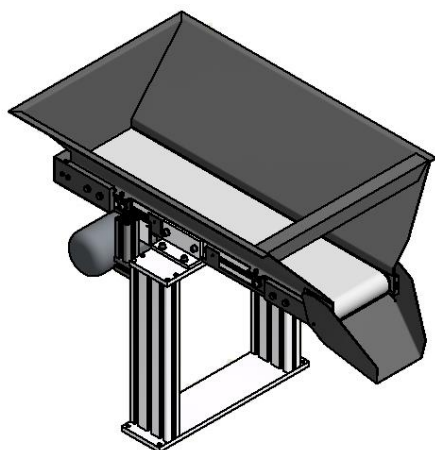


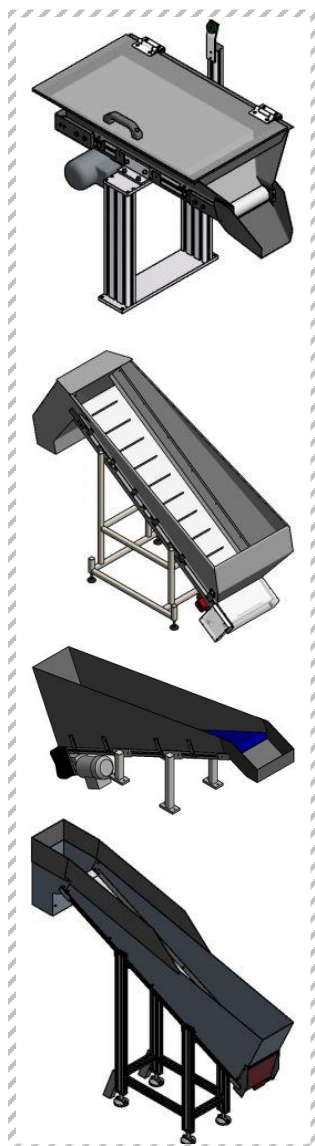


GmbH

FMB



Operating instructions belt hopper / inclined belt hopper



Types

:

BB-5
BB-50
BB-100
SBB-150
SBB-200
SBB-300

Table of contents

Chapter	Page
I. General information	3
II. Structure & functional description	4
a) Transportation & assembly	5
b) Commissioning	6-7
c) Troubleshooting	8
III. Maintenance & cleaning	9
IV. Maintenance	10
a) Tension / adjust the belt	11-12
b) Change belt	13
c) Change drive motor	14
V. Safety	15
a) Safety instructions	15-16
b) Residual risks of the machine	17
VI. Technical data	see project BOMs
VII. Manufacturer information / Declaration of incorporation	18
VIII. Appendices	(Supplied on CD only) 19
a) Documentation of the belt manufacturer (if purchased)	Appendix 01
b) Drive motor operating manual	Appendix 02
c) Frequency converter operating manual (if included)	Appendix 03
d) Other accessories (if included)	Appendix 04

General information

Explanation of symbols



Notice

This symbol indicates important information which contains information on proper operation.



Attention

In these operating instructions, this symbol is found next to all occupational safety instructions that indicate a danger to the life and limb of personnel. Follow the instructions and act with due caution in these cases. Pass on all occupational safety instructions to other users. General safety and accident-prevention regulations must be observed in addition to the guidelines stipulated in these operating instructions.

Introduction

Persons who are responsible for the machine must read, understand and observe all points of the information given in these instructions.

These operating instructions must always be kept near the machine.

It is essential to read these operating instructions carefully as the manufacturer assumes no liability for damage or malfunctions that result from a failure to observe the operating instructions.

These operating instructions are subject to technical modifications made for reasons of improvement or technological progress.

Field of application and proper use

The machine is exclusively designed to perform the functions and activities described in this documentation. Any use that deviates from those described here constitutes improper use. The manufacturer is not liable for any damage resulting from improper use. The user bears sole responsibility in such cases.

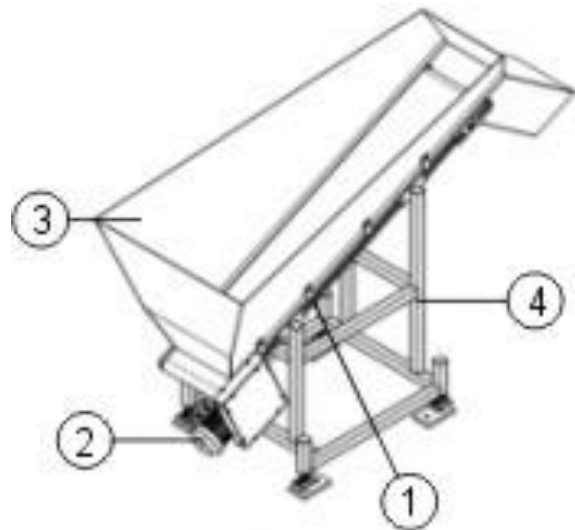
Failure to observe these instructions renders the warranty null and void!

Structure & functional description

A belt hopper is a device for storing material to be conveyed and for replenishing the material to be conveyed in a downstream device.

The basic structure of a belt hopper consists of the following elements:

- Item 1 = belt body
- Item 2 = drive motor
- Item 3 = hopper pan
- Item 4 = Base frame



The material to be conveyed is filled into the hopper tub of the belt hopper by an operator, transported lying on a conveyor belt, and at the front deflection point by gravity into the outlet of the belt hopper in a downstream device.

The belt body of the conveyor belt consists of an extruded aluminium profile, each with a drive roller and a deflection roller. A conveyor belt tensioned parallel between the drive roller and the deflection roller serves as the conveyor element of the conveyor belt. The drive roller is driven by an electric motor from a worm gear motor.

The conveyor belt is mounted on an base frame in such a way that it conveys either horizontally or diagonally upwards. This means that height differences can be bridged. Depending on the material being conveyed and the incline, either smooth, knobbed or conveyor belts with drivers are used.

Different belt widths and hopper trays allow different filling volumes.

Different filling volumes can be realised through different belt widths, belt lengths and hopper trays.

Transportation & assembly

Transportation

The machine must always be transported with due care to prevent damage caused by forceful impact or careless loading and unloading. Use transportation safety devices that are suitable for the method of transport.

If the system is to be put into temporary storage, it must be carefully covered to protect it from moisture, dirt and dust. Apply corrosion inhibitor to unpainted metal components. Check the preservative coating from time to time and reapply as necessary.



Attention

The belt hopper must not be lifted and / or transported by the hopper pan.

Assembly

Installation:

The belt hopper is delivered fully assembled and can be equipped with different belt stands depending on the application:

- Devices with individual stand feet can be screwed directly onto a base plate of the feed device.
- Free-standing devices with a height-adjustable base frame can be placed on the floor next to the feed device and adjusted in height. If the base frame is equipped with wheels, the wheel parking brakes must always be activated after positioning at the installation site in order to prevent the device from rolling away in an uncontrolled manner



Notice

When setting up the belt hopper, it must be ensured that there is sufficient clearance to other, especially vibrating, devices.

When replenishing vibratory feeders, make sure that the parts fed in from the belt hopper do not fall onto the conveyor spiral or the sorting area and thereby impair the function of the device.

Installation conditions:

When installing the machine, ensure that the floor has sufficient load-bearing capacity.

The area around the device should offer sufficient space for maintenance, operation and repair.

Commissioning



Notice

Before commissioning, it must be ensured that the aforementioned points >>*Transport & assembly*<< have been observed and checked.

Electrical connection:



Attention

Incorrect connection of the motor poses a lethal danger.

This task must only be performed by specialist personnel in compliance with all safety and local regulations. It is essential to check that there are no unauthorised persons in the danger zone of the machine.

- Connection cables must be installed with suitable protection.
- Plugs and cables may only be connected by trained electricians.
- The plug and terminal board of the motor may only be opened by qualified electricians.
- Cables may only be shortened or lengthened by qualified electricians.
- Use only flawless material in accordance with the rules of technology.
- Connection voltages and directions of rotation must be checked.
- When connecting the device, the regulations, instructions and circuit diagrams of the motor manufacturer must be observed.
- When using a frequency converter, the regulations, instructions and circuit diagrams of the frequency converter manufacturer must be observed.
- Check whether the available supply voltage corresponds with the information on the nameplate of the motor.
- After connecting to the electrical network, the direction of travel of the conveyor belt must be checked and, if necessary, corrected by swapping two outer conductors.

Commissioning



Notice

Before commissioning, it must be ensured that the aforementioned points >>Transport & assembly<< have been observed and checked.

Functional check:

Check that the conveyor belt is running straight. The procedure for a correction can be found in Chapter IV >> *Tensioning / adjusting the belt* <<.

Observe the function under load as intended and specified over a period of 15 minutes. This is how defects caused by transport damage or improper handling can be identified and rectified before the device is handed over to production.

Belt tension

The conveyor belt is correctly preset at the factory with regard to tension and straight-line stability.

Under load, the transport belt can lengthen over time, which must be corrected by readjustment (see Chapter IV >> *Tensioning / Adjusting the Belt* <<).

Checking the belt tension

After a running time of 2 days, the belt tension and the straight-line stability must be checked (see Chapter IV >> *Tensioning / adjusting the belt* <<).



Notice

Perform the following inspections and actions before commissioning the system:

No.	Assembly	Action
1	Conveyor belt	Check stability
2	Conveyor belt	Check for damage
3	Conveyor belt	Check the conveying direction, belt tension & straight-line stability

Troubleshooting

The following faults can occur during operation:

No.	Fault location	Description	Cause	Remedy
1	Motor	Drive motor doesn't run	Defective fuse Mains connection missing Connecting cable damaged	Change fuse Establish mains connection Replace connecting cable
2	Motor	Drive motor becomes hot	Ventilation grate clogged	Clean ventilation grate
3	Conveyor belt	Conveyor belt doesn't feed	Conveyor belt torn Conveyor belt slips through Conveyor belt jammed	Replace conveyor belt Clean conveyor belt Tension conveyor belt Eliminate jams
4	Conveyor belt	Conveyor belt runs off-centre	Drive and / or pulleys not aligned	Adjust the conveyor belt to run straight

Maintenance & cleaning



Notice

The conveyor belts of the belt hopper are virtually maintenance-free. The following inspections and servicing tasks must be performed at the specified intervals as a minimum requirement:

- The roller bearings are low-maintenance. If necessary, proceed according to the instructions of the bearing manufacturer.
- The motor is maintenance-free.
- The conveyor belt must be cleaned regularly and checked for damage.



Attention

The chapter >> *Safety instructions* << must be observed for all maintenance and inspection work.

Malfunctions caused by inadequate or incorrect servicing can incur considerable costs. Regular servicing is essential.

It is not possible to specify universal servicing and maintenance intervals due to the wide range of different operating conditions. A routine that is suitable for the respective operating conditions must be defined.

Cleaning:

It is recommended to thoroughly cleaning any dirt, waste, and any fallen parts off the machine on a regular basis, e.g. after the end of every shift. Coatings, e.g. made of polyurethane, conveyor brushes or other product-specific surface coatings, must be cleaned with a non-regreasing cold cleaner. Coatings in pharmaceutical-grade devices must be cleaned with pharmaceutically harmless and neutral cleaning agents.

Wear monitoring:

Wear parts, i.e. all parts that move in contact with other parts or that come into contact with the conveyed material, must be checked for wear from time to time and adjusted or replaced as required.

Maintenance

Procurement of wear parts:

Wear parts are marked with an **V** in the assembly parts lists in the appendix.
All wear parts can be requested and ordered from us.

Spare parts procurement:

Spare parts are marked with an **E** in the assembly parts lists in the appendix.

Only original spare parts may be used. DIN parts can be ordered from specialist retailers.

Tension / adjust the belt**Notice**

A correctly tensioned belt rests flat on the sliding plate during the run, does not form any buckling on the inlet side, and can be easily moved by hand. However, a slight bump near the endless connection of the belt is normal.

Requirement:

- The machine is out of operation.
- The machine is secured against being switched on again

**Attention****Risk of injury from exposed machine parts!**

Rotating machine parts can pull in parts of the body, hair and clothing and cause crushing.

- Wear close-fitting protective clothing.
- Wear a hair net if you have long hair.
- Have a second person supervise you.

**Notice**

Depending on the design of the conveyor belt, different methods of belt tension are used. The following designs are possible:

■ Conveyor belt with bearing mounted journals:

In this design, the deflection roller and axle journal form a unit and are rotatably mounted with the axle journals in the self-aligning ball bearings of the side cheeks. Belt tensioning is done by adjusting the cheeks by means of a pressure screw.

■ Conveyor belt with bearing mounted deflection roller:

In this design, the pulley is rotatably mounted on the axle with ball bearings and the axle is adjustably guided within guide grooves in the side cheeks. The belt is tensioned by a pressure screw inside the cheeks.

Tension / adjust the belt

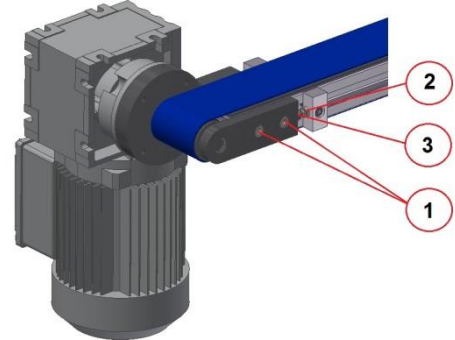


Notice

Before starting work, please check the design of your conveyor belt and carry out the belt tensioning according to the following instructions:

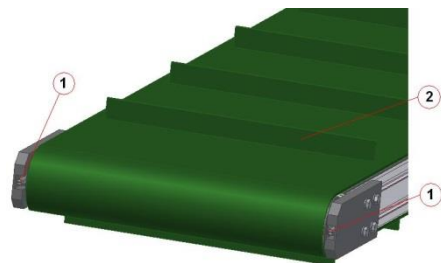
Conveyor belt with bearing mounted journals:

- 1.) Loosen the connection elements (1) on both sides.
- 2.) Loosen the lock nuts (2) on both sides.
- 3.) Tension the belt by turning the hexagon screws (3) evenly on both sides.
- 4.) Tighten the lock nuts (2) and the connecting elements (1) on both sides again.
- 5.) Turn on machine.
- 6.) Check for correct running behaviour.
- 7.) Turn off machine.
- 8.) Repeat steps 1 to 4 until the belt shows correct running behaviour.



Conveyor belt with bearing mounted deflection roller:

- 1.) Tension the belt (2) by turning the threaded pins (1) evenly on both sides.
- 2.) Turn on machine.
- 3.) Check for correct running behaviour.
- 4.) Turn off machine.
- 5.) Repeat steps 2 to 5 until the belt shows correct running behaviour.



Change belt

Requirement:

- The machine is out of operation.
- The machine is secured against being switched on again



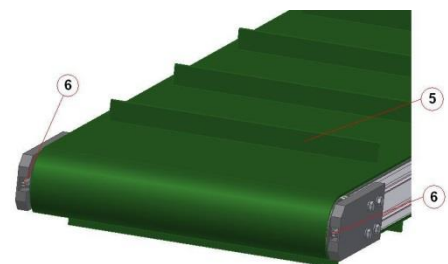
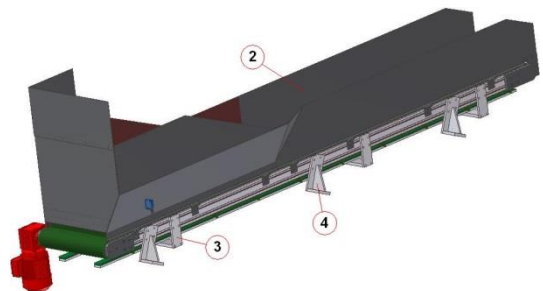
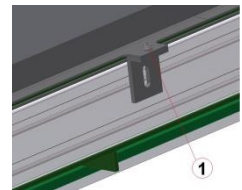
Attention

Risk of injury from exposed machine parts!
Rotating machine parts can pull in parts of the body, hair and clothing and cause crushing.

- Wear close-fitting protective clothing.
- Wear a hair net if you have long hair.
- Have a second person supervise you.

Carry out the following work steps:

- 1.) Remove all belt assemblies (1) such as side guides or hopper tray (2).
- 2.) Completely remove the closed belt cover or remove the holder (3) for the lower belt guide on one side.
- 3.) Release the belt, see previous page in the chapter "Tensioning / adjusting the belt"
- 4.) Remove the belt supports (4) on one side.
- 5.) Remove the damaged belt (5) and put on a replacement belt.
- 6.) Re-assemble the belt supports, lower belt cover and side guides.
- 5.) Release the belt, see previous page in the chapter "Tensioning / adjusting the belt"
- 8.) Turn on machine.
- 9.) Check for correct running behaviour.
- 10.) Turn off machine.
- 11.) Repeat steps 7 to 10 until the belt shows correct running behaviour.



Change drive motor



Notice

The motor position can vary from the illustration. Depending on this, a modified torque support may be available.

The motor position M2 and motor type WA (SEW Eurodrive GmbH) are shown.

Requirement:

- The machine is out of operation.
- The machine is secured against being switched on again
- Gear motor has cooled down



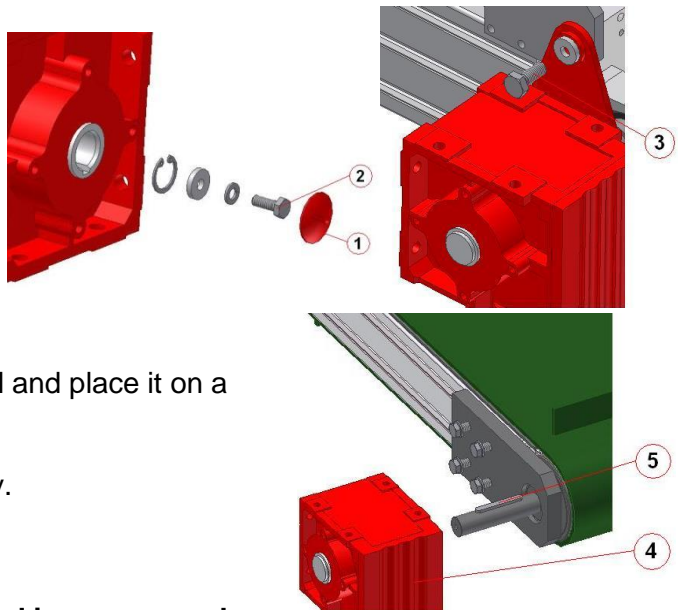
Attention

Increased risk of accident! The motor can tip over and crush body parts.

- Secure the gear motor against falling.
- Use a hoist to lower and raise the gear motor.

Carry out the following work steps:

1. Remove all electrical connection cables from the gear motor.
2. Remove cap (1).
3. Remove connecting elements (2).
4. Remove connecting elements (3).
5. Raise the drive motor (4) off the journal and place it on a suitable surface.
6. remove the feather key (5) if necessary.



The replacement gear motor is assembled in reverse order.

Safety instructions**Attention**

The following occupational safety instructions are particularly important

- ⇒ *The machine has been constructed in line with current technological standards and is safe to operate. However, this machine can be dangerous if it is used improperly by untrained personnel or if it is used for a purpose other than its intended use.*
- ⇒ *All persons involved in the installation, dismantling, commissioning, operation and maintenance of the machine must have read and understood the entire operating manual.*
- ⇒ *The operator is advised to obtain confirmation of this in writing.*
- ⇒ *The machine is exclusively designed to perform the functions and activities described in this operating manual. Any use that deviates from those described here constitutes improper use. The manufacturer is not liable for any damage resulting from improper use. The user bears sole responsibility in such cases.*
- ⇒ *Proper use also includes adhering to the conditions for installation, commissioning, operation, tool changeover and maintenance stipulated by the manufacturer and component suppliers.*
- ⇒ *The machine must only be operated, maintained and repaired by authorised, trained and instructed personnel. This personnel must have received special training concerning hazards.*
- ⇒ *Responsibilities for installation, commissioning, operation, tool changeover and maintenance must be clearly defined and observed to prevent any ambiguity concerning areas of authority.*
- ⇒ *Refrain from any working methods that impair the safety of the machine.*
- ⇒ *The operator must ensure that no unauthorised persons work on the machine.*

Safety instructions

- ⇒ *The operator is obligated to immediately report any changes to the machine that could impair safety.*
- ⇒ *The operating company must ensure that the machine is only operated in perfect condition and in the configuration of drive, control and upper part of the channel as agreed by the manufacturer.*
- ⇒ *The operating company must ensure that the workstations at and around the machine are kept clean and tidy by issuing appropriate instructions and performing inspections.*

**Attention**

- ⇒ ***Safety devices must never be removed or disabled.***

Failure to observe this instruction may result in lethal danger!

- ⇒ *If safety devices must be removed during repair and maintenance tasks, the safety devices must be reinstalled immediately after the work has been completed.*
- ⇒ *Check that the safety devices are properly installed and working correctly before commissioning the machine.*
- ⇒ *Unauthorised conversions and modifications that impair the safety of the machine are forbidden.*
- ⇒ *All work on the device is generally only to be carried out when it is at a standstill.*
- ⇒ *Secure the machine's drives and auxiliary equipment against unintentional activation before starting any work on the machine.*
- ⇒ *Similarly, test the safeguards (e.g. ground resistance) after any electrical installation work or maintenance work has been completed.*
- ⇒ *Operation of the machine is always subject to local safety and accident-prevention regulations.*

Residual risks of the machine



Attention

The following areas pose a potential hazard to the extent described during all operating and maintenance work:

No.	Designation	Possible hazard	Comment
1	Conveyor belt	Electric shock	Open the control unit only when the power supply is switched off.
2	Conveyor belt	Clamping / crushing	Disconnect the control unit from the power supply before intervening in the drive.
3	Conveyor belt	Influence of cardiac pacemakers by electromagnetic fields	Maintain a safety distance of at least 25 cm.
4	Conveyor belt	Unwellness / discomfort / headache due to: - Noise - Vibration - Air flow (only for devices with air support)	- Wear hearing protection - Use sound insulation hood - Increase the distance to the running device - Do not look into or stand in the airflow
5	Conveyor belt	Risk of injury to the eyes and/or other body parts from: - Air flow or particles shooting out (only for devices with air support)	- Wear safety glasses - Wear personal protective equipment

Manufacturer information**Manufacturer of the belt hopper (complete device including superstructures):**

For third-party conveyor belts, see Appendix 01, operating instructions from the belt manufacturer.

FMB GmbH

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Declaration of incorporation
of partly incomplete machine
according to EC machinery directive (2006/42/EC)

We hereby declare that the product complies with the following provisions:

- EC Machinery Directive 2006/42/EC
- Low voltage directive 2014/35/EU
- EMC directive 2014/30/EU

Applied harmonised standards:

- DIN EN 60204-1
- DIN EN ISO 12100-2010

Comments:

We assume that our product will be incorporated into a stationary machine. The owner must observe the provisions of EMC Directive 2014/30/EU.

The commissioning of this incomplete machine is prohibited until it has been established that the machine into which the above-mentioned incomplete machine was installed complies with the provisions of the EC Machinery Directive.

FMB GmbH

Managing Director: Hartmut Striepe, Edwin Neue

Operating manual belt hopper BB / inclined belt hopper SBB

Version: 01/2024

Subject to technical changes and misprints.

Appendices