

## RCT basic *safety control*



## HCT basic *safety control* REO basic



BETRIEBSANLEITUNG	DE	5
OPERATING INSTRUCTIONS	EN	13
MODE D'EMPLOI	FR	21
INDICACIONES DE SEGURIDAD	ES	30
VEILIGHEIDINSTRUCTIES	NL	32
NORME DI SICUREZZA	IT	34
SÄKERHETSANVISNINGAR	SV	36
SIKKERHEDSHENVISNINGER	DA	38
SIKKERHEDSANVISNINGER	NO	40
TURVALLISUUSOHJEET	FI	42
NORMAS DE SEGURANÇA	PT	44
WSKAZÓWKI BEZPIECZEŃSTWA	PL	46
BEZPEČNOSTNÍ UPOZORNĚNÍ	CS	48
BIZTONSÁGI UTASÍTÁSOK	HU	50
VARNOSTNA NAVODILA	SL	52
BEZPEČNOSTNÉ POKYNY	SK	54
OHUTUSJUHISED	ET	56
DROŠĪBAS NORĀDES	LV	58
SAUGOS REIKALAVIMAI	LT	60



	Page
CE - Declaration of conformity	4
Safety instructions	13
Unpacking	14
Correct use	14
Operation	15
Setting the operating mode	16
Setting the safety temperature limit for <b>RCT basic safety control</b> and <b>HCT basic safety control</b>	16
Assembling the stand	17
Maintenance	17
Accessories	17
Error codes	18
Technical data	19
Warranty	20

## Safety instructions

### For your protection

- **Read the operating instructions in full before starting up and follow the safety instructions.**
- Keep the operating instructions in a place where they can be accessed by everyone.
- Ensure that only trained staff work with the appliance.
- Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations.
- Socket must be earthed (protective ground contact).
- **Caution - Magnetism!** Effects of the magnetic field have to be taken into account (e.g. data storage media, cardiac pacemakers ...).
- **Risk of burns!** Exercise caution when touching the housing parts and the heating plate. The heating plate can reach temperatures in excess of 310 °C. Pay attention to the residual heat after switching off.
- Ensure that the mains power supply cable does not touch the heating base plate.

- Wear your personal protective equipment in accordance with the hazard category of the media to be processed. Otherwise there is a risk from:
  - splashing and evaporation of liquids
  - ejection of parts
  - release of toxic or combustible gases.
- Set up the appliance in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- The feet of the appliance must be clean and undamaged.
- Check the appliance and accessories beforehand for damage each time you use them. Do not use damaged components.
- Gradually increase the speed.
- Reduce the speed if
  - the medium splashes out of the vessel because the speed is too high
  - the appliance is not running smoothly
  - the container moves on the base plate.
- **Caution!** Never process and heat up any media that has a flash point higher than the adjusted safe temperature limit that has been set (50 to 360 °C).  
The safe temperature limit must always be set to at least 25 °C lower than the fire point of the media used.
- Beware of hazards due to:
  - flammable materials
  - combustible media with a low boiling temperature
  - glass breakage
  - incorrect container size
  - overfilling of media
  - unsafe condition of container.
- The appliance may heat up when in use.
- The base plate can heat up due to the action of the drive magnets at high motor speeds, even if the heater is not operational.
- Process pathogenic materials only in closed vessels under a suitable extractor hood. Please contact **IKA** if you have any questions.
- **Do not** operate the appliance in explosive atmospheres, with hazardous substances or under water.
- Only process media that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.



- Please observe the operating instructions for any accessories used.
- Ensure that the external temperature sensor (PT 1000, ETS-D ...) is inserted in the media to a depth of at least 20 mm.
- The PT 1000 external temperature sensor must always be inserted in the media when connected.
- Safe operation is only guaranteed with the accessories described in the "Accessories" chapter.
- Accessories must be securely attached to the device and cannot come off by themselves. The centre of gravity of the assembly must lie within the surface on which it is set up.
- Always disconnect the plug before fitting accessories.
- The appliance can only be disconnected from the mains supply by pulling out the mains plug or the connector plug.
- The socket for the mains cord must be easily accessible.
- The device will automatically restart in mode B following any interruption to the power supply.
- It may be possible for wear debris from rotating accessory parts to reach the material being processed.
- When using PTFE-coated magnetic bars, the following have to be noted: *Chemical reactions of PTFE occur in contact with molten or solute alkali metals and alkaline earth metals, as well as with fine powders of metals in groups 2 and 3 of the periodic system at temperatures above 300 °C - 400 °C. Only elementary fluorine, chlorotrifluoride and alkali metals attack it; halogenated hydrocarbons have a reversible swelling effect.*

(Source: Römpps Chemie-Lexikon and "Ulmann", Volume 19)

#### For protection of the equipment

- The appliance may only be opened by experts.
- The voltage stated on the type plate must correspond to the mains voltage.
- Do not cover the device, even partially e.g. with metallic plates or film. This results in overheating.
- Ensure that the base plate is kept clean.
- Protect the appliance and accessories from bumps and impacts.
- Observe the minimum distances between the devices, between the device and the wall and above the assembly (min. 800 mm), see fig. 4.

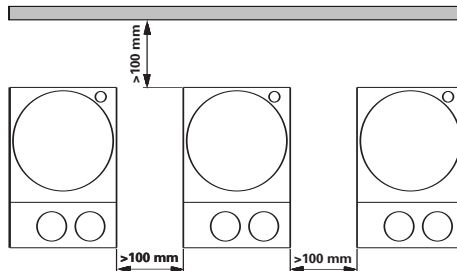


Fig. 4

## Unpacking

### • Unpacking

- Please unpack the device carefully
- In the case of any damage a detailed report must be set immediately (post, rail or forwarder)

### • Contents of package

REO basic	RCT basic safety control	HCT basic safety control
- Magnetic stirrer	- Heating magnetic stirrer	- Heating device
- Mains cable	- Mains cable	- Mains cable
- Operating instructions	- Operating instructions	- Operating instructions
	- Screwdriver	- Screwdriver
	- Temperature sensor	- Temperature sensor
	PT 1000	PT 1000

## Correct use

### • Use

- For mixing and/or heating liquids

### • Range of use

- Laboratories
- Pharmacies
- Schools

## Operation

Ensure that the protective film is removed from the base plate before use!

	REO basic	RCT basic safety control	HCT basic safety control
<b>Commissioning</b>		<ul style="list-style-type: none"> <li>☞ Move device switch (A) to the OFF position</li> <li>☞ Insert the mains power cable into the power socket (K)</li> <li>☞ Move device switch (A) to the ON position</li> <li>➤ The unit will be set to factory setting mode A (see "Operating modes")</li> </ul>	
<b>Stirring</b>	<ul style="list-style-type: none"> <li>☞ Adjust the motor speed using the rotary knob (D)</li> <li>➤ The value selected will be shown on the display (F)</li> <li>☞ Set the start point for the agitation function by pressing the rotary knob (D)</li> </ul>		
	<p><b>i</b></p> <ul style="list-style-type: none"> <li>➤ The displayed value will flash until the desired motor speed is reached</li> </ul>		
<b>Heating</b>		<ul style="list-style-type: none"> <li>☞ Set the safe temperature limit (see "Setting the safe temperature limit for RCT and HCT")</li> <li>☞ Adjust the set-point temperature using the rotary knob (C)</li> <li>➤ The value selected will be shown on the display (E)</li> <li>☞ Set the start point for the heating function by pressing the rotary knob (C)</li> </ul>	
		<p><b>i</b></p> <ul style="list-style-type: none"> <li>The set-point and actual temperatures will be shown alternately on the display (E)</li> <li>➤ When the heating is switched on, the LED "Heating plate" (G) and the LED "Set-point value" (I) will be lit</li> </ul>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">The maximum temperature that can be set for the heating plate is 310 °C</div>
		<p><b>i</b></p> <ul style="list-style-type: none"> <li>➤ During agitation and standby operation, the display (E) will show <b>HOT</b> if the base plate temperature is above 50 °C</li> </ul>	
<b>Connecting external thermometers</b> <i>(direct temperature control in the media)</i>		<ul style="list-style-type: none"> <li>☞ Move device switch (A) to the OFF position</li> <li>☞ Detach contact plug (L)</li> <li>☞ Attach a DIN 12878 (Class 2) compliant safety contact thermometer or a PT 1000 temperature sensor to the socket (L)</li> <li>☞ Move device switch (A) to the ON position</li> </ul>	
		<p><b>i</b></p>	Temperature sensor PT 1000 ➤ The actual temperature for the temperature sensor shown on display (E) will correspond to the temperature of the media. The LED "external temperature sensor" (H) will be lit
		<p><b>i</b></p>	Contact thermometer e.g. ETS-D5 ➤ Follow the operating instructions for the contact thermometer The LED "decimal point for the temperature display" (J) will be lit ➤ When a contact thermometer is connected, the display (E) will only show the set-point temperature that has been set

## Setting operating mode

### RCT basic safety control

Operating the device in mode A or B

#### Mode A

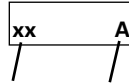
All settings will be stored if the device is switched off or disconnected from the power supply. The agitation and heating functions will be set to OFF when the device is powered on.

#### Mode B

All settings will be stored if the device is switched off or disconnected from the power supply. The agitation and heating functions will be set to ON or OFF when the device is powered on, depending on the previous status of the device.

*Factory setting: mode A*

The mode selected will be shown on the display when the device is started up.



(x: software version)

mode

#### Change the mode

- Move device switch (A) to the OFF position
- Press and hold rotary knobs (C and D)
- Move device switch (A) to the ON position
- Release rotating knobs (C and D)

➤ The set value is indicated on the display (F) xx A

### REO basic / HCT basic safety control

Operating the device in the preset mode

The operating modes are preset and not changeable. Description of the modes and the display see RCT

*Factory setting REO: mode B*

*Factory setting HCT: mode A*

## Setting the safe temperature limit (RCT basic safety control and HCT basic safety control)

The safe temperature limit that has been set will be displayed when the device is switched on.

360 SAFE

*Factory setting: 360 °C*

Adjustment range: 50 - 360 °C

### Setting the safe temperature limit

➤ Move device switch (A) to the ON position

➤ The safe temperature limit can be adjusted using a screwdriver

➤ The set value is indicated on the display (F) 150 SAFE



Fig. 5

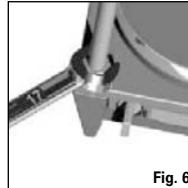
The temperature set for the heating plate (maximum 310 °C) will be at least 10 °C lower than the safe temperature limit.

**Warning: The safe temperature limit must always be set at least 25 °C lower than the flash point of the media to be processed.**

## Assembling the stand

- Remove screw plugs (M)
- Remove the protective cap from the support rod
- Put the washer between housing and nut
- Screw the support rod onto the device by hand until the end stop is reached
- Use an A/f 17 spanner to tighten the M10 nut
- Accessories should be attached using cross sleeves

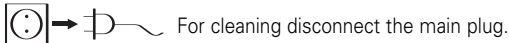
Note: For bath attachments with diameters greater than  $\varnothing$  180 mm only use the support rod H 16 V with the extension H 16.1.



## Maintenance

The device is maintenance-free.

### Cleaning



Only use cleansing agents which have been recommended by **IKA**.

Use to remove:

Dyes	isopropyl alcohol
Construction materials	isopropyl alcohol/water containing surfactant
Cosmetics	isopropyl alcohol/water containing surfactant
Foodstuffs	water containing surfactant
Fuels	water containing surfactant

- Do not allow moisture to get into the appliance when cleaning.
- Wear protective gloves when cleaning the devices.
- Please consult with **IKA** before using any cleaning or decontamination methods, other than those recommended here.

### Ordering spare parts

When ordering spare parts, please give:

- Machine type
- Manufacturing number, see type plate
- Item number and designation of the spare part, see [www.ika.de](http://www.ika.de)

### Repair

The device must be clean and free from any materials which may constitute a health hazard when sent for repair.

Please return the appliance in its original packaging. Storage packaging is not sufficient for returns. Please also use suitable packaging for transportation.

## Accessories

- Stirring bars:  $\varnothing$  6 mm, length upto 15 mm
- $\varnothing$  7 mm, length upto 60 mm
- $\varnothing$  10 mm, length upto 80 mm
- RS 1 Set of magnetic stirring bars
- RSE Stirring bar remover
- H 15 Bath attachment
- H 28 Bath attachment
- H 29 Oil bath attachment
- H 30 Oil bath attachment
- H 16 V Support rod
- H 16.1 Extension
- H 38 Holding rod
- H 44 Cross sleeve
- ETS-D5 Contact thermometer
- ETS-D6 Contact thermometer

## Error codes

Any malfunctions during operation will be identified by an error message on the display (E and F).

Proceed as follows in such cases:

- ☞ Switch off device using the main switch (A)
- ☞ Carry out corrective measures
- ☞ Restart device

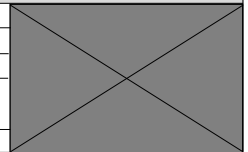
Error code	Cause	Effect	Solution
<b>E3</b>	Temperature inside device too high	Heating off	- Switch off device and allow to cool down
<b>E4</b>	Motor blockage	Heating off Motor off	- Switch off device <i>Warning! Only to be carried out by authorised service personnel: Carry out an internal test on the device to check the plug-in connector for the motor</i>
<b>E6</b>	Break in safety circuit	Heating off	- Plug in contact plug (L) - Plug in PT 1000 contact thermometer/temperature sensor - Replace faulty connecting cable, plug, or contact thermometer
<b>E24</b>	Surface temperature ( <b>temperature of control sensor</b> ): of the base plate is higher than the settled safe temperature limit	Heating off	- Switch off device until the surface temperature of the base plate is lower than the selected safe temperature limit - Set a higher safe temperature limit
<b>E44</b>	Surface temperature ( <b>temperature of safety sensor</b> ): of the base plate is higher than the settled safe temperature limit	Heating off	- Switch off device until the surface temperature of the base plate is lower than the selected safe temperature limit - Set a higher safe temperature limit
<b>E25</b>	Heating and switching element monitoring	Heating off	- Switch off device <i>Warning! Only to be carried out by authorised service personnel: Carry out an internal test on the device to check the plug-in connector. for the heating element</i>
<b>E26</b>	Difference between temperature of safety sensor and temperature of control sensor <b>control temperature</b> > (safety temperature + 40 K)	Heating off	- Switch off device <i>Warning! Only to be carried out by authorised service personnel: Carry out an internal test on the device to check the plug-in connector for the temperature sensor</i>
<b>E46</b>	Difference between temperature of safety sensor and temperature of control sensor <b>safety temperature</b> > (control temperature + 40 K)	Heating off	- Switch off device <i>Warning! Only to be carried out by authorised service personnel: Carry out an internal test on the device to check the plug-in connector for the temperature sensor</i>

If the actions described fail to resolve the fault or another error code is displayed then take one of the following steps:

- Contact the service department
- Send the device for repair, including a short description of the fault.

## Technical Data

		REO basic	RCT basic <i>safety control</i>	HCT basic <i>safety control</i>
<b>Device</b>				
Operating voltage range	Vac	220 - 230 ± 10%		
	Vac	115 ± 10%		
	Vac	100 ± 10%		
Nominal voltage	Vac	230/ 50 Hz		
	Vac	115/ 60 Hz		
	Vac	100/ 60 Hz		
Frequency	Hz	50 / 60		
Power consumption (±10%) max. at 230 Vac 115 Vac 100 Vac	W	10	650	640
		10	610	600
		10	610	600
Display		digital		
Permissible duration of operation	%	100		
Permissible ambient temperature	°C	+5 bis +40		
Permissible relative humidity	%	80		
Protection type acc. to DIN EN 60529		IP 42		
Protection class		I		
Overvoltage category		II		
Contamination level		2		
Fuse		F1/F2	T6,3A/250V (at nominal voltage 230 V) T10A/250V (at nominal voltage 115 V and 100 V)	
Operation at a terrestrial altitude	m	max. 2000		
Dimensions (B x T x H)	mm	165 x 275 x 85		
Weight	kg	2,5		
<b>Motor</b>				
Speed range	min <sup>-1</sup>	50 - 1200		
Power consumption	W	9,5		
Setting resolution	min <sup>-1</sup>	10		
Speed variation (no load, nominal voltage, at 1200 rpm, ambient temperature 25 °C)	%	±2		
Stirred quantity max. (H <sub>2</sub> O)	ltr	20		



		REO basic	RCT basic <i>safety control</i>	HCT basic <i>safety control</i>	
<b>Base plate</b>					
Dimensions	mm	ø 135			
Material		Al - alloy			
<b>Heating</b>					
Heating power (-5%/+10%) at nominal voltage	W	X	600		
Adjustment and display resolution	K		1		
Surface temperature	°C		ambient temperature - 310		
Temperature sensor PT 1000 variation DIN EN 60751 Kl. A	K		$\leq \pm (0,15 + 0,002 \times  T )$		
Temperature variation max. at 100 °C	K		±1,5		
Heating plate temperature variation	K		±5		
Heating plate control hysteresis, no container, center of heating plate at 100 °C	K		±5		
Control hysteresis with temperature sensor PT 1000*	K		±1		
with ETS-D5*	°C		±0,5		
with ETS-D6*	°C		±0,2		
<b>Adjustable safety circuit</b>					
Safety temperature limit (adjustable)	°C		X	50 - 360 (±10)	

\* The control accuracy values given were determined using the following set-up: 500 ml water in 600 ml glass beaker, magnetic stirring bar 40, 600 min<sup>-1</sup>, 50 °C

## Warranty

In accordance with **IKA** warranty conditions, the warranty period is 24 months. For claims under the warranty please contact your local dealer. You may also send the machine direct to our factory, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.

The warranty does not cover worn out parts, nor does it apply to faults resulting from improper use, insufficient care or maintenance not carried out in accordance with the instructions in this operating manual.