

VWR®LED Digital Rotary Evaporator

INSTRUCTION MANUAL

European Catalogue Number(s):

	Main Unit	Heating Bath	Glassware
LED Rotary Evaporator, set V17, bath	531-1369	531-1371	531-1375(Vertical, 1700cm²)
LED Rotary Evaporator, set V17C, bath	531-1369	531-1371	531-1376(Vertical,1700cm ² ,Coated)
LED Rotary Evaporator, set D17, bath	531-1369	531-1371	531-1378(Diagonal, 1700cm²)
LED Rotary Evaporator, set V12, bath	531-1369	531-1371	531-1380(Vertical, 1200cm²)

Version: 1

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Legal Address of Manufacturer

Europe

VWR International bv
ResearchparkHaasrode 2020
Geldenaaksebaan 464
B-3001 Leuven
+ 32 16 385011
http://be.vwr.com

Country of origin

P. R. CHINA

Table of Contents

Warning	4
Safety Information	
Package Contents	
Unpacking	
Installation	
Intended use	11
Symbols and conventions	11
Product Specifications	12
Overview	13
Description of Buttons and Switches	14
Operation	16
Troubleshooting	17
Maintenance and Cleaning	17
User replaceable accessories and spare parts	18
Technical service	19
Warranty	20

Warning

Please carefully read the Instructions, and use the product safely under the direction of the Instructions.

- Our products are under the patent protection of the origin country and other countries and regions (including obtained patents and patents being applied for).
- We elaborately prepared the manual in the attitude of being responsible for the users. But we can't guarantee that the contents of the manual are fully correct. If any occasional or subsequent loss is caused by the use of the Manual, the company will not be liable for this at all.
- The manual is a pure technical document, free of any implication or oblique hint of any third party. Moreover, we won't be liable for any user's misunderstanding upon the printer's error(s).
- The company and any of the company's employees will not bear any liability for direct/indirect loss of information or stop of business (if any) caused by the information of the manual or the product it mentions.
- The company reserves the right to change specification and price of the product.
- If any information of the manual changes, we will not notify this otherwise.
- The manual and any content of it must not be copied, abstracted or modified in any form without the company's written approval in advance.

Safety Information

- Please carefully read the Manual before operating the product, and observe the specifications on safe operation.
- Please properly keep the operating instructions for easy reference in case of need.
- Please ensure only suitably trained personnel can operate this instrument.
- Please comply with the safety rules, personal safety and accident prevention norms, especially when creating vacuum!
- According to the type of medium handled, please wear suitable protective devices when operating the instrument; otherwise, the following dangers may occur:
- Splatter of liquids
- Fly-out of parts
- Contamination of human body, hair or clothes by splattered substances
- Warning! Inhale of contact with toxic liquids, gases, spatters, vapor, dust, biological or microbiological medium might cause damage to the operator.

- Place the instrument on a stable, clean, antiskid, dry and fireproof table surface.
- Make sure there is sufficient space above the instrument and the glass assembly might exceed the height of the instrument.
- Before use, please carefully examine the instrument and accessories especially the glass assembly for any damage. Please do not use any damaged parts.
- Ensure the glass assembly is free of stress! Each of the following reasons might result in damage to the glass assembly:
- Stress due to incorrect installation
- Effect of external mechanical force
- Sharp change to the ambient temperature
- Ensure the instrument will not move due to vibration when turning on the instrument.
- Note the danger caused by the following circumstances:
- Flammable substance
- Flammable low-boiling-point medium
- Breakage of glass component
- Warning! Never distill or heat any substance whose ignition point is lower than the temperature set for the safety of the heating bath.
- The heating bath's safety temperature shall at least 25 °C lower than the ignition point of the medium being handled.
- Please don't operate or use this instrument in an explosive environment or underwater or use this instrument to handle any dangerous substance.
- This instrument is only suitable for the medium that does not react with the energy generated in the handling process in a way that might cause danger. Meanwhile, the substance being handled may not produce danger due to energy generated in any other manner such as illumination reaction.
- The instrument must be monitored all the time when operating the instrument.
- Please don't operate this instrument under overpressure.
- To ensure the effective condensation of the motor system, please do not block the vent of the motor system.
- Only use of the accessories in the list of "optional accessories" can guarantee the operational safetv.
- Please refer to the operating instructions for heating kettle.
- Please refer to the operating instructions for optional accessories.
- Please use this instrument in a closed fume hood or other suitable protective device.
- Select the distilling device according to the amount to be distilled and the distillation type.

The condenser must work normally. Please monitor the flow rate of the coolant at the outlet of the cooler.

- To prevent pressure buildup, the glass assembly shall be kept vented when operating under normal pressure, such as keeping the condenser open.
- Please note that gases, vapor or other substances can pose danger through overflow from the upper opening of the condensation tube. To minimize or avoid such danger, please take suitable measures, such as connecting the cooling tube and scrubbing bottle or other effective extraction devices downwards.

- The glass evaporating flask may not be heated on one side. The rotating evaporating flask must rotate at the heating phase.
- The glass assembly design pressure tolerance is 10mbar. The venting valve (see the part of "Testing") must be opened before heating and once again after cooling. When performing vacuum distillation, the steam must be condensed before release or released safely.

If the residue after distillation is likely to be decomposed when exposed to oxygen, please add only gas for stress release into it.

• Warning! Please be careful be avoid the formation of peroxides, as the decomposition of peroxides accumulated in the distillation process might result in explosion.

Please protect any liquid forming peroxides from ray of light, especially ultraviolet irradiation. Please be careful to examine formation of any peroxides before distillation and to remove the peroxides if any. Many organics are easy to form peroxides, such as methoxypyridine, diethyl ether, dioxane, tetrahydrofuran, unsaturated hydrocarbostyril, such as tetrahydronaphthalene, diene, isopropylbenzene, ketone and solutions of the aforesaid substances.

- Warning! The heating bath, heating medium, evaporating flask and glass assembly might become hot in the operation process and remain hot for a while after stop of the operation! Before further operation, please let each part cool down.
- Note: be careful to avoid boiling delay! When the instrument is not started up and rotated, never heat the evaporating flask! Sudden appearance of foams or gases indicates that the medium inside the evaporating flask begins decomposing. Please immediately shut down the heating bath and lift the evaporating flask above the heating bath, keep the surrounding danger area well ventilated and inform surrounding personnel.
- Note! When the evaporating flask rotates, never operate the instrument. Before the motor is started up, please lower the evaporating flask down to the heating bath, otherwise the boiling heating medium might splatter.
- When operating the instrument, if necessary, please reduce the motor speed to prevent the medium in the heating bath from splattering.
- When operating the instrument, never touch any rotating parts. Due to the instrument or fabrication problems, the instrument might be unbalanced, possibly damaging the glass assembly. When imbalance or abnormal noise occurs, please immediately turn off the instrument or reduce the rotation speed.
- In case of powering on after power failure, the instrument will not automatically be started up.
- The power supply to the instrument will be disconnected only when the instrument is turned off or the power plug is pulled off.
- The power socket must be easy to operate.
- The actual supply voltage must be consistent with the voltage specified on the instrument's nameplate.
- The power socket must be grounded.
- To prevent possible infiltration of outside liquid, moving parts must be mounted in place.
- Ensure the instrument and its accessories are protected from extrusion and collision.
- Only professional repairman may open the instrument.

Package Contents

Product	No.	Description	Quantity
	1	Main unit	1
	2	Instruction manual	1
	3	Quick Guide	1
	4	Wrench	1
Main unit	5	Fuse6.3A	1
Main unit	6	Fuse1A	1
	7	Vapor Tube	1
	8	Fastening Frame	1
	9	Loop Fastener	1
	10	Power Cable(Euro/UK/CH Plug)	3
l la atina da ath	1	Heating bath	1
Heating bath	2	Power Cable(Euro/UK/CH Plug)	3
		531-1375(Vertical condenser, 1700cm²)	
	1	531-1376(Vertical condenser,1700cm²,Coated)	1
	1	531-1378(Diagonal condenser, 1700cm²)	'
Glassware set		531-1380(Vertical condenser, 1200cm²)	
(Condenser included is	2	Evaporating flask(1000ml)	1
depending of the set	3	Receiving flask(1000ml)	1
configuration. For additional	4	Pipe of PTFE	2
condensers and glassware,	5	Screw cap	4
see page 18 for information).	6	Hose Connection	3
	7	Stopcock	1
	8	Ball Joint Clamp	1
	9	Plastic clip	1

Please refer to User replaceable accessories and spare parts (Page 18) for detail ordering information including the glass assembly.

Unpacking

If you find any damage on the package, please specify the damage on the receipt. If you find any internal damage after opening the package, please contact supplier or manufacturer.



Caution:

1. If you find any visible damage on the product, please don't connect the product to power supply.

Installation

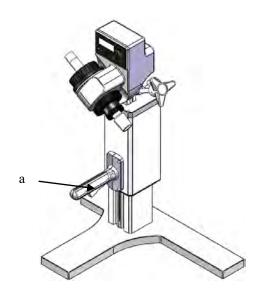


Fig. 1

• Place the main unit on a flat tabletop and squeeze the handle switch (a) to lift it to the highest position.

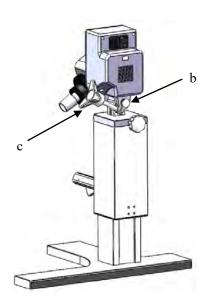


Fig. 2

• Tighten the screw (b) by hand, adjust the angle of the motor head and tighten the rotating head locking nut (c) to prevent accidental rotation.

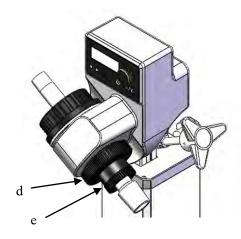


Fig. 3

- Rotate the locking device (d) (Fig. 3) by 60° counterclockwise to mount the evaporating tube in place, and rotate the locking device (d) clockwise for locking
 - Mount the seal ring (Fig. 4 and Fig. 5)



Fig. 4



Fig. 5

- Mount the condenser (f) (Fig. 6 and Fig. 7)
- Slide the locking nut (g) and pressure spring (h) onto the condenser.
- Screw down the locking nut (g) by hand

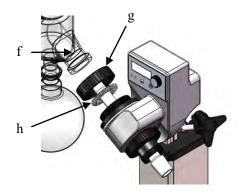


Fig. 6

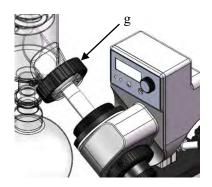


Fig. 7

Mount the fixing device for the vertical condensation glass assembly (Fig. 8)

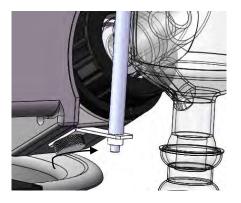


Fig. 8

• Piping connection (Fig. 9)

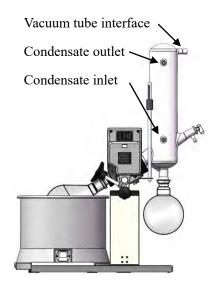


Fig. 9



Note:

To ensure good sealing performance, each glass ground joint may be coated with a layer of sealing grease.

Intended use

This instrument is designed for such application environments as schools, labs and factories, in conjunction with the optional accessories recommended by the manufacturer, which may be used for:

- Rapid softening of distilled liquid
- Distillation of solutions or suspensions
- Crystallization, synthesis or cleaning of chemicals
- Drying of powder or particulate substances
- Recovery of solvents

This instrument is intended for use in the following environment:

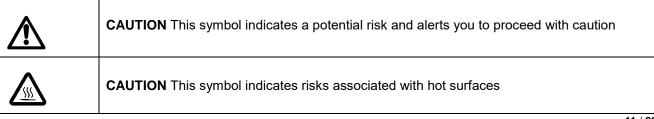
- Altitude: $\leq 2,000$ m ASL;
- Ambient temperature: 0-40°C;
- Voltage fluctuation: within the range of -10%~+10% of normal value (the product is designed for indoor socket);

The product is unusable in residential area or under the restrictions specified in Safety Information.

Symbols and conventions

The following chart is an illustrated glossary of the symbols that are used in this manual.

[The following is an example only]



Product Specifications

Item	Main unit	Heating bath
Voltage [VAC]	100-240	200-240/100-120
Frequency [Hz]	50/60	50/60
Power [W]	45	1010
Motor	DC brushless	-
Speed range [rpm]	20-200	-
Display	LED	
Temperature range [°C]	Room temperature -180	-
Temperature control accuracy [°C]	-	±1 (oil ±3)
Lifting method	Manual	-
Lifting travel [mm]	110	-
Forward and reverse rotation interval setting [s]	1-999	-
External dimension [W x D x H, mm]	440×320×450	300×300×240
Weight [kg]	7	3
Allowable ambient temperature [°C]	5-40	
Allowable RH	80%	
DIN EN60529 protection class	IP20	
USB	Yes	

Overview

Welcome to use the *Instruction Manual of Rotary Evaporator*. Users are advised to read carefully this manual before using this instrument, operate the instrument according to the instructions contained herein and be aware of all precautions

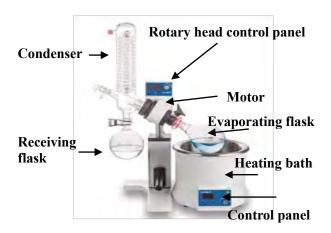


Fig. 10

Description of Buttons and Switches

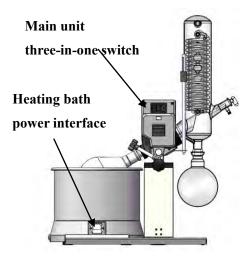


Fig. 11

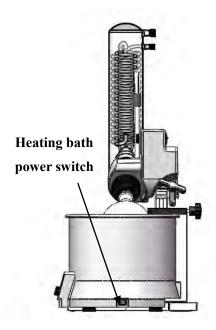


Fig. 12

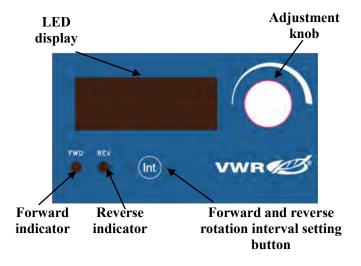


Fig. 13

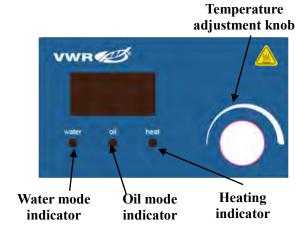


Fig. 14

Name	Description
LED display	Indicates the current working status and parameter setting.
Forward indicator	The indicator is on when the instrument is in the state of forward rotation only
Reverse indicator	The indicator is on when the instrument is rotating forwardly and reversely in turn
Forward and reverse rotation interval setting button-Int	Press this key to enter the state of setting the forward and reverse rotation interval time. Turning the adjustment knob can set the intermittent left and right rotation time within the range of 1-999 sec. When set to 0 sec, the instrument rotates forward only
Adjustment knob	Turn the knob clockwise to increase the parameter and counterclockwise to decrease the parameter Press this key to start / stop the instrument
Water mode indicator	The indictor is on when the heating bath is in the water bath mode
Oil mode indicator	The indicator is on when the heating bath is in the oil bath mode
Heating indicator	The indicator is on when the Heating bath is in the heating state
Temperature adjustment knob	Turn the knob clockwise to increase the parameter and counterclockwise to decrease the parameter Press this key to start / stop the instrument Press the key for 3s to switch heating mode between the water heating and oil heating.
Heating bath power switch	Turn on / off the main power supply to the heating bath

After the main unit is turned on, the interface is on and indicates the real-time speed:



Fig. 15

This interface indicates the real-time speed. Turn the adjustment knob to set the speed and press the adjustment knob to start the instrument. The rotation speed can be changed by turning the adjustment knob while the instrument is in operation. After setting, the interface automatically changes to real-time speed. Press the "INT" key to stop the motor, with LED indicating "txxx" (xxx is the intermittent operation interval, to be set within 1-999sec), as shown in the figure.

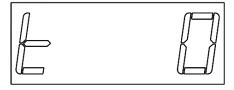


Fig. 16

Turning the adjustment knob can adjust the forward and reverse rotation interval time. The instrument only rotates forward when the forward and reverse rotation interval time is 0.

After setting, by pressing the "INT" key, the interface changes to the real-time speed display.

When the heating bath is turned on, water mode is the default mode, the water mode indicator is on and the interface is on, indicating the real-time temperature:



Fig. 17

Turn the temperature adjustment knob to set the target temperature of the heating bath. After setting, by pressing the knob, the heating indicator is on and the heating process begins. In the heating process, the target temperature can be changed by turning the knob. After setting, the interface automatically changes to real-time temperature.

Press the knob for 3s to switch the heating mode, with the corresponding indicator being on.

Water bath mode display:

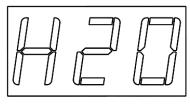


Fig. 18

Oil bath mode display:

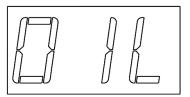


Fig. 19

Operation

- Check that whether working voltage specified on the nameplate matches with power network voltage
- Power socket should be grounded properly
- Switch on the power and turn on the power switch
- Turn the adjustment knob to set the target speed
- Press the forward and reverse rotation interval setting button to set the forward and reverse rotation interval time. If set to "0", the instrument only rotates forward.
- Press the temperature adjustment knob for several seconds to switch between the water and oil bath modes.
- Turn the temperature adjustment knob to set the target temperature (up to 90°C under the water bath mode).
- Press the temperature adjustment knob to start heating

- Squeeze the handle switch to place the evaporating flask into the heating bath
- Press the adjustment knob to start rotation

Normal work of the product during the operations above means the product can be put into normal service. If abnormal work occurs, which means the product may be damaged during transport, please contact the after-sales service center of local supplier or manufacturer.



Note

Please don't remove the evaporating flask and receiving flask while the instrument is in operation.

If the vacuum pump is not used, keep the vacuum tube interface open.

Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	Cause	Solution
No LED display	Power connection	Check the power cord connection
	Fuse	Check the fuse and replace it if necessary.
ERR 001	Driving motor overcurrent	Check the revolving shaft for any blockage and
		remove the foreign object if any.
ERR 002	Abnormal speed	Turn off the instrument and restart it.
ERR 003	Excessively high temperature	Turn off the heating bath and restart it when its
		temperature falls to the room temperature.
ERR 004	Sensor failure	Replace the temperature sensor

If the above faults can not be cleared, please contact the manufacturer/supplier.

Maintenance and Cleaning

Operate and maintain the product properly, so that it is in a good working state, which can extend the service life of the product. In routine service, keep the product dry and clean, remove the spilled liquid quickly, clean the outer surface with a non-grinding cleaner, and do not connect the power supply until all surfaces are dry. If liquid or moist solid enters the product, please disconnect the power supply quickly and leave off, and contact the manufacturer / supplier for more advice.

- Keep the product clean, and the cleaning solution is not allowed to flow into the machine.
- Power must be disconnected before maintenance and cleaning, and please use our recommended methods to clean the product. The method to clean:

Dye	Isopropanol
Building materials	Aqueous solution /isopropanol with active agent
Cosmetic	Aqueous solution /isopropanol with active agent
Food	Aqueous solution with active agent
Fuel oil	Aqueous solution with active agent

• You can consult the manufacturer about the materials that are not listed in the above table. Before using other cleaning methods, the user must confirm with the manufacturer / supplier that the method will not damage the instrument. When cleaning the product, please wear suitable protective gloves.

User replaceable accessories and spare parts

Description	Quantity	Cat. No.
Glassware set V17	1	531-1375
Glassware set V17C	1	531-1376
Glassware set D17	1	531-1378
Glassware set V12	1	531-1380
Evaporating flask 50ml	1	531-1384
Evaporating flask 100ml	1	531-1385
Evaporating flask 250ml	1	531-1386
Evaporating flask 500ml	1	531-1387
Evaporating flask 1000ml	1	531-1388
Evaporating flask 2000ml	1	531-1389
Coated evaporating flask 1000ml	1	531-1428
Receiving flask 100ml	1	531-1396
Receiving flask 250ml	1	531-1397
Receiving flask 500ml	1	531-1398
Receiving flask 1000ml	1	531-1399
Receiving flask 2000ml	1	531-1400
Coated receiving flask 1000ml	1	531-1429
Connector(NS 29/32, NS24/29)	1	531-1401
Connector(NS 29/32, NS19/26)	1	531-1402
Connector NS 29/32, NS14/23)	1	531-1403
Foam brake 250ml	1	531-1407
Vapor tube	1	531-1409
Distillation spider for simultaneous distillation	4	504 4444
from 5 evaporating flasks(Without flasks) , 50ml	1	531-1411
Rubber ring with airtight lip-seal from a PTFE	4	F24 4442
compound with a built-in stainless steel spring	1	531-1413
Full fluorine ether rubber ring with airtight lip-seal		
from a PTFE compound with a built-in stainless	1	531-1414
steel spring		
Evaporation flask clip(red)	1	531-1415
Vacuum regulator /moisture trap (including the	1	531-1417
vacuum meter and pressure regulating valve)	I	551-1417

Technical service

Web Resources

Visit the VWR website at vwr.com for:

- Complete technical service contact information
- Access to the VWR Online Catalogue, and information about accessories and related products
- · Additional product information and special offers

Contact us For information or technical assistance contact your local VWR representative or visit **vwr.com**.

Warranty

VWR warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with local laws and regulations

The product structure conforms to the following safety standard:

EN 61010-1

EN 61010-2-10

The product structure conforms to the following EMC standard:

EN 61326-1

The product material conforms to the following ROHS standard:

Restriction of the Use of Certain HazardousSubstances in Electrical and Electronic Equipment, 2011/65/EU

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

Local VWR offices in Europe and Asia Pacific

Austria

VWR International GmbH Graumanngasse 7 1150 Vienna Tel.: +43 1 97 002 0

Email: info.at@vwr.com

Belgium

VWR International by ResearchparkHaasrode 2020 Geldenaaksebaan 464 3001 Leuven Tel.:+32 016 385 011 Email: vwr.be@vwr.com

VWR International China Co., Ltd Shanghai Branch Room 256, No. 3058 Pusan Road **Pudong New District** Shanghai, 200123 Tel.: +86-21 589 868 88 Fax: +86-21 585 588 01 Email: info china@vwr.com

Czech Republic

VWR International s. r. o. Veetee Business Park Pražská 442 CZ - 281 67 Stríbrná Skalice Tel.: +420 321 570 321 Email: info.cz@vwr.com

Denmark

VWR International A/S Tobaksvejen 21 2860 Søborg Tel.: +45 43 86 87 88

Email: info.dk@vwr.com

Finland

VWR International Oy Valimotie 9 00380 Helsinki Tel.: +358 9 80 45 51 Email: info.fi@vwr.com

France

VWR International S.A.S. Le Périgares – Bâtiment B 201, rue Carnot 94126 Fontenay-sous-Bois cedex Tel.: 0 825 02 30 30* (national) Tel.: +33 (0) 1 45 14 85 00 (international)

Èmail: info.fr@vwr.com * 0,18 € TTC/min

Germany

VWR International GmbH Hilpertstrasse 20a D - 64295 Darmstadt Freecall: 0800 702 00 07 Tel.: +49 (0) 6151 3972 0 (international) Èmail: info.de@vwr.com

Hungary

VWR International Kft. Simon László u. 4. 4034 Debrecen Tel.: +36 (52) 521-130 Email: info.hu@vwr.com

India

VWR Lab Products Private Limited No.139. BDA Industrial Suburb, 6th Main, Tumkur Road, Peenya Post, Bangalore, India – 560058

Tel.: +91-80-28078400 Email: vwr india@vwr.com

Ireland / Northern Ireland

VWR International Ltd / VWR International (Northern Ireland) Ltd Orion Business Campus Northwest Business Park Ballycoolin Dublin 15 Tel.: +353 01 88 22 222

Email sales.ie@vwr.com

Italy VWR International S.r.l. Via San Giusto 85 20153 Milano (MI)

Tel.: +39 02-3320311/02-487791 Email: info.it@vwr.com

The Netherlands

VWR International B.V. Postbus 8198 1005 AD Amsterdam Tel.: +31 020 4808 400 Email: info.nl@vwr.com

Norway VWR International AS Brynsalleen 4 0667 OsloTel.: +47 22 90 00 00 Email: info.no@vwr.com

Poland

VWR International Sp. z o.o. Limbowa 5 80-175 Gdansk Tel.: +48 058 32 38 210 Email: info.pl@vwr.com

Portugal

VWR International - Material de Laboratório, Lda Centro Empresarial de Alfragide Rua da Indústria, nº 6 2610-088 Amadora Tel.: +351 21 3600 770 Email: info.pt@vwr.com

Singapore VWR Singapore Pte Ltd 18 Gul Drive Singapore 629468 Tel: +65 6505 0760 Email: sales.sg@vwr.com

Spain

VWR International Eurolab S.L. C/ Tecnología 5-17 A-7 Llinars Park 08450 - Llinars del Vallès Barcelona

Tel.: +34 902 222 897 Email: info.es@vwr.com

Sweden

VWR International AB Fagerstagatan 18a 163 94 Stockholm Tel.: +46 08 621 34 00 Email: info.se@vwr.com

Switzerland

VWR International GmbH Lerzenstrasse 16/18 8953 Dietikon Tel.: +41 044 745 13 13 Email: info.ch@vwr.com

VWR International Ltd Customer Service Centre **Hunter Boulevard** Magna Park Lutterworth Leicestershire LE17 4XN

Tel.: +44 (0) 800 22 33 44 Email: uksales@vwr.com