Betriebsanleitung
Operating instructions
Notice d'instructions

Hei-MIX Reax Top
Hei-MIX Reax Control

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Index

About this document

This operating manual describes the features and operation of test tube shakers type Hei-MIX Reax Top and Hei-MIX Reax Control.

The operating instructions manual is an integral part of the delivery!

If applicable, variants will be explicitly identified and described in detail.

Typographic conventions

Standardized symbols and signal words are used in this document to identify warnings, cautions, and important information.

Symbol	Signal word / explanatory note
	Meanings of the safety symbols and signal words used: **DANGER** Indicates a hazardous situation which, if not avoided, will result in death or serious injury. **WARNING** Indicates a possible hazardous situation which, if not avoided, could result in death or serious injury. **CAUTION** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or material/environmental damage.
	Mandatory signs are used to indicate important information regarding the product handling, This information is used to ensure operational safety and to maintain the value of the product.
➜	The arrow symbol indicates instructions to be followed in order to ensure the operational safety when handling the product.

Copyright protection

Basic product information

Standards and directives, product certification

CE

CE Marking

The device complies with the following standards:

- European Machinery Directive, 2006/42/EC
- EMC Directive, 2004/30/EC

California Residents

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

Residual risk

The device was designed and manufactured in accordance with the latest technical standards at the time of development and the recognized safety regulations. During installation and use, as well as during maintenance work, repairs and cleaning, there are nevertheless certain residual risks associated with the device described.

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

Intended use

The device described in this manual has been developed and designed by the manufacturer for the following laboratory activities:

- Shaking
- Mixing
- Emulsifying
- Suspending
- Dissolving

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!

Reasonably foreseeable misuse

For use under conditions or for purposes deviating from the intended use, additional measures may become necessary, and/or specific guidelines and safety regulations will have to be observed (see section “Special hygiene measures for the use of laboratory equipment in food, cosmetics and pharmaceutical production” on page 31). Corresponding requirements must be evaluated and observed by the operator in each individual case.

Compliance with and implementation of all relevant guidelines and safety measures for the respective field of application is within the sole responsibility of the operator. All risks resulting from improper use are solely borne by the operator.

The device may exclusively be operated by authorized and instructed personnel. Training and qualification of the operating personnel as well as ensuring that the device is operated with responsibility are the sole responsibility of the operator!

Transportation

During transport, 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 unreasonable material aging, store the device in a dry environment that should be as temperature-stable and dust-free as possible.

Recommended ambient conditions for storage:

- 5 °C – 31 °C up to 80 % rel. humidity
- 32 °C – 40 °C up to 50 % rel. humidity, decreasing linearly

Acclimatization

After each transport and after storage under critical climatic conditions (high temperature difference between inside and outside), allow the device to acclimatize at room temperature for about two hours to prevent possible damage from condensation before putting it into operation at 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. Permissible ambient conditions for operation:

- 5 °C – 31 °C up to 80 % rel. humidity
- 32 °C – 40 °C up to 50 % rel. humidity, decreasing linearly
- Maximum height above sea level: 2,000 m

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

The device **IS NOT** suitable for outdoor use!

The device **IS NOT** suitable for use in hazardous areas!

General safety information

- ➜ Before commissioning and using the device, familiarize yourself with all the safety regulations and guidelines for occupational safety applicable at the place of use and observe them at all times.
- ➜ Only operate the device if it is in perfect technical condition. In particular, make sure that no visible damage can be detected.
- ➜ If there is missing or misleading information on the device or on occupational safety, contact the responsible safety specialist or our technical service.
- ➜ Only use the device in accordance with the regulations for intended use (“Intended use” on page 27).

Electrical safety

- ➜ Ensure that the voltage indicated on the rating plate matches the supply voltage of the country in which the device is being used.
- ➜ Ensure that the mains socket-outlet is protected by means of a residual-current device (RCD).
- ➜ Always use the supplied power supply cord provided with the device.
- ➜ Prior to use, check that the device and the power supply cord are free of visible damage.
- ➜ Have repairs and/or maintenance work on the device carried out exclusively by an authorized and skilled electrician or by the technical service department of Heidolph Instruments.
- ➜ Always switch the device OFF and disconnect it from the power supply before carrying out maintenance work, cleaning, or repairs.

Operational safety

- ➜ 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!
- ➜ Observe all safety instructions and hazard warnings as well as all (handling) instructions contained in this document!

Work safety

- ➜ Always use the prescribed personal protective equipment (PPE) such as protective clothing, safety goggles, protective gloves, safety shoes, etc.
- ➜ Depending on the effort and duration, holding the sample in automatic mode can lead to overloads in the hand and arm area. When using the device, observe the specifications of the EC directive 2002-44 on the permissible vibration load.
- ➜ 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 and 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 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.
- ➜ Do not work with an open flame in the immediate vicinity of the device (risk of explosion).
- ➜ Wipe off any fluid that may have spilled on the device immediately.
- ➜ Always switch off the device when it is not in use.

Rectify disturbances or faults on the device immediately.

Shut down the device and disconnect it from the power supply if it is not possible to eliminate the disturbance or rectify the fault.

In such a case, contact the responsible technical service department.

Personal protective equipment (PPE)

The operator 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 solely within the operator's responsibility.

Environmental protection

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

The evaluation of corresponding measures such as the marking of a hazardous area, their implementation, and the training of the responsible personnel is the sole 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 a biohazard warning symbol.

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

Special hygiene measures for the use of laboratory equipment in food, cosmetics and pharmaceutical production

When laboratory equipment is used in the production processes of the food, cosmetics or pharmaceutical industry, special hygiene measures must be taken by the user to avoid sample contamination and to minimize any risk to humans and the environment as far as possible.

Please observe the following recommendations:

General Measures

- ➜ Ensure a clean working and storage environment when handling substances and materials.
- ➜ Train all employees in the field of occupational hygiene, document all training measures and check the implementation of all required hygiene measures during operation regularly.
- ➜ Use a hygiene control concept such as HACCP (Hazard Analysis and critical Control points). The HACCP comprises the following criteria:
  - Hazard analysis
  - Identification of critical control points
  - Definition of critical limit values
  - Establishment of a system for monitoring and controlling critical hazard control points (CCP)
  - Corrective actions for uncontrollable CCP
  - Establishment of a system to verify the implementation of all HACCP measures
  - Establishment of a system for documenting all associated procedures and protocols

The evaluation of the applicability of the mentioned rules and regulations is within the sole responsibility of the operator!

Device-specific Measures

➜ Make sure that even products that are intended for single use only are of sufficient purity.

➜ Avoid contamination by handling contaminated vessels, apparatus or aids with care.

Contact information

For further information, please contact our after sales service at any time.

Phone: +49-9122-9920-0

Mail: sales@heidolph.de

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 against Heidolph Instruments.

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

Device overview

Hei-MIX Reax Top

Hei-MIX Reax Control

Commissioning

Set up the device

CAUTION

Risk Of Slipping!

The vibration during operation can cause the device to move over the mounting surface and/or fall to the ground.

➜ Observe the instructions for the correct positioning of the device!

➜ Place the device on a solid level and horizontal surface for use.

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

➜ Keep all contact surfaces clean and dry.

Power Supply

Always use the supplied power supply cord provided with the device! Observe the instructions in section “Electrical safety” on page 29.

The device must only be supplied with power from a properly grounded mains socket-outlet.

Connect the power supply cord

➜ First, connect the supplied power supply cord to the appliance plug.

➜ Then connect the power plug to a grounded mains socket-outlet.

Disconnect the mains connection cord

➜ First, remove the mains plug from the mains socket-outlet.

➜ Then disconnect the power supply cord from the device connector.

Mount/dismantle the test tube tray and accessories

The test tube tray as well as the available accessories (see section “Accessories” on page 43) can be removed and attached without tools of any kind. The following description refers by way of example to the test tube tray supplied as standard. Proceed in the same way for the accessories.

Removing the test tube tray

➜ Grasp the soft edge of the test tube tray and pull it up.

Mounting the test tube tray

➜ When placing the test tube tray, make sure that the groove slides smoothly over the tongue on the device.

➜ Push the test tube tray onto the device with light pressure until it stops.

Switch the device on/off

➜ Set the speed to zero before switching on the device. To do this, turn the speed controller fully anti-clockwise.

➜ Use the on/off switch to turn the device on or off.

– When on, the on/off switch lights up green.

Shaking modes

The device can be used in automatic or continuous mode:

- In automatic mode, shaking begins as soon as a suitable test tube is pressed into the test tube tray.
- In continuous mode, the movement starts without applying pressure on the test tube tray. The shaking movement must be stopped manually!

WARNING

Risk of injury!

In continuous mode, the device automatically restarts after an interruption (e.g. fuse tripping, power failure). There is a risk of injury in the area of movement of the device!

➜ In the event of a power failure, switch off the device and keep sufficient distance!

CAUTION

Risk of slipping! Risk of falling! Risk of tipping!

Depending on the load and configuration, depending on the speed, there is a risk of excessive vibration of the device during operation. There is a risk that the device moves uncontrollably, falls or tips over.

➜ Observe the instructions for the correct positioning of the device!

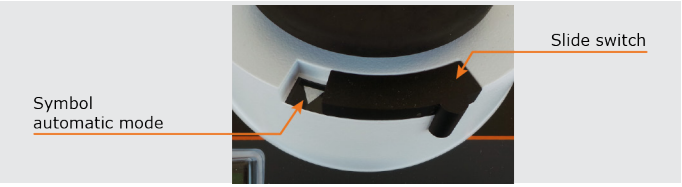
➜ Set the speed controller to zero before switching on the device. Gradually increase the speed to the desired value as the shaking movement starts. Observe the device for sufficient stability.

➜ Check and correct the configuration if excessive vibrations are detected!

Automatic mode

Switching between automatic and continuous mode is done via the slide switch of the device, see also “Device overview” on page 33.

➜ Move the slide switch to the right into the **AUTOMATIC MODE** position, see figure. The automatic mode icon must be visible:



➜ Place the test tube in the test tube tray and hold it firmly with a slight downward pressure.

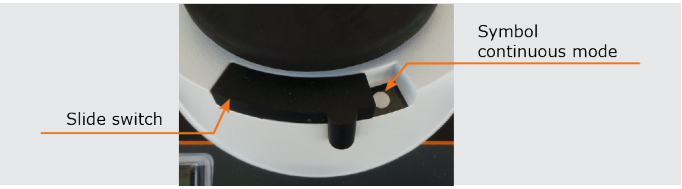
- The shaking movement starts by applying pressure with the test tube.

➜ As soon as the test tube is removed from the test tube tray, the shaking movement will stop.

Continuous mode

Switching between automatic and continuous mode is done via the slide switch of the device, see also "Device overview" on page 33.

➜ Move the slide switch to the left into the **CONTINUOUS MODE** position, see figure. The continuous mode icon must be visible:



➜ The shaking movement starts as soon as the slide switch is in the **CONTINUOUS MODE** position!

➜ Move the slide switch to the right into the **AUTOMATIC MODE** position or **SWITCH OFF** the device to stop the movement.

Regulate shaking movement intensity

The shaking movement intensity is set by the speed and by means of the speed controller of the device.

WARNING

Risk of splashing!

If shaking movement starts too quickly, fluid may splash out of the test tube.

➜ Use recommended personal protective equipment (e.g. safety glasses, protective clothing).

➜ Set the speed controller to zero before switching on the device. Gradually increase the speed to the desired value as the shaking movement starts.

WARNING

Possible overload of hand and arm!

Depending on the effort and duration, holding the sample in automatic mode can lead to overloads in the hand and arm area.

➜ When using the device, observe the specifications of the EC directive 2002-44 on the permissible vibration load.

To regulate the speed, proceed as described below:

Reax Top

➜ Turn the speed controller clockwise to increase the shaking movement intensity.

➜ Turn the speed controller counter-clockwise to decrease the shaking movement intensity.

The Reax Top model is equipped with an analogue scale with reference points:

Reax Control

➜ Turn the speed controller clockwise to increase the shaking movement intensity.

➜ Turn the speed controller counter-clockwise to decrease the shaking movement intensity.

The Reax Control model is equipped with a graduated scale:

Troubleshooting

The following table includes possible failures and corresponding corrective measures.

Malfunction	Possible cause	Remedy
On/off switch remains dark after switching on	No power supply	➜ Check that the power plug is correctly connected ➜ Check circuit breaker
	LED defective	➜ Contact authorized dealer or technical service
Shaking movement does not start in automatic mode	Slide switch not in correct position	➜ Push the slide switch all the way to the right
	Not enough pressure on the test tube tray	➜ Apply more pressure on the test tube
	Too much pressure on the test tube tray	➜ Reduce pressure on the test tube tray
	Test tube too slanted	➜ Center test tube on tray ➜ If possible, switch to continuous mode
Acoustic signal (Reax Control only)	Power recovery after interruption in continuous mode	➜ The signal tone is switched off after approx. 2 seconds, shaking movement is continued
Shaking movement stops in continuous mode	➜ Motor defective ➜ Switch defective ➜ Electronics defective	➜ Contact authorized dealer or technical service
	➜ Overheating protection triggered	➜ Allow unit to cool down, restart and reduce load

If a fault cannot be rectified with the described remedies, please contact an authorized sales representative or our technical service (see section „Contact information Heidolph international“ on page 41).

Service work

When carrying out service work on the device (cleaning, maintenance, repair), observe the general instructions and safety information described in this section.

WARNING: Danger of electric shock

Live components are installed inside the device.

When opening the device, there is a risk of touching live components.

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

Penetrating liquid poses the danger of an electric shock.

➜ When cleaning, avoid the penetration of liquids.

Cleaning instructions

Wipe all surfaces of the device with a damp cloth if necessary. Persistent contamination can be removed with mild soapy water.

CAUTION: Damage to the device

Improper cleaning can damage the surfaces of the device.

Penetrating liquid can damage the electronic components inside the device.

➜ 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 skilled 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.

In case of repair contact an authorized dealer or our technical service, see "Contact information Heidolph international" on page 41.

Include the completed declaration of no objection with every device return, see "Declaration of no objection" on page 44.

Maintenance

The device contains no user-serviceable components. The installed motors are maintenance-free. If necessary, in the event of abnormal operating behavior such as excessive noise or heat generation, for example, contact our technical service.

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 transposition into 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 disposing.
- ➜ Properly remove and dispose residues of substances that are hazardous to health, the environment and biohazardous!

Contact information Heidolph international

Heidolph Instruments North America

Phone: 1-866-650-9604
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.

Technical Specifications

Supply voltage / speed variants	Reax Top 230 V 50 Hz	100 – 2,500 rpm
	Reax Top 230 V 60 Hz Reax Top 115 V 60 Hz	200 – 3,200 rpm
	Reax Control 230 V 50/60 Hz Reax Control 115 V 50/60 Hz	0 – 2,500 rpm
Power input	51 W	
Protection class (IEC 61140)	1 ⏚	
Protection class (IEC 60529)	IP 22	
Acoustic pressure (dB(A)) (in accordance with IEC 61010)	< 50 up to 2,500 rpm < 58 up to 3,200 rpm	
Drive	shaded pole motor	
Overheating protection	self-resetting	
Motion	circular vibrating	
Orbit	5 mm	
Operating mode	automatic and continuous mode	
Weight	2.8 kg	
Dimensions (W x H x D)	134 x 105 x 172 mm	
Hei-Mix model	**Reax Top**	**Reax Control**
Speed controller (analogue)	scale with reference points	graduated scale
Control accuracy	unregulated	±2 %

Scope of delivery

Component / Variants		**Quantity**	**Product number**
Hei-Mix	**Reax Top***	1	541-10000-00
	Reax Control*	1	541-11000-00
Test tube tray, small		1	23-07-06-05-01
Operating instructions		1	01-005-002-74
Guarantee registration		1	01-006-002-78
Power supply cord		1	country specific

* the product numbers shown are for 230 V EU devices. For product numbers of variants, please contact Heidolph instruments.

Accessories

Component / Variants	Quantity	Product number
Test tube tray, large	1	549-19000-00
Test tube holding device	1	549-20000-00
Attachment for 10 test tubes	1	549-01000-00
Test tube stand for up to 6 Eppendorf vessels	1	594-04000-00

Further accessories can be found on our homepage at www.heidolph-instruments.com