

Temperature

Controlled Shaking



Betriebsanleitung Operating instructions Notice d'instructions

Hei-MIX Titramax 100/101/1000
Hei-MIX Vibramax 100
Hei-MIX Rotamax 120

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About this document

This operating manual describes the features and operation of platform shakers type Hei-MIX Titramax 100/10/1000, Hei-MIX Vibramax 100 and Hei-MIX Rotamax 120. The operating instructions manual is an integral part of the delivery!

Typographic conventions

Standardized symbols, highlighting elements, and signal words are used in this document to identify warnings, cautions, important information, and special text contents.

Symbol	Signal word / explanatory note
	Warning symbols in combination with a signal word indicate dangers: 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.
	Prohibition signs indicate actions or situations that are to be omitted or avoided. Failure to comply may result in personal injury and / or damage to property.
	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

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Basic product information

Guidelines applied, product certification



CE Marking

The device complies with the following standards:

- Low voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

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 platform shakers described in this document have been specially developed for the following tasks:

- Shaking
- Mixing
- Emulsifying
- Suspending
- Separating
- Dissolving
- Staining

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

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 35). 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, decreasing linearly up to 50 % rel. humidity

Acclimatization

After each transport 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 a minimum of 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, decreasing linearly up to 50 % rel. humidity
- 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, ensure that there is no visible damage on the device itself and, where necessary, on connected devices or the supply connections.
- 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 31).

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 power supply circuit provided 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 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.

Work 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 operate the unit when adiabatic compression or shock waves may occur (pressure wave ignition).
- Do not use substances that could release energy in an uncontrolled way and cause a pressure increase (exothermic reaction, spontaneous ignition of dusts).
- Only use stirring tools approved and authorized by Heidolph Instruments.
- Route all cables free of kinks and outside the operating and hazardous area.
- Avoid excessive pressure on the device display.
- Avoid fluid accumulation on the device.
- Keep the base unit dry during operation.
- Ensure adequate safety distance: Do not store objects in the working and hazardous area of the device during operation.

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

- Regularly clean components that come into contact with the product, such as flasks, seals, tubes, etc. in the autoclave (if available or possible) or chemically (e.g. with ethanol) to sterilize all surfaces.
- 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.

Mechanical design

The following illustration shows the mechanical structure of the platform shakers type **Hei-MIX Titramax 100/10/1000**, **Vibramax 100** and **Rotamax 120**.



- 1 Base unit
- 2 Shake platform
- 3 Rotary knob - time adjustment
- 4 Rotary knob - shaking frequency adjustment
- 5 Duration/timer switch
- 6 On/Off switch
- 7 IEC appliance inlet
- 8 Fuse holder

Model	Motion	Orbit
Vibramax 100	circular vibrating	3 mm
Titramax 100		1.5 mm
Titramax 101		3 mm
Titramax 1000		1.5 mm
Rotamax 120	rotating	20 mm

Set up the device



CAUTION: Material damage, loss of production

Improper installation of the device may result in direct and indirect damage to property due to falling and/or spilling of fluids!

- Observe the instructions for the correct positioning of the device.
- Observe the generally valid rules for the safe installation of work equipment.

- Place the device in a suitable workplace.
- The working surface must be even and flat.
- The device must be freely accessible at all times.
- Ensure that a sufficient safety distance can be maintained to moving and/or hot components.



The professional mounting and positioning of the device including the supplied accessories is within the sole responsibility of the operator!

Heidolph instruments accepts no responsibility for direct and/or indirect personal injury or damage to property resulting from failure to observe the instructions for the correct mounting and positioning of the device.

Power supply



DANGER

Electric Shock

The device may only be supplied with the required mains voltage via a grounded mains socket-outlet (voltage see rating plate).

Connect the power supply cord

- Before connecting the power supply cord, make sure that the main switch of the device is in position **0** (off).
- Connect the cable coupling of the supplied coded power supply cord (see figure) to the IEC appliance inlet on the back of the device:



- Connect the power supply cord to a properly secured mains socket-outlet.

Disconnect the power supply cord

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

Attachments

Use the various optional attachments to fix your laboratory vessels. When mounting the attachment on the shaking platform of the device, refer to the mounting instructions delivered with each attachment.



At low shaking frequencies, vessels such as Petri dishes can also be placed directly on the non-slip contoured rubber mat.

- Always place individual vessels in the center of the shaking platform.
- Always distribute several vessels evenly on the shaking platform.

Hei-MIX Titramax 100 / 101 / 1000

- Insert multi-well plates into the pockets of the contoured rubber mat supplied.
- The multi-well plates are securely fixed in the pockets.



Hei-MIX Vibramax 100 / Rotamax 120 / attachment with clamping rollers

The attachment with clamping rollers (accessory) is designed to fix laboratory vessels on the shaking platform of the device.



Note that only vessels of the same diameter can be fixed in parallel!

- Mount the attachment to the shaking platform, using the thumbscrews supplied.
- Place the vessels on the non-slip contoured rubber mat.
- Fix the vessels in parallel with the clamping rollers.



Switch the device on/off

To switch on and off, use the main switch on the front of the device, see section "Device description" on page 37.

Operating modes

The platform shakers described can be operated in continuous or timer mode. Regardless of the operating mode selected, observe the following specific safety instructions.

CAUTION

Risk of injury, risk of damage to property due to tilting/falling of the device

High shaking frequencies in combination with a large load and/or a tall attachment assembly on the shaking platform may cause the device to swing up and fall!

- Only gradually increase the shaking frequency to the required level under the above conditions, paying attention to the stability of the structure.
- Lower the shaking frequency or reduce the total load on the shaking platform when the device starts to move during operation.

An uneven distribution of the load on the shaking platform may cause the device to swing up and fall!

- Always ensure that the vessels are evenly distributed on the shaking platform.
- Pay particular attention to an even distribution of the weight load when vessels of different sizes and/or differently filled vessels are placed on the shaking platform at the same time!



Risk of injury, risk of damage to property from falling vessels

At high shaking frequencies, there is a risk that improperly fastened vessels will fall off the shaking platform.

- Before switching on the device, make sure that all vessels are properly fixed on the shaking platform.

Hand-arm over-exposure to vibration

Depending on the effort and the duration of use, there is a risk of over-exposure to vibration of your hand and arm when using the hand to hold the vessel during operation.

- Observe the European Directive 2002/44/EC regarding the permissible hand-arm vibration exposure.



WARNING

Risk of injury, risk of damage to property caused by splashing fluids

When using open vessels, there is a risk that fluid will spray out at high shaking frequencies.



→ 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.

→ Always use the necessary and appropriate personal protective equipment!



Automatic restart

When the mains is restored after a power interruption, the device automatically starts up again with the set parameters!

Depending on the setting and structure, there is a risk that the device will move uncontrolled and/or fluid will be sprayed out of the vessels.

→ In the event of an interruption to the mains supply, switch off the device via the main switch.

Continuous mode

In continuous operation, the shaking movement starts as soon as the device is switched on via the main switch.

- Place the vessel(s) on the shaking platform. Observe the instructions in section "Attachments" on page 39.
- Turn on the device.
- Use the 'shaking frequency adjustment' rotary knob (see section "Mechanical design" on page 37) to adjust the shaking frequency.
- The shaking movement stops as soon as the device is switched off via the main switch.

Timer mode

In timer operation, a specific period of time (up to 120 minutes) can be set for continuous shaking.

- Place the vessel(s) on the shaking platform. Observe the instructions in section "Attachments" on page 39.
- Use the 'time adjustment' rotary knob (see section "Mechanical design" on page 37) to set a desired time for shaking operation.
- Turn on the device.
- Use the 'shaking frequency adjustment' rotary knob (see section "Mechanical design" on page 37) to adjust the shaking frequency.
- The shaking movement stops as soon as the specified time has elapsed.



The shaking movement can be stopped manually at any time in timer mode if required. To do this, switch off the device using the main switch.

Troubleshooting

Failure	Cause	Possible remedy
LED of the on/off switch remains off when switching on	No mains voltage	Check the power supply cord for correct connection
	LED defective	Contact Heidolph Sales or Service
	Timer expired	Restart the timer if necessary
Shaking movement stops	Motor overheat protection has tripped	Wait approx. 20 minutes and reduce the load on the shaking platform
	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. Contact address see "Contact information Heidolph international" on page 50.

Technical Specifications

Model-Specific data

Hei-MIX Titramax 100/101

Dimensions (W × H × D)	245 × 125 × 310 mm
Weight	5.5 kg
Permissible load	max. 2 kg
Usable area	220 × 220 mm
Motion	circular vibrating
Orbit	Titramax 100: 1.5 mm Titramax 101: 3 mm
Speed range	150 – 1,350 rpm

Hei-MIX Titramax 1000

Dimensions (W × H × D)	320 × 128 × 375 mm
Weight	8 kg
Permissible load	max. 5 kg
Usable area	290 × 258 mm
Motion	circular vibrating
Orbit	1.5 mm
Speed range	150 – 1,350 rpm

Hei-MIX Vibramax 100

Dimensions (W × H × D)	245 × 125 × 310 mm
Weight	5.5 kg
Permissible load	max. 2 kg
Usable area	220 × 220 mm
Motion	circular vibrating
Orbit	3 mm
Speed range	150 – 2,500 rpm

Hei-MIX Rotamax 120

Dimensions (W × H × D)	245 × 125 × 310 mm
Weight	5.5 kg
Permissible load	max. 2 kg
Usable area	220 × 220 mm
Motion	orbital
Orbit	20 mm
Speed range	20 – 300 rpm

General device data**Hei-MIX Titramax 100/101/1000, Vibramax 100, Rotamax 120**

Drive	Shaded pole motor
Speed control	analogue
Protection class	IP30
Degree of pollution	2
Acoustic pressure	< 50 dB (A)
Engine overheat protection	self-resetting

Electrical data

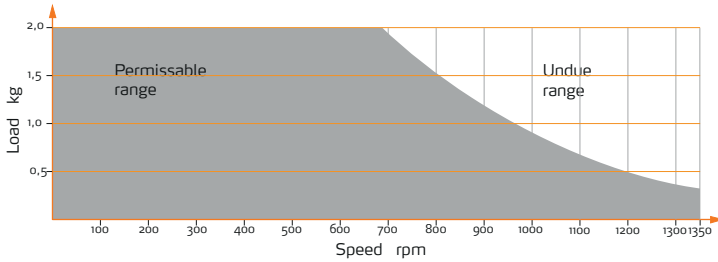
	230 – 240 V, 50/60 Hz
Rated voltage (depending on variant)	115 V, 50/60 Hz
	115 V, 60 Hz
Fuse	M 1,25 A (230 V) or T 2,0 A (115 V)
Overvoltage category	II
Protection class	I Ⓢ
Permissible mains voltage fluctuations	±10 %
Power input	Titramax 100/101/1000 25 W Vibramax 100 31 W Rotamax 120 33 W

Permissible ambient conditions

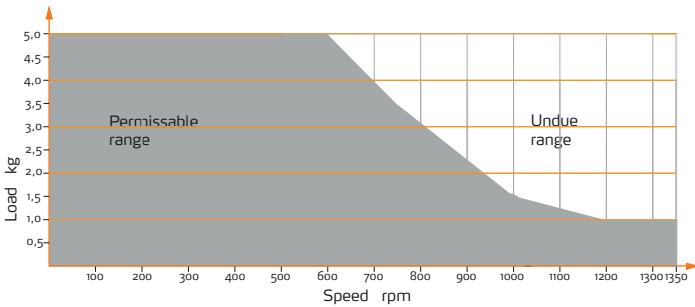
Operating temperature	5 °C – 31 °C up to 80 % rel. humidity 32 °C – 40 °C up to 50 % rel. humidity (decreasing linearly)
Maximum height above sea level	2,000 m

Performance range/admissible load

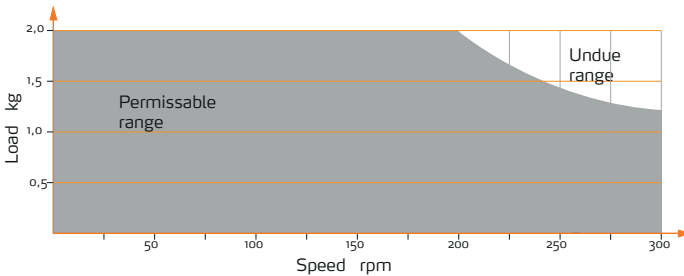
Hei-MIX Titramax 100/101, Hei-MIX Vibramax 100



Hei-MIX Titramax 1000



Hei-MIX Rotamax 120



Scope of delivery

Item	Quantity	Product no.
Hei-MIX Titramax 100*	1	544-11200-00
Hei-MIX Titramax 101*	1	544-11300-00
Hei-MIX Titramax 1000*	1	544-12200-00
Hei-MIX Vibramax 100*	1	544-21200-00
Hei-MIX Rotamax 120*	1	544-41200-04
Power supply cord	1	country specific
Operating instructions DE-EN-FR	1	01-005-002-34
Guarantee registration / Declaration of no objection	1	01-006-002-78
EC Declaration of Conformity	1	01-001-025-06

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

Accessories

Hei-MIX Titramax 100/101, Vibramax 100, Rotamax 120	Quantity	Product no.
Device fuse for 230 V version	1	14-002-015-23
Device fuse for 115 V version	1	14-002-015-45
Accessories Hei-MIX Vibramax 100, Rotamax 120		
Attachment with clamping rollers	1	549-810000-00
Clamping roller	1	11-008-007-08
Tablar 100 with universal perforation for use with clamps for Erlenmeyer flasks	1	549-59100-00



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

Device service

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.

General cleaning instructions

Wipe all surfaces and the control panel 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.

Replace the device fuse

The fuse holder for the two device fuses is located on the rear of the device below the IEC appliance inlet, see section "Mechanical design" on page 37.



DANGER

Electric Shock

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, see section "Accessories" on page 47.

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

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 50.

Include the completed declaration of no objection with every device return, see "Declaration of no objection" on page 51.

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 "Contact information Heidolph international" on page 50.

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 assumes a three-year warranty against material and manufacturing defects.

Excluded from the warranty are glass and wear parts, transport damage, and damage resulting from improper handling or non-intended use of the product.

For registered products, the warranty period 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.