



Operating Instructions

Bulk Hopper Conveyor

BU 3,5
BU 6
BU 12
BU 25
BU 50
BU 100
BU 200

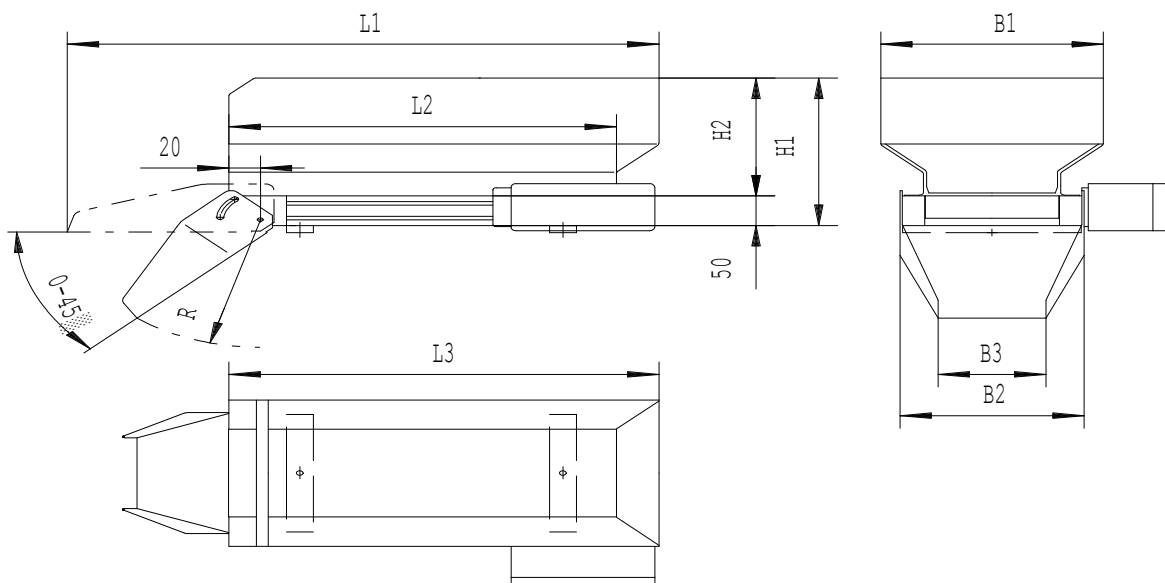
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Rhein-Nadel Automation

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1. Dimensions



Type	Ltr.	Kg	L1	L2	L3	B1	B2	B3	H1	H2	R
BU3,5	3,5	20	377	280	292	150	146	70	165	115	117
BU6	6	30	457	340	357	180	166	90	185	135	137
BU12	12	40	552	400	427	230	196	110	220	170	172
BU25	25	50	662	500	547	280	206	120	285	235	182
BU50	50	70	787	600	662	350	246	150	350	300	207
BU100	100	80	987	750	832	440	296	190	420	370	257
BU200	200	100	1247	950	1057	550	356	240	520	470	317

1.1. Technical Data

24V-DC-Drive unit with 0,1m/min or 0,8m/min Belt speed

Code	BU3,5	BU6	BU12	BU25	BU50	BU100	BU200
Capacity max in litres	3,5 l	6 l	12 l	25 l	50 l	100 l	200 l
Capacity max (24V-DC-Drive unit with 0,1m/min Belt speed)	30 kg	35 kg	40 kg	50 kg	50 kg	50 kg	50 kg
Capacity max (24V-DC-Drive unit with 0,8m/min Belt speed)	10 kg	10 kg	10 kg	10 kg	10 kg	-	-
Nominal voltage (V)	24V=	24V=	24V=	24V=	24V=	24V=	24V=
Current consumption (A)	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Power output (W)	10	10	10	10	10	10	10
Working temperature (°C)	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°

The above mentioned hopper is equipped with a power pack. Voltage is 230V/ 50Hz

230V-Drive unit with 0,85m/min. Belt speed (optional)

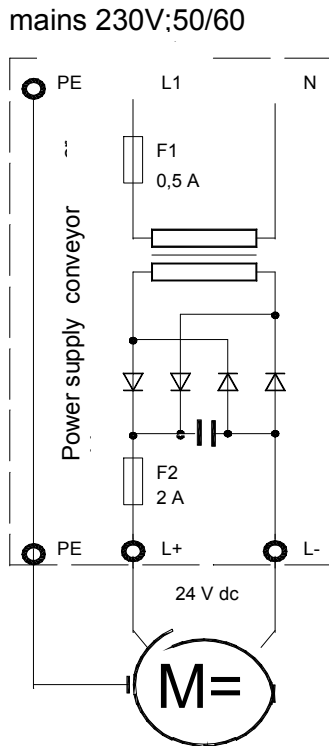
Code	BU3,5	BU6	BU12	BU25	BU50	BU100	BU200
Capacity max in litres	3,5 l	6 l	12 l	25 l	50 l	100 l	200 l
Capacity max. (230V-Drive unit with 0,85m/min Belt speed)	-	-	50 kg	60 kg	70 kg	80 kg	90 kg
Nominal voltage (V)	-	-	230V~270V 50Hz~60Hz	230V~270V 50Hz~60Hz	230V~270V 50Hz~60Hz	230V~270V 50Hz~60Hz	230V~270V 50Hz~60Hz
Current consumption (A)	-	-	0,68 – 0,73	0,68 – 0,73	0,68 – 0,73	0,68 – 0,73	0,68 – 0,73
Power output (W)	-	-	90 - 108	90 - 108	90 - 108	90 - 108	90 - 108
Working temperature (°C)	-	-	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°

400V-Drive unit with 0,85m/min. Belt speed (optional)

Code	BU3,5	BU6	BU12	BU25	BU50	BU100	BU200
Capacity max in litres	3,5 l	6 l	12 l	25 l	50 l	100 l	200 l
Capacity max. (400V-Drive unit with 0,85m/min Belt speed)	-	-	60 kg	70 kg	80 kg	90 kg	100 kg
Nominal voltage (V)	-	-	400V~460V 50Hz~60Hz	400V~460V 50Hz~60Hz	400V~460V 50Hz~60Hz	400V~460V 50Hz~60Hz	400V~460V 50Hz~60Hz
Current consumption (A)	-	-	0,39 – 0,42	0,39 – 0,42	0,39 – 0,42	0,39 – 0,42	0,39 – 0,42
Power output (W)	-	-	90 – 108	90 – 108	90 – 108	90 – 108	90 – 108
Working temperature (°C)	-	-	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°	-5° up to +60°

1.2. Circuit diagram controller board and power supply unit

Direct current option



Power pack 230 V ac, 24 V dc

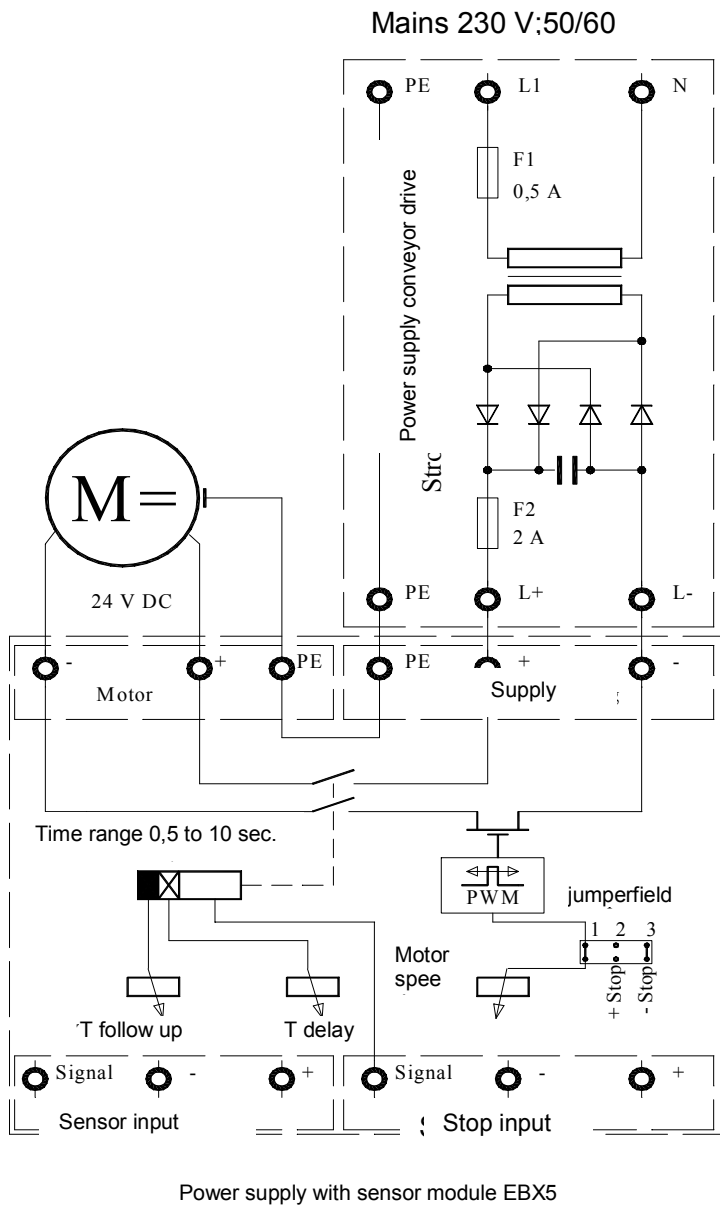
In connection with an ESK 2000/2001 the power supply unit is quite enough for the operation of the hopper. In this case the power line in the ESK is led to the terminals 13, 24 and PE. The level sensor is connected to the ESK as sensor 2, the delay times are to be selected in the menu C005. In the menu C020 the logic control P4 is called up. Thus, independent from the filling level, the hopper starts operation only when the feeder is running. Notice must be taken that the running speed of the hopper belt cannot be adjusted and no electronic current limitation intervenes in case of overload or short circuit.

For retrofitting it is also possible that the power supply unit is connected by means of the adapter EBX2. In this case an additional installation with intervention in the control unit does not take place.

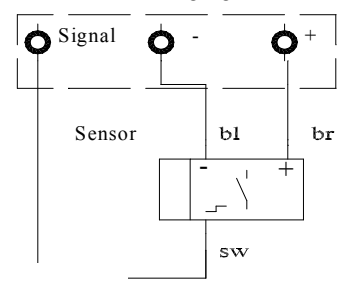
In cases where no sensor input is available in the preconnected control unit, the additional board EBX5 is used, which is accommodated in the housing of the belt drive. The board is looped into the motor circuit, by connecting the three lines of the power supply unit to the terminals SUPPLY and the three motor lines to the block of terminal MOTOR. Here the polarity must be observed. The running speed of the belt is now selectable. With it jumper 1 must be plugged in the jumper field. At the trimmer potentiometer 5 --> 100%. The required speed must then be adjusted.

The terminal for the level control is marked with TRANSMITTER START and allows to connect almost all commercially available sensors. After the set time T DELAY has run off the belt starts up, when a positive signal is generated at the input SIGNAL START. The belt stops after passing of T TIME LAG at a signal level <8 volt. The signal direction is not invertible. If the input is not needed, it must be connected by means of a jumper with a terminal+.

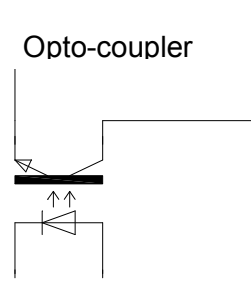
The input TRANSMITTER STOP works instantaneously. For the function of this input jumper 2 or jumper 3 must be plugged into the jumper field, however, never both jumpers. To jumper 2, STOP – ACTIVE applies, the motor stops at a signal 0 volt at the input. It stops at a positive signal, if jumper 3, STOP + ACTIVE is plugged in.



Sensor input



Opto-coupler



Contact

Exemplary connections

The opto-coupler taken as an example may also be the driver transistor of a PLC. In this case it is not the collector that is connected to the terminal plus, but the 0-volt potential of the PLC to the terminal – of the stop input.

2 Safety instructions/labeling



Attention

This warning marks safety instructions. Non-observance of these warnings may lead to severe injuries or death.



Take care

This warning marks safety



Note

This hand marks the notes giving you useful advice for the operation of the belt hopper.

- Basic condition for safe handling and trouble-free operation of the belt hopper is the knowledge of the basic safety instructions.
- These operating instructions, especially the safety Instructions, must be observed by all persons working at the machine.
- Moreover, the regulations applicable at the place of installation and the regulations for the prevention of accidents must be observed.

Make sure that all persons, who work with or at this machine thoroughly read and observe the following safety instructions!

This operating instructions are only valid for the types mentioned on the title page.

It must always be available at the place of installation of the hopper conveyor.

When using the hopper conveyor in humid or wet environment (wet area), it must be made sure that the required insulation type is used.

- The user and operator must take care that only authorized personnel may work at the conveyor belt.
- Changes affecting safety must immediately be reported to the operator.
- The conveyor belt may be operated in proper conditions only.
- The conveyor belt may be operated according to the intended use only.
- Please observe the regulations for prevention of accidents VBG 10 for continuous conveyors and VBG 4 for electric equipments and operating means.

Requirements made on the user

Starting, conversion work as well as maintenance and Repair work may only be carried out by qualified and Authorized personnel.

Dangers in handling the machine

Our belt hoppers are build according to the latest state of the art and the recognized safety regulations. Nevertheless, dangers for life and limb of the user or third persons or impairments to the machine or to other material assets may occur. The machine is to be used

- according to the intended use
- in proper condition as regards safety technology.

Disturbances affecting safety must be immediately eliminated.

Intended use

The belt hopper exclusively serves storage, refilling or conveying of component parts, which were determined at placing the order. Another use or any use exceeding that is not considered to be in accordance with the intended use. For damages resulting from that RNA will not take any liability.

The intended use also includes:

- the observance of all notes contained in the operating instructions,
- the adherence to the inspection and maintenance work.

Electric connection

- see the connection diagrams of the control units.

Here the correct polarity of the connections must be observed (observe connection diagram on the inside of the motor case cover). At the same time care should be taken that the protective earth conductor is installed.

- The drive unit 230V may only be operated with alternating current 230V, the connecting cable must have a properly connected protective earth conductor. The drive unit 400V may only be operated with 400V three-phase current, the connecting on the inside of the motor case cover must be observed. The connection of the device may only be made by authorized personnel. In case of disturbances, the device must be disconnected from the power supply.

Dangers of the machine

- In case the hopper conveyor comes in to contact with moisture, danger of an electric shock may occur.
- Make sure that the protective earthing of the power supply is in proper condition.
- The operation of the hopper belt without casing and protection hood (chain drive) is in any case prohibited!
- The gap at the belt intake points may not be greater than 4 mm, otherwise danger of limbs being taken in. In case a greater gap results from the belt adjustment, the protective collar must be readjusted.

Hopper conveyor

- If, despite the extremely slow belt speed, the operating personnel is still in danger of body parts being taken in, owing to the equipment design or the equipment application, the operator of the device must take care for suitable covering of th hazardous points.

3. Design and function of the hopper belts

The basis of the hopper conveyor is a conveyor belt, on which the parts are being put on and conveyed to an inclined chute. For reaching a certain filling volume, a specific parts storage container is put on this conveyor belt. At construction sizes 0 – 3 (3.5l – 30 l) the conveyor belt is driven by a direct current geared motor, construction sizes 4 and 5 (100 l and 200 l) usually by a Three-phase motor. The drive of the hopper is realized as follows:

	Power supply unit	EBB 1ZS	EBB 1ZDS
Direct current drive	X		
Alternating current drive		X	
Three-phase current drive			X

Application ranges:

- Parts storage for sorting and feeding devices (longer refilling intervals for the operating personnel)
- Charging of packing machines and scales
- Metered parts supply
- Essential optimization of the conveying behaviour of feeding devices
- Reduction of the feeding device sizes and consequently cost reduction and space-saving through external feeding of the parts

4. Transport and assembly

4.1 Transport

Transport ex works

The hopper conveyors are delivered ex works in cardboard or box packings.

Transport, ex factory

The weight of the hopper conveyor depends on the dimensions. Please see the weight of its special design in the transport documents.



Attention

When unpacking, all protective devices must be checked. Damaged parts must be replaced before starting the equipment.

5 Starting



Attention

The electric connection of the hopper conveyor may be made by trained (qualified electrician) personnel! When modifications are carried out at the electrical connection, the operating instructions of the protective motor switch or the control unit must be strictly observed.

Installation:

The hopper conveyor should be installed on a suitable foundation, slab or similar or on a stand. A tight screwed connection of the device with the basis is not absolutely necessary, as it does not operate according to the vibration principle. The device must, however, be secured against dropping down. When mounting care should be taken that the running of the belt is not obstructed. For fastening the hopper conveyor two adjusting strips are arranged at the bottom side of the equipment.

5.1 Electric connection

The electric connection may, according to the circuit diagram, only be made by a qualified electrician. In the factory all motor or switching relay connections have been put on terminals, and also the device has been earthed. For the cable inlet to the motor case a PG-screwing is provided at the front side of the casing. Care must be taken for sufficient lead cross section. The connection cable must have a properly connected ground wire. A permanent running should not be aimed at, but switching off of the belt conveyor through a min./max. control of the conveyor system.

5.2 Adjustment possibilities

Adjusting plates: in the parts storage container adjustable stainless strips are arranged on both sides. These strips prevent parts to run. After loosening the cap nuts they can be adjusted. The adjusting plates may not obstruct the running of the belt.

Chute: after loosening the round head tapping screws the inclination of the chute can be adjusted. At parts storage for oscillating conveyors, care must be taken that parts dropping down from the chute do not fall on the baffle plates and with that obstruct the function of the device. Feeding of the parts into the device should take place in the centre..

Rubber mat: at the exit of the goods to be transported there is a rubber mat, by which it is avoided that in case of large filling quantities of the hopper, not too many parts fall on the chute. In case of large parts to be conveyed, an unobstructed parts passage is not possible, the rubber mat must be shortened by the customer bit by bit, by means of a suitable tool, until the parts passage is no longer obstructed.

Belt tension: the belt is preadjusted in the factor as regard tension and central run of the drive and guiding roll.

Retensioning, see maintenance.

An adjustment of the chain tension at 230/400 V drive is usually not necessary, may, however, if necessary, be made by means of the chain adjuster.

An operation of the device with detached motor or drive cover is not permitted!

6 Maintenance



Attention

When installing, maintenance and repair the belt hopper must with all poles be disconnected from the power according the VDE-regulations. Work at electric equipments of the conveyor belt may only be carried out by a qualified electrician or by an instructed person (see chapt. 2) under the instruction and supervision of a qualified electrician according to the electrotechnical regulations.,

After a running-in period of approx. 2 weeks tension and central running of the goods to be transported should be checked and, if necessary, corrected. Subsequent control are sufficient and may be made in approx. 4 week's time.

6.1 Belt

The belt tension must be adjusted in a way that also at full parts storage container (max. belt load of your belt hopper must be observed) the conveyor belt does not slip.

The belt tension is adjusted by turning the round-head tapping screws. Turning in clockwise direction causes an increase in the belt tension. At the same time this adjustment influences the central run of the belt. The conveyor belt must run centrally between the head-pieces. If the belt fits closely at one of the head-pieces, the central run must be corrected, as otherwise the belt is worn off increasingly.

For that the round head tapping screws at the tension-reversing head, at which the belt starts up, must be tightened or the screw of the opposite tensioning-reversing head must be loosened. Here the belt tension must be observed!

6.2 Retensioning the belt

If required, the chain can be retensioned at the 220/380V-drive by adjusting the tensioning device after removing the drive cover. Previously the device must be disconnected from the power supply. After the adjustment the drive cover must be remounted!

All further component parts of the belt hopper do not require any maintenance.

7 Stockkeeping of spare parts and after-sales service

An overview of the spare parts available is taken from the separate spare parts list.

In order to guarantee quick and faultless handling of the order, please always indicate the type of device (see type plate), required number of pieces, spare parts designation and spare parts number.

An overview of the service-addresses is found on the rear cover page.



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