

Unlimited
Combinations



Betriebsanleitung
Operating instructions
Notice d'instructions

Hei-SHAKE Multi Reax

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research made easy

Contents

Introduction

About this document.....	22
Typographic conventions.....	22
Copyright protection.....	22
Safety instructions in the official languages of the European Union	22

General product information

Directives applied, product certification.....	23
California Residents.....	23
Residual risk.....	23
Intended use.....	23
Compliant use.....	23
Reasonably foreseeable misuse.....	24
Transportation.....	24
Storage.....	24
Acclimatization.....	24
Permissible ambient conditions.....	24

Safety

General safety instructions.....	24
Electrical safety.....	25
Operational safety.....	25
Occupational safety.....	25
Personal protective equipment (PPE).....	25
Environmental protection.....	26
Biohazard.....	26
Other regulations.....	26

Device description

Mechanical design.....	27
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Commissioning

Set up the device.....	28
Power supply.....	28
Fixing laboratory vessels.....	29

Operation

Switching the device on/off	30
Continuous operation	30
Timer mode	30
Troubleshooting	31

Appendix



Technical specifications	32
Scope of delivery	32
Accessories	33
Device service	33
General cleaning instructions	33
Repairs	33
Maintenance	34
Disposal	34
Contact details	34
Warranty statement	34
Certificate of decontamination	35

About this document

This operating manual describes the features and operation of vortexers, Hei-SHAKE Multi Reax type. The operating instructions are an integral part of the described device!

Typographic conventions

Standardized symbols, signal words and highlighting elements are used in this document to warn of hazards and to identify important information or rather special text contents.

Symbol	Signal word / explanation
	Warning symbols in combination with a signal word indicate dangers: DANGER Indicates an immediate dangerous situation. Failure to respect the indications will result in death or serious injury.
	WARNING Indicates a potential danger. Failure to respect the indications will result in serious injuries.
	CAUTION Indicates a potential hazard which, if not avoided, damage to property and minor to moderate injuries can occur.
	Mandatory signs are used to indicate important and useful information on handling a product. This information is used to ensure operational safety and to maintain the value of the product.
[GUI]	Parameter designations, display texts , and device labels are typographically highlighted in the text and in tables to facilitate their assignment on the device.
→	The arrow indicates specific instructions to be followed to ensure operational safety when handling the product.

Copyright protection

This document is protected by copyright and is generally intended for use by the purchaser of the product.

No transfer to third parties, reproduction in any form, including excerpts, and by any means, as well as utilization and/or disclosure of the contents is permitted without the prior written consent of Heidolph Instruments GmbH & Co. KG. Any violation is subject to compensation for damage.

Safety instructions in the official languages of the European Union

A summary of all safety instructions in the official languages of the European Union can be found in our Safety Guide for the product group shakers & mixers (Ref. 01-005-006-99). This document is available for download on our homepage in the most up-to-date version.

Directives applied, product certification



CE marking

The device meets all requirements of the following directives:

- European Machinery Directive, 2006/42/EC
- EMC Directive, 2004/108/EC

California Residents

Important information for California residents regarding Prop 65. Please visit www.P65Warnings.ca.gov for more information.

Residual risk

The device has been designed and manufactured in accordance with the state-of-the-art standards at the time of development and the recognized safety regulations. During mounting and use, as well as during maintenance, repair and cleaning work, there are nevertheless certain residual risks associated with the described device.

These are identified and described at the appropriate points in this document.

Intended use

The described vortexer in this document has been specially developed for the following tasks:

- Shaking
- Mixing
- Emulsifying
- Suspending
- Dissolving

The areas of application of the described device include chemical, biological and environmental-analytical laboratory and research applications, applications of basic research and comparable facilities.

Due to its design, the device in its delivery condition may only be used in analytical processes or in laboratory-like conditions in the food, cosmetics, and pharmaceutical industries as well as other comparable industries that manufacture products intended for consumption by humans or animals, or for use on humans or animals.

Any other use of this device is not considered as intended!

Compliant use

The user is generally responsible for evaluating the conformity of his application and, if necessary, for taking additional measures.

Reasonably foreseeable misuse

Additional measures may be necessary for use under conditions or for purposes deviating from the intended use, and/or specific guidelines and safety regulations must be observed. Corresponding requirements must be evaluated and implemented by the operator in each individual case.

Compliance with and implementation of all relevant directives and safety measures for the respective field of application is generally the responsibility of the operator.

All risks resulting from improper use are borne generally by the operator.

The device may generally be operated by authorized and instructed personnel. Training and qualification of the operating personnel as well as ensuring that the device is handled responsibly are the general responsibility of the operator!

Transportation

During transportation, avoid severe shocks and mechanical stresses that can cause damage to the device. Keep the original packaging in a dry and protected place for later use.

Storage

Always store the device in its original packaging. To protect against damage and excessive material aging, store the device in an environment that is as dry, temperature-stable and dust-free as possible.

Acclimatization

After each transportation and after storage under critical climatic conditions (e.g. high temperature difference between inside and outside), allow the device to acclimatize at room temperature for at least two hours to prevent possible damage due to condensation before commissioning it in the place of use. If necessary, extend the acclimatization phase if the temperature differences are very high.

Make all supply connections (power supply, tubing) only after the device has been acclimatized!

Permissible ambient conditions

The device is designed for indoor use only. The device is **NOT** suitable for outdoor use!

The device is **NOT** suitable for use in potentially explosive areas!

When used in corrosive atmospheres, the service life of the device may be reduced depending on the concentration, duration and frequency of exposure.

General safety instructions

- Before commissioning and using the device, familiarize yourself with all the safety regulations and occupational safety guidelines applicable at the place of use and observe them at all times.
- Only operate the device if it is in faultless technical condition. In particular, ensure that there is no visible damage on the device itself and, where applicable, on connected devices or the supply connections.
- If there is missing or misleading information on the device or regarding occupational safety, contact the responsible safety specialist or our technical service.
- Only use the device in accordance with the regulations for intended use.

Electrical safety

- Before connecting the device to the power supply, ensure that the voltage indicated on the rating plate matches the specifications of the local power utility company.
- Ensure that the power supply circuit provided is protected by means of a residual-current device (RCD).
- Always use the three-pole power supply cord supplied with the device.
- Prior to use, check that the device and the power supply cord are free of visible damage.
- Always have repairs and/or maintenance work on the device carried out by an authorized electrician or by the technical service department of Heidolph Instruments.
- Always switch off and disconnect the device from the power supply, preventing reconnection, before carrying out maintenance work, cleaning, or repairs.

Operational safety

- Operate the device under a closed ventilated fume hood when working with potentially hazardous substances (see EN 14175 and DIN 12924).
- Do not make any unauthorized changes or modifications to the device!
- Only use genuine spare parts and accessories, or those expressly approved by the manufacturer!
- Rectify malfunctions or faults on the device immediately.
- Switch off and disconnect the device from the power supply, preventing reconnection, if it is not possible to eliminate the malfunction or rectify the fault immediately.
- Observe all other applicable regulations such as laboratory and workplace guidelines, recognized safety technology rules and special local regulations.

Occupational safety

- Always use the prescribed personal protective equipment (PPE) such as protective clothing, safety goggles, protective gloves, safety shoes, etc.
- Do not operate any other devices in the immediate vicinity of the device ...
 - which can generate electromagnetic fields in the frequency range between 9×10^3 Hz to 3×10^{11} Hz,
 - which generate emission or radiation sources in the frequency range 3×10^{11} Hz to 3×10^{15} Hz (in the optical spectral range wavelengths from 1,000 μm to 0,1 μm),
 - which generate ultrasonic or ionizing waves.
- Do not process any substances that could release energy in an uncontrolled manner (e.g. self-ignition).
- Do not process substances in which the energy input through mixing poses a danger.
- Wipe off any liquid that may have spilled on the device immediately.

Personal protective equipment (PPE)

The operating company must determine and provide the necessary PPE, depending on the respective application and the media and chemicals used.

The corresponding instruction of the personnel is generally within the operating company's responsibility.

Environmental protection

When processing environmentally hazardous substances, take appropriate measures to avoid hazards to the environment.

The evaluation of corresponding measures such as the marking of a hazardous area, their implementation, and the training of the relevant personnel is the general responsibility of the operator!

Biohazard

When processing biohazardous substances, take appropriate measures to prevent hazards to persons and the environment, including:

- Instruction of the personnel regarding the necessary safety measures.
- Provision of personal protective equipment (PPE) and instruction of the personnel in its use.
- Marking of the device with the biohazard warning symbol.

The evaluation of corresponding measures such as the marking of a hazardous area, their implementation, and the training of the relevant personnel is the general responsibility of the operator!

Other regulations

In addition to the notes and instructions in this document, observe all other applicable regulations such as laboratory and workplace guidelines, hazardous substances ordinances, recognized rules of safety engineering and occupational medicine as well as particular local regulations!



Noncompliance will invalidate any warranty claims against Heidolph Instruments.

The operator is generally liable for all damage resulting from unauthorized changes or modifications to the device, from the use of unapproved or non-genuine spare parts and accessories, or from disregarding the safety instructions and hazard warnings or the manufacturer's instructions!

Mechanical design



Legend

- | | |
|---|--|
| 1 | Device base |
| 2 | On/off switch (on the side of the housing) |
| 3 | Device display |
| 4 | Start/Stop button with LED |
| 5 | Shift button [Select] to switch between the shaking frequency display and the time, with LED |
| 6 | Arrow keys [up]/[down] to increase/reduce the displayed value |
| 7 | Control for the shaking frequency (motor speed) |
| 8 | Adapter for twelve vessels, illustration by way of example |

Set up the device



CAUTION

To use the device, place it on a clean, stable, level and horizontal surface. Make sure that the power plug can be reached directly at any time, in order to disconnect the device from the power supply at any time without delay.

Before switching on, make sure that the device is sufficiently stable.

Before switching on, always make sure that all setups and vessels are fixed on the base unit with sufficient stability.

Keep all support and contact surfaces clean and dry.

The operator is generally liable for all damage resulting from unauthorized changes or modifications to the device, from the use of unapproved or non-genuine spare parts and accessories, or from disregarding the safety instructions and hazard warnings or the manufacturer's instructions!

Noncompliance will invalidate any warranty against Heidolph Instruments.

Power supply



DANGER

Please note the safety instructions in section „Electrical safety“ on page 25.

Connect the power supply cord

- Before connecting the power supply cord, make sure that the main switch of the device is in position [O] (off).
- Connect the cable coupling of the supplied cord to the IEC appliance inlet on the back of the device.
- Connect the power supply cord to a properly secured power socket.

Disconnecting the power supply cord

- Before disconnecting the power supply cord, switch off the device.
- Disconnect the power supply cord from the power socket.
- Disconnect the power supply cord from the IEC appliance inlet on the back of the device.

Fixing laboratory vessels

The device can be operated with an adapter for 26 vessels (diameter of up to 16 mm) or an adapter for twelve vessels (diameter of 16 – 32 mm).

Before replacing the assembled adapter, remove all vessels, pull the adapter carefully up and place the new adapter on the attachment. Please consider the positions of the two guides!

Further information can be found on our website at www.heidolph.com.



WARNING

Whenever possible, use closed vessels for processing corrosive, toxic or biohazardous substances and seal them safely.

Increase the speed only gradually to the desired shaking frequency, especially with open vessels, and observe the fluid movements.

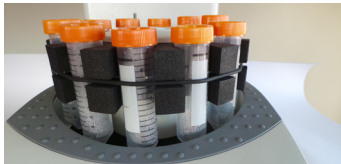
Lower the shaking frequency or reduce the total load on the platform when the device starts to vibrate during operation.

Always use the necessary and appropriate personal protective equipment!

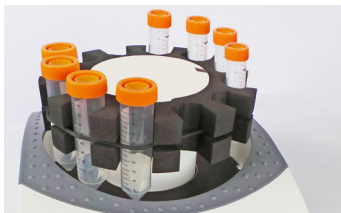
- Always note the even and homogeneous distribution of the vessels in the adapter:



- Align all vessels in such way that the outer ring is placed in the center.



- Group vessels of a different diameter and leave a space of at least one attachment between vessels with a different diameter:



Switching the device on/off

Use the main switch (on the side of the device's housing) to switch the device on or off. When switched on, the button lights up green.

Continuous operation

- After switching on the device, press the two arrow keys on the control panel simultaneously (see section „Mechanical design“ on page 27).
 - The value [Time] is set to [000].
- Press the [Start/Stop] button.
 - The device is started in continuous operation, the LEDs of the buttons [Start] and [Speed] light up green.
- Define the desired shaking frequency (motor speed) in a range of 150 – 2,000 rpm by means of the speed controller.
 - The set value is shown on the display.
 - The shaking frequency can be adjusted at any time during operation.
- Press the [Start/Stop] button again to deactivate the shaking operation

Timer mode

In timer mode, a specific period of time can be set for a continuous shaking movement.

- After switching on the device, set the desired running time in a range of 1 – 99 minutes (see section „Mechanical design“ on page 27) by means of the two arrow keys :
 - Tap the [up/down] button to increase/reduce the set value gradually.
 - Press and hold the [up/down] button to increase/reduce the display value in fast forward.
 - Press the two buttons simultaneously to set the value directly to [000].
- After having set the desired time, press the [Start/Stop] button.
 - The device is started in Timer mode with the last set shaking frequency, the LEDs of the buttons [Start] and [Time] light up green, the shaking frequency is shown on the display with four digits.
 - The shaking frequency can be adjusted at any time during operation: press the button [Select] to switch to the shaking frequency display.

The LED [Speed] lights up, the LED [Time] flashes.

 - The expired time is shown on the display with three digits.



Press the [Start/Stop] button to interrupt the shaking operation if necessary. The timer stops and continues as soon as the shaking operation is restarted with [Start/Stop].

In case of a mains interruption, the timer will be reset and has to be adjusted again!

- The timer value can be adjusted at any time during operation. The initial setting remains until the value is adjusted again or the device is switched off.
- After the functional sequence of the set time has expired, an acoustic signal sounds and the shaking movement stops.

Troubleshooting

Failure	Cause	Possible remedy
Display remains dark after switching on Shaking movement does not start	No mains voltage	Check if the on/off switch is in position ON
	Power supply cord defective	Check the power supply cord for damages/correct connection
	On/off switch in position OFF	Check building fuses Check device fuses
Shaking movement stops	Display defective	Contact Heidolph Sales or Service
	Timer expired	Restart timer or change operating mode
	Motor overheat protection has tripped	Wait about 20 minutes and reduce the load
	Electrical fault (no engine noise)	Contact Heidolph Sales or Service
	Mechanical defect (engine noise audible)	Contact Heidolph Sales or Service



In case of recurring errors please contact the responsible sales department or our technical service (see section „Contact details“ on page 34).

Technical specifications

Hei-SHAKE Multi Reax	
Dimensions (W × H × D)	270 × 172 × 410 mm
Weight	approx. 10 kg
Permissible load	max. 1.5 kg
Motion	circular vibrating
Orbit	3 mm
Operating modes	Continuous operation, Timer mode
Speed range	150 – 2,000 rpm
Rotation speed indicator	digital
Drive	Asynchronous motor
Overheat protection	self-resetting
Protection class	IP30 (acc. to EN 60529)
Protection class	I ⊕
Acoustic pressure	< 45 dB (A), in accordance with IEC 61010
Rated voltage	230 V / 50 Hz, 110 V / 60 Hz
Power input	50 W
Operating and storage temperature	5 °C – 31 °C at up to 80 % rel. humidity 32 °C – 40 °C at up to 50 % rel. humidity (decreasing linearly)
Installation altitude	up to 2,000 m asl

Scope of delivery

Item	Quantity	Product no.
Hei-SHAKE Multi Reax	1	545-10000-00
Power supply cord	1	country specific
Attachment for 26 vessels up to Ø of 16 mm	1	549-016001-00
Attachment for twelve vessels with Ø of 16 – 32 mm	1	549-03000-00
Operating instructions	1	01-005-004-28
Warranty registration	1	01-006-002-78

Accessories



Detailed information on the available accessories for your device variant can be found on our website at www.heidolph-instruments.com.
In case of need, contact an authorized dealer or our technical service, see „Contact details“ on page 34.

Device service



DANGER

Switch the device's main switch off and disconnect it from the power supply before carrying out maintenance work, cleaning, or repairs.

When cleaning, avoid the penetration of liquids.

Before replacing the fuses, switch off the device and disconnect the power supply cord.

Always replace the two device fuses in pairs with original manufacturer fuses. Further information on available accessories can be found on our website at www.heidolph.com!

After fuse replacement, check the device for a safe condition according to IEC 61010-1.

General cleaning instructions



CAUTION

Clean the device's surfaces with a soft, lint-free and only slightly moistened cloth.

Never use any aggressive or abrasive cleaning agents or aids.

Repairs

Repairs to the device may only be carried out by authorized experts!

Unauthorized repairs during the warranty period will result in the loss of the warranty claim.

The owner is solely liable for damage caused by unauthorized repairs.

If repairs are required, contact an authorized dealer or our technical service, see section „Contact details“ on page 34.

Include the completed certificate of decontamination with every device return, see „Certificate of decontamination“ on page 35.

Maintenance

The device contains no user-serviceable components. If necessary (in the event of abnormal operating behavior such as excessive noise or heat generation, for example), contact our technical service, see section „Contact details“ on page 34.

Disposal



- When disposing of the device, observe the provisions of the WEEE Directive 2012/19/EU and its transposition into national law in the country of use.
- When disposing of portable batteries, observe the provisions of the European Battery Directive 2013/56/EU and their implementation in national law in the country of use.
- Check the device and all components for residues of substances that are hazardous to health, the environment and biohazardous before disposal.
- Properly remove and dispose of residues of substances that are hazardous to health, the environment and biohazardous!

Contact details



Heidolph Instruments North America

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E-mail: service@heidolph.com
www.heidolphNA.com

Heidolph Instruments United Kingdom

Phone: 01799 - 5133-20
E-mail: service@radleys.co.uk
www.heidolph-instruments.co.uk

Local distributors

To find your local distributor please visit www.heidolph.com

Warranty statement



Heidolph Instruments provides a three-year warranty against material and manufacturing defects.

Glass and wear parts, transportation damage, and damage resulting from improper handling or non-intended use of the product are excluded from the warranty.

The warranty period for registered products begins on the date of purchase. Register the product with the enclosed warranty card or on our homepage www.heidolph.com.

For non-registered products, the warranty period begins with the date of the serial production (to be determined by the serial number).

In the event of material or manufacturing defects, the product will either be repaired or replaced free of charge within the warranty period.