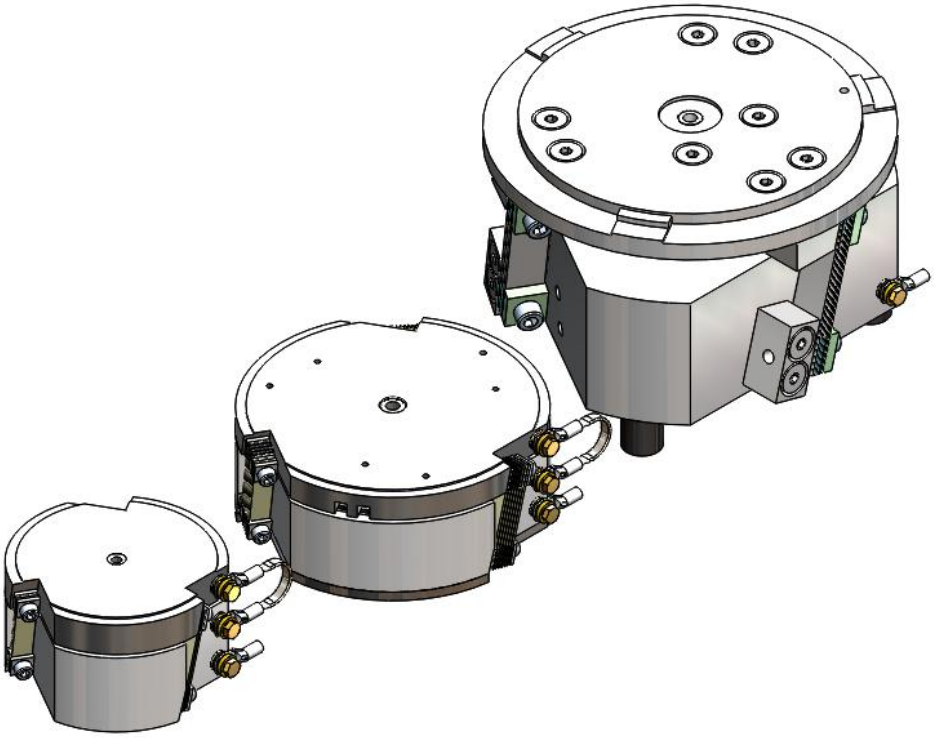
Rhein-Nadel Automation GmbH
Zuführtechnik für die Industrieautomatisierung

RNA
We handle it.



Installation and Operating Instructions

for Vibratory Feeders

SRA-Z100
SRA-Z150
SRA-Z200

Table of Contents

Declaration of Incorporation

according to Machinery Directive 2006/42/EC

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 feeder
Type designation:	SRA-Z100/150/200
Serial number	XXXXXXXX 0001 – XXXXXXXX 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
2006/35/EU	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. Safety Information

1.1. General

These installation and operating instructions contain all necessary instructions for the safe use and operation of the SRA-Z drives. This document, in particular the safety directives, must be observed by all persons who work on or with the SRA-Z drive unit. Apart from the safety directives in these installation and operating instructions, the accident prevention rules and regulations that apply at the place of use must be observed.
We recommend to always keep the installation and operating instruction manual handy, near the SRA-Z unit.
The applied procedure for risk assessment can be found in DIN EN ISO 12100:2011.

1.2. Symbols and safety information

In the present installation and operating instructions you will find four different signal words, three of them with an associated symbol. These are the following, sorted from the most to the least important:

Danger!
This symbol indicates imminent danger to life or health of persons. Non-observance of these directives causes severe health damage or even fatal injury!

Attention!
This symbol indicates potential damage to property and/or environment.

Notice!
This symbol indicates important facts or circumstances and particularly useful information.

1.3. Intended use

The intended use of SRA-Z drives is to power sorting bowls made by Rhein-Nadel Automation GmbH in automatic continuous operation, and to feed parts to a downstream process for pick-up. The sorting bowls are sorting devices matched to the SRA-Z drives for oriented feeding, singulation and presentation of bulk parts for automatic pick-up by a downstream process (for example a handling device). Any other use beyond the above or any modifications to the SRA-Z drive shall be deemed inconsistent with the machine's intended use. The intended use also includes the observance of these installation and operating instructions.
The SRA-Z drive may only be used with sorting bowls meeting the conditions specified in the operating and maintenance instructions manual. Any other application shall be deemed ‘inconsistent with the machine's intended use’. Without prior consultation of qualified personnel of Rhein-Nadel Automation GmbH and their approval, no changes or modifications must be made to the SRA-Z drives.
SRA-Z drive units are to be operated in roofed and closed industrial production and assembly facilities (‘industrial area’) in accordance with its intended use.

The use of SRA-Z drive units is not allowed:

1. Outdoors
2. In areas subject to explosion hazards or in wet areas
3. Underground
4. In areas with highly inflammable substances
5. In aggressive environments (i.e. saline atmosphere)
6. In production plants requiring cleanroom conditions
7. In private households

The temperature ranges of the SRA-Z drive unit are limited by the electromagnets installed. The ambient temperature must not exceed 40°C and its mean value over a period of 24 hours must not exceed 35°C. The lower limit for the ambient temperature is -5°C. The altitude of its place of use must not exceed more than 2000 m above sea level.
The relative humidity of ambient air must not exceed 50% at 40°C. A higher humidity may be acceptable at lower temperatures, i.e. 90% at 20°C.

1.4. Personnel

The following groups of persons (‘users’) are authorized to use and handle the SRA-Z drive unit:

1. Instructed person: Instructed persons have demonstrably been briefed by the equipment user on their assigned tasks on the SRA-Z unit and the potential dangers hazards in case of improper behaviour. A briefing is the basic prerequisite for working on/with SRA-Z units. Reading the technical documentation of the SRA-Z is part of the briefing.
2. Qualified personnel: Qualified personnel are able to independently execute their assigned work on the SRA-Z unit and recognize potential dangers in handling the SRA-Z unit and avoid hazards based on their professional training, skills and experience and knowledge of the respective standards and regulations. Any trained electrician who has professional training, skills and experience as well as knowledge of the respective standards and regulations is able to work on the electric components of the SRA-Z unit and independently recognize and avoid potential dangers. Qualified personnel includes trained electricians.
3. Certain work such as replacing electromagnets, leaf springs or other components of the SRA-Z unit must only be done by qualified personnel of Rhein-Nadel Automation GmbH or after previous consultation with qualified personnel of the Rhein-Nadel Automation GmbH. For carrying out such work, please contact our customer service: vertrieb@rna.de

1.5. Residual hazards

Danger!
The SRA-Z drive unit is intended to complete / to be incorporated into a complete system. Do not operate the machine before safe completion/incorporation by the user.

Notice!
The SRA-Z drive unit was delivered as incomplete machinery with a Declaration of Incorporation according to Machinery Directive 2006/42/EC and intended to be incorporated into a complete system. Incorporation means that the SRA-Z drive unit must be connected to a disconnector (main disconnect switch) which can be locked out in order to prevent inadvertent starting during works.

2. Product description

2.1. General

The purpose of our standardized SRA-Z drive, in combination with a sorting bowl / feeder bowl , is to orient and singulate bulk products in automated production or assembly applications. For this purpose, the drive unit is associated to a user-supplied, product-specific sorting/feeder bowl and integrated - on its own or as part of a feeding system - into a production or assembly line at the user’s.

2.2. Technical data

Vibratory Feeder Type		**SRA-Z100**	**SRA-Z150**	**SRA-Z200**
Dimensions Ø x H	mm	Ø 105 x 64.5	Ø 148 x 61.5	Ø 195 x 130
Weight of drive without base plate	kg	2.2	3.6	10.5
Sorting bowl weight (standard)	kg	0.65	1.3	2.3
Degree of protection		IP54	IP54	IP54
Length of connecting cable	m	1.5	1.5	1.5
Current input [1)]	A	0.12	0.36	1.42
Nominal magnet voltage [1)] / frequency	V / Hz	200 / 50	200 / 50	200 / 50
Standard spring configuration		17 x 1.0 mm	11 x 1.5 mm	21 x 1 mm
Coil-to-armature air gap	mm	0.5	0.5	0.5
Magnet type WA #		39980992	39980992	35000733
Number of magnets		1	3	1
Vibrating frequency	Hz	100	100	100

Notice
[1] For special connected loads (voltage / frequency) see rating plate on the motor

Notice
All vibratory 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.

Notice!
Noise emission: constant sound pressure level (without parts) < 70 dB (A)
Noise emission depends on the parts to be fed and can therefore be measured only at the site of installation, under real-world conditions. If the sound pressure level exceeds the acceptable limit, suitable noise reduction measures need to be taken.

Notice!
SRA-Z drive units are precision machinery. The function of the drive unit depends on the accuracy of the sorting bowl, coating and spiral track design. For correct function of the equipment, the controller settings as well as the filling rate, state of the parts to be fed and qualities of threaded assemblies must also be in line with the specifications in these operating and installation instructions.

Fig. 1 shows the dimensions of SRA-Z100.

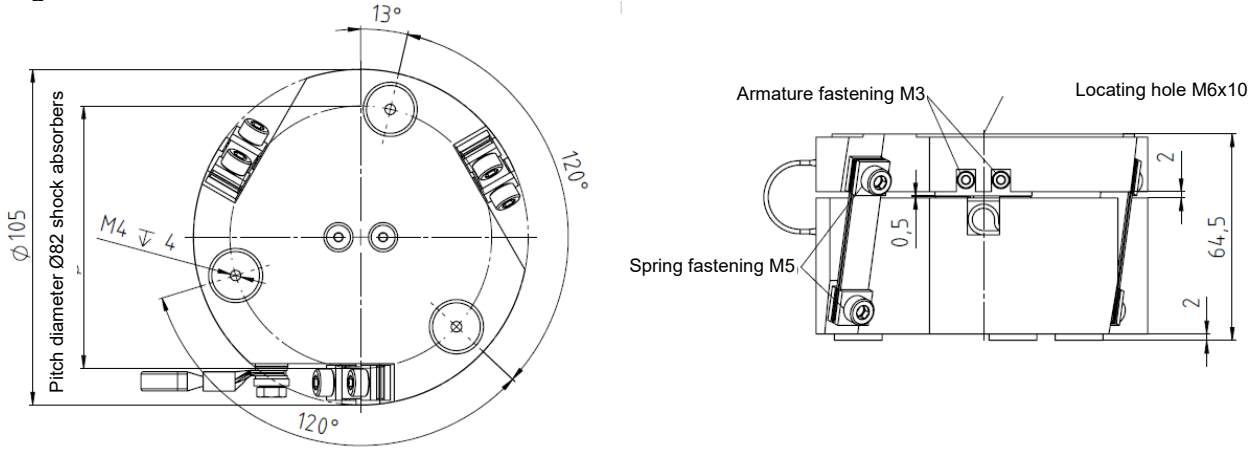


Fig. 1: Dimensions of SRA-Z100

This translates to following space requirements for a SRA-Z unit:
1. Floor space requirement for SRA-Z100: 150mm x 150mm x 150mm (length x width x height)
2. Minimum loading capacity of floor for SRA-Z: 150 kg per square metre
3. Recommended surface area for operation (accessibility of quick emptying feature, air nozzles, for servicing etc.): 300mm x 300mm
4. Recommended space provision for ergonomic installation: 1 sqm

As a rule the equipment user only needs to observe the tightening torque for the rubber-metal isolators. For the sake of completeness and possible maintenance work the tightening torques of the other threaded fasteners.

ISO 4762 M6 (8.8) central fastening of sorting bowl [Nm]	10
ISO 4762 M5 (12.9) spring fastening to exciter mass and vibratory unit [Nm]	10
ISO 4762 M5 (8.8) armature fastening to vibrator plate [Nm]	1.3
ISO 4762 M4 screws for rubber-metal isolators [Nm]	1.4
All M4 screws [Nm]	3
All M5 screws [Nm]	6
All M6 screws [Nm]	10

Fig. 2 shows the dimensions of SRA-Z150.

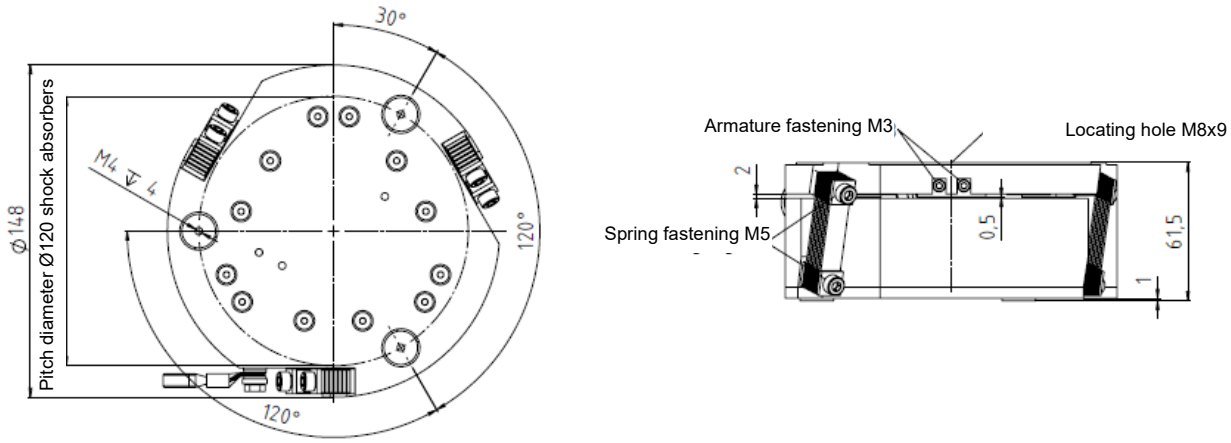


Fig. 2: Dimensions of SRA-Z150

This translates to following space requirements for a SRA-Z unit:
1. Floor space requirement for SRA-Z150: 200mm x 200mm x 250mm (length x width x height)
2. Minimum loading capacity of floor for SRA-Z: 150 kg per square metre
3. Recommended surface area for operation (accessibility of quick emptying feature, air nozzles, for servicing etc.): 350mm x 350mm
4. Recommended space provision for ergonomic installation: 1 sqm

As a rule the equipment user only needs to observe the tightening torque for the rubber-metal isolators. For the sake of completeness and possible maintenance work the tightening torques of the other threaded fasteners.

ISO 4762 M8 (8.8) central fastening of sorting bowl [Nm]	25
ISO 4762 M5 (12.9) spring fastening to exciter mass and vibratory unit [Nm]	10
ISO 4762 M5 (8.8) armature fastening to vibrator plate [Nm]	1.3
ISO 4762 M4 screws for rubber-metal isolators [Nm]	1.4
All M4 screws [Nm]	3
All M5 screws [Nm]	6
All M6 screws [Nm]	10

Fig. 3 shows the dimensions of SRA-Z200.

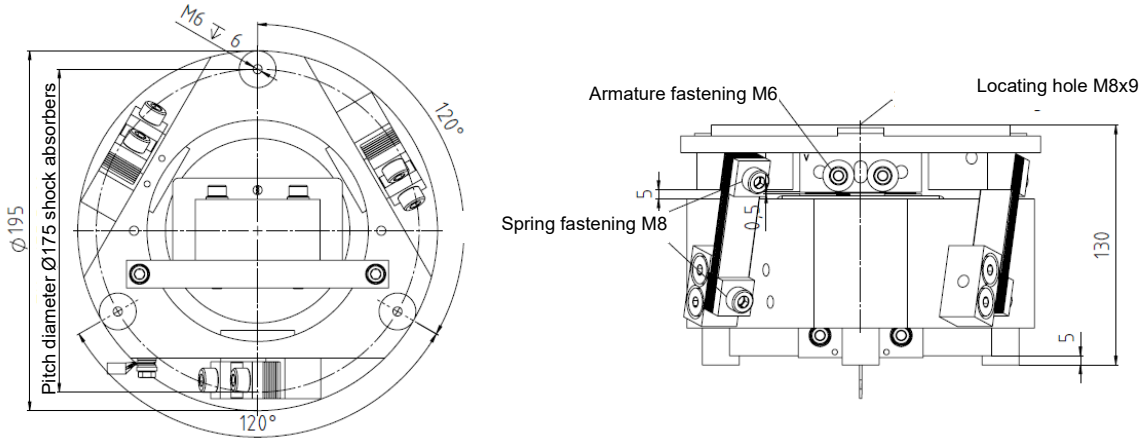


Fig. 3: Dimensions of SRA-Z200

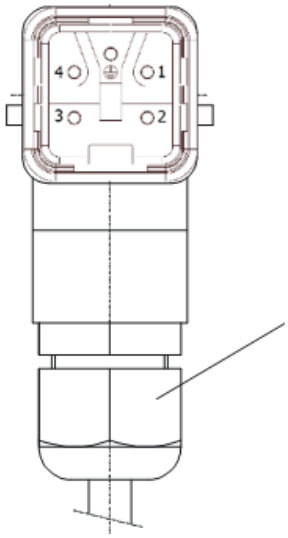
This translates to following space requirements for a SRA-Z unit:
5. Floor space requirement for SRA-Z200: 200mm x 200mm x 250mm (length x width x height)
6. Minimum loading capacity of floor for SRA-Z: 150 kg per square metre
7. Recommended surface area for operation (accessibility of quick emptying feature, air nozzles, for servicing etc.): 350mm x 350mm
8. Recommended space provision for ergonomic installation: 1 sqm

As a rule the equipment user only needs to observe the tightening torque for the rubber-metal isolators. For the sake of completeness and possible maintenance work the tightening torques of the other threaded fasteners.

ISO 4762 M8 (8.8) central fastening of sorting bowl [Nm]	25
ISO 4762 M8 (12.9) spring fastening to exciter mass and vibratory unit [Nm]	30
ISO 4762 M5 (8.8) armature fastening to vibrator plate [Nm]	1.3
ISO 4762 M4 screws for rubber-metal isolators [Nm]	4.8
All M4 screws [Nm]	3
All M5 screws [Nm]	6
All M6 screws [Nm]	10

2.3. Automatic mode change / pin assignment

SRA-Z drive units do not require the operator to take care of selecting the right operating mode. The operating mode is determined by a code in the RNA vibrating drive connector. A wire jumper from pin 3 to 4 in the connector switches the controller to mode 2: 100 or 120 Hz. In the absence of this wire jumper the controller operates in mode 1: 50 or 60 Hz.
The RNA vibratory drive systems come with the right code in the connector.



M20 gland

Black: 50/60Hz vibrating frequency
Grey: 100/120Hz vibrating frequency
(EMC metal gland if frequency controllers are used.)

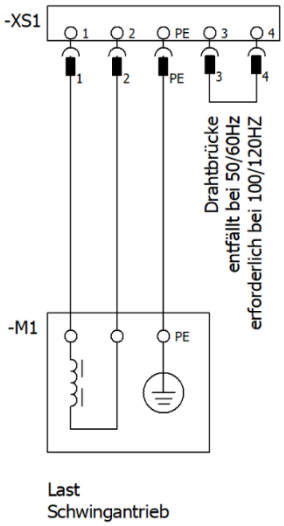


Fig. 4: Pin assignment

Notice
Where frequency controllers with selectable output frequency are used, an EMC metal gland and a shielded cable are provided.

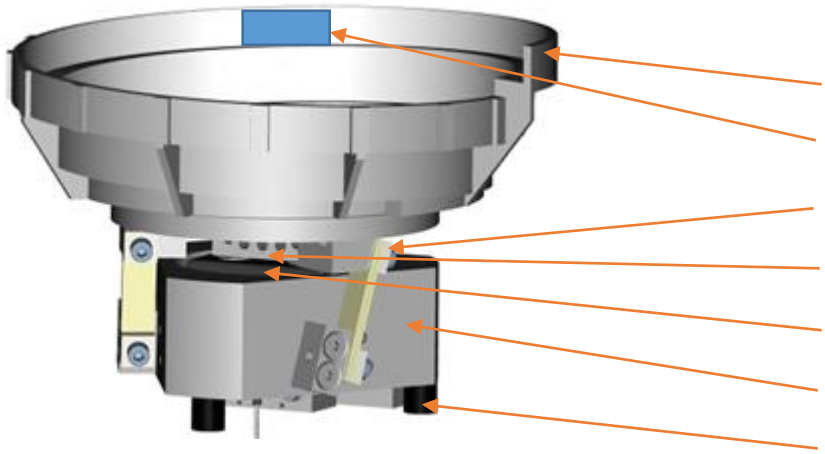
The vibratory feeder is controlled by a low-loss electronic control unit. The choice of the control unit depends on the power input of the feeder. The available choice of controllers is shown in the following table:

	SCU 1000 /2000	ESG 2000	ESK 200X	ESR 2000	ESR 2500
SRA-Z100/150/200	√	√	√	√	√

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

2.4. Functional description

The SRA-Z drive unit is a two-mass system. In SRA-Z drive units, exciter mass and useful mass are connected to each other by spring leaves inclined at a fixed, non-adjustable angle. The vibratory system is excited by magnets. The result is an oscillating helical motion of the useful mass and of the sorting/feeder bowl. This motion accelerates the parts in circumferential and vertical direction, causing them to move along the ascending spiral track or the bottom. SRA-Z drive units can be ordered for clockwise or counterclockwise part travel.



A	*Feed bowl*
B	*Parts handled*
C	*Spring pack*
D	*Armature*
E	*Drive magnet*
F	*Exciter mass*
G	*Shock absorber*

Driving magnet E is rigidly attached to exciter mass F. When the driving magnet is energized it exerts a force on armature D. This force is transmitted to bowl A mounted on spring packs C, causing the bowl to vibrate. The angle of the spring packs defines the direction of bowl movement.
The power cable supplying the electromagnets is routed along the side or underside of the drives.
All three drive types offer the possibility to establish equipotential bonding.

Gefahr

Danger!
The drives must be connected to an equipotential bonding bar. During incorporation into the complete system it must be ensured that the equipotential bonding bar is connected to the main equipotential bonding system of the complete system/building.

3. Installation Instructions

3.1. Shipping and handling

Notice
Take care that the vibratory feeder cannot collide with other objects and is not subjected to pressure during shipping and handling operations.

For the weight of the SRA-Z drive please refer to the table titled 'Technical Data'.

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 feeder depends on its dimensions and motor rating. For the weight of the standard version please refer to the table titled 'Technical Data'. Please refer to the shipping documents for the weight of your specific equipment.

If the packing is severely damaged on delivery, please contact the forwarding agent without delay. Please observe the forwarding agent's Terms and Conditions so as not to forfeit your right to claim damages due to errors in form.
Unless otherwise agreed, the scope of delivery of the SRA-Z unit comprises:

1. Packing
2. SRA-Z drive unit, designed either for clockwise or counterclockwise part travel

3. Operating and installation instructions
4. Declaration of Incorporation
5. Recommended settings for sorting bowl / feeder bowl (as required)

Attention!
SRA-Z drive units may be lifted only at the underside of the exciter mass.

Danger!
Use only means of transport and tools suitable for the loads involved. For lifting the machine or individual machine components use only vehicles or devices that are sufficiently dimensioned and in perfect working condition.
Observe the relevant accident prevention regulations!

Do not stay under suspended load

CAUTION - TRIPPING HAZARD!
Take appropriate action to prevent tripping (machine parts/ service lines) and slipping in the operating and working area.

Attention!
Before re-locating the machine, make sure that the required ambient conditions are provided at the new site.

3.2. Installation

SRA-Z drive units are delivered fully assembled. All you need to do is unpack and install them at the place of destination. After removing the drive units from their packing you should first make a visual inspection of all visible surfaces and clean the unit as necessary to remove any soiling that may have entered the drive during transit. For set-up and assembly work individually agreed between buyer and seller, please refer to the instructions attached.

Attention!
For positioning the SRA-Z drive unit on its intended substructure, temporary storage deposit or the target machine in which the drive is to be integrated, make sure that the load bearing capacity is sufficient. The mount must be dimensioned such that no vibrations are transmitted from the machine to the drive unit and vice versa.

The SRA-Z drives unit are screwed to the rubber-metal isolators on the substructure provided by the user or the machine frame of the complete machine. As an optional item, the range of accessories includes a base plate for each of the three SRA-Z series drive types to fasten them drives above the base plate.

Notice
Hole patterns and tightening torques are specified in the chapter titled ‘Technical Data’.

3.3. Commissioning

Check following items before starting the feeding system:

Danger! Attention!

- All shipping braces are removed and all screws and bolts tightened firmly.
- The feeding system is properly aligned and fastened in place without any strains or stresses exerted on the base plate and/or substructure. After that check smooth carryover of the parts on the feeder transition points.
- The transitions to downstream equipment are perfectly aligned with no interferences.
- The vibrating drives are standing free without contact to any solid body.
- The compressed-air supply is available and stable. The required operating pressure is shown in the table. The cross-sectional areas at the connections are to be adapted to the connection union or coupling (if provided).
- All guards and safety devices are in perfect condition.
- No objects and (bulk) parts are inside the machine.
- The drive connecting cables are plugged into the requisite control unit.
- The available electricity supply (frequency, voltage, power) corresponds to the connection data of the control system.
- The control units have been set up as specified.

After set-up and proper connection of electricity and compressed air supply to the drive unit, switch on the system without product.
Verify that the vibratory systems are working freely without touching anything. Do not load any product before successful completion of the trial run.

Attention!
Electrical connection of the SRA-Z drive unit and its components as well as commissioning of the system must only be carried out by professionals in accordance with the rules and regulations of the country where the SRA-Z unit is operated! When making any change to the electrical connection be sure to observe the operating instructions for the control unit used.

As SRA-Z drive units are incomplete machinery, the interaction between vibratory feeder and user's receiving station is to undergo a risk analysis to be conducted by user. Should this risk analysis reveal that any measures are required, these measures are to be implemented by the integrator/equipment user. Emergency Off switches are not provided on the SRA-Z drive.. This function has to be implemented by the manufacturer of the complete system/machine. Maintain unobstructed access to Emergency Off switches at all times. Check proper operation of the Emergency Off switches every day at the beginning of the machine operation.

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

Notice!
The feeding system was delivered as incomplete machinery with a Declaration of Incorporation according to Machinery Directive 2006/42/EC and intended to be incorporated into a complete system. Incorporation means that the feeding system must be connected to a disconnector (main disconnect switch) which can be locked out in order to prevent inadvertent starting during works.

Warning of magnetic 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.

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.

Notice
For bowl feeders 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. For units with digital display a sticker showing the parameter settings is affixed to the casing.

4. Operating Instructions

4.1. Operation

For operation of the SRA-Z drive unit observe the following:
1. In the standard configuration the SRA-Z drive unit is switched on and off via the controller. Equipment users have the possibility of interfacing this controller with their higher-level machine controllers.
2. Avoid at all cost that parts back up all the way to the sorting elements of the feeder bowl, which may occur for example if the drive is stopped by the controller while the downstream buffer sections are full.
3. If compressed air is used in the feeder bowl be sure to keep a constant operating pressure and be advised that the air supply must not be switched off during operation. On start-up or re-starting make sure that the operating pressure is reliably available before the SRA-Z drive unit starts.
4. The set air and sorting nozzle positions must not be changed.
5. Operators must have free access to the drive unit at all times.
6. NEVER remove jammed parts from the feeding system unless the system has been shut down completely. Proceed without damaging the product or the sorting bowl!
7. It is prohibited to overload the SAR-Z drive units with too many parts.
8. If you observe all operation and installation instructions in this manual the SRA-Z unit will require no maintenance.

Notice!
SRA-Z drive units must be operated by trained and skilled personnel only. Be sure to observe the operation and installation instructions in this manual at all times. Operators assigned by the equipment user can be trained on the SRA-Z unit by Rhein-Nadel Automation GmbH. Please ask for the terms and conditions of such training if required.

Attention!
Stopped SRA-Z drive units should not be assumed to be in a safe state. Stored energy from the leaf springs may be released unintentionally or through maintenance procedures not in accordance with instructions. This applies in particular to procedures that may be dangerous if carried out whilst the machine is in operation, e.g. the removal of a jam, which is against the recommendations of this instruction manual.

4.2. Maintenance items and intervals

The SRA-Z drive units are designed and dimensioned for continuous automatic operation. Information on wear of the sorting tooling cannot be provided as such wear varies depending on the feeder bowl and parts to be fed. Recommended maintenance intervals are as follows:

Notice!
The drive units basically require no maintenance. They require cleaning only when soiled or after coming into contact with liquids.

Maintenance plan				
Action P = check E = adjust R = clean N = re-tighten S = lubricate A = replace		**Interval** t = daily w = weekly m = monthly h = half-yearly j = yearly		
Component	**Check**	**Action**	**Interval**	**Note**
General machine condition	Visual inspection	P	t	Pay attention to corrosion, damage and defects
Electrical equipment	Make functional test	P	h	Tighten loose connections, remove charred cables/components
Couplings / connections		P / N	h	Observe tightening torques
SRA-Z drive unit	Clean from dirt	R	w	Pay attention to corrosion, damage and defects
Hoses and pipes	Visually check for leaks and damage	P	w	


Wear following personal protective equipment:

- Foot protectors (safety footwear)
- Hand protectors (safety gloves), if necessary

Before starting any maintenance work, switch off the machine using the main switch (supply circuit disconnector) and lock it off with a padlock to prevent inadvertent starting.
If appropriate, post a 'DO NOT OPERATE' sign in a conspicuous place at the disconnectors.

Notice!
Be careful when working on and with motors/magnets! They can get hot during operation. Therefore let motors cool down before working on them. If this is not possible, take suitable protective measures such as the use of gloves.

Danger!
Maintenance work must be performed by professionals only.

- Inspect/check the electrical equipment of the drives at regular intervals of time. Remedy defects like loose connections or charred cables without any delay.

Danger!
Before connecting or disconnecting cables, verify absence of voltage. Non-observance may lead to electric shock or machine malfunctions.

- Use only original fuses with the specified amperage! In the event of faults in power supply switch off the machine at once!
- Observe the respective product safety instructions when handling oils, greases and other chemical substances!
- Replace damaged spare parts and safety-relevant parts without any delay.

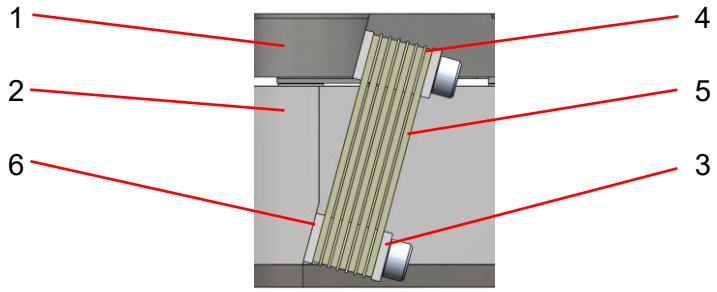
Notice!
Periodical maintenance and inspection of the machine is very important. This avoids malfunctions and improves safety and reliability in operation.

4.3. Spring replacement / installation of spring pack

To exclude collisions between the exciter mass and the spacers, insert the set-up gauge between the exciter mass and springs/intermediate plates when you install the spring packs. Remove the gauge once the required tightening torque is applied.

Installation of spring pack

The required tightening torque is specified in the chapter ‘Technical Data’. Make sure only to use screws of strength class 12.9 on the spring pack!



1 Vibrator
2 Exciter mass
3 End plate
4 Spacer
5 Leaf spring
6 End plate

Notice!
On SRA-Z100 and SRA-Z150 drive units the end plate is also the clamping plate.

4.3.1. Setting the coil-to-armature air gap

All standard-tuned SRA-Z drive units have a coil-to-armature air gap of 0.5 mm. For parallel alignment and adjustment of this distance between magnet and armature it is necessary to slide the set-up gauge approx. 50 mm into the drive.

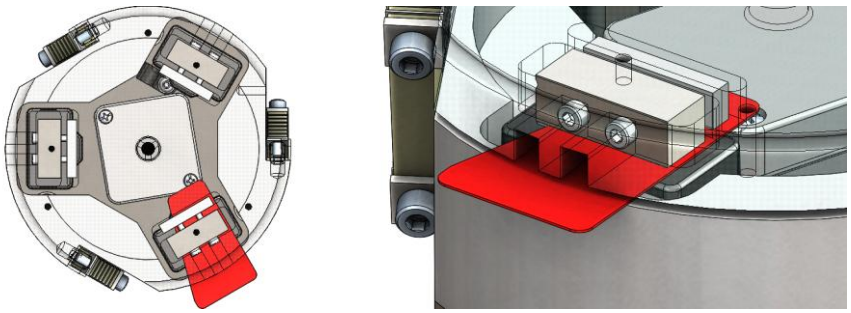


Fig. 1: Setting the coil-to-armature air gap

The insertion depth of the set-up gauge is needed to ensure that the armature plate is not lower than the armature. If the gauge is too narrow the armature may be misaligned. If this is the case the armature plate may knock into the magnet.

Notice!
The coil-to-armature air gap can only be set after having adjusted the parallel distance between vibratory unit and exciter mass using the mounting aids SRA-Z 100/150 respectively SRA-Z 200.

4.4. Installing the vibratory unit

It is imperative to use the mounting aids to ensure that the vibratory unit is installed parallel to the exciter mass, and that you can set a reproducible coil-to-armature air gap. Different types are required, depending on the drive unit.

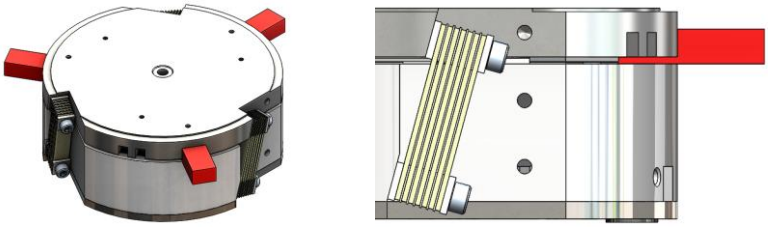


Fig. 2: Setting the coil-to-armature air gap

The clearance between exciter mass and vibratory unit is defined and has to be observed.

Notice!
The clearance between vibratory unit and exciter mass is specified in the chapter titled "Technical Data".

4.5. 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
Vibratory feeder does not start on power up	Mains connector of control unit not plugged-in Connecting cabled between vibratory feeder and control unit not plugged-in Defective fuse in control unit Power switch off Magnet coil defective	Plug in the mains connector Plug 5-pin connector into control unit Replace fuse Close power switch Have magnet coil examined by professionals and replace if necessary
Vibratory feeder vibrates only slightly Achtung	Controller set at 0 % on control unit Wrong vibration frequency **Attention** **If you operate a vibratory feeder designed for 100 vibrations per second without having inserted the jumper in the 5-pin connector, there is a risk of damage to the controller and magnet.**	Set control unit to 80 % Check that coding in plug connector of the controller is correct (see rating plate and 'Technical Data' (Section 1))
The vibratory feeder no longer meets the requested feeding capacity after prolonged operation.	Screws of one or more spring packs have come loose. Broken springs Coil-to-armature air gap has gone out of adjustment Fixing screws of feed bowl have come loose.	Tighten screws (for tightening torques see 'Technical Data' in Section 1). Replace broken springs Readjust the coil-to-armature air gap (for air gap size see 'Technical Data' in Section 1). Re-tighten the screws.

5. Storage, dismantling, disposal

SRA-Z drive uints must be stored in a dry place protected from aggressive media or soiling. Strong temperature variations must be avoided. After prolonged storage the unit must be cleaned in accordance with these installation and operating instructions.
Disconnect power and compressed air before dismounting the SRA-Z drive unit from its target system. Remove all parts from the system. Fit the shipping braces (if required) and loosen the threaded fasteners for attachment to the base plate or rubber-metal isolators. For the rest observe the instructions in the chapter titled "Shipping and Handling".
For return of the SRA-Z unit to Rhein-Nadel Automation GmbH we recommend the use of its transport box.
The SRA-Z drive units are made up of steel, stainless steel and aluminium components.

Take the following actions:

- Remove and destroy the nameplate.
- Dispose of or recycle machine parts completely.

Danger!
Shutdown, dismantling, storage and disposal of the machine must be performed by qualified professionals only.

Ensure a safe and environmentally friendly disposal of the materials used. Observe all applicable national regulations!

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

6. Accessories / spare parts / customer service

Spare parts must satisfy the technical requirements specified by us. This is always ensured if genuine spare parts are used. We assume warranty only for the genuine spare parts supplied by us. The installation and/or use of spare parts not supplied by us may have a negative effect on design characteristics and thus impair active and/or passive safety. We do not assume any liability or warranty for damage due to the use of other than genuine spare parts or accessories.

Please address your spare parts orders to our customer service department.

For a smooth and swift execution of your spare parts order we need following information:

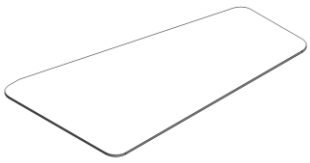
1. Name of customer:
2. Machine identification
3. Designation of spare part required
4. Required quantity
5. Requested mode of shipment

6.1. Accessories

Set-up and tuning work on units of the SRA series requires the use of gauges that you can order from us. Please indicate the respective article codes.
As further accessories we offer adapter plates allowing you to screw down the devices from top.

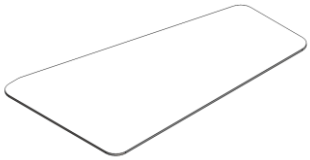
6.1.1. Recommended accessories

For adjustment of the coil-to-armature air gap (0.5 mm) in all SAR-Z drive unit and for alignment of the spring pack (parallel distance to exciter mass) in SRA-Z100 and SRA-Z150 drive units.



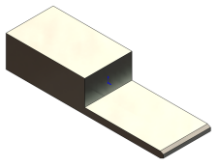
Drives	SRA-Z100 and SRA-Z150
Designation	Set-up gauge 0.5 mm SRA-Z
Drawing #	6-0100-900-09ETZ
RNA article #	38000352
Category	Accessories

For alignment of spring pack parallel to the exciter mass.

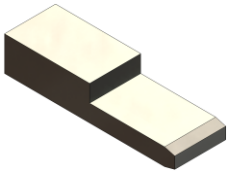


Drives	SRA-Z200
Designation	Set-up gauge 2.0 mm SRA-Z200
Drawing #	6-0100-900-08ETZ
RNA article #	38000356
Category	Accessories

For adjustment of clearance between exciter mass and vibratory unit

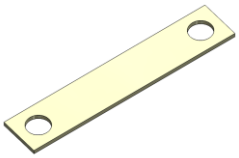


Drives	SRA-Z100 and SRA-Z150
Designation	Mounting aid SRA-Z 100/150
Drawing #	6-0100-900-65ETZ
RNA article #	38000350
Category	Accessories

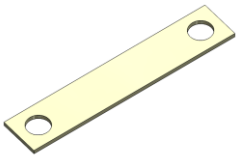


Drives	SRA-Z200
Designation	Mounting aid SRA-Z200
Drawing #	6-0100-952-65ETZ
RNA article #	38000351
Category	Accessories

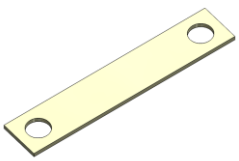
6.1.2. Spare and wear parts for SRA-Z100/150



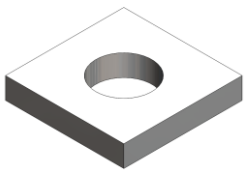
Sub-ass'y	SRA-Z100 and SRA-Z150
Designation	Leaf spring 52x10 mm x 1 mm
Drawing #	6-0100-951-50ETZ
RNA article #	39980479
Category	Spare part



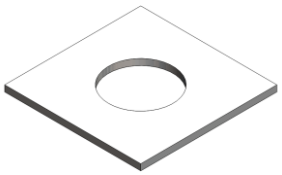
Sub-ass'y	SRA-Z100 and SRA-Z150
Designation	Leaf spring 52x10 mm x 1.5 mm
Drawing #	6-0100-951-50ETZ
RNA article #	39980476
Category	Spare part



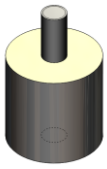
Sub-ass'y	SRA-Z100 and SRA-Z150
Designation	Leaf spring 52x10 mm x 2 mm
Drawing #	6-0100-951-50ETZ
RNA article #	39980477
Category	Spare part



Sub-ass'y	SRA-Z100 and SRA-Z150
Designation	End plate SRA-Z100/150
Drawing #	6-0100-950-07ETZ
RNA article #	38000354
Category	Spare part

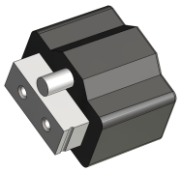


Sub-ass'y	SRA-Z100 and SRA-Z150
Designation	Spacer SRA-Z100/150
Drawing #	6-0100-950-06ETZ
RNA article #	38000353
Category	Spare part



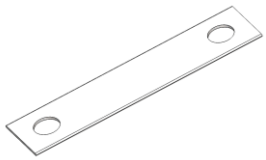
Sub-ass'y	SRA-Z100 and SRA-Z150 Standard
Designation	Rubber-metal isolator 45 Shore
Drawing #	6-0100-400-16ETZ
RNA article #	35000689
Category	Spare part

Sub-ass'y	SRA-Z100 and SRA-Z150
Designation	Rubber-metal isolator 55 Shore
Drawing #	6-0100-400-16ETZ
RNA article #	35000690
Category	Spare part

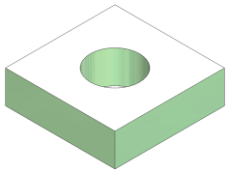


Sub-ass'y	SRA-Z100 (1x) and SRA-Z150 (3x)
Designation	Solenoid 200V50H
Drawing #	OAC003062
RNA article #	39980992
Category	Spare part

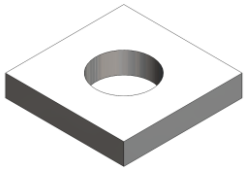
6.1.3. Spare and wear parts list for SRA-Z200



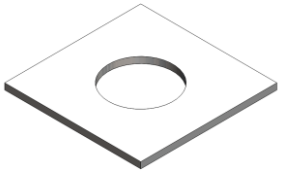
Sub-ass'y	SRA-Z200
Designation	Leaf spring 87x20x1 mm
Drawing #	6-0100-200-08ETZ
RNA article #	35000679
Category	Spare part



Sub-ass'y	SRA-Z200
Designation	Clamping plate for spring pack SRC
Drawing #	6-0100-200-05ETZ
RNA article #	35000705
Category	Spare part

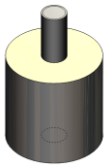


Sub-ass'y	SRA-Z200
Designation	End plate SRA-Z200
Drawing #	1-0100-200-04ETZ
RNA article #	35000707
Category	Spare part

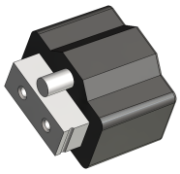


Sub-ass'y	SRA-Z200
Designation	Spacer
Drawing #	1-0100-200-06ETZ
RNA article #	35000709
Category	Spare part

Sub-ass'y	SRA-Z200
Designation	Rubber-metal isolator 45 Shore
Drawing #	6-0100-400-16ETZ
RNA article #	35000691
Category	Spare part



Sub-ass'y	SRA-Z200
Designation	Rubber-metal isolator 55 Shore
Drawing #	6-0100-400-16ETZ
RNA article #	35000692
Category	Spare part



Sub-ass'y	SRA-Z200
Designation	Solenoid 200V50H
Drawing #	OAC007090
RNA article #	35000733
Category	Spare part

6.2. Accessories

As accessories for all SRA-Z drive units we offer base plates for direct mounting on the machine frame. For shapes and dimensions see the table and illustrations below.

Vibratory Feeder Type		**A**	**B**
SRA-Z100	mm	105	91
SRA-Z150	mm	150	130
SRA-Z200	mm	200	180

Fig. 4 is a schematic representation of the base plates with length and width, as well as the hole pattern for fastening to your machine substructure.

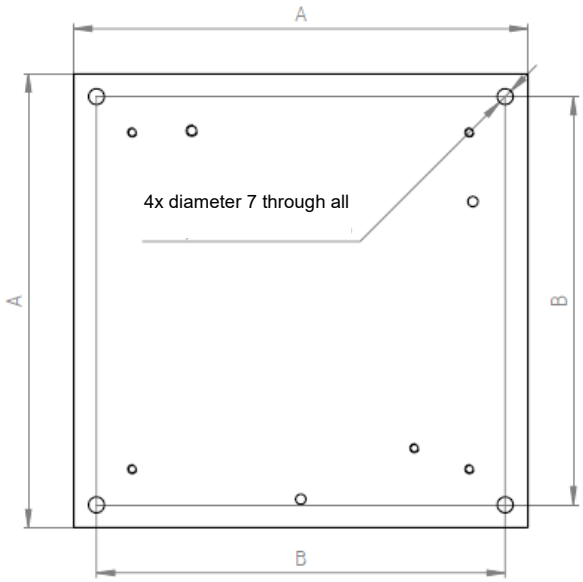
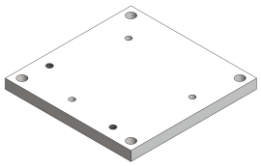
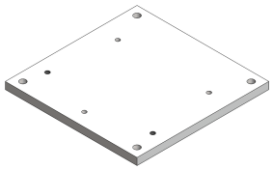


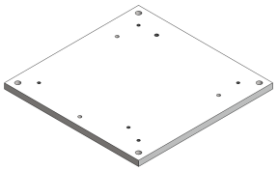
Fig. 4: Dimensions of SRA-Z200



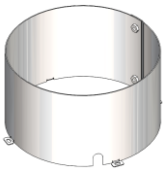
Sub-ass'y	SRA-Z100
Designation	Base plate SRA-Z100
Drawing #	6-0100-900-36ETZ
RNA article #	35000739
Category	Spare part



Sub-ass'y	SRA-Z150
Designation	Base plate SRA-Z150
Drawing #	6-0100-950-36ETZ
RNA article #	38000307
Category	Spare part



Sub-ass'y	SRA-Z200
Designation	Base plate SRA-Z200
Drawing #	6-0100-952-36ETZ
RNA article #	38000343
Category	Spare part



Sub-ass'y	SRA-Z200
Designation	Protective enclosure SRA-Z200
Drawing #	6-0100-952-20ETZ
RNA article #	38000336
Category	Spare part

Notice!
Protective enclosure SRA-Z200 can only be used together with base plate SRA-Z200.

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
Vibratory feeder does not start on power up	Mains connector of control unit not plugged-in Connecting cabled between vibratory feeder and control unit not plugged-in Defective fuse in control unit Power switch off Magnet coil defective	Plug in the mains connector Plug 5-pin connector into control unit Replace fuse Close power switch Have magnet coil examined by professionals and replace if necessary
Vibratory feeder vibrates only slightly 	Controller set at 0 % on control unit Wrong vibration frequency **Attention** **If you operate a vibratory feeder designed for 100 vibrations per second without having inserted the jumper in the 5-pin connector, there is a risk of damage to the controller and magnet.**	Set control unit to 80 % Check that coding in plug connector of the controller is correct (see rating plate and 'Technical Data' (Section 1))
The vibratory feeder no longer meets the requested feeding capacity after prolonged operation.	Screws of one or more spring packs have come loose. Broken springs Coil-to-armature air gap has gone out of adjustment Fixing screws of feed bowl have come loose.	Tighten screws (for tightening torques see 'Technical Data' in Section 1). Replace broken springs Readjust the coil-to-armature air gap (for air gap size see 'Technical Data' in Section 1). Re-tighten the screws.

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