



**Operating instructions vibratory bowl feeder**



**Types** : BTH-16  
 BTH-20  
 BTH-25  
 BTH-40  
 BTH-63  
 BTH-80

**Drive types** : SRC-N 160-2  
 SRC-N 200-2  
 SRC-B 200-2  
 SRC-N 250-2  
 SRC-B 250-2  
 SRC-N 400-1  
 SRC-N 400-2  
 SRHL 400-1  
 SRHL 400-2  
 SRC-N 630-1  
 SRC-N 800-1

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## General Information

### Symbols

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#### **Notice**

This icon marks notes, which contain information for proper operation.

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#### **Attention**

This symbol is found in all safety instructions in this manual, where there is danger to life and limb in front of people. These notes and behave in such cases special care. Pass on all occupational safety tips to other users. In addition to these instructions, the general safety and accident prevention rules are considered.

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### Introduction

This information should be read by those understood and complied with in all respects responsible for the machine.

This manual should always be kept near the machine.

A careful reading of this manual is particularly important, as the producer for damage or disruption, which result from the failure to observe the operation, no liability.

This manual, technical changes designed to improve or technical progress is reserved.

### Application and use

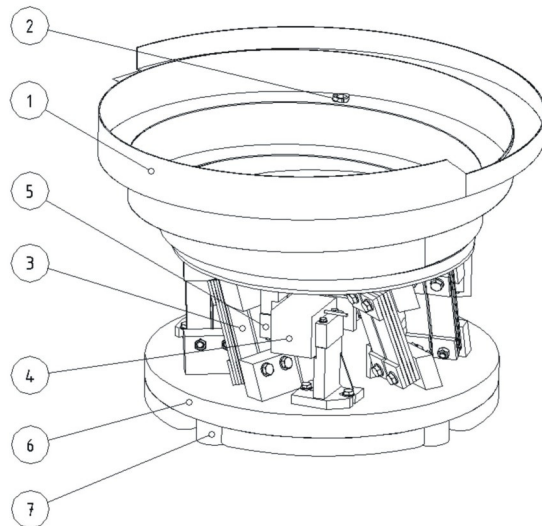
The device is designed only to be described in this document functions and services. Any other use is considered improper. Shall not be liable for damages resulting from the manufacturer. The risk is on the user.

### **Non-observance of the warranty!**

## Structure and function description

A vibratory bowl feeder is a device that electromagnetically induced vibrations in mechanical vibrations and converts this transfer of work to use. The basic structure of a vibratory bowl feeder consists of the following:

- Pos. 1 = Funding pot
- Pos. 2 = Conveyed
- Pos. 3 = Spring bank
- Pos. 4 = Oscillating magnet
- Pos. 5 = Anchor
- Pos. 6 = Against ground
- Pos. 7 = Vibration mounts



If the magnet that is permanently connected to the counterweight, electricity is supplied, it produces a force that attracts the armature, depending on the resonant frequency of the network and releases.

Because the armature is connected to the conveyor track (spiral sort of pot) in a fixed, does this also with the haunting movement. This raises the conveyed, from due to the angle of the leaf springs and the slope angle of the spiral, at every vibration of the conveyor belt and carries out little jumps in the direction perpendicular to the leaf spring plane.

In a period of 50 Hz AC system, the magnet reached twice its maximum tension, since it is independent of the direction of current flow. The magnet thus generates an oscillation frequency of 100 Hz This resonant frequency of 100 Hz devices to the drive type SRC-2 amp; SRHL-2 used in order to facilitate the work pieces or a quiet and gentle handling to achieve smaller.

For heavier or larger workpieces it is advisable to use a resonant frequency of 50 Hz. Here, a half wave of AC current through a diode or a thyristor is blocked. This is used for devices connected to the drive type SRC-1 amp; SRHL-1.



### Notice

**It is important to make sure that is set on the connected control device, the correct resonant frequency for the particular drive types. This is done according to the control unit, for example by internal DIP switches, bridges, or via the Settings menu. Otherwise, components of the equipment damaged.**

## Transport & Mounting

### Transport

Any transport of the device must be carried with the necessary caution to prevent damage from rough or careless loading and unloading. Depending on the type of transport corresponding transport Fuses must be provided.

If the unit is stored, so care must be taken to carefully cover against moisture, dirt and dust. Bare metal parts shall be preserved against rust. This conservation must be checked from time to time and to replace if necessary.



### Attention

**The vibrating feeder may not be raised and / or transported on top of sorting.**

### Mounting

#### Installation conditions:

When installing the device, ensure that the bearing capacity of the frame used and the soil is sufficient.

The bowl feeder is screwed from below with appropriate mounting screws into the anti-vibration mounts, or fixed with Einfanglaschen on the base plate.

The environment of the device should provide sufficient clearance for maintenance, operation and repair.



### Notice

It is important in establishing the fact that the device can vibrate freely. That has a sufficiently large air gap between the vibrating pot top and resting environment be present.

## Starting



### Notice

**Before starting, ensure that the above points being >>Transport & Mounting<< complied with and monitored.**

### Connection:



### Attention

This work may only be performed by qualified personnel in compliance with all safety and local regulations. The control over that no unauthorized persons are in the danger zone of the machine are located is important faults. Connection lines must be protected. Terminal voltages and directions of rotation must be checked.

The connection of the device must be installed according to the information under >>Technical Data<<, or the data plate.

Check if the available supply voltage matches the specifications on the nameplate of the unit.

Make sure that the upstream control or regulating device is connected to the correct output frequency of 50 Hz (half-wave). (See also >>Structure and function description<<)



### Notice

**Before Starting are additionally perform the following checks and actions:**

Nr.	Module	Action
1	Vibratory-Bowl Feeder	Sufficient number of the transported material refill. Check for foreign objects and jammed material.

## Starting



### Notice

**In most cases vibratory bowl feeders are not jam-safe.  
For a proper function the following instructions must be followed to avoid consequential disturbances:**

- ⇒ *It is a following buffer path (linear vibratory conveyor, conveyor belt or gravity channel) provided, which is equipped with a maximum level detection.*
- ⇒ *The vibratory bowl feeder may only be switched on when the buffer path is switched on, so that the conveyed material can leave the vibratory bowl feeder in the free pass and not be dammed back into the device.*
- ⇒ *It must be ensured that the fill level inquiry of the following buffer path is oriented in such a way that the interrogation signal between two following workpieces conveyed is not released or the interrogation flickers.*
- ⇒ *The control unit or the PLC used must be set separately for pre- and post-run times for the sensor input of the level query.*
- ⇒ ***Pre run time: Time from freeing up the fill level polling to turning on the vibratory bowl feeder.***  
*If this time is chosen too low, the vibratory bowl feeder will switch on immediately whenever the fill level query (even with a brief flickering) becomes free. This can lead to increasing running time that the parts back up into the vibratory bowl feeder.*  
*If this time is chosen too large, the buffer section becomes increasingly empty with increasing running time and the delivery rate may not be reached*  
***Recommendation: approx. 1 - 3 seconds, the optimal lead times must be determined individually.***
- ⇒ ***Post run time: Time from occupying the fill level inquiry to switching off the vibratory bowl feeder.***  
*If this time is selected too low, the vibratory bowl feeder switches off at a single part conveyed past the interrogation and may no longer reach its capacity.*  
*If this time is chosen too large, the parts can possibly back up into the vibratory bowl feeder.*  
***Recommendation: approx. 1 - 3 seconds, the optimal follow-up times must be determined individually.***
- ⇒ *When linking several feed systems (buffer section, spiral conveyor, storage bunker), the activation order depending on the fill levels must be taken into account.*

## Maintenance and Cleaning



### Notice

The vibration of the vibratory bowl feeder drive is virtually maintenance free will. The following checks and maintenance should the specified time intervals, however, carried out in:

Nr.	Assembly	Action	Frequency
1	Vibratory bowl feeder drive	- Check for unusual noises	daily
2	Vibratory bowl feeder-uppers	- Control of the conveying behavior	daily
3	Vibratory bowl feeder-uppers	- On pollution control - Cleaning the surfaces of the conveyed - Eliminate foreign parts	daily



### Attention

**For all maintenance and inspection work, the chapter >>Safety<< in Appex 03 (RNA's Manual Vibratory feeder) must be observed.**

Breakdowns, caused by inadequate or improper maintenance can cause very high costs. Regular maintenance is essential. Due to the different operating conditions is generally applicable definition of maintenance and inspection intervals are not a possibility. When the operating conditions an appropriate routine is established.

#### Cleaning:

It is recommended to clean the unit regularly, e.g. after the end of each shift, all traces of dirt, debris and possibly falling down. Coatings, e.g. polyurethane, brush or other product-specific support surface coatings, must be cleaned with for example acetone. Coatings in pharmaceutical goat right equipment can be cleaned with a pharmaceutically acceptable detergents.

#### Wear control:

Wear parts, ie, all parts that move against each other or come into contact with feed are checked from time to time to wear and if necessary readjust or replace.



**Manufacturer****Manufacturer of drive unit:****Rhein-Nadel Automation GmbH**

Reichsweg 19 – 42

D-52068 Aachen

Tel.: +49 241 5109-159

Fax.: +49 241 5109-219

E-Mail: [vertrieb@rna.de](mailto:vertrieb@rna.de)Internet: [www.rna.de](http://www.rna.de)

The manufacturer is responsible for ensuring that the device meets at least the following standards:

- EC Low Voltage Directive 2006/95/EG

Applied harmonized standards:

- DIN EN 60204 T1

**Manufacturer of the resonant structure (for complete units from the factory FMB):****FMB GmbH**

Arndtstraße 18

D-38120 Braunschweig

Tel.: +49 531 88505-0

Fax: +49 531 85 263

E-Mail: [info@fmb.de](mailto:info@fmb.de)Internet: [www.fmb.de](http://www.fmb.de)

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Technical changes and misprints excepted.

Appendix