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IKA®

RCT basic *safety control* RCT 基本型 (安全控制型) 加热磁力搅拌器

HCT basic *safety control* HCT 基本型 (安全控制型) 加热板



Operating instructions
使用说明

EN 4
CN 14







RCT basic *safety control*

RCT 基本型 (安全控制型)

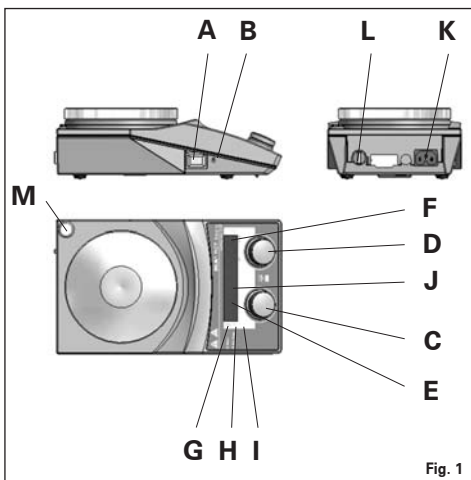


Fig. 1

HCT basic *safety control*

HCT 基本型 (安全控制型)

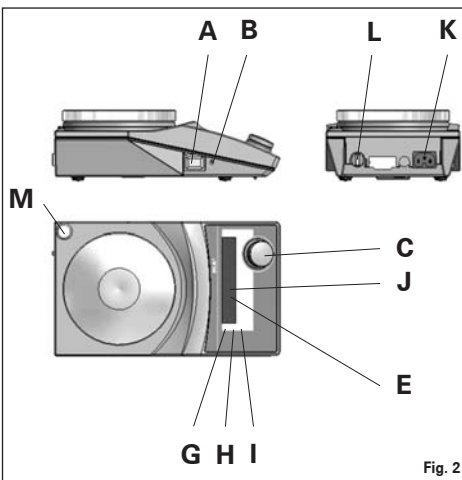


Fig. 2

Item Designation

A	Main Switch
B	Adjustable safety circuit
C	Rotary knob, heater
D	Rotary knob, motor
E	LED display, heater
F	LED display, motor
G	LED, heating plate
H	LED, external temperature sensor
I	LED (set=set point value)
J	LED, external temperature sensor
K	Power socket
L	Socket, contact thermometer
M	Threaded hole for stand

062010

序号 名称

A	电源开关
B	安全温度设定螺丝
C	调温旋钮
D	调速旋钮
E	温度显示
F	转速显示
G	加热指示
H	外部温度计指示
I	设定指示
J	外部温度计指示
K	电源插口
L	温度计插口
M	支杆螺孔



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Safety instructions

- **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 temperature may exceed 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!** Only 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-D5) is inserted in the media to a depth of at least 20 mm.

EN





- 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 has 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.*
- 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 (min. 100 mm) between the devices, between device and wall and minimum distances (min. 800 mm) above the assembly, see fig. 3.

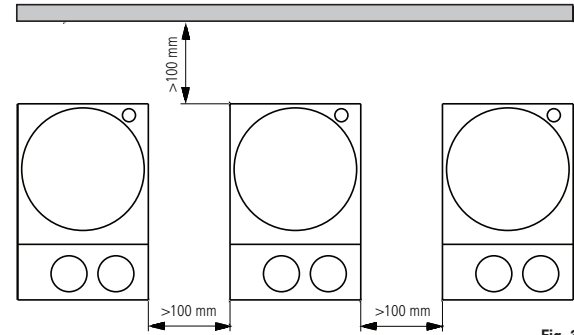


Fig. 3





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

RCT basic safety control

- Heating magnetic stirrer
- Mains cable
- Operating instructions
- Screwdriver
- Protection cover
- Temperature sensor
PT 1000

HCT basic safety control

- Heating device
- Mains cable
- Operating instructions
- Screwdriver
- Protection cover
- Temperature sensor
PT 1000

Correct use

• Use

- For mixing and/or heating liquids

• Range of use

- Laboratories
- Pharmacies
- Schools
- Universities

This device is suitable for use in all areas, except industrial areas.

The safety of the user cannot be guaranteed if the appliance is operated with accessories that are not supplied or recommended by the manufacturer or if the appliance is operated improperly contrary to the manufacturer's specifications or if the appliance or the printed circuit board are modified by third parties.





Operation

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

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

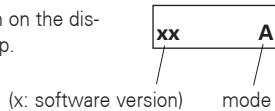
All settings will be stored if the device is switched off or disconnected from the power supply. The mixing and heating functions will be set to OFF when the device is powered on.

Mode B

All settings will be stored if the device is switched off or disconnected from the power supply. The mixing 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.



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)

① ➤ The set value is indicated on the display (F) xx A

HCT basic safety control

Operating the device in the preset mode

The operating mode is preset and not changeable. Description of the mode and the display see RCT

Factory setting: Mode A

Setting the safe temperature limit

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

① ➤ 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.

Functional check of inactivating the safety circuit

- ☞ Position the safe temperature limit at the left (50 °C)
- ☞ Move device switch (A) to the ON position

① ➤ Indication on the display (F)

Err 25





Setting the temperature control mode

When using an external PT1000 temperature sensor, the user can choose between two types of control:

PI mode

Good control results, minimised overshooting, slow rise in temperature.

2P mod (two-point controller)

Maximum heating rate, increased overshooting

Factory setting: PI mode

Changing the temperature control mode

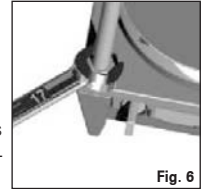
1. Set target temperature to 2 °C
2. Switch off device
3. Hold down temp knob
4. Switch on device

This activates or deactivates the two-point controller (2P) for the external PT 1000 temperature sensor (2P appears on the display).

When switching on the device, 2P is also displayed next to the operating mode A/B when the two-point controller is activated. When the heating function is active in 2P mode, (with external PT 1000 temperature sensor) the actual temperature flashes - that notifies the user that the process temperature has been greatly overshot!

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 Ø 180 mm only use the support rod H 16 V with the extension H 16.1.

Fig. 6





Maintenance

The device is maintenance-free.

Cleaning



For cleaning disconnect the main plug.

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.net**.

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: Ø 6 mm, length upto 15 mm
Ø 7 mm, length upto 60 mm
Ø 10 mm, length upto 80 mm
- RS 1 Set of magnetic stirring bars
- RSE Stirring bar remover
- H 16 V Support rod
- H 16.1 Extension
- H 38 Holding rod
- H 44 Cross sleeve
- ETS-D5 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
E3	Temperature inside device too high	Heating off	- Switch off device and allow to cool down
E4	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>
E6	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
E24	Surface temperature (temperature of control sensor): of the base plate is higher than the setted 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
E44	Surface temperature (temperature of safety sensor): of the base plate is higher than the setted 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
E25	Heating and switching element monitoring	Heating off	- Switch off device - Set the safe temperature limit ≥ 55 °C, see also "Functional check of inactivating the safety circuit" - <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>
E26	Difference between temperature of safety sensor and temperature of control sensor control temperature > (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>
E46	Difference between temperature of safety sensor and temperature of control sensor safety temperature > (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

		RCT basic safety control	HCT basic safety control
Device			
Operating voltage range	Vac	220 - 230 ± 10% 115 ± 10% 100 ± 10%	
Nominal voltage	Vac	230/ 50 Hz 115/ 60 Hz 100/ 60 Hz	
Frequency	Hz	50 / 60	
Power consumption (±10%) max. at 230 Vac 115 Vac 100 Vac	W	650 610 610	640 600 600
Display		digital	
Permissible duration of operation	%	100	
Permissible ambient temperature	°C	+5 to +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 (W x D x H)	mm	165 x 275 x 85	
Weight	kg	2.5	
Motor			
Speed range	rpm	50 - 1500	X
Rated input power	W	16	
Setting resolution	rpm	10	
Speed variation (no load, nominal voltage, at 1500 rpm, ambient temperature 25 °C)	%	±2	
Stirred quantity max. (H ₂ O)	ltr	20	



		RCT basic safety control	HCT basic safety control
Base plate			
Dimensions	mm		Ø 135
Material			Al - alloy
Heating			
Heating power (-5%/+10%) at nominal voltage	W		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
Adjustable safety circuit			
Safety temperature limit (adjustable)	°C		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 rpm, 50 °C

Subject to technical changes!

Warranty

In accordance with **IKA** warranty conditions, the warranty period is 12 months. If you could fill and post back our questionnaire attached with register card, the guarantee period will be extended to 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.



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安全说明

- **操作仪器前请认真阅读使用说明并遵守安全操作规范。**
- 请妥善保管使用说明以便需要时查阅。
- 请确保只有受过相关训练的人员才能操作使用本仪器。
- 请遵守安全规范、人身安全和事故防止等相关规范。
- 电源插座必须接地保护。
- **注意-磁场!** 使用时需考虑磁场对周边环境的影响，如数据存储器、心脏起搏器。
- **小心高温!** 仪器工作时盘面温度最高可达 310 °C，触摸仪器外壳和盘面时小心烫伤，仪器关闭后，也请注意余热。
- 注意避免仪器电源线触及盘面。
- 根据处理介质的种类，在操作仪器时请佩戴合适的防护设备；否则

可能出现下列危险：

- 液体溅出
- 部件飞出
- 释放出有毒或者可燃气体。
- 将仪器放置于平坦、平稳、清洁、防滑、干燥、防火的台面。
- 仪器支脚必须清洁无损。
- 每次使用前请检查仪器和配件并确保无损，请勿使用损毁的仪器和配件。
- 操作仪器时，请逐渐升高仪器转速。
- 出现下列状况时，请降低转速：
 - 由于转速过高导致所处理的介质溅出容器
 - 仪器运转不平稳
 - 容器在工作盘上发生移动
- **注意!** 切勿将仪器安全温度 (50 至 360 °C) 设置高于所处理的介质的着火点，仪器安全温度设定值应该至少低于介质着火点 25 °C。
- 注意以下可能产生的危险：
 - 易燃物质
 - 低沸点可燃物质
 - 易碎玻璃容器
 - 容器大小不合适
 - 溶液过量
 - 容器处于不安全状态
- 即使没有开启加热功能，由于磁力搅拌子的高速转动，也有可能导致仪器盘面升温。
- 处理病原体介质时，请使用密闭容器并在合适的通风橱中进行。如有其他任何问题，请联系 IKA 公司。
- **切勿**在易爆的环境或水下操作使用本仪器。
- 请仅使用本仪器处理在搅拌过程中不会因搅拌而产生危险的介质，也不能处理因其他方式的外部能量 (如光照) 的增加产生危险的物质。
- 使用任何配件时都须遵守操作说明。
- 使用温度计时，请确保温度探头浸入介质深度至少 20 mm。

CN





- 连接温度计 PT 1000 时，请确保温度探头浸入介质中。
- 只有使用“选配件”列表中的配件才可确保安全。
- 使用配件时，必须安装牢固，安装完毕，整个系统的重心不能超出系统之外。
- 安装配件前请断开电源。
- 只有按下仪器电源插头才能完全切断电源。
- 电源插座必须易于使用和操作。
- 在 B 模式下，电源中断重新供电后仪器会自动重启。
- 仪器转动部件的磨损产生的碎片有可能接触到所处理的介质。
- 使用 PTFE 覆膜的磁力搅拌子请注意可能出现下列问题：温度高于 300-400 °C 时，碱或碱土金属熔融态或者溶液以及元素周期表的第二族及第三族的粉末会跟 PTFE 发生化学反应。常温下，只有金属单质氟、三氟化物和碱金属会侵蚀 PTFE，卤烷烃会使其膨胀。
- 只有受过专业维修人员才能打开仪器
- 输入电压必须与仪器铭牌上标示的电压一致。
- 使用时，请勿使用外物盖住仪器，否则将会导致仪器过热。
- 请确保仪器盘面清洁。
- 确保仪器和配件免受挤压和碰撞。
- 确保仪器放置间距合理，仪器之间、仪器距离四周墙壁至少 100 mm；仪器距离上方至少 800 mm，如图 3。

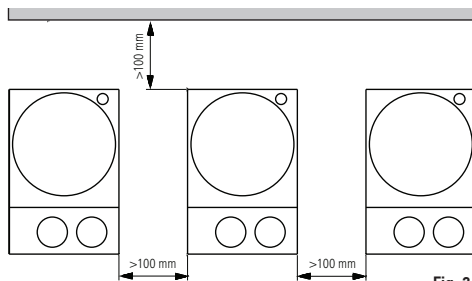


Fig. 3

开箱

• 开箱检查

- 请小心拆除包装并检查仪器
- 如果发现任何破损，请填写破损报告并立即通知货运公司。

• 交货清单

RCT 基本型 (安全控制型)

- 加热磁力搅拌器
- 电源线
- 使用说明
- 调节螺丝刀
- 仪器保护膜
- 温度计 PT 1000

HCT 基本型 (安全控制型)

- 加热板
- 电源线
- 使用说明
- 调节螺丝刀
- 仪器保护膜
- 温度计 PT 1000

正确使用

• 使用

- 仪器可用于搅拌 / 加热液体介质

• 使用领域

- 实验室 - 学校
- 药剂研究 - 大学

仪器可用于除工业之外的所有区域。

如果操作人员使用非 IKA 认可或生产的选配件或者违规操作以及擅自改动产品电路板，我们将不对产生的后果负责。





操作

使用前，请将仪器盘面保护膜去除！

	RCT 基本型 (安全控制型)	HCT 基本型 (安全控制型)
开机	<ul style="list-style-type: none"> ☞ 将电源开关 (A) 置于关闭位置 ☞ 连接电源线 (K) ☞ 将电源开关 (A) 打开 ➤ 仪器将进入出厂设置模式 A (参考“操作模式”部分) 	
搅拌	<ul style="list-style-type: none"> ☞ 使用调速旋钮 (D) 调节马达转速 ➤ 设定值将显现在屏幕上 (F) ☞ 按下调速旋钮 (D) 开始搅拌处理 	
	① ➤ 显示数值会一直跳动直到达到设定值	
加热	<ul style="list-style-type: none"> ☞ 设定安全温度 (参考 RCT 和 HCT “设定安全温度”部分) ☞ 使用调温旋钮 (C) 调节设定温度 ➤ 温度设定值将显示在屏幕上 (E) ☞ 设定温度控制模式 (参考 RCT 和 HCT “设定控温模式”部分) ☞ 按下调温旋钮 (C) 开始加热 	
	①	设定温度和实际温度将交替在屏幕上显示 (E) ➤ 开启加热功能时加热指示灯 (G) 和设定数值指示灯 (I) 亮起 加热盘面最高加热温度可设置为 310 °C
	①	➤ 在搅拌处理或者待机状态时，如果盘面温度超过 50 °C 显示屏 (E) 将提示 Hot
加热连接外部温度计 (直接控制介质温度)	<ul style="list-style-type: none"> ☞ 关闭仪器开关 (A) ☞ 拔下温度计短路接头 (L) ☞ 将符合 DIN 12878 (2 级) 的温度计或者 PT 1000 温度计接入温度计接口 (L) ☞ 打开仪器开关 (A) 	
	①	温度计 PT 1000 ➤ 温度计测得的实际温度显示在屏幕 (E) 上，外部温度计指示灯 (H) 亮起
	①	温度计 ETS-D5 ➤ 按照操作说明连接接触式温度计 温度显示屏小数点指示灯 (J) 亮起 当连接接触式温度计后，仪器温度显示屏 (E) 只显示加热设定值





设定操作模式

RCT 基本型 (安全控制型)

在 A 模式或者 B 模式下操作仪器

模式 A

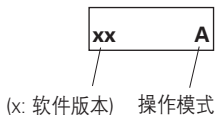
仪器关闭或者断开电源后，所有设置将被存储；开机后加热和搅拌功能处于关闭状态，仪器为待机状态。

模式 B

仪器关闭或者断开电源后，所有设置将被存储；开机后加热和搅拌功能与上次关机前状态一致，可能处于关闭或开启状态。

出厂设置：模式 A

在开机自检时，仪器屏幕显示操作模式。



改变操作模式

- ☞ 闭仪器电源开关 (A)
- ☞ 按下并按住调温和调速旋钮 (C 和 D)
- ☞ 打开仪器电源开关 (A)
- ☞ 松开调温和调速旋钮 (C 和 D)

① > 设定的模式将显示在屏幕上 (F) **xx A**

HCT 基本型 (安全控制型)

在预设式下操作仪器

操作模式为预设操作模式，不可改变。

模式描述与显示参考 RCT 部分。

出厂设置：模式 A

设定安全温度

开启仪器时，所设定的安全温度显示在屏幕上。

出厂设置：360 °C

设定范围：50 - 360 °C

360 SAFE

设定安全温度

- ☞ 打开仪器电源开关 (A)
- ☞ 使用螺丝刀调节安全温度

① > 设定值显示在屏幕上 (F) **150 SAFE**



加热盘设定的加热温度 (310 °C) 比安全温度至少低 10 °C。

注意：所设定的安全温度至少应低于所处理的介质着火点 25 °C。

安全回路功能检查

- ☞ 将安全温度调节旋钮置于左侧 (50 °C)
- ☞ 打开仪器电源开关 (A)

① > 屏幕上 (F) 上显示 **Err 25**





设温度控制模式

使用外部温度计 PT 1000 时有两个操作模式可选：

PI 模式

控制效果良好，温冲小，温度升高速度慢。

2P 模式 (双点控制)

加热功率最大，温冲增大。

出厂设置：PI 模式

改变温度控制模式

1. 将温度设置为 2 °C
2. 关闭仪器
3. 按下调温旋钮
4. 开启仪器

温度计 PT 1000 双点控制 (2P) 模式被激活或者消除 (屏幕显示 2P)。

如果双点控制模式激活，打开仪器时，在操作模式 A/B 后屏幕上会显示 2P。当加热功能在 2P 状态下工作 (使用外置 PT 1000 温度传感器)，当实际温度闪烁，则表示加热过程温度严重过冲！

注意：对于直径超过 180 mm 的容器，需使用 H 16 V 支杆和 H 16.1 延伸支杆。

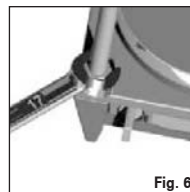


Fig. 6

安装支杆

- ☞ 移除螺孔保护盖 (M)
- ☞ 去掉支杆保护胶帽
- ☞ 将垫片放在仪器支杆孔和螺母之间
- ☞ 用手将支杆旋入螺孔直到完全到位、
- ☞ 使用扳手再次紧固螺母
- ☞ 使用夹头固定其他配件

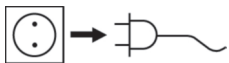




清洁维护

本仪器无需特殊保护。

清洁



清洁仪器须断开电源。

清洁时请用 **IKA** 公司认可的清洁剂。

使用如下清洁剂清洗对应污渍：

染料	异丙醇
建筑材料	含活性剂的水溶液/异丙醇
化妆品	含活性剂的水溶液/异丙醇
食品	含活性剂的水溶液
燃油	含活性剂的水溶液

- 清洁时请确保仪器不要受潮。
- 清洁仪器时请佩戴防护手套。
- 当采用其他非 **IKA** 推荐的方法清洁时，请先向 **IKA** 确认清洁方法不会损坏仪器。

零部件订购

订购零部件时，需提供：

- 机器型号
- 生产编号，见标牌
- 零部件的名称和编号，详见 www.ika.cn。

维修

在送检您的仪器之前，请先清洁并确保仪器内无任何对人健康有害的物料残留。

如果您需要维修服务，请使用原包装妥善包装后将仪器寄回 **IKA** 公司。如原包装不存在时请采用合适的包装。

可选配件

- 磁力搅拌子：φ 6 mm，最长 15 mm
φ 7 mm，最长 60 mm
φ 10 mm，最长 80 mm
- RS 1 搅拌子套装
- RSE 搅拌子移出棒
- H 16 V 支杆
- H 16.1 延长支杆
- H 38 固定支杆
- H 44 夹头
- ETS-D5 接触式温度计





错误代码

操作过程中的故障均可在屏幕上显示 (E 和 F)。

通常情况按照下列方式排除故障：

- ☞ 关闭仪器电源 (A)
- ☞ 进行校正
- ☞ 重新启动仪器

错误代码	故障原因	故障影响	校正措施
E3	仪器内部温度过高	加热功能关闭	- 关闭仪器 待其冷却
E4	马达卡死	加热功能关闭 马达关闭	- 关闭仪器 - 注意！只有经授权的维修人员才可打开仪器检测马达电源插头是否工作正常
E6	安全回路中断	加热功能关闭	- 插上温度计短路插头 (L) - 插上 PT 1000 接触式温度计 / 温度传感器 - 更换有故障的连接导线、插头或接触式温度计
E24	盘面温度 (控温传感器温度) 高于设定的安全温度	加热功能关闭	- 关闭仪器直到盘面温度降低至设定的安全温度以下 - 设定较高的安全温度
E44	盘面温度 (安全传感器温度) 高于设定的安全温度	加热功能关闭	- 关闭仪器直到盘面温度降低至设定的安全温度以下 - 设定较高的安全温度
E25	加热传感元件故障	加热功能关闭	- 关闭仪器 - 设定安全温度在 55 °C 以上，参考“安全回路功能检查” - 注意！只有经授权的维修人员才可打开仪器检测马达电源插头是否工作正常
E26	安全回路传感器温度与控温传感器温度偏差过大 (控制温度 高于安全温度 40 K 以上)	加热功能关闭	- 关闭仪器 - 注意！只有经授权的维修人员才可打开仪器检测马达电源插头是否工作正常
E46	安全回路传感器温度与控温传感器温度偏差过大 (安全温度 高于控制温度 40 K 以上)	加热功能关闭	- 关闭仪器 - 注意！只有经授权的维修人员才可打开仪器检测马达电源插头是否工作正常

如果上述方法无法排除故障或者出现其他错误代码请采取如下措施：

- 联系 IKA 公司维修部门；
- 将仪器附故障说明发送至 IKA 公司检视维修。



技术参数

		RCT 基本型 (安全控制型)	HCT 基本型 (安全控制型)
仪器			
操作电压	V	220 - 230 ± 10% 115 ± 10% 100 ± 10%	
额定电压	V	230 / 50 Hz 115 / 60 Hz 100 / 60 Hz	
频率	Hz	50 / 60	
功耗 (±10%) 最大值-230 V -115 V -100 V	W	650 610 610	640 600 600
显示		数字显示	
允许工作制	%	100	
允许环境温度	°C	5 - 40	
允许相对湿度	%	80	
保护等级 (DIN EN 60529)		IP 42	
防护等级		I	
过压类别		II	
耐污染等级		2	
保险丝		F1/F2 T6.3A/250V (230 V 额定电压) T10A/250V (115 V 和100 V 额定电压)	
使用海拔高度	m	max. 2000	
外观尺寸 (W x D x H)	mm	165 x 275 x 85	
重量	kg	2.5	
马达			
转速范围	rpm	50 -1500	X
额定输入功率	W	16	
设定精度	rpm	10	
转速偏差 (额定电压, 转速 1500 rpm, 环境温度 25 °C)	%	± 2	
最大搅拌量 (水)	ltr	20	



		RCT 基本型 (安全控制型)	HCT 基本型 (安全控制型)
工作盘			
尺寸	mm	Ø 135	
材料		铝合金	
加热			
额定电压加热功率 (-5%+10%)	W	600	
调节和显示精度	K	1	
盘面温度	°C	室温 - 310	
温度计 PT 1000 温度变异 DIN EN 6075 Kl. A	K	<± (0.15+0.002 × T)	
温度波动最大值 (100 °C)	K	±1.5	
加热盘温度变异	K	± 5	
加热盘控制精度, 无容器, 盘面中心温度为 100 °C	K	± 5	
使用 PT 1000* 温度计控制精度	K	± 1	
使用 ETS-D5* 温度计控制精度	mm	± 0.5	
可调安全回路			
可调安全温度	°C	50 - 360 (± 10)	

* 标示处精度数值是在如下条件下测得：500 ml 水置于 600 ml 的玻璃杯，使用 40 mm 搅拌子在 50 °C 时以 600 rpm 的搅拌转速进行搅拌。

技术参数若有变更，恕不另行通知！

保修

根据 IKA 公司保修规定(需提供购机发票)本机保修 1 年；若填写并寄回保修卡所附客户问卷，保修期可延长至 2 年。保修期内如果有任何问题请联络您的供货商，您也可以将仪器附发票和故障说明直接发至我们公司，经我方事先确认后运费由贵方承担。

保修不包括零件的自然磨损，也不适用于由于过失、不当操作或者未按操作说明书使用和维护引起的损坏。





IKA® Works Guangzhou

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