

Instruction Manual

VWR[®]LCD Digital Rotary Evaporator

North America Catalogue Number(s):

	Main Unit	Heating Bath	Glassware
76533-248 (VWR EVAPORATOR LCD ROTARY SET V17)	76533-232	76533-246	76533-238(Vertical, 1700cm ²)
76533-250 (VWR EVAPORATOR LCD ROTARY SET V17C)	76533-232	76533-246	76533-240(Vertical,1700cm ² , Coated)
76533-252 (VWR EVAPORATOR LCD ROTARY SET D17)	76533-232	76533-246	76533-242(Diagonal, 1700cm ²)
76533-254 (VWR EVAPORATOR LCD ROTARY SET V12)	76533-232	76533-246	76533-244(Vertical, 1200cm ²)



Legal address of Manufacturer

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Country of Origin

China

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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).*
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- *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

- 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. When working under a vacuum in particular!
- Wear your personal protective equipment in accordance with the hazard category of the medium to be processed. Otherwise there is a risk of:
 - splashing liquids,
 - body parts, hair, clothing and jewelry getting caught,
 - injury as a result of glass breakage.
- CAUTION! Inhalation of or contact with media such as poisonous liquids, gases, spray mist, vapors, dusts or biological and microbiological materials can be hazardous to user.
- Set up the device in a spacious area on an even, stable, clean, non-slip, dry and fireproof

surface.

- Ensure that there is sufficient space above the device as the glass assembly may exceed the height of the device.
- Prior to each use, always check the device, accessories and especially the glass parts for damage. Do not use damaged components.
- Ensure that the glass assembly is tension-free! Danger of cracking as a result of:
 - stress due to incorrect assembly,
 - external mechanical hazards,
 - local temperature peaks.
- Ensure that the stand does not start to move due to vibrations respectively unbalance.
- Beware of hazards due to:
 - flammable materials,
 - combustible media with a low boiling temperature,
 - glass breakage.
- CAUTION! Only process and heat up media that has a flash point higher than the adjusted safe temperature limit of the heating bath that has been set.
- The safe temperature limit of the heating bath must always be set to at least 25 °C lower than the fire point of the media used.
- 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.
- Tasks with the device must only be performed when operation is monitored.
- Operation with excess pressure is not permitted (for cooling water pressure see "Technical Data").
- Do not cover the ventilation slots of the device in order to ensure adequate cooling of the drive.
- There may be electrostatic discharges between the medium and the drive which could pose a direct danger.
- The appliance is not suitable for manual operation.
- Safe operation is only guaranteed with the accessories described in the "Accessories" chapter.
- Refer to the operating instructions for the accessories, e.g. vacuum pump.
- Only use the device under an all side-closed exhaust, or a comparable protective device.
- Adapt the quantity and the type of distill and to the size of the distillation equipment. The cooler must work properly. Monitor the coolant flow rate at the cooler outlet.
- The glass equipment must always be ventilated when working under normal pressure (e.g. open outlet at cooler) in order to prevent a pressure build-up.
- Please note that dangerous concentrations of gases, vapors or particulate matter can escape through the outlet at the cooler. Take appropriate action to avoid this risk, for example, downstream cold traps, gas wash bottles or an effective extraction system.
- Evacuated glass vessels must not be heated on one side; the evaporating flask must rotate

during the heating phase.

- The glassware is designed for operation under a vacuum of up to 10 mbar. The equipment must be evacuated prior to heating (see chapter “Commissioning”). The equipment must only be aired again after cooling. When carrying out vacuum distillation, uncondensed vapors must be condensed out or safely dissipated. If there is a risk that the distillation residue could disintegrate in the presence of oxygen, only inert gas must be admitted for stress relief.
- CAUTION! Avoid peroxide formation. Organic peroxides can accumulate in distillation and exhaust residues and explode while decomposing!
- Keep liquids that tend to form organic peroxides away from light, in particular from UV rays and check them prior to distillation and exhaust for the presence of peroxides. Any existing peroxides must be eliminated. Many organic compounds are prone to the formation of peroxides e.g. dekalin, diethyl ether, dioxane, tetrahydrofuran, as well as unsaturated hydrocarbons, such as tetralin, diene, cumene and aldehydes, ketones and solutions of these substances.
- DANGER OF BURNING! The heating bath, tempering medium, evaporator piston and glass assembly can become hot during operation and remain so for a long time afterwards! Let the components cool off before continuing work with the device.
- ATTENTION! Avoid delayed boiling! Never heat the evaporating flask in the heating bath without switching on the rotary drive! Sudden foaming or exhaust gases indicate that flask content is beginning to decompose. Switch off heating immediately. Use the lifting mechanism to lift the evaporator piston out of the heating bath. Evacuate the danger zone and warn those in the surrounding area!
- When the device is switched off or the power supply disconnected, the internal safety lift removes the evaporator piston from the heating bath.
- CAUTION! Never operate the device when the evaporator piston is rotating and the lift is raised. Always lower the evaporator piston into the heating bath first before starting the rotation drive. Otherwise hot tempering medium may be sprayed out!
- Set the speed of the drive so no tempering medium is sprayed out as a result of the evaporator piston rotating in the heating bath. If necessary, reduce the speed.
- Do not touch rotating parts during operation.
- Imbalance may result in uncontrolled resonance behavior of the device or assembly. Glass apparatus may be damaged or destroyed. In the event of unbalance or unusual noises, switch off the appliance immediately or reduce the speed.
- The appliance does not start up again automatically following a cut in the power supply.
- The device is only disconnected from the power
- supply network if the device power switch is off or the plug is pulled out.
- The socket for the mains cord must be easily accessible.
- The voltage stated on the type plate must correspond to the mains voltage.
- Socket must be earthed (protective ground contact).
- Removable parts must be refitted to the appliance to prevent the infiltration of foreign objects, liquids etc.
- Protect the appliance and accessories from bumps and impacts.
- The appliance may only be opened by experts.

Package Contents

Product	No.	Description	Quantity
Main unit	1	Main unit (76533-232)	1
	2	Instruction manual	1
	3	Quick Guide	1
	4	Wrench	1
	5	Fuse12.5A	1
	6	Fuse12.5A	1
	7	Vapor Tube	1
	8	Fastening Frame	1
	9	Loop Fastener	1
	10	Power Cable (USA Plug)	1
Heating bath	1	Heating bath (76533-246)	1
Glassware set (Condenser included is depending of the set configuration. For additional condensers and glassware, see page 17 for information).	1	76533-238(Vertical condenser, 1700cm ²) 76533-240(Vertical condenser,1700cm ² , Coated) 76533-242(Diagonal condenser, 1700cm ²) 76533-244 (Vertical condenser, 1200cm ²)	1
	2	Evaporating flask(1000ml)	1
	3	Receiving flask(1000ml)	1
	4	Pipe of PTFE	2
	5	Screw cap	4
	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 17) 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.
2. Loosen transportation lock before Power ON.

Installation

- Adjustable base (Figure 1).

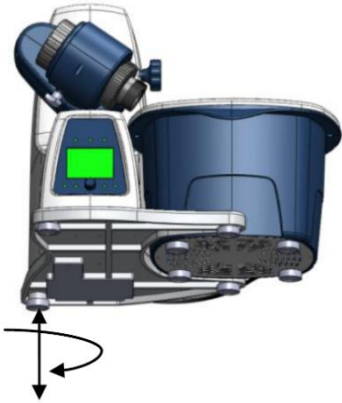


Figure 1

CAUTION! Loosen transportation lock (Figure 2).

- Hold the lift with your hand on the height position and remove the thumb screw on the back of the appliance (a).
- Once the transportation lock has been removed, the lift moves slowly to its upper end position. The distance is 150mm.
- Connect the device to the power supply using power cable (b).
- Connect the heating bath to the device (c).

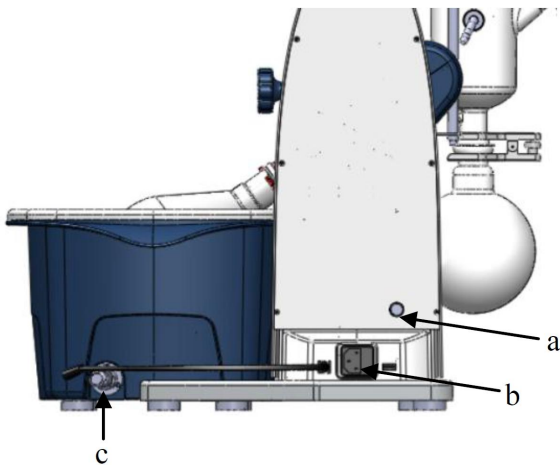


Figure 2

- Remove the clamping device for the angle setting of the rotation drive on the right side of the lift by rotating the knurled screw (d) counterclockwise.
- Set the drive at an angle of approx. 30° (Figure 3)
- Then secure the rotation drive from being accidentally turned by tightening the knurled screw in a clockwise direction.

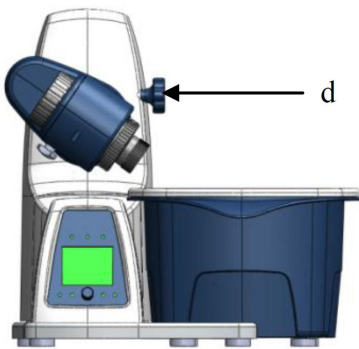


Figure 3

- Open the locking device on the drive head by turning it 60° counter clockwise (e), (Figure 4).
- Feed the steam pipe in until it stops.
- Then lock the locking device by turning it clockwise by 60°.
- The plastic screw nut (f) helps loosen evaporating flask(Figure 4)
 - Hold the tight-fitting evaporator piston(e) and turn the plastic screw nut (f) until the evaporating flask loosen.

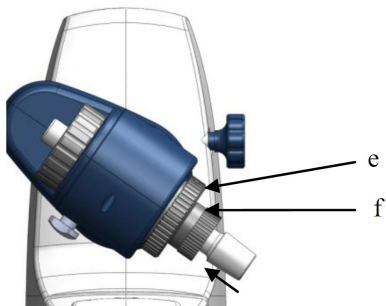


Figure 4

Note: Prior to commissioning, hand-tighten the plastic screw nut (f) left-aligned.

- Installing condenser seal (Figure 5 and Figure 6).



Figure 5

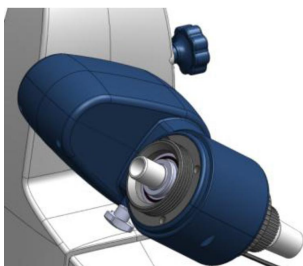


Figure 6

- Installing condenser (g) (Figure 7 and Figure 8).
 - Load the cap nut (h) and locking spring (i) to condenser in turn.
 - Tighten the cap nut hand-screwed (h). Start the device at 200 rpm for 2 min. Then tighten

the cap nut firmly.

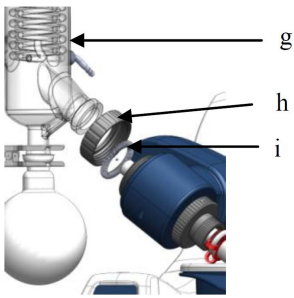


Figure 7

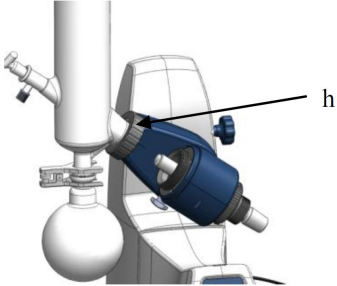


Figure 8

- Installing the vertical glassware condenser locking device (Figure 9). Use the transportation screw on the back of the appliance (a)

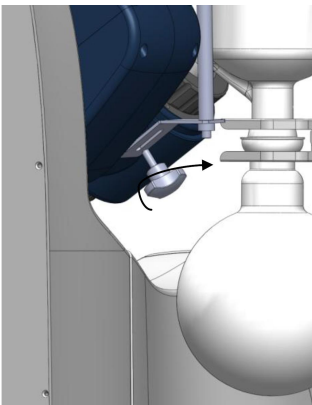


Figure 9

- Connecting tubes (Figure 10).

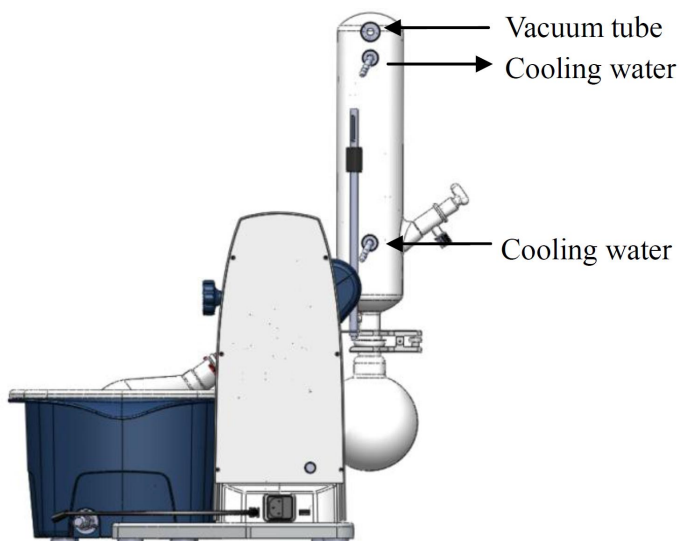


Figure 10

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]

	CAUTION This symbol indicates a potential risk and alerts you to proceed with caution
	CAUTION This symbol indicates risks associated with hot surfaces

Product Specifications

Item	Specifications
Voltage [VAC]	100-120
Frequency [Hz]	50/60
Power [W]	1400
Motor	External rotor brushless motor
Speed Range [rpm]	20-280
Speed Display	LCD
Reversible Direction of Rotation	Yes
Temperature range [°C]	RT -180
Heat Control Accuracy[°C]	± 1
Temperature Display	LCD
Heat Output[W]	1300
Lift	Motor
Stroke[mm]	150
Timer[mm]	1-999
Overall Dimensions [D x W x H, mm]	564 x 457 x 583
Weight [kg]	15
Permissible Ambient Temperature [°C]	5-40
Permissible Relative Humidity	80%
Protection class acc. to DIN 60529	IP20
USB	Yes

Overview

Welcome to choose our products. Users should read this Manual carefully, follow the instructions and procedures, and be aware of all the cautions when using this instrument.



Fig. 1

Description of Buttons and Switches

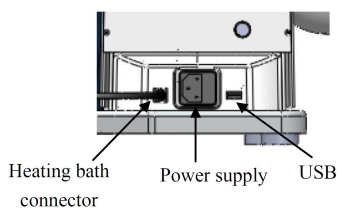


Fig. 2

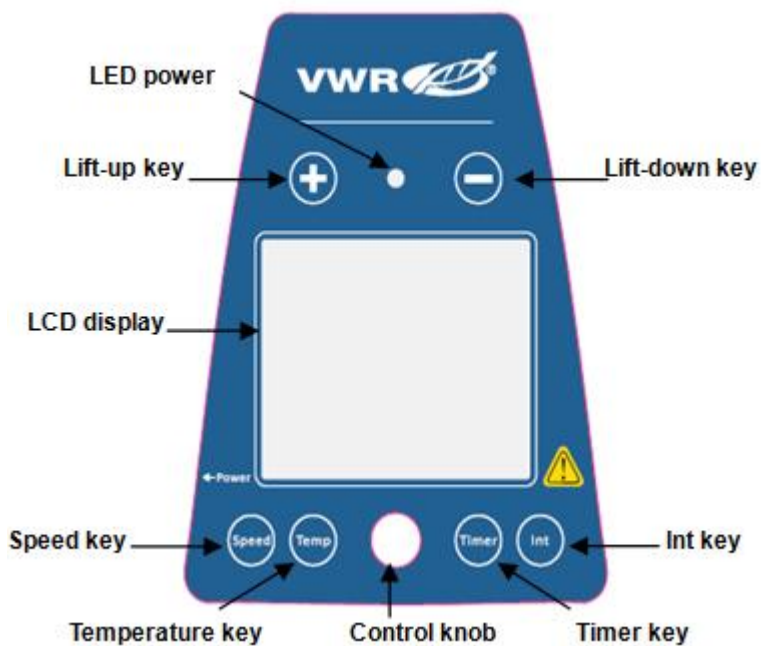


Fig. 3

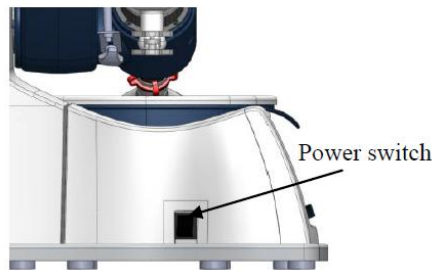


Fig. 4

Name	Description
Speed key Speed	Push the key and then rotate control knob to set the rated speed in the range from 20 to 280.
Temperature key Temp	Push the key and then rotate control knob to set the rated temperature in the range from room temperature to 180°C.
Timer key Timer	Push the key and then rotate control knob to set the rated time in the range from 1 to 999min.
Int key Int	Push the key and then rotate control knob to set the interval for right-left running in the range from 1 to 999s.
Control knob	Clockwise rotate to increase program values. Rotate anti-clockwise to decrease program values. Press the knob, switch ON/OFF the unit.
Lift-up key	Press the key, the lift goes up. Release the key the lift stops and remains in that position.
Lift-down key	Press the key, the lift goes down. Release the key the lift stops and remains in that position.

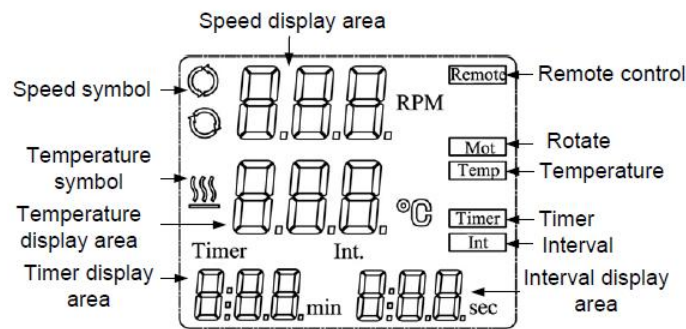


Fig. 5

Display	Description
Remote	Display in case of remote control.
Mot	Display when the rotating function is switched ON
Temp	Display when the heating function is switched ON.
Timer	Display when timer function is switched ON.
Int	Display when "Int" function is switched ON.
Speed display area	When setting speed, displaying the setting value and flashed. The setting value does not flash until real speed reaches the set point.
Speed symbol	Display when the rotating function is switched ON.

Display	Description
Temperature display area	When setting temperature, displaying the setting value. When the heating function is switched ON, displaying the real value.
Temperature	Display when the heating function is switched ON.
Timer display area	When setting timer, displaying the rated time. When the timer function is switched ON, displaying remaining time.
Interval display area	Displaying the "Int" target value.

Operation

- Make sure the required operating voltage and power supply voltage match.
- Ensure the socket must be properly grounded.
- Plug in the power cable · ensure the power is on and begin initializing.
- Press Lift-up/Lift-down key, the lift goes up/down. Release Lift-up/Lift-down key, the lift stops.
- Push the speed key and then rotate control knob to set the rated speed.
- Push the temperature key and then rotate control knob to set the rated temperature.
- Push the timer key and then rotate control knob to set the rated time.
- Deactivate the timer by setting the target value to "0".
- Press the Int key and then rotate control knob to set the rated interval value.
- Deactivate the interval by setting the target value to "0".
- Press the control knob, switch ON.

If these operations above are normal, the device is ready to operate. If not, the device may be damaged during transportation and please contact manufacturer/supplier.



Note:

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

Troubleshooting

- Instruments can't be power ON
 - Check whether the power line is unplugged
 - Check whether the fuse is broken or loose
- Fault in power on self-test
 - Switch OFF the unit, then switch ON and reset the instruments to factory default setting.
- ERR 003, lift operation timeout
 - Load overweight
- ERR 005, lift can't work
 - Check whether the transportation lock is loose
 - Load overweight

If these faults are not resolved, please contact 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	76533-238
GLASSWARE SET V17C	1	76533-240
GLASSWARE SET D17	1	76533-242
GLASSWARE SET V12	1	76533-244
VWR FLASK EVAPORATING 50ML	1	76533-264
VWR FLASK EVAPORATING 100ML	1	76533-266
VWR FLASK EVAPORATING 250ML	1	76533-268
VWR FLASK EVAPORATING 500ML	1	76533-270
VWR FLASK EVAPORATING 1000ML	1	76533-272
VWR FLASK EVAPORATING 2000ML	1	76533-274
VWR FLASK COATED EVAPORATING 1000ML	1	76533-306
VWR FLASK RECEIVING 100ML	1	76533-276
VWR FLASK RECEIVING 250ML	1	76533-278
VWR FLASK RECEIVING 500ML	1	76533-280
VWR FLASK RECEIVING 1000ML	1	76533-282
VWR FLASK RECEIVING 2000ML	1	76533-284
VWR FLASK COATED RECEIVING 1000ML	1	76533-308
VWR CONNECTOR NS24/40 NS29/42	1	76533-286
VWR CONNECTOR NS24/40 NS19/22	1	76533-288
VWR CONNECTOR NS24/40 NS14/20	1	76533-290
VWR BRAKE FOAM 250ML	1	76533-292
VWR VAPOR TUBE	1	76533-294
VWR DISTILLATION SPIDER 50ML W/OUT FLASK	1	76533-296
VWR RUBBER RING PTFE	1	76533-298
VWR RING RUBBER FULL FLUORINE ETHER	1	76533-300
VWR CLIP EVAPORATION FLASK RED	1	76533-302
VWR VACUUM REGULATOR	1	76533-304

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 www.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

CONDITIONS OR APPLICATIONS. Compliance with Local Laws and Regulations The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorizations necessary to run or use the Device in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorization, unless any refusal is due to a defect of the Device.

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

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