

Operating instructions VarioShaker 270

with control box

Item number: **VA-Art-00018**



Read before assembly and commissioning!

www.variobotic.de

Operating instructions

All non-German versions of this document are translation of the original document!

Item number: VA-Art-00018

Project name: VarioShaker 270 with control box

Year of construction: 2019

Creator: Technische Dokumentation Wörtz | www.tedok-woertz.de

Copyright by: Variobotic GmbH



Declaration of incorporation

for the purpose of Machinery Directive 2006/42/EC, appendix II Part 1 Paragraph B

We:

Company

Variobotic GmbH

Dr.-Carl-Schwenk-Str. 24
89233 Neu-Ulm (Germany)

hereby declare that the machine:

Item number: VA-Art-00018

Project name: VarioShaker 270 with control box

Function: Component separation and feed for handling systems

Year of construction: 2019

the basic requirements of Machine Directive 2006/42/EC are fulfilled. The following requirements according to appendix I of the directive are applied and complied with:

- General principle no. 1
- Article 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.3.2, 1.3.3, 1.3.4 and 1.5.1.

The commissioning of the incomplete machine is prohibited until it has been installed in a machine and the entire machine corresponds to the regulations of the machine directive (2006/42/EC).

The technical documents specifically belonging to the machine were created according to appendix VII part B. The manufacturer is obligated to electronically transfer the special documents for the incomplete machine to individual federal sites with justified request.

Authorised person in terms of appendix II no. 1 A. No. 2; 2006/42/EC for compilation of technical documents:

Name: Company Variobotic GmbH; Technical Documentation

Address: See address of the manufacturer

submitted by:

Neu-Ulm, February 6, 2019

Peter Klement (Managing director)



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1. General notes

Please carefully read through this operating manual before assembly and commissioning the product. Through this you can avoid errors during assembly and operation of the product and learn how to optimally use all characteristics and functions.

1.1 About this operating instructions

1.1.1 How to reach us

Company

Variobotic GmbH

Dr.-Carl-Schwenk-Str. 24

89233 Neu-Ulm (Germany)

Telephone: +49 731 20 64 15 73

E-Mail: info@variobotic.de

Web: www.variobotic.de

1.1.2 This operating manual

This operating manual belongs to:

Type: VarioShaker 270 with control box

Item number: VA-Art-00018

Year of construction: 2019

1.1.3 Language

The original operating instructions are written in German. All non-German versions of this operating manual are translations of the original document.

1.1.4 Storage of the operating instructions

The operating company is obligated to properly store the operating instructions and make them accessible at the place of usage of the machine.

1.1.5 Copyright

The copyright for this document remains with the company Variobotic GmbH. This operating instructions may neither be completely nor partially reproduced, distributed or evaluated for competition purposes without authorization or shared with third parties. Violations of this may result in legal consequences.

1.2 Used symbols and keywords

1.2.1 Notes in the operating instructions

There are two different types of notes:



A **tip / note** from the manufacturer is identified with this symbol



Observe additional documentation!

A reference to additional documentation outside of these operating instructions is identified with this symbol.

1.2.2 Action-related keywords

The following keywords apply to different hazard levels:



Describes a very dangerous situation that will lead to death or permanent injury if the safety note is ignored.



Describes a dangerous situation that may lead to death or permanent injury if the safety note is ignored.



Describes a dangerous situation that may lead to treatable injuries if the safety note is ignored.



Warning notes for property damage, which may result in production failures or machine damage if the safety notes are not followed.

1.2.3 Appearance of the warnings

The warnings found in these operating instructions and, if applicable, on the machine must be completely followed. In the event of non-compliance, the manufacturer does not take over any liability for any personal and property damage that arises.

Installed safety symbols may not be removed, pasted over, painted over or in any other way impaired in their recognition.



Danger!

Type and source of hazard

Consequences upon the occurrence of a hazard

Actions against the hazard



Warning!

Type and source of hazard

Consequences upon the occurrence of a hazard

Actions against the hazard



Caution!

Type and source of hazard

Consequences upon the occurrence of a hazard

Actions against the hazard

Notice

Note on system or machine damage

Consequences upon the occurrence of a hazard

Actions against the hazard

1.2.4 Explanation of used symbols

1.2.4.1 Warning sign

	Hazardous area!	General hazard or hazard not defined through a picture
	Electric current or voltage!	Only open identified components after release of the supply line to the machine and only by an electrician. (for example, control cabinet) Installed directly at the hazardous area!
	Hand injuries through mechanically closing parts!	There is a risk of hand injury through crushing on clamping devices or rollers and shafts. Installed at the hazardous area.

Table 1.1: Warning sign

1.2.4.2 Ban sign

	Use foot protection		Use hand protection
	Use head protection!		Wear eye protection

Table 1.2: Ban sign

2. Safety

2.1 Intended use

The operating safety of the machine is only guaranteed with proper usage.

The VarioShaker 270 with control box is used to actuate transported material, in particular general cargo, through mechanical vibrations. The VarioShaker 270 with control box is integrated in automated industrial facilities and controlled through a communication interface in automatic mode. A manual operation through the configuration software is also possible. Regarding the maximum permissible dimensions and weights to be used for the transported goods, take note of the technical data about the product. Proper use also includes following all notes from the operating instructions, as well as following all safety notes.

2.1.1 Environment for proper use

Industrial / commercial use; no private users

2.1.2 Not intended use

- not for use with flammable media or in an explosive environment
- not for use in moist and wet areas
- not for use in dirty or dusty environments
- not for use in aggressive environments (for example, atmosphere containing salt, corrosive vapors, etc.)
- independent constructional changes to the machine
- Operation of the machine with defective safety mechanisms or improperly installed or non-functional safety or protection mechanisms. (Manipulation)
- not or improperly executed maintenance and commissioning measures

Any use going beyond that described in proper use is seen as improper. The manufacturer is not liable for any damage resulting from this. The user alone bears the risk.

2.1.3 Predictable misuse

The usage of other material types/thickness and sizes that are not included in the technical data is permitted.

The usage of operating materials that are not approved by the manufacturer is prohibited.

2.1.4 Warranty and liability

Independent modifications and changes to the machine are forbidden! Hardware and software changes to the machine may not be performed without approval from Variobotic GmbH. Damage that results from improper usage leads to the forfeiture of all warranty and compensation claims.

Spare parts Spare parts must correspond to the technical requirements determined by the manufacturer. This is always guaranteed for original spare parts from the manufacturer.

Wear parts Wear parts are not included in the warranty.

2.1.5 Introduction and instruction of people

People who work on the machine must correspond to the requirements defined under [2.2 Personnel qualification, page 17](#) and must be regularly trained regarding the hazards when handling this machine. These instructions must be documented by the operating company.

The operating and technical personnel must have read and understood the operating instructions, in particular the safety chapter, as well as applicable national provisions before working on the machine.

The operating instructions and applicable national provisions are to be stored in such a way that they are accessible at all times to the operating and technical personnel.

All information and notes for the operation and maintenance on the machine are provided under consideration of our prior experiences and knowledge.

2.2 Personnel qualification

2.2.1 Basic requirements

Only people who can be expected to perform their work reliably are permitted as personnel. People who have an influenced responsiveness, for example through drugs, alcohol or medicine, are not permitted.

Observe the applicable local age and occupational guidelines when selecting personnel.

2.2.2 Operator

The operator fulfills the following requirements:

- The operating company authorizes them to use the product.
- They are physically and mentally able to properly operate the product without creating additional hazards.
- They are fluent in the official language for the site in writing and speech in order to be able to understand the manual and the operating interface of the control.
- They are familiar with the risks that exist when working with the product due to the instructions received and experience with the product.

2.2.3 Commissioning / maintenance staff

The commissioning / maintenance staff fulfills the following requirements:

- They are qualified through training and experience to commission the product as well as to perform any maintenance work on the product.
- They have fundamental experience with electrical controls.
- They have advanced experience with the functional safety and control of such products.
- The maintenance staff must additionally possess the qualification of the operator.

2.2.4 Electrician

The electrician is specially trained for the working environment in which they work. Due to their technical training, knowledge and experience as well as knowledge of the local standards and regulations, they are able to perform work on electrical machines and both detect and avoid any possible hazards independently.

2.2.5 Unauthorized persons

Unauthorized persons that do not fulfill the requirements described here are not familiar with the hazards affiliated with this machine. Thus, the risk of severe injuries or even death exists for unauthorized users.

2.3 User / operating company obligations

Safety when handling the product can only be guaranteed if all required measures were taken. The user's due diligence includes the planning of these measures and inspecting their execution on the product.

In particular, the user shall ensure that:

- the product is only used properly and there is no misuse of the product.
- the product is only used in a proper, functional state and the functionality is inspected.
- the required personal protection equipment is provided and worn by the personnel for all work with the product.
- the operating manual is always in a legible state and completely available at all times where the product is being used.
- only qualified and authorized personnel operates the product.
- only qualified and authorized technical personnel with specific training repairs, maintains and performs improvements to the product.
- the personnel is instructed about the requirements for work safety and environment protection on a regular basis.
- that the personnel used has read and understood the operating manual.
- all safety and warning notes installed on the product are not removed and are easily legible and clear at all times.
- a hazard analysis according to the operating safety order (BetrSichV) or corresponding provisions must be executed before commissioning. This risk assessment must be documented.

2.4 Personnel obligations

Work with the product may only be performed by reliable, qualified and trained personnel. The manufacturer recommends regularly extending and refreshing this knowledge.

- Observe the legally permissible minimum working age!
- People who have been assigned to work with the product must have read and understood the operating manual before beginning their work.
- The basic provisions on work safety and accident prevent, such as wearing designated personal protection equipment, apply to all people who work with the product.
- The personnel has the obligation to immediately inform superiors of any determined faults and damage to the product. Work with the product must be stopped until the damage has been repaired.

2.5 Safety during normal operation



Warning!

Risk of injury through electromagnetic fields

Persons who wear pacemakers or other active medical implants may be in danger when exposed to EMF.

Persons with active medical implants are forbidden to stay in the work and hazard area.

All safety provisions must be complied with while using the product. Changes to protective measures and safety equipment are not permitted.

In the event of disturbances, the product must be stopped immediately and until the disruption has been eliminated, the machine must be secured so that an unauthorized restart can be ruled out.

Do not work on the machine if you are under the influence of alcohol, narcotics or medication.

2.6 Safety while working on electrical equipment



Danger!

Danger through electric shock!

When working on the control cabinet and components under power, there is mortal danger through fatal electric shock.

There may still be electrical voltage in the control cabinet after the machine is turned off with the main switch.

Work in the control cabinet may only be performed by an electrician under compliance with the five safety rules of electrical technology.

2.6.1 The five safety rules



1. Unlock



2. Secure against turning back on

3. Ensure that there is no voltage



4. Ground and short-circuit

5. Cover or block off neighbouring parts under voltage

Figure 2.1: The five safety rules

Behaviour Always keep control cabinets closed! Only allow access for authorised people!
Never hose down switch cabinets and other enclosures from electrical equipment in order to clean them.
Only touch electrical equipment with dry hands!
Do not use any metallic conductors during maintenance work on or near electrical equipment!

Fuses Only original fuses with the prescribed current may be used.

2.7 Fire fighting



Danger!

Hazard while fighting fire!

Further hazards may be caused as a result of improper use of fire extinguishers or use of other fire extinguishing equipment! For example, risk of a fatal electrical shock or injury caused by vapours or gases.

In the event of a fire, turn off the main switch from the machine or disconnect the machine from the power supply (pull plug, remove fuses). Otherwise there is a risk of an electrical shock and electrical fires cannot be effectively extinguished.

Only use non-residue CO₂ extinguishers in the event of a fire.

If these are not available, use class A, B or C fire extinguishers. (these fire extinguishers leave behind residue that is difficult to remove!).

3. Structure and function

3.1 Structure

The VarioShaker 270 with control box consists of a component separator (1) and the control box (2). The control box from the VarioShaker 270 must be installed at the place of use in a control cabinet authorized by the operating company. Due to safety reasons, the control box may not be used outside of a locked control cabinet.

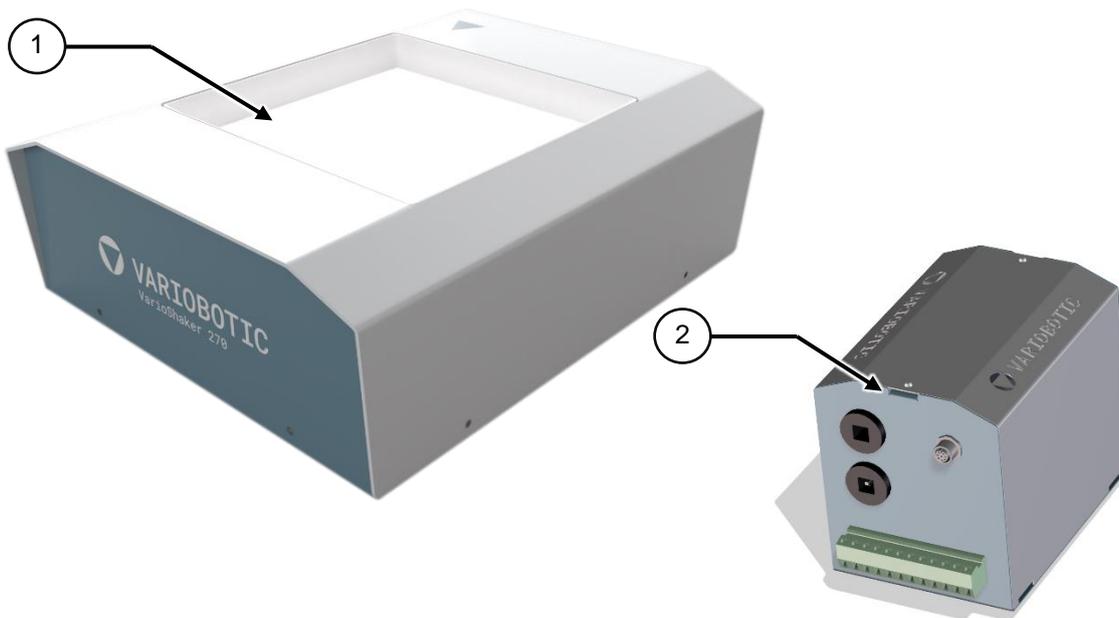


Figure 3.1: Structure

3.2 Functional description

On the VarioShaker, components are separated and isolated using vibrations. If necessary, the components can be transported as specifically separated or in any areas from the vibrating plate. These movements must be adjusted to the user's needs.

The components are added to the VarioShaker as bulk material. Normally a hopper system is used for this. The valid tapping coordinates are determined through a camera system and the component is removed with a handling system.

A very high separate rate is achieved through the precise movement of the bulk material.

4. Transportation, installation and connection



Caution!

Hazard through moved loads

Moved loads may fall over, move or fall down and can jam or injure persons.

Loads may only be lifted and transported using suitable transport and load suspension points. Never go under a lifted load. Always use suitable transport and conveyor material. Only use qualified personnel for transportation. When using industrial trucks, the driver must be able to verify their qualification and authorization.

Notice

Material and product damage

The product may be damaged by incorrect or unsuitable transportation equipment. The safety and fastening material may not press against parts of the product or against the transport packaging during transport. Corresponding edge protection and intermediate layers must be used.

Only use qualified personnel for transportation. When using industrial trucks, the driver must be able to verify their qualification and authorization.

The VarioShaker was designed and built so that it can be transported in a completely assembled state. Please reference the technical data for the weight. When transporting the control box, you must ensure that the contacts and clamps from the box are not damaged.

The included transport packaging must be used.



4.1 Set-up and fasten

The following steps must be taken to ensure the reliable functionality of the VarioShaker. Proper operation cannot be ensured if these are not complied with.

The following installations are prohibited:

- Installation in rooms with explosion hazards
- Installation in environments with hazardous oils, acids, gases, vapours, dust, radiation, etc.



Caution!

Hazard through tripping and falling!

To rule out a tripping hazard, all device connections such as cables, hoses and pipes must be laid so that there are no tripping hazards through these.

Use cable ducts, bridges, covers, etc. for this purpose.

After installation and assembly of the machine, make sure...

- the required connection cables and lines are properly connected.
- all covers and safety mechanisms on the device are assembled or closed.
- all hazardous sites caused by the installation of the device are properly removed, secured or identified.

4.1.1 Dimensions of the system base plate

The VarioShaker must be installed on a plate with a weight of at least 25 kg. Otherwise the performance of the VarioShaker is limited.

In the event that two devices are installed close to each other, you must ensure that the assembly plates have the specified weight. A so-called vibration decoupling must be used.

This decoupling must also be used if vibrations are expected through combined machines in the application or the combined machines may not be exposed to any vibrations.



A tip / note from the manufacturer

We recommend non-tear damping elements (metal-rubber buffer) that can compensate for movements in the X-Y-Z directions.

The damping elements used must be approved respectively for a mass of > 30kg.

- Metal-rubber buffer MGA diameter 25mm or
- Metal-rubber buffer MGA diameter 20mm

4.1.2 Drill image for assembly

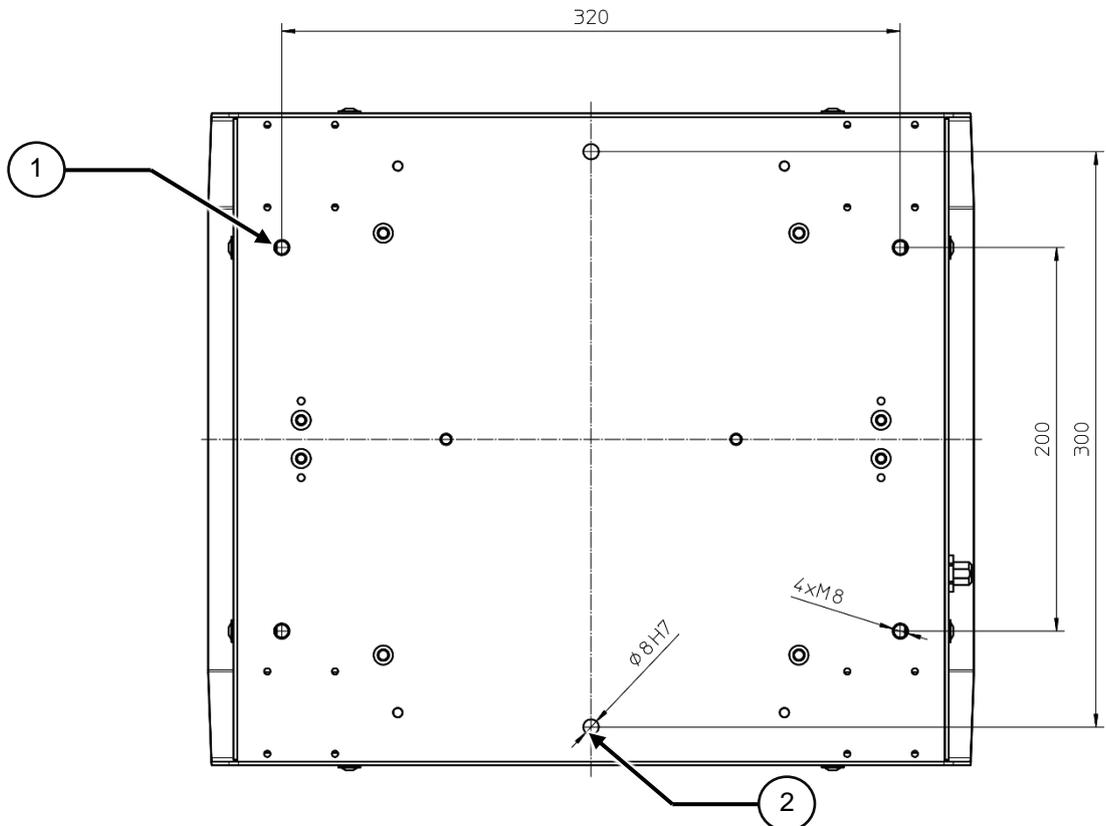


Figure 4.1: Set-up and fasten



4.1.3 Assembly on system base plate

Align the device vertically and horizontally so that the following values are not exceeded:

Deviation from level: max. 0.5 mm on 1000 mm length.

Align the machine horizontally and vertically with a level.

- Assembly process:**
- 1) Place the VarioShaker on the bore pattern from the system base plate. (do not mount)



A tip / note from the manufacturer

Pay attention to the orientation of the device for cable connection later.

The device must have an orientation mark for this purpose. This orientation mark must also be used as a reference for the device coordinate system.

- 2) Align device in all directions.
 - ✓ The two dowel pin drill holes \varnothing 8H7 (fig. above pos.: 2) are available.
- 3) Use four M8 screws (fig. above pos.: 1) for the mounting of the VarioShaker on the base plate.
- 4) Tighten the screws and check the fixed positioning of the screws.

4.1.3.1 Assembly alternatives

Alternatively, you can fasten the VarioShaker through the base plate of the device with four M6 screws through the M8 (1) thread on the machine base plate. The front and back plate must be removed on the front and back side to reach the drill holes.

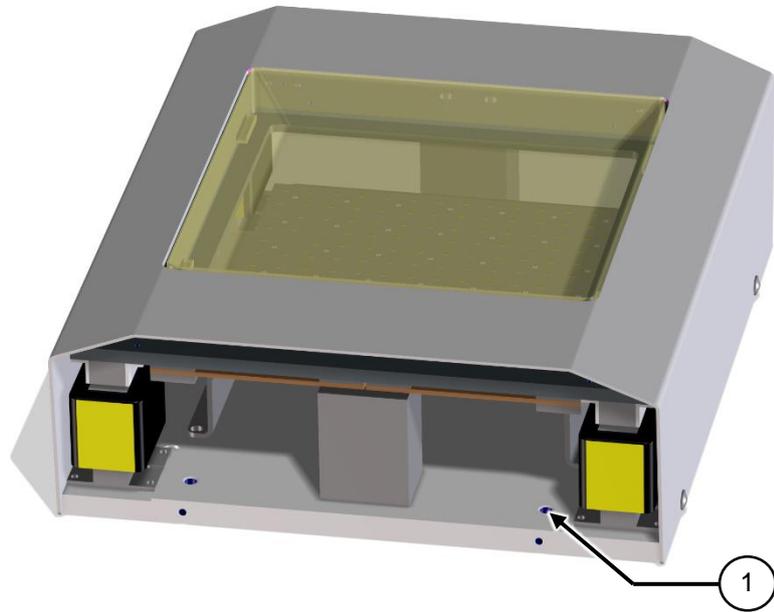


Figure 4.2: Set-up and fasten

Tighten the front and back plate again after mounting the VarioShaker on the machine base plate.

Only a completely assembled device may be used!



4.2 Changing the vibration plate

It is possible to replace the vibration plate (A) for different applications and workpiece.

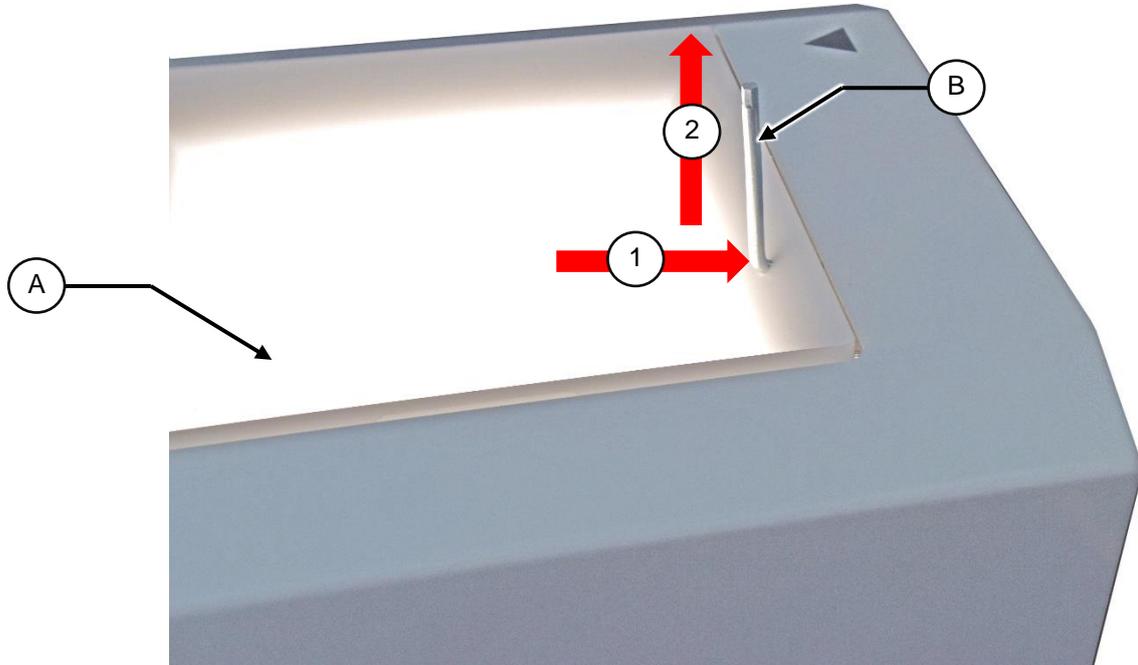


Figure 4.3: Changing the vibration plate

Use a hook key (B) or alternatively a fitting Allen wrench for this.

- 1) Place the tool in the designated drill holes of the vibration plate.
- 2) Pull the vibration plate up.



A tip / note from the manufacturer

The vibration plate is held in place with magnets; if necessary, you must pull them with a little tug or tip/lever it to break through the holding resistance.

- 3) Remove the vibration plate and insert the new vibration plate.
- 4) Make sure that the vibration plate is attracted by all magnets. You can confirm this by trying to move the vibration plate by hand:
 - ✓ If the vibration plate moves, then it is not correctly positioned and will not be held by all magnets.
 - ✓ If the vibration plate does not move, then it is correctly positioned and will be held by all magnets.

5. Electrical connection of the product



Danger!

Danger through electric shock!

When working on the control cabinet and components under power, there is mortal danger through fatal electric shock.

Work in the control cabinet may only be performed by an electrician under compliance with the five safety rules of electrical technology.

The control box for VarioShaker must be installed in a closed and locking control cabinet.

5.1 Connection of the control box



Observe additional documentation!

In addition to this short description, read the included circuit diagram.

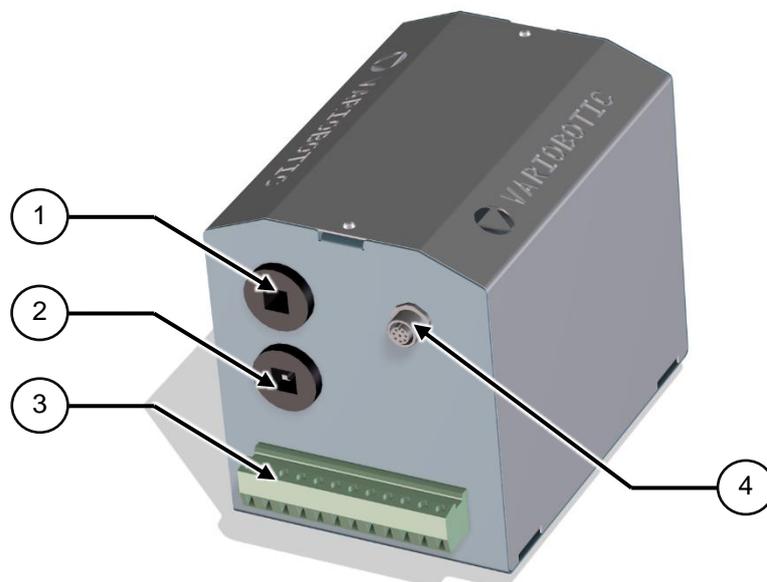


Figure 5.1: Connection of the control box

- 1) USB connection
- 2) Ethernet connection
- 3) Connection strip
- 4) M12 VarioShaker connection

5.1.1 Connection strip

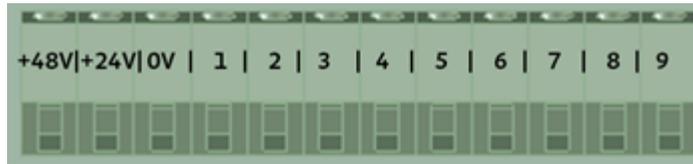


Figure 5.2: Connection strip

PIN	Connection	Description
+48 V	48 V / 2A	
+24 V	24 V / 2A	
0 V	GND (-)	
1	Digital input (24V max. 2.4 mA)	Enable / Start
2	Digital input (24V max. 2.4 mA)	Sequence selection - Bit 1
3	Digital input (24V max. 2.4 mA)	Sequence selection - Bit 2
4	Digital input (24V max. 2.4 mA)	Sequence selection - Bit 3
5	Digital input (24V max. 2.4 mA)	Sequence selection - Bit 4
6	Digital input (24V max. 2.4 mA)	LED lighting on
7	Digital input (24V max. 2.4 mA)	Hopper on (external)
8	Digital output (24V max. 500 mA)	Switch output hopper
9	Unassigned (reserved)	

Table 5.1: Connection strip



A **tip / note** from the manufacturer
 48V and 24V are backed up with 2A fuses.
 The fuses are located in the casing.

5.2 Connection to the VarioShaker

The energy feed from the VarioShaker is provided with 24V/48V DC low voltage from the control box.

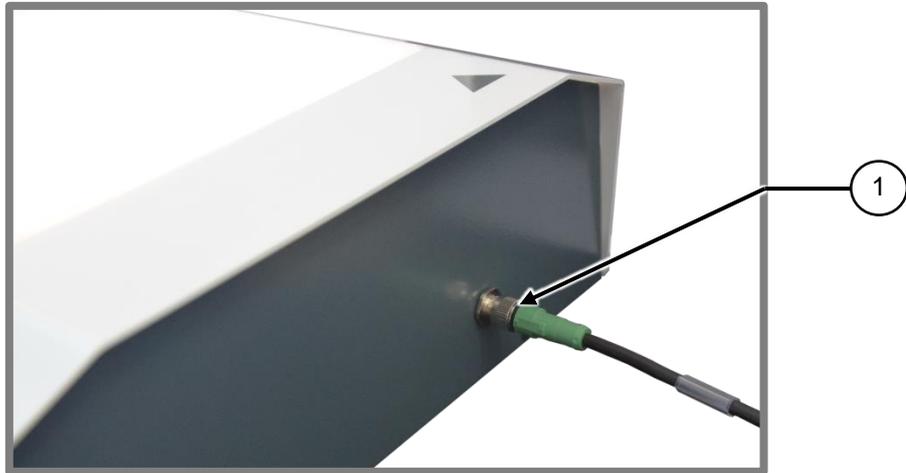


Figure 5.3: Connection to the VarioShaker

The VarioShaker is supplied through the included eight-pin M12 connection cable (1). The cable can be connected on the side of the VarioShaker.

6. Operation and usage

Access to the control of the VarioBox is performed through the web interface. A browser-based user interface that is independent of the operating system and end device.



Warning!

Risk of injury through electromagnetic fields

Persons who wear pacemakers or other active medical implants may be in danger when exposed to EMF.

Persons with active medical implants are forbidden to stay in the work and hazard area.

Notice

Machine damage

Errors in the programming may lead to significant machine damage.

Only authorized and qualified experts with technical training may perform this task.

6.1 VarioShaker user interface

In order to activate the user interface of the control, a connection must be established through your network. The control box and your end device (for example, PC, laptop or tablet) must be in the same network to do this.



A tip / note from the manufacturer

The manufacturer recommends using the following: „Google Chrome“. Normal standard browsers can be used as well.



A tip / note from the manufacturer

Open up the user interface of the VarioShaker the first time it is being used:
<http://shakerXXXX>.

XXXX stands for the 4-digit number on the VarioShaker control box.

In the settings (*see 6.6 Start page settings (yellow), page 47*), you can later assign a fixed IP address to the control box and therefore user interface as well as undertake any individual settings.

6.2 Initial setup of network

The control box is in the DHCP mode by default and is automatically assigned an IP in a network. If this is not the case, you can assign a fixed IP address as follows:

- Open the control box
- Connect a monitor (Micro-HDMI) to the control
- Also connect a keyboard via usb

6.2.1 DHCP / STATIC

A set-up mode is activated by default:

„**Set network type: (DHCP) or (STATIC):**”

DHCP By entering **DHCP** - confirmation through enter - the control box is restarted in DHCP mode (wait for about 120 seconds).

STATIC By entering **STATIC** - confirmation through enter - you receive further input options that you also confirm with enter:

„**Enter a valid IP:**“ - Assign the desired IP address

subsequently

„**Enter a valid NetMask:**“ - Assign the desired SUP network mask

subsequently

„**Enter a valid Gateway:**“ - Assign the desired gateway

With confirmation through enter, the control box is restarted in DHCP mode (wait for about 120 seconds).



A **tip / note** from the manufacturer

It is also possible to manually set the IP address later through the settings ([see 6.6 Start page settings \(yellow\), page 47](#)).

6.2.2 User interface - overview



Figure 6.1: User interface - overview

If the connection was successful, the start screen shown here will appear.

- Red frame = Preset and file management
- Green frame = Clip Editor
- Blue frame = Sequence Editor
- Yellow frame = Settings

6.3 Preset and file management (RED)

In the preset and file management, you will find the PRESET CLIPS (templates, presettings), MY CLIPS and MY SEQUENCES.

6.3.1 PRESET CLIPS

There are preset clips to simplify the setup of different functions.
 This function is described in detail.

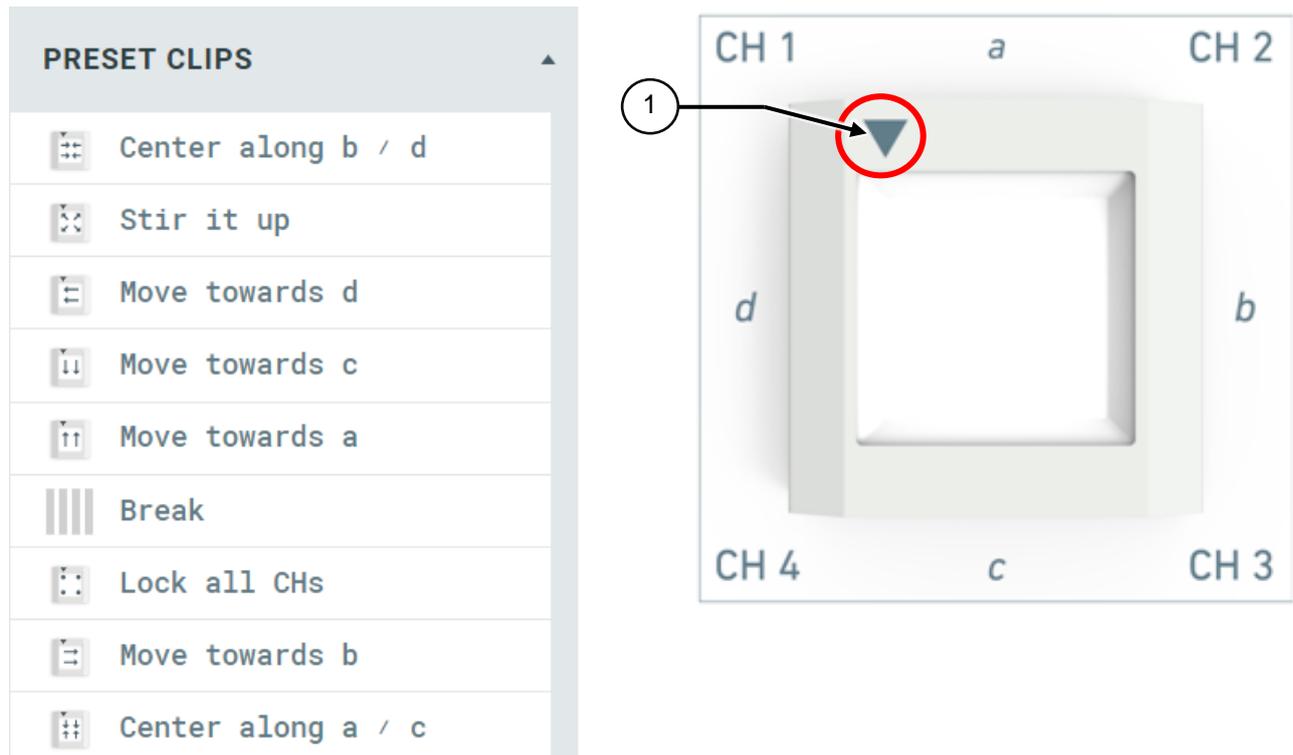


Figure 6.2: PRESET CLIPS

In order to detect the correct alignment of the channel, the corner of your VarioShaker is marked with a triangle (1) as well as the icons of the presets.

The individual “channels” begin in clockwise direction and the page names in the form of letters on the triangle. The channels always stand for a corner.



 Center along b / d	<p>Center parts between sides b and d</p> <p>Setting the frequency and adjusting the amplitude to your case</p>
 Center along a / c	<p>Center parts between the sides a and c</p> <p>Setting the frequency and adjusting the amplitude to your case</p>
 Move towards a  Move towards b  Move towards c  Move towards d	<p>Move parts to side a, b, c or d</p> <p>Setting the frequency and adjusting the amplitude to your case</p>
 Stir it up	<p>Completely rearrange parts through complete jump movement</p> <p>Setting the frequency and adjusting the amplitude to your case</p>
 Break	<p>Set all amplitudes to zero</p> <p>Serves as a break in the sequence to let vibrations come to an end or to create transitions</p>
 Lock all CHs	<p>All corners on a block</p> <p>Causes a very quick stop of the vibration.</p> <p>! ATTENTION! Pay attention to switch on duration</p>

Table 6.1: PRESET CLIPS

By pressing a PRESET clip, it will be accepted in the CLIP EDITOR.

This can be adjusted to the respective conditions there and then saved as MY CLIP.

The presettings of the PRESET CLIP make it easier for you to find the right settings. Phases like amplitude are preset.

Normally only the frequency has to be adjusted. This allows the amplitude to be perfectly optimized as well.

6.3.2 MY CLIPS

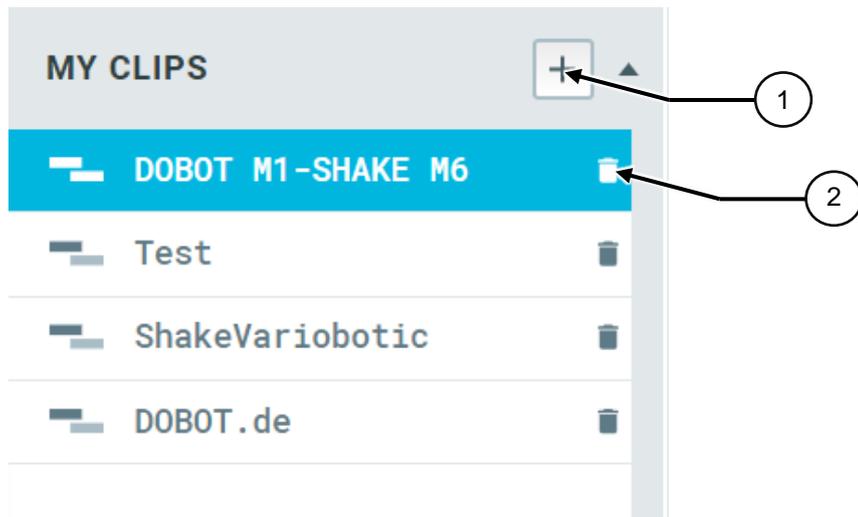


Figure 6.3: MY CLIPS

By opening the MY CLIPS area, you can manage the clips you have created.

Create new clips by pressing the PLUS symbol (1).

A field to enter the description will appear.

Blue clips are now active in the CLIP EDITOR.

The respective clip can be deleted using the waste bin symbol (2).

6.3.3 MY SEQUENCES

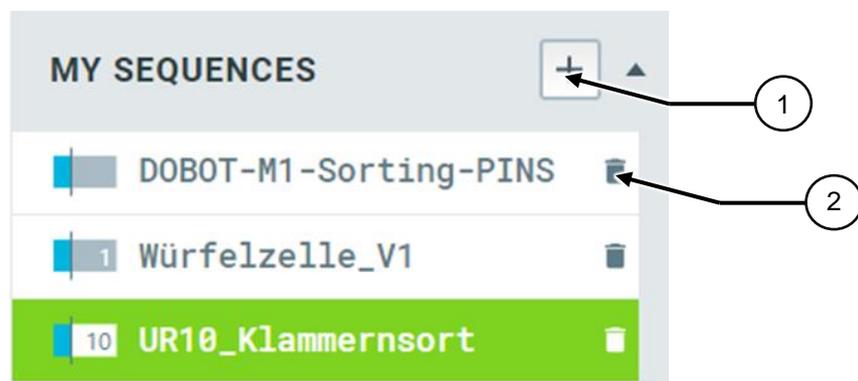


Figure 6.4: Preset and file management (RED)

By opening the MY SEQUENCES area, you can manage the sequences you have created.

Create new sequences by pressing the PLUS symbol (1).

A field to enter the description will appear.

Green sequences are active.

The respective sequence can be deleted using the waste bin symbol (2).

The number before the designation (see 1 or 10 above) indicates the SLOT where the sequence was saved.

A SLOT is the BIT CODED position where the sequence is saved.



By opening the digital I/O on PIN 1 for start and 2 -5 for the BIT selection, you can open the sequences without needing the WEB GUI.

6.4 CLIP EDITOR (green)

6.4.1 Basics clip EDITOR

Different movement and vibration effects can be achieved in the CLIP EDITOR by setting the frequency, amplitude and phase movement.



Figure 6.5: CLIP EDITOR (green)

The setting is dependent on the component that moves / should be separated, the vibration plate and the structure of the machine in which a VarioShaker is installed.

Notice

Note on machine damage

The function LOCK ALL CH ([see 6.3.1 PRESET CLIPS, page 35](#)) holds the corners on BLOCK and causes a very quick stop of the vibration.

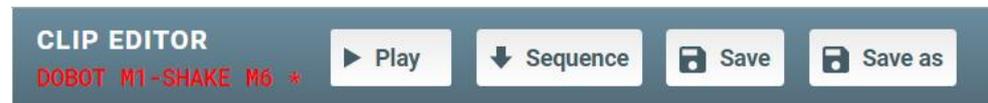
If the amplitude was set too high and the shaker moves constantly to BLOCK, this will lead to increased wear and damage.

The currently selected CLIP is found under the description CLIP EDITOR.



Figure 6.6: Currently selected CLIP

If these settings are changed, the color will change to red as long as this has not yet been saved.



- It is saved with SAVE. With SAVE AS a new entry (new name must be assigned).
- A setting can be tested/loaded in the CLIP EDITOR with PLAY.
- The symbol changes to PAUSE. The playback can be interrupted again here.



If the setting is performed and achieves the desired effect, the CLIP can be moved by pressing SEQUENCE in the SEQUENCE EDITOR.

The prerequisite is an active sequence in the SEQUENCE EDITOR.

If a CLIP is moved to the SEQUENCE EDITOR, these are independent units and have no further link.

This means that adjustments to the sequence or in MY CLIP are independent of each other.

The CLIP automatically received a new name in the SEQUENCE as well.



This is additionally made clear by showing the name of the selected CLIP (here from the sequence) in green.

The SAVE button also indicates that it is saving to the sequence through green.

6.4.2 Other functions

Since it is often the case that you want to change the amplitude or phase of multiple controllers at the same time, there is no LINK button.

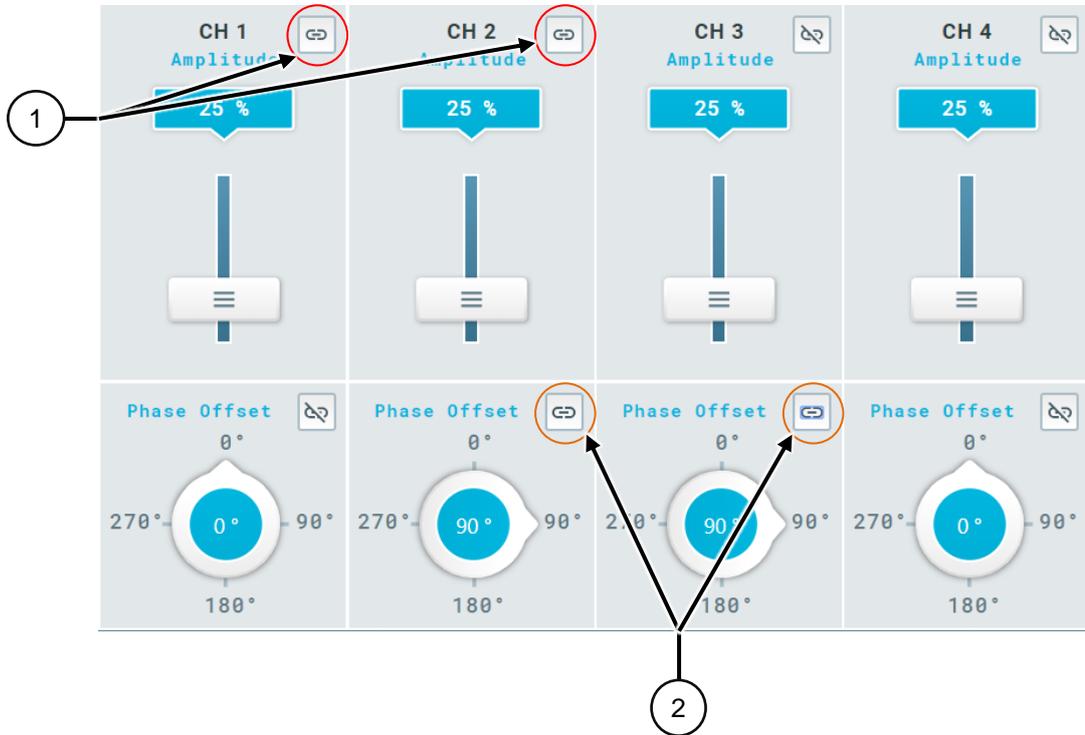


Figure 6.7: CLIP EDITOR (green) - Other functions

If for example CH1 and CH2 (1) are moved together in their amplitude, they can be linked by pressing the button.

In this example, the phase from CH2 and CH3 (2) is also linked and changed together.

6.4.3 Introduction to the creation of CLIPS

A movement on the VarioShaker is generated through the correct combination of frequency, amplitude and phase.

The PRESETS help to easily and quickly understand dependencies.

Load STIR IT UP.

The frequency and amplitude must be initially present so that an effect is created when PLAY is pressed.

Areas between 15 and 30 Hz are a good range, for example, for the STIR IT UP movement.

Once the excitation frequency has been found, the amplitude can be adjusted to the best effect.

After this, the clip should be saved under MY CLIPS, for example, with a machine identification.



Figure 6.8: CLIP EDITOR (green) - Introduction to the creation of CLIPS

6.5 SEQUENCE EDITOR (blue)

6.5.1 Basics of the SEQUENCE EDITOR

Complete process sequences can be generated from individual CLIPS.

For example, components should initially be collected from the top and bottom and left and right in the middle to then be sorted in a new order.

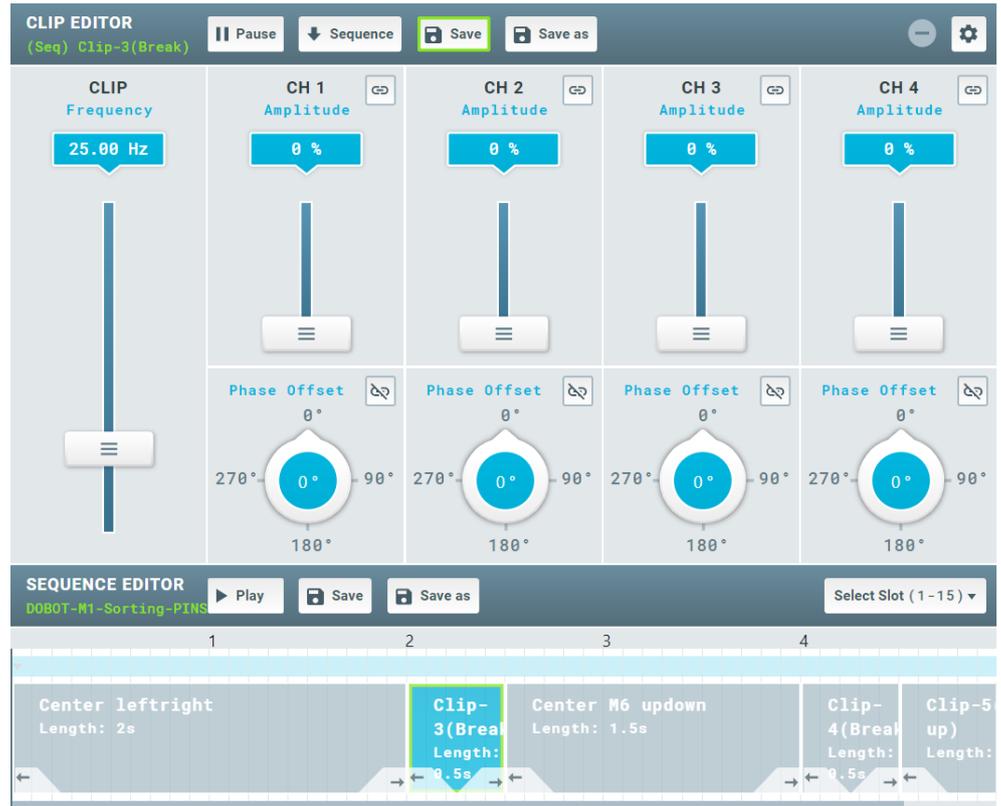


Figure 6.9: SEQUENCE EDITOR (blue) - Basics of the SEQUENCE EDITOR

Similar to the CLIP EDITOR, the active sequence is shown here as well.

- You can save a sequence once with PLAY.
- SAVE and SAVE AS have the same function as with the CLIP EDITOR.

Clips changes in the SEQUENCE EDITOR are only saved in the sequence.



A clip marked in the SEQUENCE EDITOR is illustrated in the CLIP EDITOR (GREEN) and can be changed there.

The clip can be renamed and its length changed by double clicking on a clip in the SEQUENCE EDITOR.

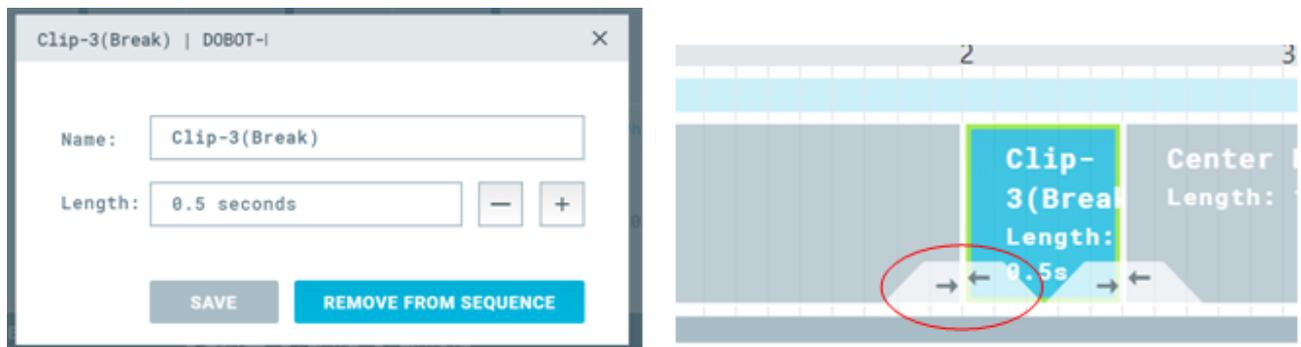


Figure 6.10: SEQUENCE EDITOR (blue) – rename clip

The sequence of the clips can be changed to the left and right by using the arrows underneath the clips.

6.5.2 SLOT assignment

In order to assign a matching SLOT to a sequence, it must be marked under MY SEQUENCE.

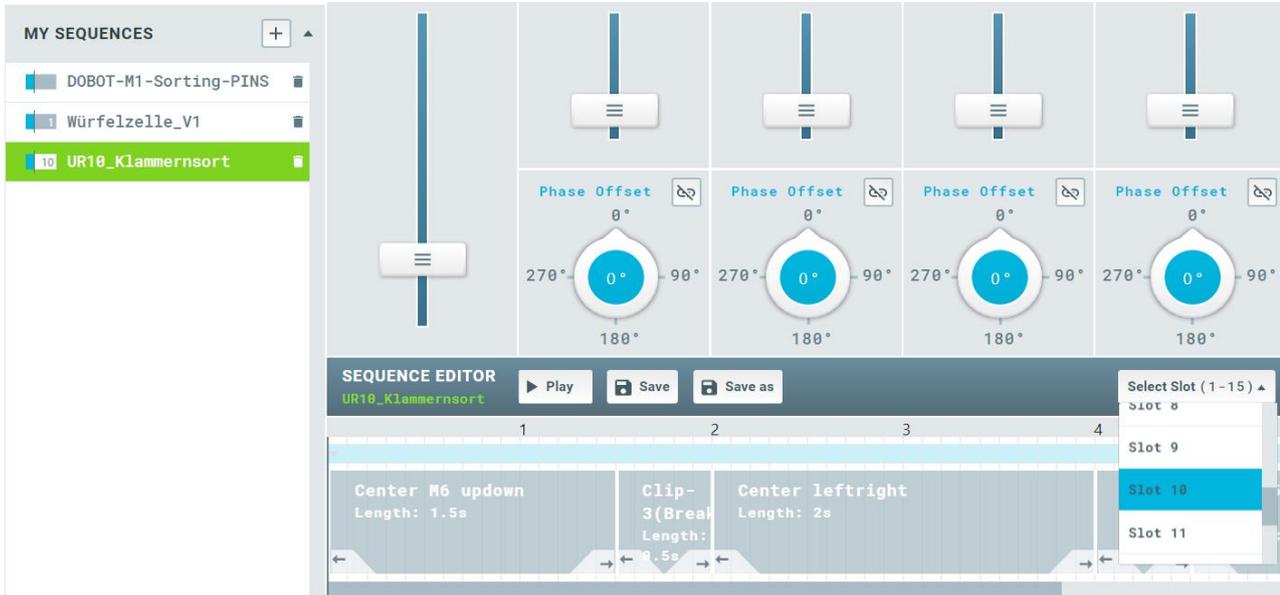


Figure 6.11: SEQUENCE EDITOR (blue) - SLOT assignment

Then the matching SLOT can be assigned in the drop down menu. If the selected SLOT was already assigned, there will be a notification on the display that the SLOT was overwritten.

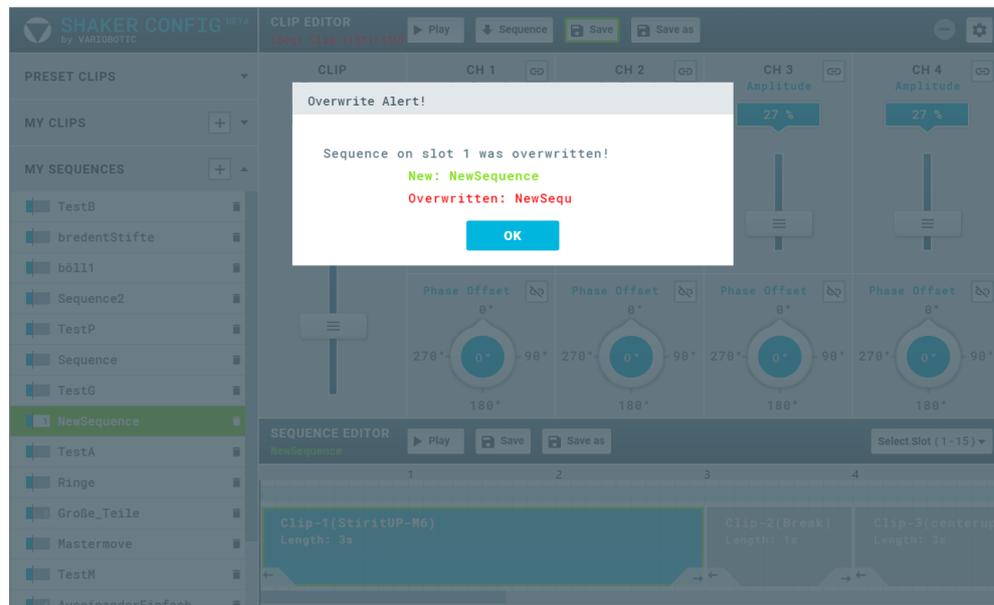
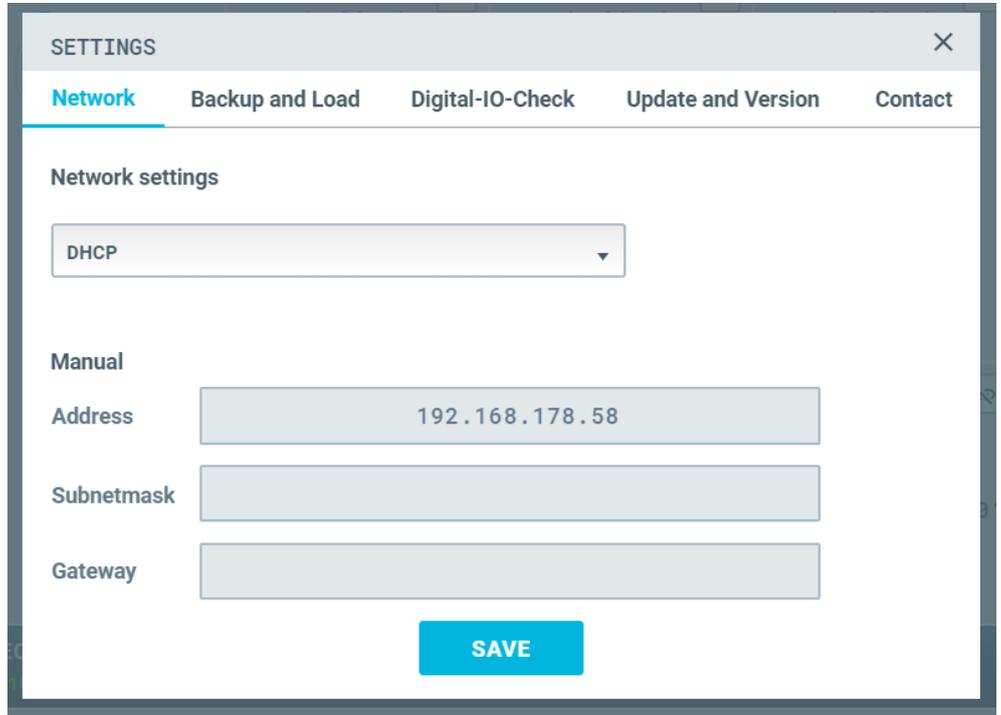


Figure 6.12: SEQUENCE EDITOR (blue) - SLOT overwritten

6.6 Start page settings (yellow)

The following images are visualized when opening the settings.

6.6.1 Network configurations (network)



SETTINGS [X]

Network Backup and Load Digital-IO-Check Update and Version Contact

Network settings

DHCP

Manual

Address 192.168.178.58

Subnetmask

Gateway

SAVE

Figure 6.13: Start page settings (yellow) - Network configurations (network)

An IP is assigned to the control box using the DHCP setting.

A fixed IP can be assigned under *MANUAL*.

6.6.2 Data backup and restoration (backup and load)

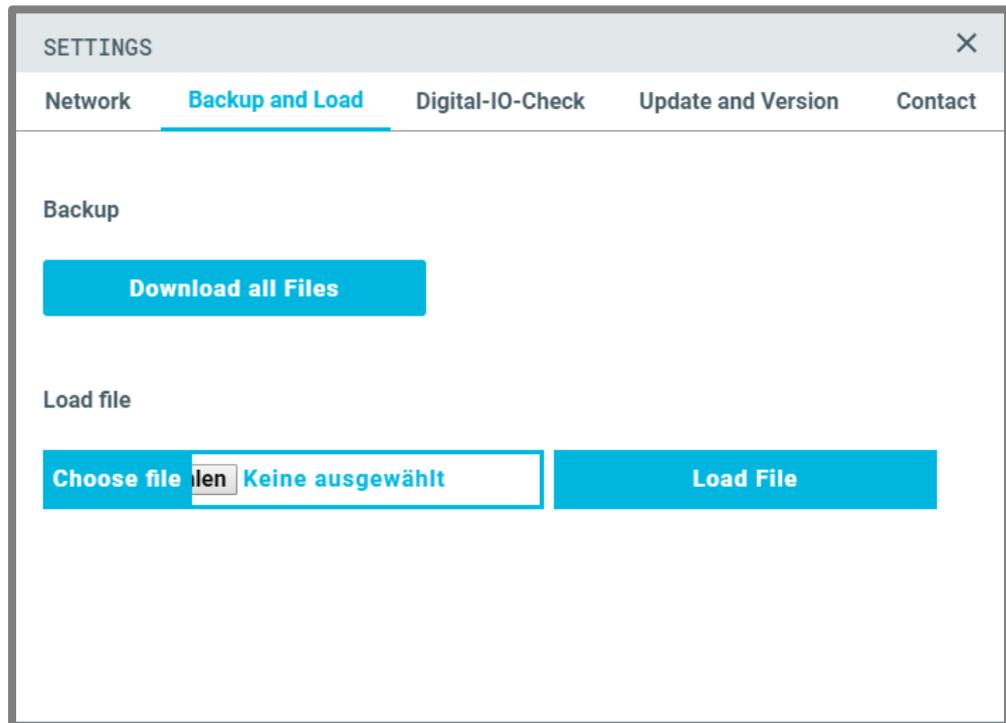


Figure 6.14: Start page settings (yellow) - Data backup and restoration (backup and load)

Using the “Download all Files” button, a file is downloaded with all MY CLIPS and MY SEQUENCES.

You can select a file to upload to the control box through “Choose file” and upload with “Load file”.

6.6.3 Input and output check (digital IO check)

Test the inputs and outputs.

6.6.4 Update and Version (Update and Version)

If you are the owner of a VarioShaker with the respective control box, you will receive an e-mail with a software update where you are informed of the update and its content. There are two files in the attachment that should be treated as follows.

6.6.4.1 Step-by-step instructions

- 1) Create it on an empty mobile data carrier (USB drive).
Make sure that the data carrier is formatted in FAT32 and contains an “updates” folder.
- 2) Copy the two files that you received by e-mail and paste them into the “updates” folder.
- 3) The update files should look as follows:
 - ✓ YYYY-MM-DD_XXXX.ruetteltisch.tar.xz (CONTROLLER)
 - ✓ YYYY-MM-DD_XXXX.webtisch.tar.xz (GUI)

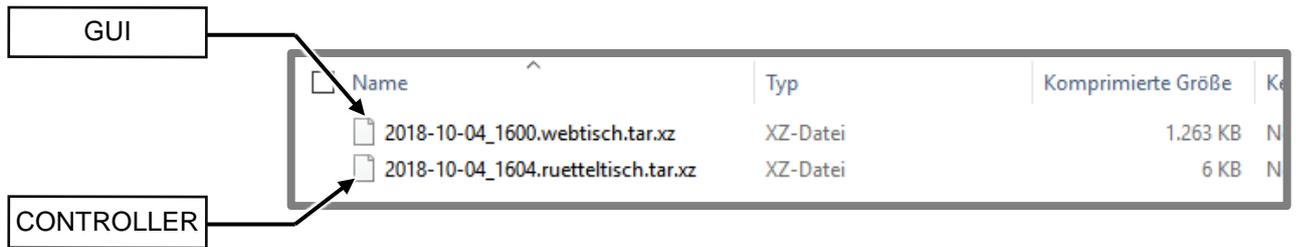
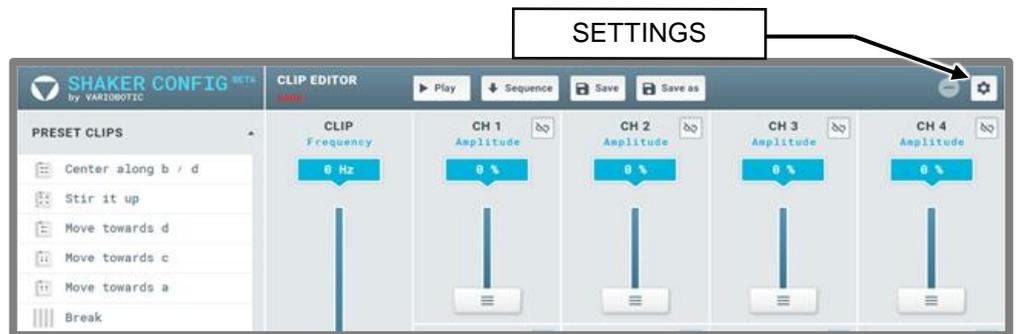
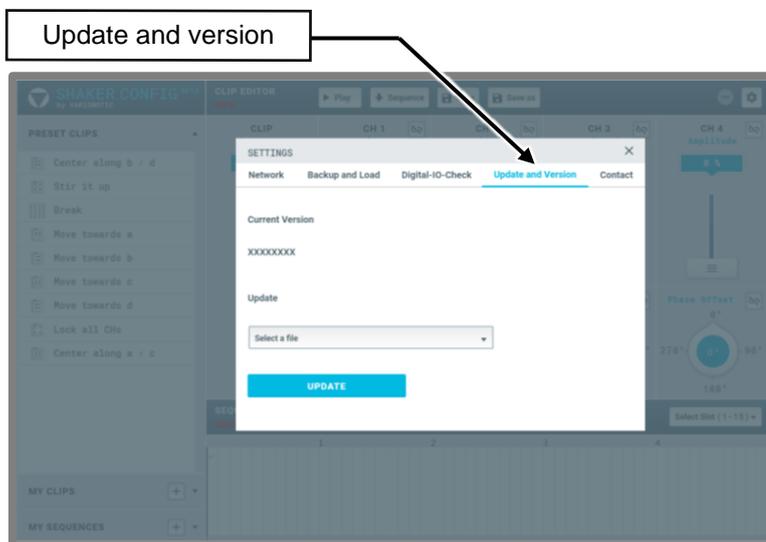


Figure 6.15: Update and Version (Update and Version)

- 4) Plug the USB stick into the USB socket on the exterior of the casing when the system is turned on (vibration table does not have to be activated) ([Figure 5.1, Connection of the control box page 29](#))
- 5) Open the WebGUI in the web browser and select under *SETTINGS*:



THE tab UPDATE AND VERSION.





Now first select the file from the web interface (webtisch.tar.xz) in the dropdown menu and click on *UPDATE*.



A **tip / note** from the manufacturer

This process takes about 2 minutes, but it may also require more time. In this case, the page will be reloaded, but the web interface will not open. Please wait and reload the page after a few seconds until the web interface is shown again.

-
- 6) Once this process is complete, repeat step 8 with the controller file (ruetteltisch.tar.xz).

The vibration table and the web interface were now updated with the current version.



A **tip / note** from the manufacturer

There are two different update files depending on the software state of your shaker. Please use the file that fits for you.

Version 3.4.2:

- Shaker6*** / SN10
- Shaker6*** / SN05
- Shaker6*** / SN12
- Shaker6*** / SN06
- Shaker6*** / SN13
- Shaker6*** / SN14

Version 3.5.3:

- Shaker8*** / SN07
 - Shaker8*** / SN02
 - Shaker8*** / SN04
-

7. Maintenance and repair



Warning!

Risk of injury through electromagnetic fields

Persons who wear pacemakers or other active medical implants may be in danger when exposed to EMF.

Persons with active medical implants are forbidden to stay in the work and hazard area.

Notice

Machine damage

Improperly performed work may lead to significant machine damage.

Only authorised and qualified experts with technical training for mechanical / electrical systems may perform this task. The operator must be able to see the complete work area of the machine.

7.1 Preparation and general measures for maintenance and repair

Maintenance and repair work may only be performed by trained and instructed experts. Pay attention to the current legal and operational provisions for maintenance and repair work.

The VarioShaker 270 is maintenance-free. Should, however, any repair or maintenance work be necessary, the device must be disconnected from all energy sources.

Pull out the plug connection to the VarioShaker 270 for this.

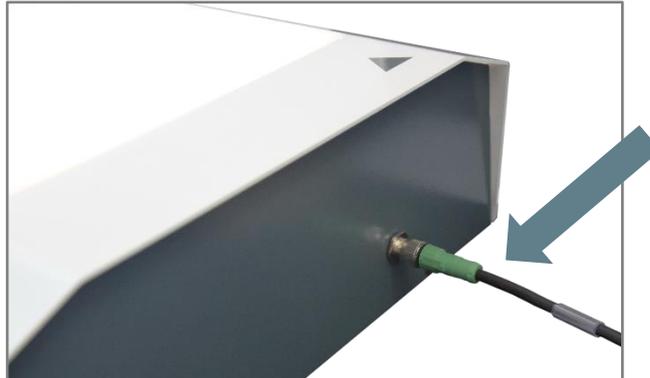


Figure 7.1: Preparation and general measures for maintenance and repair

Make sure that all tools, cleaning cloths and other materials are removed from the work area after completion of the maintenance work.

Remove liquids in a proper and environment-friendly manner. Before commissioning the machine, check the proper assembly and function of all safety equipment.

Should there be any further questions about repair and maintenance work, please contact the manufacturer under the contact options specified in the Service chapter.

8. Service and maintenance

If the machine can no longer be started or if functional disruptions occur during operation, technical personnel should examine the machine for repair. Do not allow non-expert people to execute repair work or program changes to the machine.

8.1 Contact data

Before you contact our service, take note of this in advance.

- The exact machine name (nameplate)
- The article/serial number of the machine (nameplate)

8.1.1 In the event of disruptions and technical problems:

Contact data: **Company**

Variobotic GmbH

Dr.-Carl-Schwenk-Str. 24
89233 Neu-Ulm (Germany)

Telephone: +49 731 20 64 15 73 or

E-Mail: support@variobotic.de

8.2 Spare and wear parts

Independent modifications and changes to the machine are forbidden! Hardware and software changes to the machine may not be performed without approval from Variobotic GmbH. Damage that results from improper usage leads to the forfeiture of all warranty and compensation claims.

Wear parts Wear parts are not included in the warranty

Spare parts Spare parts must correspond to the technical requirements determined by the manufacturer. This is always guaranteed for original spare parts from the manufacturer. Contact the manufacturer for this.



9. Disassembly and disposal

During disassembly of the machine, observe the applicable operational and legal provisions. Dispose of all materials in an environment-friendly manner and corresponding to the currently valid legal and operational provisions. Continue to observe the following notes!



Danger!

Danger through electric shock!

There may still be electrical voltage in the control cabinet after the machine is turned off with the main switch. When working on the control cabinet and components under power, there is mortal danger through fatal electric shock.

Repair work on electrical parts or components of the machine may only be executed by a trained electrician! Keep the control cabinet closed if no work is being done in it. Only use certified and approved electrical tools for repair work!

9.1 Disassembly for disposal

- Disconnect network connection cable and disconnect feed to the control box
- Dispose of all materials separated corresponding to the existing provisions

9.1.1 Notes on disposal

9.1.1.1 Within the European Union



If your product is designated with this symbol, consumed electrical/electronic products should not be disposed of with normal waste. A separate collection system is available for these products. Consumed electrical/electronic devices must be handled separately and in agreement with the legal regulations, which prescribe the correct handling, disposal and reprocessing of such products. Corresponding to the implementation by member states, private households within the EU states may bring their consumed electrical/electronic devices to corresponding collection points free of charge.

9.1.1.2 In countries outside of the EU

If you would like to dispose of this product, please contact your local authorities to receive information on proper disposal.



9.1.1.3 OLD BATTERIES (note for Germany)

Batteries and accumulators do not belong in normal waste!

In the interest of environment protection, as an end consumer you are obligated according to the current battery directive to return old and used batteries and accumulators. You can return used batteries to all GRS collection points at your location or anywhere that such batteries are sold. The batteries will be accepted free of charge for the consumer.

10. Technical data

This technical data includes:

Item number:	VA-Art-00018
Year of construction:	2019

10.1 Dimensions of the VarioShaker 270 with control box

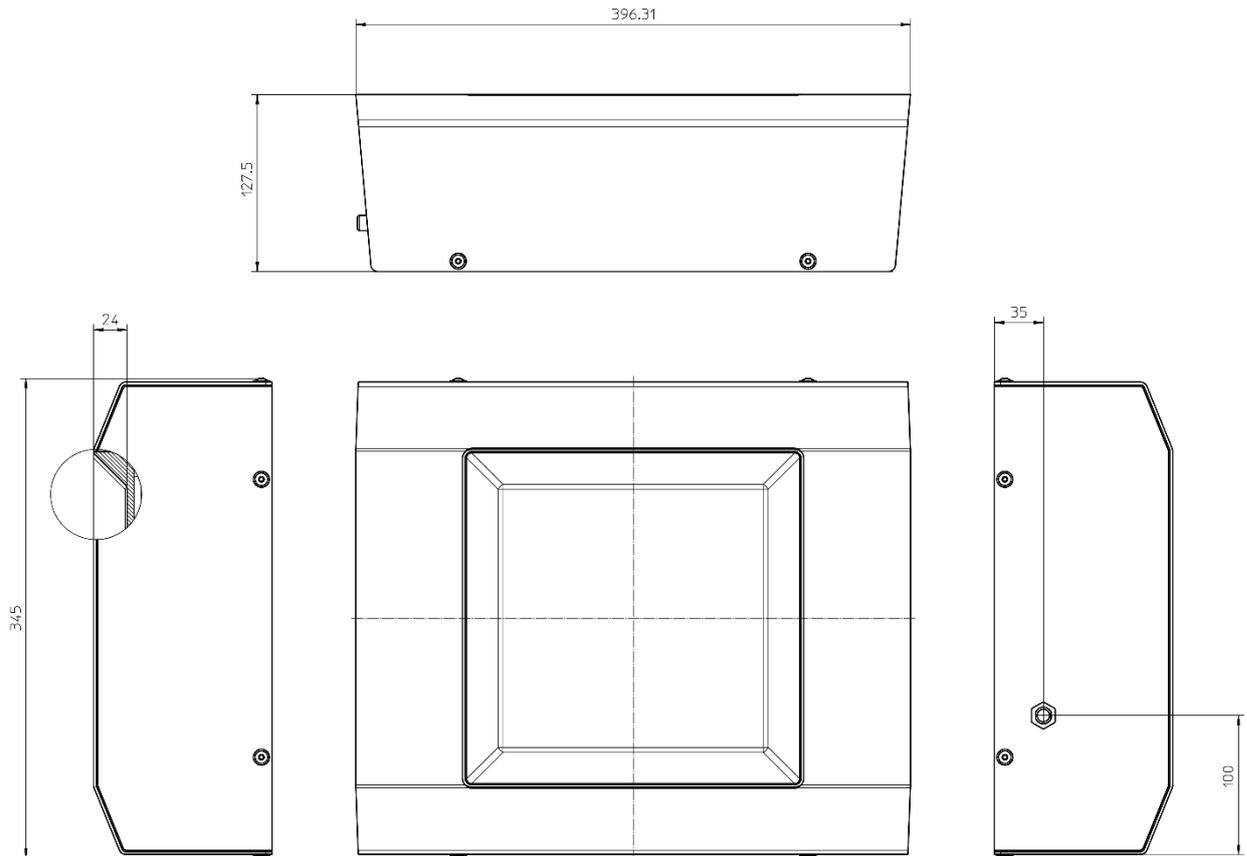


Figure 10.1: Dimensions of the VarioShaker 270 with control box

Weight:	14.2 kg
Vibration area:	270 mm diagonal (185x185mm) smooth with removal slopes
Depth:	24 mm
Optional vibration area:	Reduced area for small parts, grooves, holes, elevations, structure, indentations (can be adjusted to your application)

Table 10.1: Dimensions of the VarioShaker 270 with control box

10.2 Climatic and environmental requirements

Operation:	+05 °C ... +40 °C
Environment:	<ul style="list-style-type: none"> ▪ not for use with flammable media or in an explosive environment ▪ not for use in moist and wet areas ▪ not for use in dirty or dusty environments ▪ not for use in aggressive environments (for example, atmosphere containing salt, corrosive vapors, etc.)

Table 10.2: Climatic and environmental requirements

Electrical and software-technical requirements

Power supply:	24V DC 2A and 48V DC 2A
Switch on duration (ED):	< 50%
Connections:	M12 cable - control line between VarioShaker and control box
Control:	Separate control box in control cabinet
Ethernet (TCP/IP)	For the initial configuration and optionally on customer request for actuation of the control
Software:	WebGUI through standard web browser (Google Chrome, Apple Safari)

Table 10.3: Climatic and environmental requirements

10.3 Material and component properties

10.3.1 Maximum part size

The manufacturer recommends a part size from 0.5 to approx. 50mm. The maximum part size, however, is based on the optimal part number for the respective process. This part number must be determined empirically dependent on the orientation behavior and the tapping process.

The most stable process is normally achieved when the tapping area is covered with components up to 2/3.

10.3.2 Maximum part weight

A general specification about the maximum part weight cannot be provided. The weight threshold is dependent on the component geometry and the material. If the components are too heavy, they cannot be re-oriented in a process-safe manner.

Components should always be examined for suitability in advance.

11. Annex

11.1 Switch and connection plan control box



Observe additional documentation!

The switch and connection plan for the control box can be found in paper form as an appendix to these operating instructions.



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