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Mode d'emploi

Gebrauchsanleitung

Schott Laborrührer SLR
mit Glaskeramik-Heizfläche

Operating Instructions

Schott laboratory stirrer SLR
with glass-ceramics heating zone

Mode d´emploi

Agitateur de laboratoire Schott SLR
à plaque chauffante en vitro céramique

Manual de instrucciones

Agitador de laboratorio Schott SLR
con superficie de calefacción vitrocerámica

SCHOTT

Operations manual information

The present manual is designed to enable you using the Schott laboratory stirrers safely in accordance with its designated use.

Reading aids used in this manual

Throughout this manual you will find reading aids. These reading aids have the following meaning:

- A dot is used to denote an instruction; you are required to take a certain action.

⇒ An arrow indicates what happens after you have taken this action.

Example:

- Press button.

⇒ An indicator lights up.

Safety

You should always observe all safety and warning instructions to ensure best possible safety! The pictograms used have the following meaning:

Warning referring to a common danger for people or materials.
Failure to follow these instructions may result in physical injury or material damage.

Warning referring to a special hazard.
Example: To warn operators of a hot surface.

Warning referring to a particular group of people.
Example: People with pacemakers or ICDs (Implanted Coronar Defibrillator)

Description

Designated use

This Schott laboratory stirrer with glass-ceramics heating zone has been designed for the stirring of liquids in a vessel while heating them up.

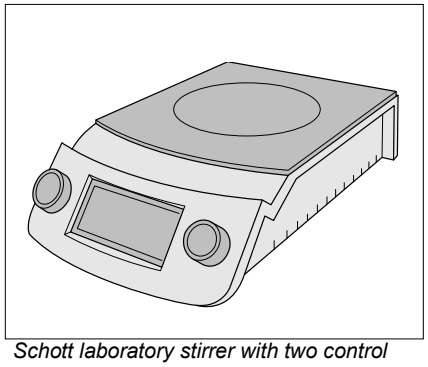
Using the appliance for other purposes is considered contrary to its designated use and is inadmissible since this may result in unpredictable risks!

Scope of supply

For the scope of supply of your Schott laboratory stirrer please refer to the accompanying packing list. If any parts are missing or some damage can be noticed from outside, please contact the manufacturer or the sender.

Accessories

An optional temperature sensor is available for your Schott laboratory stirrer. In addition, your stirrer has been constructed so that it can be mounted on a tripod rod (available as accessory part incl. fastening nut, see p. 23: "Accessories".



Schott laboratory stirrer with two control knobs and display

Scope of functions

Stirring rate and heating output of the device can be sensitively regulated by means of two control knobs and a display for control purposes.

If precise temperature control is required, we recommend to operate the stirrer with a temperature sensor (accessory). This sensor is used to control the temperature instead of the heating output. If a sensor is connected, the display alternately shows the selected command temperature and the actual temperature measured for the heated medium instead of the heating stages.

Safety first!

The inappropriate use of technical equipment always involves possible hazards to safety. Therefore:

The laboratory stirrer must only be operated by laboratory personnel especially trained for this purpose and familiar with all precautionary measures required for working in a laboratory!

When using this Schott laboratory, all prescribed precautionary measures required for working in a laboratory must be observed (in particular all applicable legal regulations relevant to accident prevention)!

The heating zone can heat up to a maximum temperature of approximately 555 °C! Therefore:

CAUTION! Risk of deflagration, explosion and fire hazard when heating flammable liquids! Always heat up liquids with a flash point above 580 °C!

Be aware of increased ease of ignition of hot liquids!

Always cover vessel to prevent hot liquids from getting into contact with the heating zone (e.g. by liquid splashing or boiling over, or through escaping gases)!

The Schott laboratory stirrer must be set up and connected in a way that ensures maximum safety for people and material handled (see p. 15: "Setting up and connecting")!

Setting up and connecting

Setting up

Your Schott laboratory stirrer is designed for indoor use in dry environments. When selecting a location for your stirrer, make sure to observe the following safety instructions:

Explosion hazard! Never operate your Schott laboratoy stirrer in hazardous location!

Danger of electric shock! Never operate your stirrer in wet areas!

Fire hazard due to overheating! Never install your stirrer in furniture!

Fire hazard! For safety reasons place the stirrer at least 50 cm from any inflammable material!

Risk of tripping! Never route connection cables in highly frequented areas!

Possible cable damage! Keep away connection cable from heating zone!

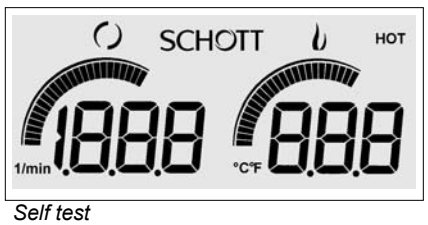
When using harmful or aggressive media:

Risk of poisoning or chemical burn! The device can be damaged when sucking in aggressive gases or vapor through the installed ventilator! Schott laboratory stirrers must only be operated in the presence of an exhaust system!

- Install the stirrer on a flat, stable surface. The area under the stirrer must be non-combustible! Do not put any support material under the stirrer as it blocks the ventilator installed at the bottom of the device and may cause overheating!
- Install the stirrer on a flat, clean, dry and non-slippery surface.
- Avoid areas where the sun shines directly on the display (impaired readability).

Connecting

- Be sure to operate the stirrer only with the specified power supply (see p. 22: "Technical data" and details on the ratings plate).
- Make sure that the mains socket is equipped with an earthing protective wire (socket outlet with earthing)
- Insert mains plug in the socket to connect the stirrer to the mains line.
- Be sure to keep the socket clear for direct access in the case of emergency!



Self test

⇒ The stirrer performs a self test which is indicated on the display followed by information on the software version (e.g. "P 1.82").

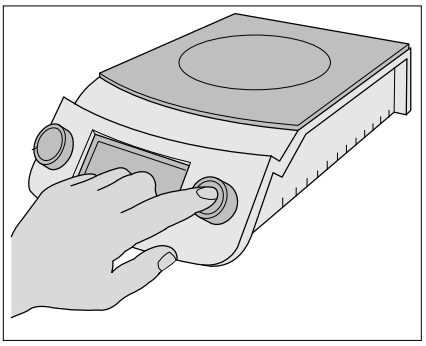
⇒ On completion of the self test, the display shows stirrer and heater symbols.

⇒ Stirrer and heater are now ready for operation.

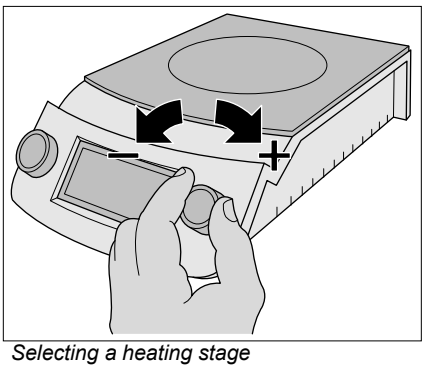
Display symbols and their meaning:

	Stirrer symbol	Indicates that the stirrer is ready for operation.
	Heater symbol	Indicates that the stirrer is ready for operation.
HOT	Residual-heat indicator	Warning sign to inform the user that the heating zone is still hot.
	Bar graph	Indicates the control activity of stirrer or heater.

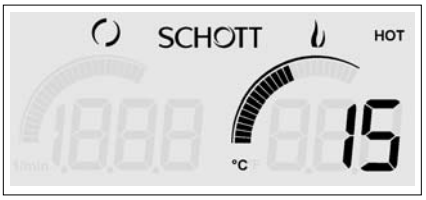
Operating heater without temperature sensor



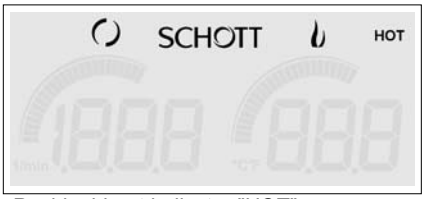
Switching on the heater



Selecting a heating stage



Heating stage 015



Residual-heat indicator "HOT"

Switching on the heater

- Press and hold the right control knob for approximately 2 seconds until the heater display appears.

⇒ The display shows heating stage "0" (zero).

- Select your desired heating stage within 30 seconds.

⇒ After 30 seconds the heater switches off again if you do not select a heating stage (safety function).

Selecting a heating stage

If the heater is operated without a temperature sensor, the heating energy will be controlled.

- Select the desired heating stage using the right control knob (turn clockwise to switch to a higher heating stage). The maximum heating stage is 024.

⇒ The selected heating stage is shown on the display.

⇒ The bar graph indicates the heating activity of the heater.

⇒ The heater heats up until the selected temperature level is achieved.

CAUTION! Risk of burning!
Do not touch the heating zone!

⇒ After having operated at heating stage 024 for 3 hours, the heater switches back to heating stage 018 (safety function)

Switching off the heater

- Press and hold the right control knob for approximately 2 seconds until the heating display disappears.

⇒ The heater is now switched off.

⇒ The residual-heat indicator "HOT" continues to light up as long as the glass-ceramics heating zone is still hot.

CAUTION! Residual heat!
Do not touch the heating zone!

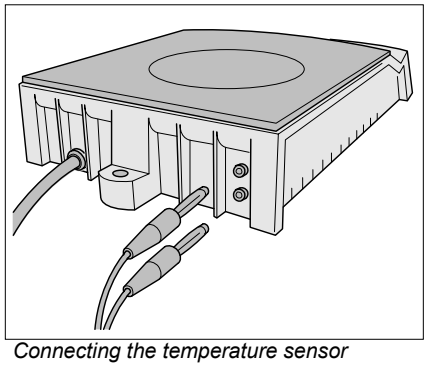
⇒ The installed ventilator continues to operate until the heating zone has cooled down completely.

CAUTION! Risk of overheating!
Do not pull out mains plug!

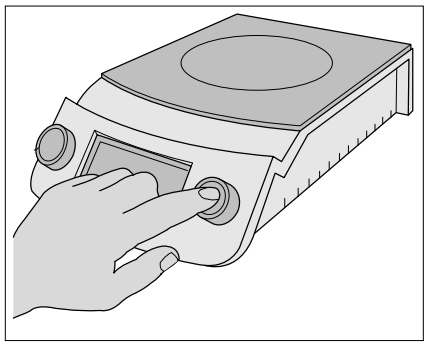
Disconnecting the device from mains

Do not unplug the stirrer before the heating zone has completely cooled down and the ventilator has switched off. To disconnect the device from the mains, pull out mains plug.

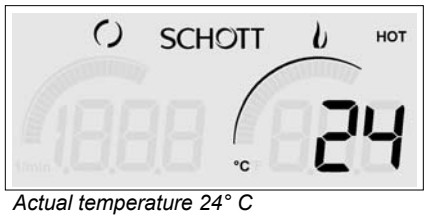
Operating heater with a temperature sensor



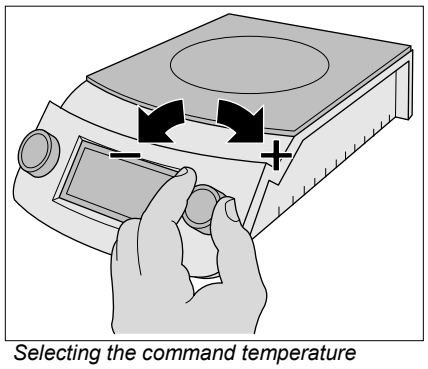
Connecting the temperature sensor



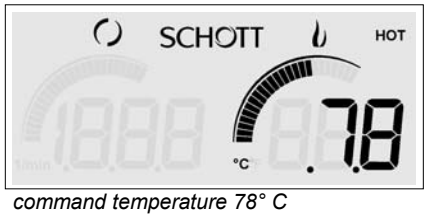
Switching on the heater



Actual temperature 24° C



Selecting the command temperature



command temperature 78° C

Connecting the temperature sensor

- Be sure to use the correct temperature sensor (see p. 23: "Accessories").
- Connect the temperature sensor at the rear of the laboratory stirrer.
- Make sure that the cable of the temperature sensor is routed so that it cannot touch the heating zone.
- Immerse the temperature sensor into the liquid min. 30 mm in depth.

In contrast to operation without temperature sensor, the laboratory stirrer now features:

⇒ Automatic temperature control instead of fixed heating stages with control of energy.

⇒ Temperature display alternating between command temperature and actual temperature instead of showing the heating stages.

Switching on the heater

- Press and hold the right control knob for approximately 2 seconds until the heater display appears.

⇒ The display shows the actual temperature measured by the temperature sensor at that time.

- Select your desired command temperature within 30 seconds.

⇒ After 30 seconds the heater switches off again if you do not select a command temperature (safety function).

Selecting the command temperature

- Select the desired command temperature using the right control knob (turn clockwise to increase temperature). The maximum command temperature is 200°C.

⇒ The selected command temperature is shown on the display (indicated by dots between figures).

⇒ The bar graph indicates the heating activity of the heater.

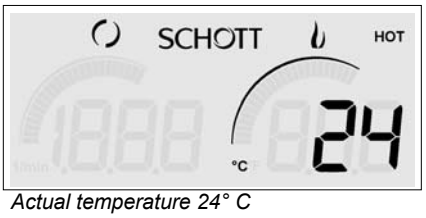
⇒ The heater heats up and maintains the selected temperature.

⇒ The residual-heat indicator "HOT" continues to light up as long as the glass-ceramics heating zone is still hot.

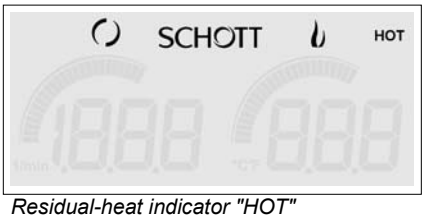
CAUTION! Risk of burning!
Do not touch the heating zone!

⇒ The display now alternates between command temperature (with dots between figures) and actual temperature (no dots between figures) every 5 seconds.

ENGLISH



Actual temperature 24° C



Residual-heat indicator "HOT"

Switching off the heater

- Press and hold the right control knob for approximately 2 seconds until the heating display disappears.

⇒ The heater is now switched off.

⇒ The residual-heat indicator "HOT" continues to light up as long as the glass-ceramics heating zone is still hot.

CAUTION! Residual heat!
Do not touch the heating zone!

⇒ The installed ventilator continues to operate until the heating zone has cooled down completely.

CAUTION! Risk of overheating!
Do not pull out mains plug!

Disconnecting the device from mains

Do not unplug the stirrer before the heating zone has completely cooled down and the ventilator has switched off. To disconnect the device from the mains, pull out mains plug.

ENGLISH

Operating stirrer

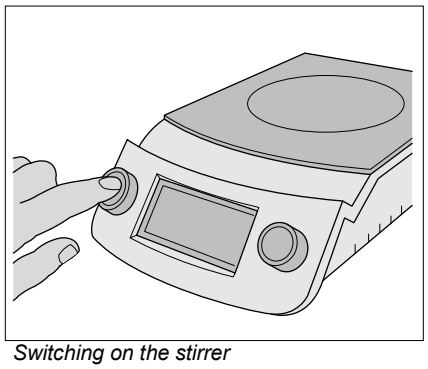
Precautionary measure

This equipment is the source for a strong magnetic field interfering with objects up to a distance of 50 cm from the laboratory stirrer. It is therefore recommended to be careful when approaching the stirrer with magneto-sensitive objects such as electronic data carriers (discs, bank cards), mechanical wristwatches or pacemakers, etc.!

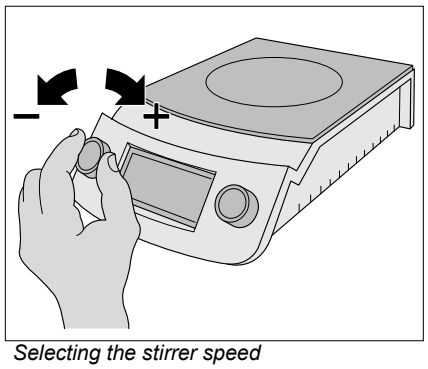
People with pacemakers or implanted coronar defibrillator:
CAUTION! Risk of interference resulting from a magnetic field!

CAUTION, magnetic field!
Keep away magneto-sensitive objects!

- Use a support frame to prevent the stirrer vessel from slipping off the heating zone, if required (see p. 23: "Accessories").



Switching on the stirrer



Selecting the stirrer speed

Stirring speed 280 revolutions/minute

Switching on the stirrer

- Press and hold the left control knob for approximately 2 seconds until the speed display of the stirrer appears.

⇒ The display shows the desired speed which is always "0" (zero) when switching on the appliance.

Selecting the stirrer speed

The speed of the stirrer can be adjusted in increments of 10 (between 100 and 1100 revolutions per minute).

- Select the desired speed using the left control knob (turn clockwise to increase the speed). You should avoid operating the stirrer at excessive speed as this may damage the stirrer vessel!

⇒ The display shows the selected speed.

⇒ The stirrer starts running.

⇒ The bar graph shows the actual stirrer speed.

Switching off the stirrer

- Press and hold the left control knob for approximately 2 seconds until the speed display disappears.

⇒ The stirrer is now switched off.

Disconnecting the device from mains

Do not unplug the stirrer before the heating zone has completely cooled down and the ventilator has switched off. To disconnect the device from the mains, pull out mains plug.

ENGLISH

Maintenance, cleaning and servicing

Maintenance

If you operate your Schott laboratory stirrer in accordance to its designated use, no special maintenance is required. To make cleaning easier, you should observe the following instructions:

- Do not allow liquid to boil over!
- Do not allow spillage to stick to the surface of the equipment!

Cleaning

Always observe the following basic instructions:

Never immerse your Schott laboratory stirrer in water!
Never spray wash your Schott laboratory stirrer!

Removing normal stains

- Switch off your stirrer.
- Allow the equipment to cool down.
- Pull out mains plug.
- Clean your Schott laboratory stirrer using a damp cloth and a commercial-grade cleaning agent for glass-ceramics cooking hobs.
- Cleansers must be wiped off completely otherwise they may damage the surface when heated.
- After cleaning, thoroughly dry the surface of your Schott laboratory stirrer with a cloth.

Cleaning in special cases

Sugar, synthetic material or aluminium stains:

- Remove stains on hot glass-ceramics heating zone using a razor-blade scraper!

CAUTION! Residual heat!
Do not touch the heating zone!

Stains caused by highly concentrated acids or alcaline solution:

- Wipe off stains on the heating zone or the casing immediately after cooling of the equipment using a suitable cloth! Exposure to highly concentrated acids or alcaline solutions for an extended period of time may damage the glass-ceramics heating zone or the lacquered surface of the casing!

Servicing

If you operate your Schott laboratory stirrer in accordance with its designated use, no servicing is required.

- Before operating the equipment, always check both the mains cable and connection cable of the temperature sensor for proper operating condition. Never operate stirrer or temperature sensor with damaged cables!

CAUTION! Risk of electric shock!
Never operate the stirrer with damaged cables!

Troubleshooting

The display has disappeared (only Schott logo shown).	No connection to the mains (power cable damaged or power failure). • Check connection to the mains!
Display shows "E 1"	One or both plugs of the temperature sensor have been pulled while the stirrer was running. • Connect temperature sensor again! or: Temperature sensor or its connection cable has been damaged while the stirrer was running. • Replace temperature sensor (see p. 22: "Technical data")! • Make sure that the cause of failure cannot reoccur in future (e.g. cable touching the heating zone)!
Display shows "E 2"	Temperature sensor has caused a short-circuit. • Replace temperature sensor (see p. 22: "Technical data")!
Display shows "E 3"	Error in internal data storage unit. • Contact the manufacturer!
Display shows "E 4"	The installed ventilator does not operate. • Contact the manufacturer!
The laboratory stirrer fails to start again automatically after power failure.	The switching off after power failure is a normal safety function. • Switch on laboratory stirrer manually!
Residual-heat indicator "HOT" went out although the heating zone is still hot.	Your laboratory stirrer was or is disconnected from the mains. This caused resetting of the residual-heat indicator function (as is the case with all other functions of the device). • Switch off heater by pressing the right control knob, never by pulling the mains plug!
Device functions valid at the time are incorrectly shown on the display.	This is possibly due to a failure in the electronic system of your Schott laboratory stirrer. • Return the stirrer to the manufacturer or your dealer to have it checked and repaired!

IMPORTANT! Do not attempt to repair the stirrer! Unauthorized changes or modifications to the laboratory stirrer can impair the safety of equipment and void the guarantee!

ENGLISH

At the end of its service life

At the end of its service life the stirrer is to be disposed of in accordance with the local regulations specified for the disposal of electronic industry waste.

Technical data

Translation of the legally binding German version

Safety standards

Dated: 18 July 2000

CE 89/336/EWG	Electromagnetic Compatibility
73/23/EWG	Low Voltage Directive, as amended by 93/68/EEC
Model:	Schott laboratory stirrer type SLR
Country of origin:	Germany
Order no./power supply:	28 541 6373 230 V AC; 50...60 Hz 28 541 6279 115 V AC; 50...60 Hz
Power consumption:	max. 920 W ± 10%
Speed range of stirrer:	100...1100 revolutions/minute
Stirring volume:	max. 20 liter
Heating output of heater:	900 W ± 10%
Temperature of heating zone:	max. ca. 555° C
Temperature control range:	25...200 °C ± 3 °C (temperature of heated medium)
Heating zone:	Glass-ceramics (chemically stable, corrosion-resistant and scratchproof)
Diameter of heating zone:	155 mm
Glass-ceramics floor space:	235 mm x 235 mm
Loading capacity of glass-ceramics floor space:	max. 25 kg (max. 0.1 kp/cm^2)
Safety class:	Class 1 appliance (not suitable for use in hazardous area), system of protection: IP20
Environment (storage and operation):	Ambient temperature: +10...+40° C; max. relative humidity up to +31 °C: 80 %; up to +40 °C: 50 %
Dimensions:	370 mm long x 240 mm wide x 85 mm high
Weight:	ca. 3.8 kg
Area of application:	All technical data and device functions specified are valid for use up to a height of max. 2,000 m above zero level.

Heating stages and heating zone temperatures

The table below shows the temperature of the heating zone achieved at a certain heating stage (for operation without temperature sensor). These values are, however, approximate only since:

- ☐ In practice the temperature may vary due to factors such as different atmosphere temperatures or voltage fluctuations, for example;
- ☐ Similarly, no information on the temperature of the heated medium can be obtained from the temperature of the heating zone due to the following reasons: different volumes and different heat capacities, structures, materials and surface of vessels, realization of the thermal contact between vessel and heating zone etc.

Heating stage	Temperature of heating zone [ca. °C]
1	65
2	93
3	130
4	160
5	186
6	207

Heating stage	Temperature of heating zone [ca. °C]
7	230
8	255
9	287
10	330
11	360
12	380

Heating stage	Temperature of heating zone [ca. °C]
13	400
14	415
15	430
16	444
17	456
18	473

Heating stage	Temperature of heating zone [ca. °C]
19	487
20	505
21	520
22	533
23	544
24	555

ENGLISH

Accessories

Temperature sensor (shaft made out of V4A stainless steel; Pt 1000 sensor; 1 m fixed cable with 2x 4 mm banana plug; 120 mm long; Ø 4 mm; -30...+ 250 °C):	W 5791 NN HT	Order no. 28 510 5308
Tripod rod incl. fastening nut M 8 (stainless steel; 450 mm long; Ø 10 mm):	Z 601	Order no. 28 541 6492
Holder for temperature sensor (clamp with extension rod made out of stainless steel; connector)	Z 602	Order no. 28 541 6505
Magnetic stirrer for standard applications (AlNiCo5; circular cross section; PTFE-walled; set of one from each 15, 20, 30, 40, 50, 60, 70, 80 mm item):	Z 603	Order no. 28 541 6554
Magnetic stirrer for medium-sized volumes (SmCo; circular cross section; PTFE-walled; set of five 9 x 15 mm items):	Z 604	Order no. 28 541 6562
Magnetic stirrer for large volumes (SmCo; elliptical cross section; PTFE-walled; set of one 19 x 75 mm item):	Z 605	Order no. 28 541 6579
Support frame (designed to prevent vessels from slipping off the heating zone)	Z 606	Order no. 28 541 6587

For safety and guarantee reasons only original accessory parts are to be used!

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KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY
DÉCLARATION DE CONFORMITÉ

Wir erklären in alleiniger Verantwortung, dass das Produkt	We declare under our sole responsibility that the product	Nosotros declaramos, que solo bajo nuestra responsabilidad el producto
Laborrührer SLR mit Glaskeramik-Heizfläche	**Laboratory Stirrer SLR** with glas-ceramic hot plate	**Agitador de laboratorio SLR** con superficie de calefacción vitrocerámica
auf das sich diese Erklärung bezieht, übereinstimmt mit dem normativen Dokument	to which this declaration relates is in conformity with the normative document	en lo referente a esta declaratión, está conforme con las normas

Technische Daten
Laborrührer SLR mit Glaskeramik-Heizfläche
18. Juli 2000

SCHOTT-GERÄTE GmbH
Hattenbergstraße 10
55122 Mainz
Deutschland, Germany, Allemagne

16. April, April 16th, 16 Avril 2002
AGQSF 0000-A065-01/020416

SCHOTT

KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY
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auf das sich diese Erklärung bezieht, übereinstimmt mit dem normativen Dokument	to which this declaration relates is in conformity with the normative document	auquel se réfère cette déclaration est conforme au document normatif

Technische Daten
Laborrührer SLR mit Glaskeramik-Heizfläche
18. Juli 2000

SCHOTT-GERÄTE GmbH
Hattenbergstraße 10
55122 Mainz
Deutschland, Germany, Allemagne

16. April, April 16th, 16 Avril 2002
AGQSF 0000-A065-01/020416

DEUTSCH

Wichtige Hinweise

Die Gebrauchsanleitung vor der ersten Inbetriebnahme des Laborrührers bitte sorgfältig lesen und beachten. Aus Sicherheitsgründen darf der Laborrührer mit Glaskeramik-Heizfläche nur für die in dieser Gebrauchsanleitung beschriebenen Zwecke eingesetzt werden.

Alle in dieser Gebrauchsanleitung enthaltenen Angaben sind zum Zeitpunkt der Drucklegung gültige Daten. Es können jedoch von Schott sowohl aus technischen und kaufmännischen Gründen als auch aus der Notwendigkeit heraus, gesetzliche Bestimmungen der verschiedenen Länder zu berücksichtigen, Ergänzungen am Gerät vorgenommen werden, ohne dass die beschriebenen Eigenschaften beeinflusst werden.

ENGLISH

Important notes

Before initial operation of the Schott laboratory stirrer SLR with glass-ceramics heating zone please read and observe carefully the operating instructions. For safety reasons the Laboratory hot plate with glass - ceramic material may only be used for the purposes described in these present operating instructions.

All specifications in this instruction manual are guidance values which are valid at the time of printing.However, for technical or commercial reasons or in the necessity to comply with the statuary stipulations of various countries, Schott may perform additions to the Schott laboratory stirrer SLR with glass-ceramics heating zone without changing the described properties.

FRANÇAIS

Indications importantes

Prière de lire et d'observer attentivement le mode d'emploi avant la première mise en marche de l'Agitateur de laboratoire Schott SLR à plaque chauffante en vitro céramique. Pour des raisons de sécurité, l'Agitateur de laboratoire Schott SLR à plaque chauffante en vitro céramique pourra être utilisé exclusivement pour les usages décrits dans ce présent mode d'emploi.

Toutes les indications comprises dans ce mode d'emploi sont données à titre indicatif au moment de l'impres-sion. Pour des raisons techniques et/ou commerciales ainsi qu'en raison des dispositions légales existantes dans les différents pays, Schott se réserve le droit d'effectuer des suppléments concernant l'Agitateur de laboratoire Schott SLR à plaque chauffante en vitro céramique qui n'influencent pas les caractéristiques dé-crits.

ESPAÑOL

Observaciones importantes

Primeramente, lean y observen atentamente el manual de instrucciones antes de la primera puesta en marcha del Agitador de laboratorio Schott SLR con superficie de calefacción vitrocerámica. Por razones de seguridad, el Agitador de laboratorio SLR con superficie de calefacción sólo debe ser empleada para los objetivos descritos en este manual de instrucciones.

Todos los datos contenidos en este manual de instrucciones son datos orientativos que están en vigor en el momento de la impresión. Por motivos técnicos y / o comerciales, así como por la necesidad de respetar normas legales existentes en los diferentes países, Schott puede efectuar modificaciones concernientes al Agitador de laboratorio Schott SLR con superficie de calefacción sin cambiar las características descritas.

DEUTSCH

Bescheinigung des Herstellers

Wir bestätigen, dass der Schott Laborrührer SLR mit Glaskeramik-Heizfläche gemäß DIN EN ISO 9001, Absatz 4.10.4 ”Endprüfung” geprüft wurde und dass die festgelegte Qualitätsanforderung an das Produkt erfüllt wird.

ENGLISH

Supplier’s Certificate

We certify that the Schott laboratory stirrer SLR with glass-ceramics heating zone has been tested according to EN ISO 9001, part 4.10.4 ”Final inspection and testing” and that the specified requirements for the product are met.

FRANÇAIS

Certificat du fournisseur

Nous certifions que l’Agitateur de laboratoire Schott SLR à plaque chauffante en vitro céramique a été vé-rifiée selon EN ISO 9001, partie 4.10.4 ”Contrôles et essais finals” et que les exigences spécifiées pour le produit sont respectées.

ESPAÑOL

Certificado del fabricante

Nosotros certificamos que el Agitador de laboratorio Schott SLR con superficie de calefacción vitrocerámica está verificado conforme a EN ISO 9001, parte 4.10.4 ”Inspección y control final” y que las especificaciones requeridas para el equipo son espetadas y cumplidas.

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