Operating instructions
Vibratory bowl feeder

SRC-N 63-2
SRC-N 100-2
Notice

All vibratory bowl feeders listed in the table may only be operated in connection with a RNA control unit at a mains voltage of 230V/50Hz. Special voltages and frequencies see separate data sheet.

## 1 Technical data

<table>
<thead>
<tr>
<th>Vibratory bowl feeder type</th>
<th>SRC-N 63-2</th>
<th>SRC-N 100-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions ø x height</td>
<td>in mm</td>
<td>60 x 65</td>
</tr>
<tr>
<td>Weight</td>
<td>in kg</td>
<td>0,8</td>
</tr>
<tr>
<td>Insulation type</td>
<td></td>
<td>IP 54</td>
</tr>
<tr>
<td>Connecting cable length</td>
<td>in m</td>
<td>1,4</td>
</tr>
<tr>
<td>Power consumption &quot;&quot;</td>
<td>in VA</td>
<td>8</td>
</tr>
<tr>
<td>Current consumption 2)</td>
<td>in A</td>
<td>0,04</td>
</tr>
<tr>
<td>Magnet nominal voltage /frequency</td>
<td>in V / Hz</td>
<td>230 / 50</td>
</tr>
<tr>
<td>Air gap [mm]</td>
<td>in mm</td>
<td>0,3 - 0,4</td>
</tr>
<tr>
<td>Number of magnets</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Vibration frequency 1)</td>
<td>in Hz/min²</td>
<td>100 / 6000</td>
</tr>
</tbody>
</table>

1) The last figure of the type identification shows the Vibration frequency: 1=50Hz (black mains cable), 2=100 Hz (grey mains cable)

2) For special voltages (voltage, frequency) see type plate at the magnet

## 2 Safety instructions

The conception and production of our vibratory bowl feeders has been carried out very careful, in
order to guarantee a trouble-free and save opera-
tion. You too can make an important contribution
to job safety. Therefore, please read this short
operating instruction completely, before starting
the machine. Always observe the safety instruc-
tions!

Make sure that all persons working with or at this
machine carefully read and observe the following
safety instructions!

This operating instruction is only valid for the
types indicated on the front page.

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Notice
This hand points to information that
gives you useful tips for the operation
of the vibratory bowl feeder.

Attention
This warning triangle marks the safety
instructions. Non-observance of these
warnings can result in serious or fatal
injuries!

Dangers occurring at the machine

- The most dangerous parts of the machine
  are the electrical installations of the vibratory
  bowl feeder. In case the vibratory bowl
  feeder becomes very wet, there is the danger
  of an electric shock!

- Make sure that the protector ground of the
  electric power supply is in perfect condition!

- Operation of the vibratory bowl feeder with-
  out trim panel is strictly prohibited!

Proper use

The intended use of the vibratory bowl feeder is
the actuation of sorting machines. These sorting
machines are used for sorting and feeding cor-
rectly positioned mass-produced parts, as well as
for the proportioned feeding of bulk material.

Using the machine for other purposes than the
above mentioned, eg. as vibrating screen or in
material testing, is considered not to be the in-
tended use.

The intended use also includes the observance of
the operating and servicing instructions.

Please take the technical data of your vibratory
bowl feeder from the table "technical data" (see
page 1-2). Make sure that the connected load of
the vibratory bowl feeder, control unit and power
supply corresponds to each other.

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Notice
The vibratory bowl feeder may only be

operated in perfect condition!

The vibratory bowl feeder may only be operated in
the configuration drive unit, control unit and bowl,
as specified by the manufacturer.

The vibratory bowl feeder may not be operated in
the explosive or wet area.

No additional loads may act upon the vibratory
bowl feeder, apart from the bulk material, for
which the special type is designed.

Attention
It is strictly prohibited to put any safety
devices out of operation!

Demands on the user

- For all activities (operation, maintenance, re-
  pair, etc.) the details of the operating instruc-
tions must be observed.

- The operator has to refrain from any working
  method which would impair the safety of the
  vibratory bowl feeder.

- The operator has to take care that only au-
  thorized personnel works at the vibratory
  bowl feeder.

- The operator is obliged to inform the operator
  immediately about any changed conditions at
  the vibratory bowl feeder, which could en-
  danger safety.

Attention
The vibratory bowl feeder may only be installed, put into operation and
serviced by expert personnel. The
binding regulation for the qualification of electricians and personnel in-
structed in electrical engineering is
valid, as defined in IEC 364 and DIN
VDE 0105 part 1.

Attention:
Since the electromagnet-field may have an
impact on persons arrying pacemakers it is
recommended to keep a minimum dis-
tance of 25 cm.

Noise emission

The noise level at the place of operation depends
on the total equipment and the material to be
sorted. The determination of the noise level ac-
cording to the EC-Regulations "Machinery" can
therefore only be carried out at the place of opera-
tion.

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If the noise level at the place of operation exceeds the limit permitted, noise protection hoods may be used, which we offer as accessory parts (see catalogue).

**Standards and regulations**

The device was built according to the following standards and regulations:

- EC- Directive Machinery 98/37/EC
- EC- Low voltage directive 73/23/EC
- EMC- Directive 89/336/EC
- Applied harmonized Standards
  - EN 60204, T.1
  - EN 292, T.1 and T.2
- Applied national technical standards
  - VGB 4
  - VGB 10
- Rheinndadel- Conditions for purchasing
- VDE- Standards
- VDMA- Conditions of delivery

### 3 Construction and function of the vibratory bowl feeder

Vibratory bowl feeders are used for the actuation of sorting machines. The actuation takes place by electromagnets. The following schematic diagram shows the function of a vibratory bowl feeder:

A = Bowl  
B = Material to be conveyed  
C = Spring assembly  
D = Drive magnet  
E = Armature  
F = Counter-mass  
G = Vibration buffers

The drive magnet D is firmly connected with the counter-mass F. When current passes the drive magnet, it exerts power on armature E. The power is transmitted to bowl A, which is supported by the spring assembly C. The moving direction of the bowl is determined by the angle of the spring assemblies.

Owing to the vibrations the material to be conveyed is shortly lifted off the conveyor belt (helix of the bowl) and it carries out little jumps (micro-jumps). The jump direction is in a right angle to the level of the spring assemblies.

The drive magnet achieves its maximum magnetic force twice during a period of the alternating current. Consequently the vibration frequency corresponds to the double mains frequency.

For heavy sorting installations a lower frequency of 50 Hz can be more advantageous.

The vibration frequency of your vibratory bowl feeder results from the last figure of the type designation:

-2: 100 Hz - 6000 vibrations/min.

A vibratory bowl feeder is a resonant system (spring-mass-system). The result is that the adjustment made at the plant will rarely meet your requirements. Chapter 5 shows how your vibratory bowl feeder is adapted to your requirements.

As accessory parts we are offering a spectrum of sorting bowls, which cover a wide range of application. For special applications individual problem solutions can be manufactured.

Controlling of the vibratory bowl feeder takes place by a low loss electronic control unit. The selection of the control unit depends on the power consumption of the vibratory bowl feeder. The following table shows the kind of control units that can be used at the individual vibratory bowl feeders:

<table>
<thead>
<tr>
<th></th>
<th>ESG 2000</th>
<th>ESK 2000</th>
<th>ESG 90</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC-N 60</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SRC-N 100</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

The pin assignment of the bowl is shown in the table “Technical Data” (chap. 1).

**Notice**

Detailed information on the complete range of control units may please be taken from the operating instructions for control units.

All control units have got two main operating elements:

- By the **mains switch** the vibratory bowl feeder is switched on or off.
- By the **turning knob** the conveying capacity of the sorting unit is set.

### 4 Mounting
The device is completely mounted. The vibrator has to be screwed on a strong sub-assembly in a dry room.

Ambient temperature – 10°C to + 50°C

Ensure that no contact exists between the bowl feeder in operation and other equipments. The bowl feeder is to be firmly mounted from beneath the fastening threads on a mass of at least 15 – 20 Kp.

<table>
<thead>
<tr>
<th>Vibratory bowl feeder type</th>
<th>Hole circle ∅ [mm]</th>
<th>Hole circle angle [°]</th>
<th>Vibration buffer thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC-N 63</td>
<td>40</td>
<td>2 x 180°</td>
<td>M4</td>
</tr>
<tr>
<td>SRC-N100</td>
<td>70</td>
<td>3 x 120°</td>
<td>M4</td>
</tr>
</tbody>
</table>

Further details on the control unit (bore plan, etc.) are please taken from the operating instructions of the control unit separately delivered.

5 Starting
Preparations

⚠️ Notice
Ensure that the machine frame (stand, under frame, etc) is connected with the protective conductor (PE). If necessary, protection earthing must be provided on spot.

Check, whether
- the vibratory bowl feeder stands in an isolated position and does not come in contact with a solid body
- the sorting bowl is tightly screwed down
- the connecting cable of the vibratory bowl feeder is plugged in at the control unit.

⚠️ Attention
The electric connection of the vibratory bowl feeder may only be made by trained personnel (electricians)! In case modifications are made at the electric connection, it is absolutely necessary to observe the operating instructions “control units”.

- the available supply voltage (frequency, voltage, power delivery) corresponds to the connecting data of the control unit (see type plate at the control unit).

Plug in the mains cable of the control unit.

Switch on the control unit with the mains switch.

⚠️ Notice
At vibratory bowl feeders which are delivered as a completely adjusted system, the optimal conveying capacity is already set in the factory. It is marked on the scale of the turning knob with a red arrow. In this case set the turning knob to the marking.

The optimal operative range of the vibratory bowl feeder is at a controller position of 80% at the control unit. In case of higher deviations (≥±15%) a new adjustment must be made. This adjustment is described on the following page.

In the factory the vibratory bowl feeders are approximately adjusted to standard sorting bowls (without sorting element).

Adjustment
To set the air-gap, lift and lower the magnet coil, which is fastened with a threaded pin.

Adjusting the magnet coil:
1. Fit the unit on a solid subsurface
2. Loosen the fixing screw of the magnet coil (Screw is fitted laterally at the counter mass across the cable outlet)
3. Adjust the air-gap with the height adjusting screw of the magnet coil. This new is found laterally at the counter mass between the cable outlet and fixing new of the coil magnet
4. Tighten the fixing screw

In order to guarantee an optimal sorting behaviour, the vibratory bowl feeder must be adjusted to the concrete operating conditions. The adjustment is made by adding or removing leaf springs and washers.

While the spring fastening screw is loosened, you can see a change in the conveying speed.

The following graphic chart shows the resonance curve of a vibratory bowl feeder:

⚠️ Notice
The resonant frequency of the vibratory bowl feeder may not correspond to the mains frequency.

⚠️ Notice
The adjustment is, however, more easy with an electronic frequency
The vibratory bowl feeder should be adjusted that the required conveying capacity is achieved at a controller position of approx. 80% at the control unit.

6 Maintenance

The vibratory bowl feeders are generally maintenance-free. They should only be thoroughly cleaned when they are considerably dirty or after fluids have been spilled over them.

7 Stockkeeping of spare parts and after-sales service

The range of the spare parts available may be taken from the separate spare parts list.

8 What happens, if...
Instructions for trouble-shooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibratory bowl feeder does not start at being switched on</td>
<td>Mains plug of the control</td>
<td>Plug in the mains plug unit is not plugged in</td>
</tr>
<tr>
<td></td>
<td>Connecting cable between vibratory bowl feeder and control unit not plugged in</td>
<td>Plug in the 7-pole plug at the control unit</td>
</tr>
<tr>
<td></td>
<td>Only in connection with control unit ESK 2000</td>
<td>Replace the sensor or readjust it</td>
</tr>
<tr>
<td></td>
<td>Sensor gives the faulty message of pile-up, owing to defect or maladjustment (green LED at the vibratory bowl feeder STOP)</td>
<td>Check whether the sensor is plugged in</td>
</tr>
<tr>
<td></td>
<td>Fuse in the control unit defect</td>
<td>Replace the fuse</td>
</tr>
<tr>
<td></td>
<td>Mains switch off</td>
<td>Switch on the mains switch</td>
</tr>
<tr>
<td></td>
<td>Magnet coil defect</td>
<td>Have the coil checked by trained personnel and , if necessary, have it exchanged.</td>
</tr>
<tr>
<td>The vibratory bowl feeder vibrates only slightly</td>
<td>The control unit is set to 0%</td>
<td>Set the controller to 80 %</td>
</tr>
</tbody>
</table>