

Installation and Operating Instructions

Vibratory Hopper

Type BV

Type BVL

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Declaration of Incorporation
(according to Annex II B of the Machinery Directive)

We,
Company

Rhein-Nadel Automation GmbH
Reichsweg 19-23
52068 Aachen
Germany

herewith declare under our sole responsibility that with regard to the following product:

Machine designation: (function) Vibratory Hopper
Type designation: BV(L)
Serial number 10865660 0001 2500000 0001

all relevant essential safety and health requirements of Directive 2006/42/EC have been fulfilled up to the battery limits.

The product to which this declaration refers is furthermore in conformity with following directives and standards or other regulations:

2006/42/EC	Machinery		
2006/95/EC	Low Voltage		
2014/30/EU	Electromagnetic Compatibility		
EN 614-1	2006+A1:2009	EN ISO 13857	2008
EN 619	2002+A1:2010	EN ISO 14120	2015
EN 620	2002+A1:2010	EN 60204-1	2006
EN ISO	12100 2010		

The relevant technical documentation has been compiled in accordance with Annex VII B of the Machinery Directive and on request, such documentation will be transmitted to the competent authorities in hard copy.

Nico Altmeyer, Rhein-Nadel Automation GmbH, Reichsweg 19-23, 52068 Aachen
(Name and address of person authorised to compile the relevant technical documentation)

Notice: This machine must not be put into service until the complete system into which it will be incorporated has been declared to be in conformance with the provisions of the Directive.

Signatory information

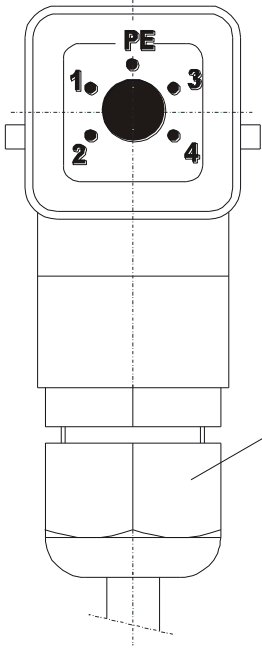
Name: Dr. Hensen
Given name: Tobias
Function: Managing Director
Germany
Aachen,
Place and date



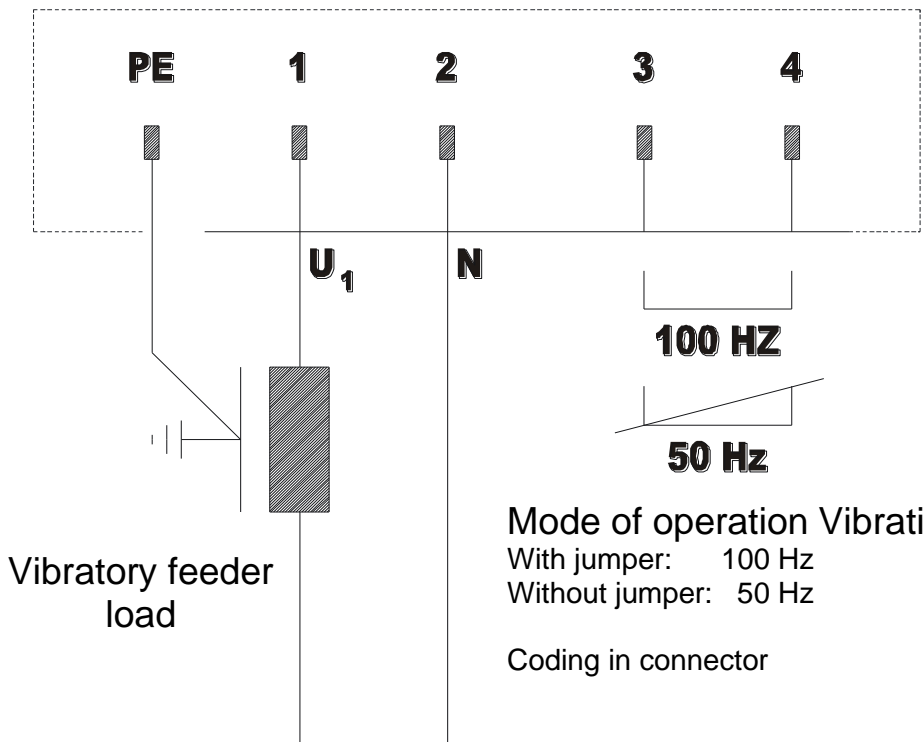
Signature

1. General

1.1. Pin assignment



M20 gland
grey-2 100 Hz vibration frequency
black-1 50 Hz vibration frequency
Metal EMC gland for
frequency-controlled systems

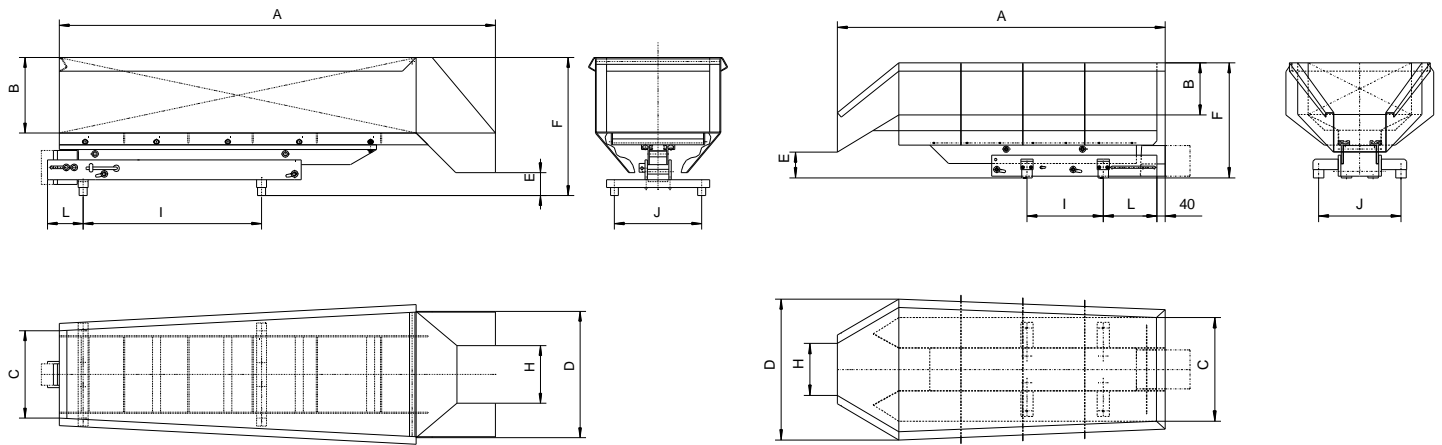


With jumper: The jumper must be inserted between connections 3 + 4.



Notice

All linear feeders listed in this table shall be operated only in conjunction with an RNA controller and with a mains voltage of 230 V / 50 Hz. For special voltages and frequencies please refer to the separate data sheet.

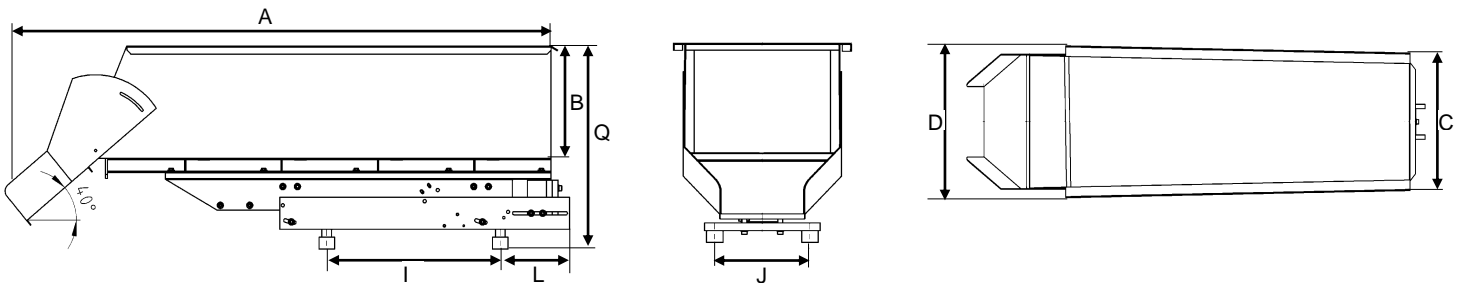
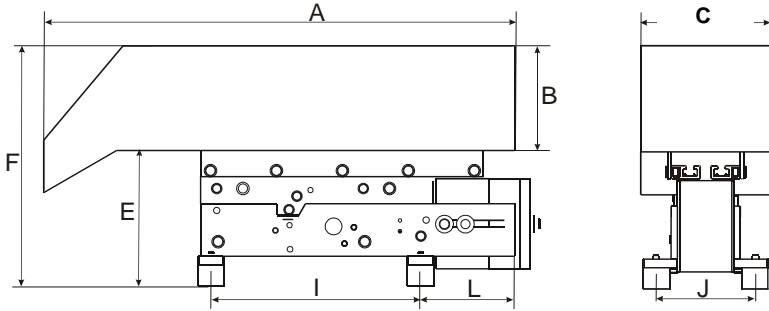
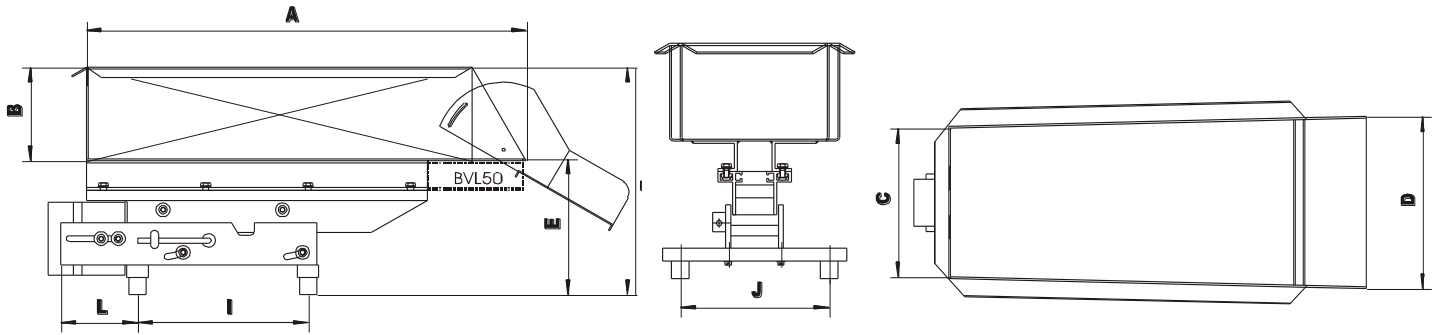


	BV 8	BV 15	BV 30	BV 60	BV 100	BV 150	BV 200
Filling volume	8 l	15 l	30 l	60 l	100 l	150 l	200 l
Filling weight	30 kg	30 kg	35 kg	100 kg*	150 kg*	200 kg*	200 kg*
Drive	SLL 400-	SLL 400-	SLL 400-	SLL 804-	SLF 1000	SLF 1000	SLF 1000
Main dimensions (mm)							
A	700	700	1,100	1,250	1588	1588	1588
B	130	170	190	250	200	250	300
C	210	260	220	280	500	500	500
D	266	316	314	389	680	680	680
E	53	53	58	123	124	124	124
Q	283	323	348	473	505	555	605
H	122	143	145	172	250	250	400
I	200	200	450	300	370	370	370
J	170	220	220	230	400	400	400
L	90	90	90	180	260	260	260

* The maximum filling weight depends on the condition of the parts to be handled.

Design types	
Standard design:	<ul style="list-style-type: none"> - Hopper tray made of stainless steel (1.4301) - Nominal voltage 200 V / 50 Hz - Painting in RAL 6011 (reseda green)
Special design:	<ul style="list-style-type: none"> - Hopper tray coated with polyurethane, MetaLine or PX - Special voltages (110 V / 50-60 Hz; 220 V / 50-60 Hz)
Accessories:	<ul style="list-style-type: none"> - Controllers - Level monitor - Substructures

Subject to technical changes



	BVL 3	BVL 5	BVL 15	BVL 25	BVL 50	BVL 100
Filling volume	3.5 l	7 l	15 l	25 l	50 l	100 l
Filling weight	15 kg	15 kg	20 kg	25 kg	50 kg	50 kg
Drive	SLL 400-400		SLL 400-600	SLL 400-800	SLL 804-800	SLL 804-1000
Main dimensions (mm)						
A	450	515	700	885	1,015	1,360
B	100	110	150	150	200	285
C	124	170	220	220	280	390
D	124	197	256	256	329	430
E	129	165	163	163	228	
Q	229	275	313	313	428	510
I	200	200	300	450	300	450
J	95	170	220	220	230	230
L	90	90	90	90	180	180

*depending on the number of balancing weights used
Subject to technical changes.

Design types	
Standard design:	<ul style="list-style-type: none"> - Hopper tray made of stainless steel (1.4301) - Nominal voltage 200 V / 50 Hz - Factory set-up for specified filling weight - * BVL 100 including adjustable chute, glass bead blasted
Special design:	<ul style="list-style-type: none"> - Hopper tray coated with polyurethane, MetaLine or PX - Special voltages (110 V / 50-60 Hz; 220 V / 50-60 Hz)
Accessories:	<ul style="list-style-type: none"> - Controllers - Level monitor - Substructures - Adjustable chute, glass bead blasted

2. Safety Information

We have taken great care in design and manufacture of our hoppers in order to ensure smooth and safe operation. You, too, can make an important contribution towards safety at work. We therefore ask you to read the brief operating instructions completely prior to commissioning the system. Observe the safety directives at all times!

Make sure that all persons working with or at the equipment also read the following safety directives carefully and follow them!

These Operating Instructions only apply to the equipment types indicated on the cover page.



Notice

This symbol indicates useful tips for operation of the linear feeder.



Attention

This warning triangle indicates safety notices. Non-observance of such warnings may cause serious injury or even death.

Machine hazards

- Hazards arise mainly from the electrical components of the hopper. If the hopper comes into contact with moisture or liquids there is risk of electric shock.
- Make sure that protective earthing of the power supply system is in perfect condition!

Intended use

The intended use of this hopper is the storage and controlled supply of bulk materials.

Intended use also includes observance of the operating instructions and compliance with the maintenance rules.

For the technical data of your hopper please refer to the table 'Technical Data'. Make sure that the rating data of the vibratory feeder, control system and power supply are compatible.



Notice

Operate the hopper in perfect condition only.

Never operate the hopper in areas subject to explosion hazards or in wet areas.

Operate the hopper only in the configuration of drive unit, control unit and vibratory system agreed with the manufacturer.

The hopper must never be subjected to any loads other than the parts for which this special type has been rated and dimensioned.



Attention

It is strictly forbidden to disable any guards or safety devices!

Equipment user's duties

- Observe the directives given in the operating instructions for any kind of work (operation, maintenance, repairs, etc.).
- Refrain from any working practice that affects the safety at the hopper.
- Make sure that only authorised personnel work at the hopper.
- Give immediate notice to the management of any changes that have occurred on the hopper affecting safety.



Attention

The hopper must be installed, put into operation and maintained by professional personnel only. Observe the legally binding provisions for the qualifications of qualified electrical workers and instructed workers as defined by standards IEC 364 and DIN VDE 0105, part 1.



Caution: Electromagnetic field

Magnetic fields may affect a cardiac pacemaker. Therefore, persons wearing a cardiac pacemaker are recommended to keep a distance of at least 25 cm.

Noise emission

The noise level at the place of use depends on the complete line into which the hopper will be incorporated and on the material to be conveyed. If the noise level at the place of use exceeds the permissible, sound-insulating hoods can be installed which we can offer on request.

2.1. Applicable directives and standards

The hopper has been manufactured in accordance with the following directives:

- EC Machinery Directive 2006/42/EC
- EC Low-Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive 2014/30/EU

We assume that our product will be incorporated into a stationary machine. The requirements of the EMC Directive must be satisfied by the user.

The applicable standards are specified in the Declaration of Incorporation.

The hopper is controlled by an electronic control unit (type ESG 2000 or type ESG 1000). The hopper controller is supplied as a separate item. The controller has a 5-pin connector on its front panel for connection to the hopper.

For assignment of the socket pins refer to the technical data.



Notice

For comprehensive information on the full range of control devices please refer to the 'Control Units' operating instructions.

All control units have two essential operating elements:

- The **power switch** is used to energize and de-energize the linear feeder.
- A **rotary knob** (or buttons) can be used to set the feed rate of the system.
- Tuning of the hopper can also be done by means of frequency controllers. For detailed description of the tuning procedure refer to the frequency controller operating instructions.

3. Shipment and installation

3.1. Shipping and handling

3.1.1. Shipment ex works

The linear feeders are delivered ex works in a box or crate.

3.1.2. On-site moving

The weight of the vibratory hopper depends on its dimensions and motor rating. Please refer to the shipping documents for the weight of your specific equipment.



Attention

Check all guards when unpacking. Replace any damaged parts before commissioning!



Attention

For lifting the feeders be sure to use only sufficiently dimensioned vehicles, ropes, chains and sling gear.



Attention

Handling operations to be carried out only by employees who are capable of performing such work due to their own knowledge and experience in this field.



Warning

Warning against suspended loads



Notes on shipping braces installed in linear feeder

Prior to commissioning, remove the shipping braces marked black and yellow.
For future handling operations be sure to re-install the shipping braces!

3.2. Installation

The hopper should be mounted on a stable substructure (available as an accessory) at the point of use. This substructure must be dimensioned to ensure that no vibrations from the linear feeder can be transmitted.

Make sure that the linear feeder cannot touch other devices during operation.

For further details on the control unit (drilling template, etc.), please refer to the separate operating instructions manual of the control unit.



Attention

The vibratory hopper is intended to complete / to be incorporated into a complete system. Do not operate the machine before safe completion/incorporation by the user.

4. Commissioning



Attention

Make sure that the machine frame (rack, substructure, etc.) is connected to the protective earth conductor (PE). Protective earthing has to be provided by user as necessary.

Verify that

- the hopper is arranged freely without contact to any solid body.
- the hopper connecting cable is plugged into the control unit.



Attention:

It is imperative that the vibrating drive be connected to the equipotential bonding system of the overall equipment before commissioning. The adaptation points are marked with earth symbols. See also: DIN EU 60204 / VDE 0100-540



Attention

Electrical connection of the hopper must be made by trained professional electricians only! When making any change to the electrical connection make absolutely sure that the 'Control Units' operating instructions are duly observed.

- The available electricity supply (frequency, voltage, power) must correspond to the connection data of the control system (see rating plate on the control unit).

Plug the cable of the control unit into a power socket and operate the power switch to energize the control unit.



Notice

For hoppers that are supplied as a completely set-up system the optimum feed rate has been factory-set. It is marked with a red arrow on the dial of the rotary knob. In this case set the rotary knob to this mark.

Optimum tuning is achieved when the desired feed rate is obtained with a controller setting of 80 %. In case of larger deviations (> +/- 15%) you should re-tune the system.

5. Maintenance

Hoppers basically require no maintenance. They should be cleaned when soiled or after coming into contact with liquids.

- Before starting such work be sure to pull the mains plug.
- Clean the inside of the hopper (dismount components as necessary), and in particular the air gap of the coil.

After remounting the components and plugging in the mains plug the hopper is again ready for operation.



Attention

For installation, maintenance and repair work all poles of the power supply must be disconnected from the vibratory hopper in compliance with VDE provisions. Any work on electrical equipment of the linear feeder shall be carried out exclusively by a professional electrician, or by instructed persons (see chapter 2) working under the direction and supervision of a professional electrician, according to electrotechnical rules.

6. Spare parts and customer service

For an overview of genuine spare parts available please refer to the separate spare parts list. In order to make sure that your order is processed swiftly and correctly please specify the device type (see rating plate), the quantity required, the spare part designation and the spare part number.


For a list of Service Center addresses refer to the back cover page of this manual.

7. What if... (Advice on troubleshooting)



Attention

Only professional electricians are allowed to open the control unit or connector. Pull the mains plug before opening!

Fault	Potential cause	Remedy
Hopper does not start on power up	Power switch off Mains connector of control unit not plugged-in Connecting cable between hopper and control unit not plugged-in Defective fuse in control unit	Close power switch Plug in the mains connector Plug 5-pin connector into control unit Replace fuse
Only slight hopper vibration 	Rotary knob on control unit set at 0 % Shipping locks or braces not removed Wrong vibration frequency Attention If the hopper is operated in connection with a basic linear feeder of type SLL 400, make sure that the jumper is inserted in the 5-pole connector. Otherwise there is a risk of damage to the magnet and controller in case of overload!	Set control unit to 80 % Remove shipping locks or braces. Check that coding in plug connector of the feeder is correct (see rating plate and 'Technical Data' (Section 1))
Hopper makes loud noises	Foreign matter in air gap	Switch the hopper off and eliminate foreign matter



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