with endless vulcanisation

Rubber chains are always fitted from top to bottom. Carry out all steps simultaneously for both rubber chains.

Condition:

✓ Maintenance doors are open.

✓ Safety devices are in proper working condition.

✓ Suitable hoisting equipment is available.

Carry out the following steps:

DANGER

Risk of injury!

When dismantling the drive, you can injure yourself.

➔ Secure the drive against it falling, before loosening any screws.

CAUTION

Uneven chain tracking damages rubber chains and buckets!

➔ After having been stored for a longer period of time, hang up the rubber chains for about two days, before you insert them.

➔ Use suitable hoisting equipment.

➔ Never drop the rubber chains on the ground.

➔ Never bend and twist the rubber chains.

➔ When inserting the rubber chains, do not damage any components on the continuous bucket conveyor.

➔ Align the rubber chains with one another so that the endless joints face one another exactly.

Carry out the following steps:

Dismantle the wheel units.

1. Dismantle the drive unit.
2. Dismantle the idler unit.
3. Dismantle the tension unit.

✓ Done, continue …

Inserting rubber chains

1. Place the rubber chains with the lower block around the drive wheels in the continuous bucket conveyor's head.
   ↪ The chain bushes must always point towards the inside.
   ↪ The rubber chains must lie exactly opposite one another.
2. Fit the drive unit.
3. Guide the rubber chains through the continuous bucket conveyor.

✓ Done, continue …

Fit the wheel units.

1. Fit the tension unit.
2. Fit the idler units.
3. Check that the rubber chains lie in the centre on all the support rollers.

✓ Done.

✓ **Endless rubber chains are installed.**

Tensioning rubber chains

Carry out the following steps:


CAUTION

Unevenly tensioned rubber chains will damage the buckets!
➔ If required adjust the chain tension.

1. Tension the two rubber chains on the tension unit evenly.
   ↪ The rubber chains are tensioned correctly if they can be depressed about 15mm to 20mm without too much force between two support rollers on the foot, that lie about 600mm apart.
2. Check the buckets are operating correctly for at least three revolutions.

✓ **Done. Rubber chains are tensioned.**

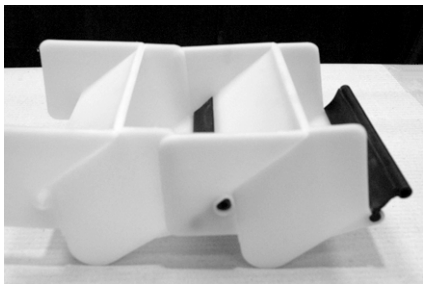
Buckets

You can find the following information below:

- Basic information
- Pre-fitting buckets (page24)
- Turning the backstop (page26)
- Inserting buckets (page27)
- Trial run (page30)

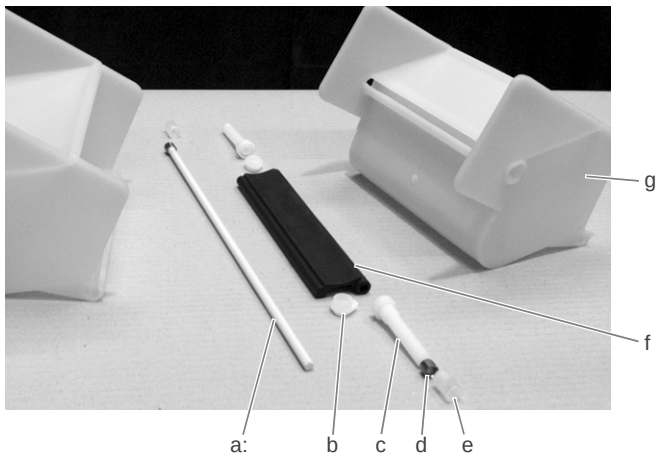
Basic information

The buckets are usually supplied pre-fitted in practical units. The buckets are also connected to one another with a connecting flap. A connecting flap is a moveable link between two buckets.



Two buckets pre-fitted with a connecting flap

Large buckets are supplied separately too. In this case, you have to fit the buckets yourself. The following components are included in the standard package.



Included with a bucket

Key

No.	Designation	Included with a bucket
a:	Rod	1
b	Bucket bush	2
c	Chain bush	2
d	Spring ferulle	2
e	End cap	2
f	Connecting flap	1
g	Buckets	1

TIP

In some bucket types, the bucket bush is already a part of the bucket. In this case, the bucket bushes are not supplied separately.

Pre-fitting buckets

The type and number of components in the bucket belt depend on the type of continuous bucket conveyor, see the bucket belt's part list.

Before you insert the buckets in the continuous bucket conveyor, connect the buckets with connecting flaps to make practical units. The connecting flaps are separate parts. The connecting flap is only an integral part of the bucket in type SEB03.

Condition:

- ✓ You require buckets and connecting flaps.
- ✓ To assist you, you will need two fitting rods that each have a rounded point (like thick knitting needles.)
- ✓ A lubricant will make fitting much easier, e.g. a solution of soft soap or silicone spray.

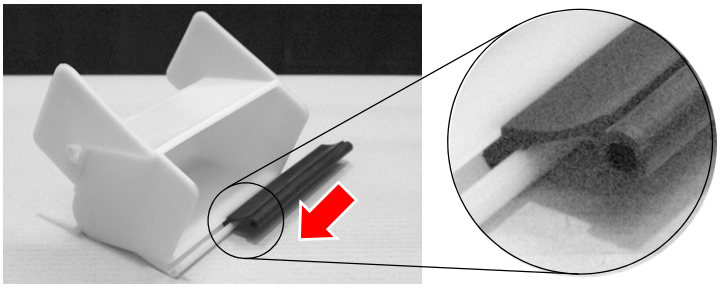
CAUTION

The conveyor can be damaged if unsuitable accessories are used
Grease, oil and sharp tools can damage the buckets.
➔ Do not use any sharp tools.
➔ Only use the lubricant recommended.

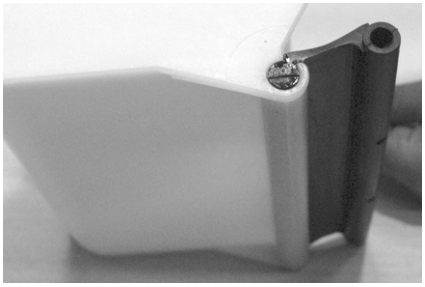
Carry out the following steps:

Feed in the connecting flap

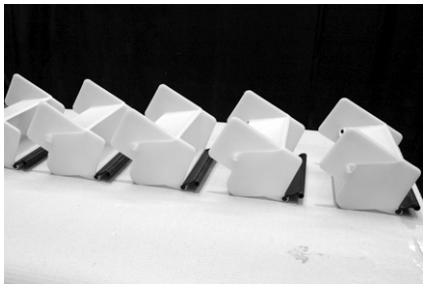
1. Thread in the "closed eye" on the connecting flap from the side into the front groove of a bucket.



2. Push the connecting flap right into the groove.



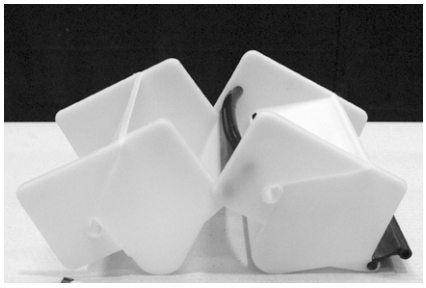
3. Repeat steps 1 and 2. Prepare as many buckets as you can easily handle when inserting onto the conveyor.



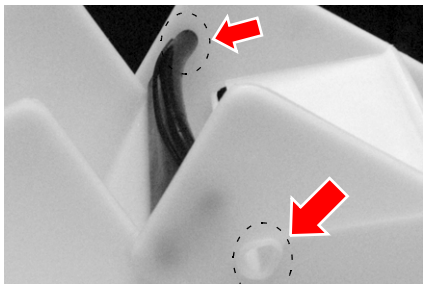
✓ Done, continue …

Connecting the buckets

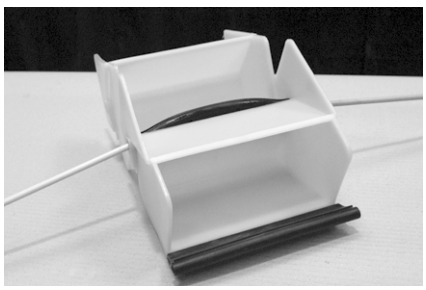
1. Position two buckets behind one another,



2. Bend the connecting flap slightly and wedge it into the bucket so that the two "open eyes" on the connecting flap are flush with the drill holes in the bucket.



3. Carefully push one fitting rod with a rounded point into each drill hole on the bucket into the eye of the connecting flap.



4. Press one end of the connecting flap into the groove of the bucket. In doing so, slowly pull the fitting rod out of the drill hole.

5. Repeat the step on the other side.
6. Press the connecting flap - from the outside towards the centre of the bucket - completely into the groove.

7. Repeat steps 1 and 6. Connect as many buckets with one another as you can easily handle when inserting onto the conveyor.

✓ Done.

✓ **Buckets are pre-fitted**

Turning the backstop

You must turn the backstop before you fit the buckets in the opposite direction to the one conveyed in. Otherwise fitting is not possible.

Carry out the following steps:

➔ If you fit the buckets in the opposite direction to the one conveyed in, turn the backstop round.

➔ If the buckets are fitted in the direction conveyed in, the backstop remains in the factory setting.

✓ Done.

Inserting buckets

In large or very high continuous bucket conveyors, the fitted rubber chains might be difficult to pull manually. If this is the case, fit the drive section before you insert the buckets. When tipped, the rubber chains can be moved forwards or backwards. Please ask WIESE personnel to give you a thorough briefing before you insert the buckets with the aid of a motor.

Condition:

- ✓ Safeguards are in place in the workplace to ensure no unauthorised persons enter, or objects can fall.
- ✓ If using scaffolding, all openings in the scaffolding must be secured to prevent falls.
- ✓ The knocker must be dismantled.
- ✓ You will need the pre-fitted buckets, rods with pre-fitted spring ferulle, bucket bushes, chain bushes, spring ferulles and end caps.
- ✓ You will also need a hammer to hit the spring ferulle and another heavy hammer to hold against it.
- ✓ A lubricant will make fitting much easier, e.g. a solution of soft soap or silicone spray.

DANGER

Risk of injury from the moving bucket belt

Because the chains are not evenly fitted with buckets during fitting, the bucket belt can inadvertently start moving.

- ➔ Take suitable measures to prevent the bucket belt moving when inserting the buckets, e.g. by blocking the drive unit.
- ➔ Never reach into the bucket belt if it moves.
- ➔ Always carry out the following steps with at least two people.

CAUTION

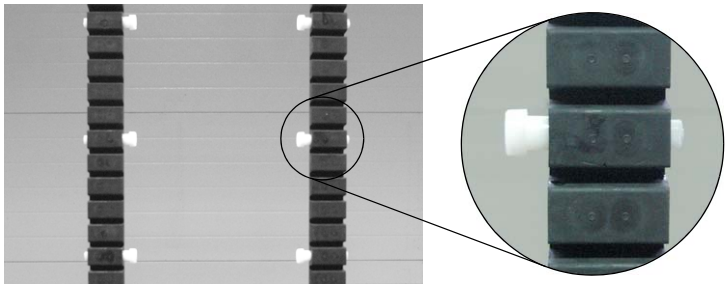
The conveyor can be damaged if unsuitable accessories are used

Grease, oil and sharp tools can damage the rubber chains, the connecting flaps and the buckets.

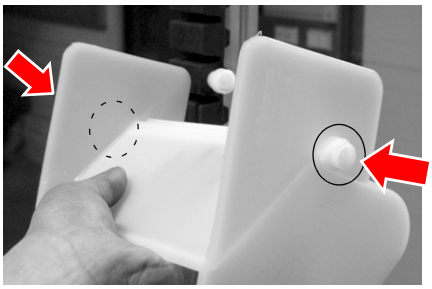
- ➔ Do not use any sharp tools.
- ➔ Only use the lubricant recommended.

Carry out the following steps:

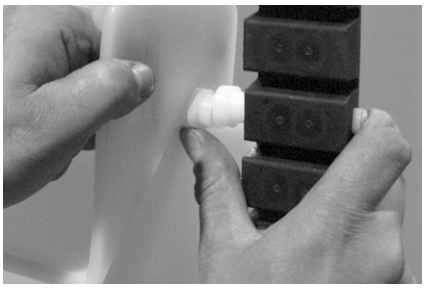
1. Push a chain bush into all the drill holes on the rubber chains, if the chain bushes have not been supplied pre-fitted.



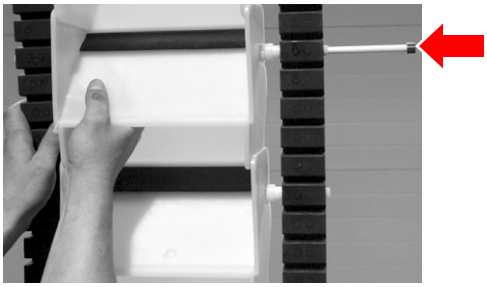
2. Using the connecting flap, connect the topmost bucket with the lowest bucket on the segment previously inserted (does not apply to the first segment.) See the section "Pre-fitting buckets" (page 24) for details of how to proceed.
3. Lift a segment of pre-fitted buckets between the rubber chains. Grasp the topmost bucket.
4. Place one bucket bush into each drill hole on the bucket.



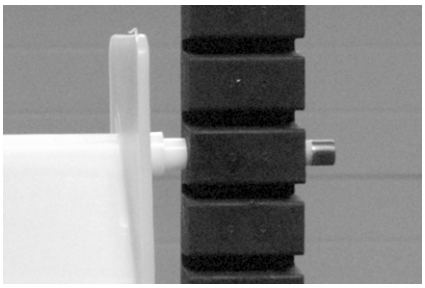
5. Thread the buckets between the chains so that the bucket bush slides into the chain bush. Continue to hold the buckets firmly.



6. Push the rod through the pre-fitted chain bush, bucket and second chain bush.



7. Push the rod till the pre-fitted spring ferulle is flush with the chain bush.



8. Repeat steps 4 and 7 on the other buckets. When fitting the rest of the conveyor, it might be easier if you affix the next segment of pre-fitted buckets to the last bucket already, before you affix the last bucket with the rod to the rubber chains.

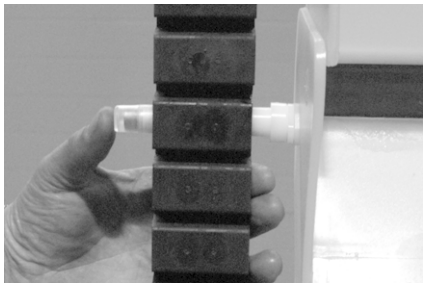
9. Affix the second spring ferulle onto the rod. Hit the spring ferulle with the hammer while a second person holds the other end of the rod with a heavy hammer.

↪ The buckets must not be jammed in.

↪ The rod and the spring ferulles must be flush with one another.

↪ The rod must be easy to turn.

10. Push an end cap into each end of the rod, if your continuous bucket conveyor has end caps.



11. Repeat steps 9 and 10 on the other buckets.

12. Repeat steps 2 to 11 till all buckets are fitted.

13. Fit the knocker.

✓ Done.

Activating the backstop

Carry out the following steps:

1. Apply the backstop as required.

2. Check the backstop works perfectly.

✓ Done.

Trial run

After fitting the buckets, you will have to carry out several trial runs. If required adjust the chain tension. Too much tension in the rubber chains will result in the bucket belt vibrating.

Drive unit

You can find the following information below:

- Basic information
- Connect gear box motor (page30)

Basic information

The continuous bucket conveyor is supplied with a gear box motor. The gear box motor has already been fitted in the factory to the drive segment.

Please note the following conditions:

- The gear box motor must be connected by skilled and trained personnel.
- Please comply with all applicable safety regulations.
- Skilled and trained personnel must know how the motor works.
- Skilled and trained personnel must be aware of the entire production process.

Connect gear box motor

Carry out the following steps:

1. Dismantle the backstop on the drive unit.
2. Connect the motor.
   ↪ See information in the motor's operation manual.
3. Let the gear box motor run briefly (for less than a second.)
4. Check the direction of rotation by referring to the sticker on the motor.

5. If necessary adjust the direction of rotation.
6. Insert the backstop for the drive unit.

✓ **Done. The motor is now connected.**

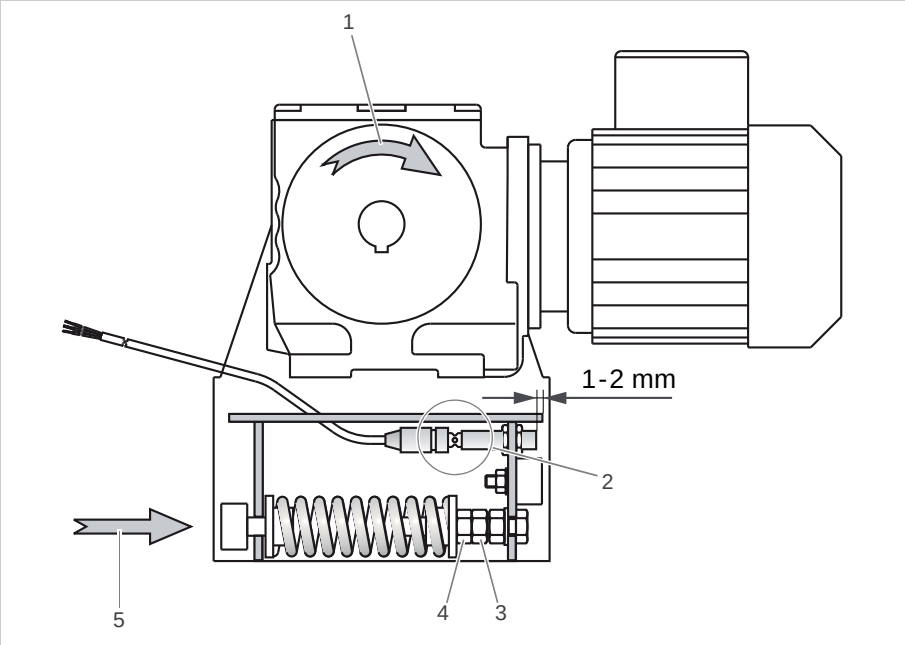
Torque arm overload control

You can find the following information below:

- Basic information
- Connecting the torque arm overload control (page32)
- Procedure for adjusting the torque arm overload control (page32)

Basic information

Torque arm overload control is located in the torque arm of the gear box motor. If the nominal load is exceeded the torque arm overload control causes the following to happen: the motor stops. The order confirmation will indicate whether your continuous bucket conveyor includes torque arm overload control.



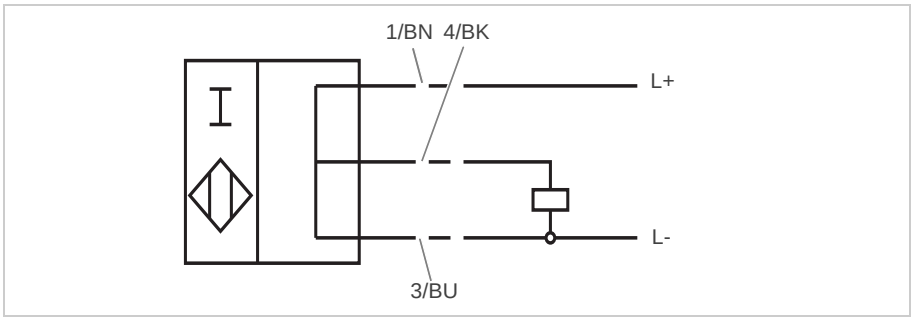
Key

No.	Designation
1	Direction of rotation
2	Initiator with LED
3	Lock nut
4	Adjustment nut
5	Reaction to overload

Connecting the torque arm overload control

Carry out the following steps:

1. Following the wiring diagram, connect the torque arm overload control with your continuous bucket conveyor's drive unit. You will find a detailed wiring diagram in the delivery documents.



Key

Designation	Meaning
BN	Brown
BK	Black
BU	Blue
Voltage: 10…36 V DC	

2. Check the torque arm overload control works properly. Proceed according to the chapter "Procedure for adjusting the torque arm overload control" (page 32).

✓ Done.

TIP

Do not forget to connect the safety switches, e.g. with emergency stop function. However, these are not included in the continuous bucket conveyor delivery package. Check the emergency stop function works properly before you operate the continuous bucket conveyor.

Procedure for adjusting the torque arm overload control

Adjust the torque arm overload control so that it

- Is set off each time the motor blocks
- Is set off each time the motor is subjected to jerks.
- So that when started, a start-up bridging of 3 seconds is guaranteed.
- So that after an malfunction report, the motor does not start by itself again.

Carry out the following steps:

1. Operate the continuous bucket conveyor with products as you would do during a normal working day. If you change products: convey the heaviest and lightest product available.
2. Fill up the buckets as you would in a standard operational process.
3. Loosen the lock nut.[3].
4. Loosen the adjustment nut[4], till the torque arm overload control is set off.
5. Tighten the adjustment nut round once.
6. Tighten the lock nut.

✓ **Done. The torque arm overload control is adjusted.**

Monitoring speed

You can find the following information below:

- Basic information
- Information about fitting and connecting (page35)
- Connecting the speed monitor (page35)
- Adjusting the potentiometer (page36)

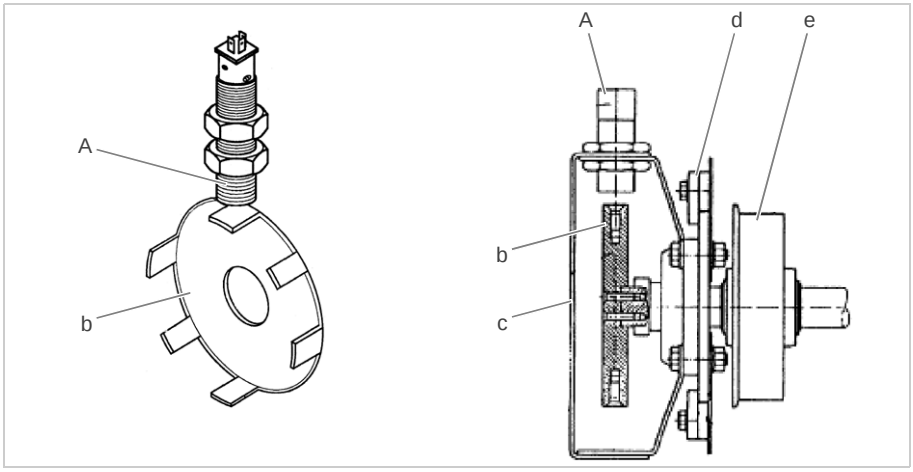
Basic information

The speed monitor checks the speed of a shaft. Non-contact speed monitors on one or several of the idler shafts on a continuous bucket conveyor identify the actual speed of the idler shafts. The control function on the continuous bucket conveyor constantly compares this actual speed n_{actual} with the preset target figure n_{target}. If the difference between n_{actual} and n_{target} is too great, e.g. when the machine is blocked by a foreign body, the continuous bucket conveyor is switched off.

A start override of approx. 5 seconds enables the continuous bucket conveyor to accelerate to the target speed. Only then will the speed monitor be effective. A green LED on the speed monitor indicates the conveyor is working properly.

A speed monitor consists of an inductive proximity switch as well as a rotatable cam disc. The disc is driven by an idler shaft. The proximity switch measures the number of cam discs that pass per unit of time (frequency.) The device's own analytical electronics identify the current speed from this frequency.

Your order confirmation will show whether your continuous bucket conveyor has a speed monitor.



Speed monitor: a diagonal view (left) and cross section (right)

Key

No.	Designation
A	Proximity switch
b	Cam disc
c	Protective cover
d	Tension unit
e	End wheel

Speed monitor's technical data

Nominal voltage (DC)	10 ... 36 V
Constant current	250 mA
Power consumption at 24 V	≤ 3 V
Damping frequency	250 Hz
Setting range	3...300 impulses/min
Switch point hysteresis	± 15%
Switch distance	5 mm
Switching state display	2 (yellow + green) LED
Start override t_A	5 s
Ambient temperature	- 25.. .+ 80 °C
Protection type	IP67
Connector	Plug
Wire cross section	1.5 mm^2

TIP

Please refer to the data sheet issued by the manufacturer for further technical data on the speed monitor.

Information about fitting and connecting

In the factory, the speed monitor is fitted to an idler shaft on the continuous bucket conveyor. The monitor may only be fitted by a qualified electrician.

Speed monitors may be connected to the following segments on the continuous bucket conveyor:

- "Inlet segment incl. inlet seal" [1]
- "Corner segment, bottom" [4] (optional)

Please read the documentation on the electrical components on the entire conveyor, if you connect the speed monitor to the control section of the conveyor, or onto a machine where chains have been applied.

If electrical components, control units, wiring or connecting are part of the standard. WIESE package (see order confirmation), you will find the wiring/electricity plans, wiring specifications etc. in the documentation on the electrical components that was supplied with the product.

Connecting the speed monitor

Condition:

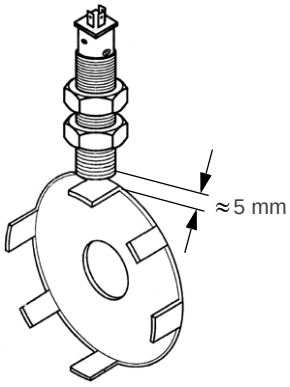
✓ To connect the speed monitor to the control box, a lubricated three-core cable is required.

✓ The electrical equipment must be switched off and earthed.

✓ The nuts (M 30) for affixing the speed monitor to its casing must be tightened securely.

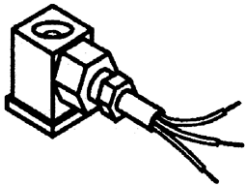
Carry out the following steps:

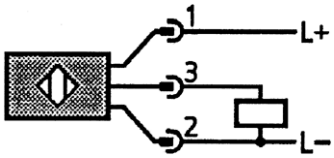
1. Check the distance between the active interface on the proximity switch and the cam disc. A distance of ≈ 5 mm is correct.



2. Lay the cable from the speed monitor to the control box separately (never together in four-core wires.)

3. Connect the cable to the plug.

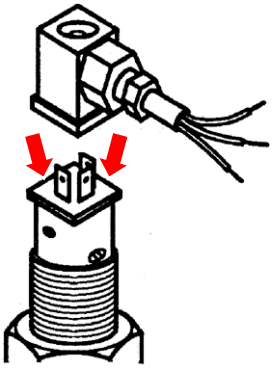




Key

No.	Designation	Meaning
1	BN	Brown
2	BU	Blue
3	BK	Black

4. Place the plug onto the contacts on the proximity switch.



5. Affix the plug by turning the screw tightly.

✓ Done.

Adjusting the potentiometer

After switching on the continuous bucket conveyor, the yellow "impulse" LED on the proximity switch blinks with the damping frequency. The green LED lights up during start override. After about 5 seconds it goes out. If this does not happen, adjust the potentiometer on the proximity switch.

Condition:

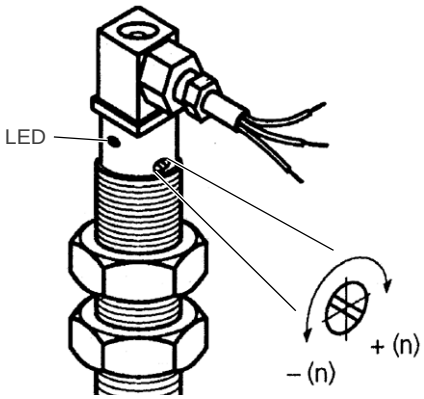
✓ To adjust the potentiometer, an electric screwdriver with a 2 mm wide bit is required.

✓ The continuous bucket conveyor is switched off.

Carry out the following steps:

1. Switch on the continuous bucket conveyor, complying with all safety regulations.

2. If the green LED continues to light up after start override:
   ➔ Turn the potentiometer clockwise, till the LED goes out.
   ➔ Turn the potentiometer again anticlockwise till the LED lights up.



3. If the green LED does not light up constantly:
   ➔ Turn the potentiometer carefully towards the left, till the LED lights up.

✓ Done.

Adjusting the inlet

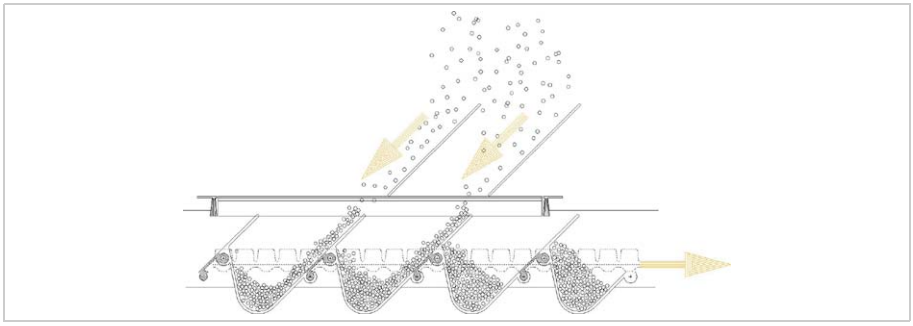
A product infeed section is not part of the continuous bucket conveyor. The machinery that feeds the products onto the continuous bucket conveyor must be designed so that the continuous bucket conveyor works properly.

Please note the following information:

- Ensure that it is not possible for people to reach into the continuous bucket conveyor during operation.
- Ensure that the free fall height of the goods conveyed is not more than 200 mm.
- Start the continuous bucket conveyor before you start the machine that feeds the goods onto it. In this way you can ensure that you do not over-fill the continuous bucket conveyor.
- Ensure that the buckets are evenly filled widthways and only a maximum of 80% full.
- Ensure that the direction of the products fall in is opposite to the direction the buckets travel in (see figure.)
- Stop the machine that feeds the goods before you stop the continuous bucket conveyor. In this way you can ensure that you do not overfill the continuous bucket conveyor.

Correct fall direction

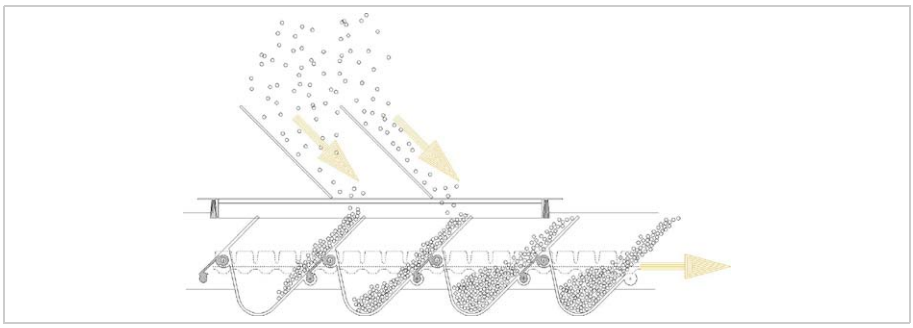
Fall and conveying direction are not the same. The buckets are filled evenly lengthways and across.



Correct fall direction

Incorrect fall direction

Fall direction and conveying direction are the same. The buckets are not filled evenly. Always avoid this fall direction.



Incorrect fall direction, always avoid!

Adjusting the discharge

Discharge hoppers are not part of the package supplied. The operator is responsible for fitting suitable discharge hoppers.

Please note the following information:

- Fit suitable monitoring of filling level on the discharge hopper.
- Ensure that it is not possible for people to reach into the continuous bucket conveyor during operation.

Operation

Starting the continuous bucket conveyor

You start the continuous bucket conveyor as follows.

Condition:

✓ Entire installation procedure has been properly completed

✓ After each fitting step, test runs must be carried out.

Carry out the following steps:

1. Switch on the continuous bucket conveyor.
2. Switch on the metered infeed.
   ↪ The feeder's operation manual will give the information required.
3. Check the following on the continuous bucket conveyor:
   ↪ Unusual noises and vibration that indicate faults.
   ↪ That the safety devices function properly.
   ↪ The rubber chains run properly.
   ↪ The buckets change direction properly.
   ↪ The goods conveyed are fed on properly.
   ↪ The goods conveyed are discharged properly.
   ↪ The torque arm overload control and the speed monitor work properly. The order confirmation will indicate whether your continuous bucket conveyor has these components.
4. Ensure that the goods conveyed are discharged properly.
5. If required carry out further test runs.
6. If necessary adjust the settings.

✓ **Done. You have started the continuous bucket conveyor.**

TIP

The buckets may only be a maximum of 80% full. See the order confirmation for information on the exact filling level limits.

Stopping operation

The continuous bucket conveyor is stopped at the end of a shift or before maintenance work.

Carry out the following steps:

Switch off the continuous bucket conveyor.

1. Switch off the feeder.
2. Do not switch off the continuous bucket conveyor until all the buckets have been emptied.
3. Switch off the continuous bucket conveyor.
4. Protect the continuous bucket conveyor from being switched on accidentally.
5. Disconnect the continuous bucket conveyor from the power supply.

✓ Done, continue …

✓ **No longer operating.**

Re-starting the continuous bucket conveyor

After long periods of standstill, the continuous bucket conveyor is operated as follows.

Carry out the following steps:

Check assembly groups

➔ Check all the components on the continuous bucket conveyor for wear and tear or damage.

✓ Done, continue …

Switch on the continuous bucket conveyor.

1. If necessary, remove the safety devices to prevent switching on accidentally.
2. Ensure that the goods conveyed are discharged properly.
3. Switch on the continuous bucket conveyor.
4. Switch on the metered infeed.

✓ Done, continue …

Checking the continuous bucket conveyor

1. Check the following on the continuous bucket conveyor:
   ↪ Unusual noises and vibration that indicate faults.
   ↪ That the safety devices function properly.
   ↪ The rubber chains run properly.
   ↪ The buckets change direction properly.
   ↪ The goods conveyed are fed on properly.
   ↪ The goods conveyed are discharged properly.
   ↪ The torque arm overload control and the speed monitor work properly
   The order confirmation will indicate whether your continuous bucket conveyor has these components.
2. If necessary adjust the settings.

✓ Done.

✓ **The continuous bucket conveyor has been restarted.**

Stopping the continuous bucket conveyor.

If long periods of standstill are to be expected, the continuous bucket conveyor is stopped as follows.

Carry out the following steps:

Switch off the continuous bucket conveyor.

1. Switch off the feeder.
2. Do not switch off the continuous bucket conveyor until all the buckets have been emptied.
3. Switch off the continuous bucket conveyor.
4. Protect the continuous bucket conveyor from being switched on accidentally.
5. Disconnect the continuous bucket conveyor from the power supply.

✓ Done, continue …

Cleaning the continuous bucket conveyor

1. Clean all buckets thoroughly.
2. Clean the rubber chains thoroughly.
3. Clean all of the continuous bucket conveyor.

✓ Done, continue …

Storing the buckets

CAUTION

The rubber chains will be damaged if stored incorrectly!

➔ Store the rubber chains in a line, not in a pile.

➔ Always store the rubber chains in the dark, packaged in foil, dry, cool and so as not exposed to frost.

1. Store the rubber chains flat, extended out, cool, dry and in a dark place.

✓ Done, continue …

Protecting the continuous bucket conveyor from corrosion

1. Protect the casing and drive unit on the continuous bucket conveyor with suitable corrosion protection.

2. Close all the maintenance doors.

✓ Done.

✓ **The continuous bucket conveyor has now been stopped.**

Fixing malfunctions

There are many different types of malfunctions during operation. Usually they are in connection with incorrect metered feeding of, or maintenance on the continuous bucket conveyor.

Goods have fallen underneath the inlet

Possible causes:

- Product fall height is too high.
- Overfilling.
- The feed direction is incorrect.
- The inlet sealing is torn.

Tips:

- Reduce the fall speed of the goods conveyed by using feeders in between or baffle plates in the feeder.
- Ensure the buckets are filled evenly over the entire width and length of the bucket.
- Ensure that the direction the products fall in is opposite to the direction the buckets travel in. Read the chapter "Adjusting the inlet" (page 37).

Too many goods in the whole of the continuous bucket conveyor

Possible causes:

- Buckets are not filled evenly.
- Buckets are overfull.
- A lot of dust, because the product is very fine or dusty.
- The discharge hopper is too full without any filling level indicator.
- Malfunctions are re-set without any explanation of the causes.

Tips:

- Ensure the buckets are filled evenly.
- Ensure that each bucket is emptied.
- Install a suction device.
- Install a filling level indicator on the discharge hopper.

Despite running motor, the driving shaft is not turning	Possible causes: • Back stop is incorrectly fitted. • Rotational direction of the motor is incorrect. Tips: • Fit the backstop in the correct free wheeling direction. Check the back-stop is not damaged. • Change the rotational direction of the motor. Read the chapter on "Drive unit" (page 30). For further information see "Maintenance intervals" (page 45).


TIP

Should you have an questions about the continuous bucket conveyor, contact WIESE Förderelemente GmbH.

Maintenance, repair and disposal

Maintenance

The continuous bucket conveyor is low maintenance and durable. Build-up, for example from the goods conveyed, dirt as well as older and torn components, can have a detrimental effect on the way the continuous bucket conveyor works. By carrying out frequent maintenance, you will ensure that the continuous bucket conveyor works perfectly and has a long service life.

Maintenance may only be carried out by qualified staff.

Before carrying out maintenance, ensure that:

- The feeder is switched off.
- The continuous bucket conveyor is switched off.
- The conveyor's operational areas are freely accessible.
- Suitable hoisting equipment is available.
- Suitable tools are available.

Maintenance intervals

Establish the maintenance interval you think is appropriate, depending on conditions on site. The following table will give a few guidelines. Should you have any questions, contact WIESE Förderelemente GmbH.

CAUTION

Damage of rubber chain and buckets due to a high pressure cleaner or too high temperatures!

Using a high pressure cleaner can destroy the rubber chain and the buckets. The buckets can also be damaged by using too high temperatures.

➔ Never point the jets from high pressure cleaners directly onto the buckets and rubber chains.
➔ Clean PAgf buckets at temperatures below 80°C.
➔ If higher temperatures are necessary, please contact WIESE Förderelemente GmbH.

Recommended maintenance intervals

Interval	Assembly groups	To do
Once after two weeks	Rubber chains	Check chain tension and adjust if necessary
At the beginning of each shift	Entire continuous bucket conveyor	Check material flow – Filling levels OK? – Inlet OK? – Discharge OK?
		Check emergency stop works.
		Remove all loose products from the continuous bucket conveyor.
		Empty drawers.
		Get damaged identified repaired, before putting into operation.
Weekly	Bucket suspension	Check, if necessary clean or replace chain bushes in the rubber chain.
	Speed monitor	Remove soiling or build-up from the active interface.
Every 2 to 4 weeks	Entire continuous bucket conveyor	Clean all of the continuous bucket conveyor.
Monthly	Drive unit	Check torque arm overload.
	Drive wheels	Clean.
		Check the rollers turn freely.
		Replace torn rollers.
		Check for damage.
	Inlet seal	Check wear and tear.
	Buckets	Check wear and tear, if necessary clean.
	Electricity supply	Check supply points.
	Rubber chains	Check wear and tear. In link connectors also check wear and tear on the pins.
		Check chain operation/vibrations and if necessary adjust.
	Knocker	Check wear and tear.
	Wheels	Check cleanliness, if necessary clean.
	Support rollers	Checking they free wheel, if necessary clean or replace.
Every quarter	Rubber chains	Check for tears and abrasion marks (uneven wear and tear) on the rubber blocks.

Recommended maintenance intervals (cont.)

Interval	Assembly groups	To do
Annually	Entire continuous bucket conveyor	Check stability.
		Check for corrosion.
		Clean all of the continuous bucket conveyor.
		Visual inspection.
	Flange bearings on the wheel units	Check the play on the bearings and the support rollers are freely accessible, if necessary replace.
	Gear box motor	Maintenance as stated by manufacturer.
	Rubber chains	Check chain tension and adjust if necessary

TIP

After carrying out maintenance, do several trial runs to make sure the continuous bucket conveyor is functioning properly.

Cleaning and care

Clean the continuous bucket conveyor regularly. Carry out the following steps:

- Remove any of the products conveyed that have fallen out.
- Empty all the drawers so that the buckets do not touch any goods that have fallen out.
- Clean all the support rollers and wheels.

Repairs

Repairs may only be carried out by skilled personnel. There are special spare parts for each continuous bucket conveyor. Only use spare parts stated in the part list.

Any alterations carried out on the conveyor constitutes improper usage of the continuous bucket conveyor. Before altering the continuous bucket conveyor, please contact WIESE Förderelemente GmbH.

Before repairing, ensure as follows:

- The feeder is switched off.
- The continuous bucket conveyor is not connected to the power supply.
- Maintenance doors are open.
- Relax or remove rubber chains if required for repair.
- Suitable hoisting equipment is available.
- Suitable tools are available.

Disposal

Dismantle the continuous bucket conveyor and its components. Dispose of the components properly. Observe local regulations on waste disposal.

WIESE Förderelemente GmbH will dismantle and dispose of the continuous bucket conveyor on request and at a charge. Should the continuous bucket conveyor or parts of it be contaminated, WIESE Förderelemente GmbH will not dismantle and dispose of it.