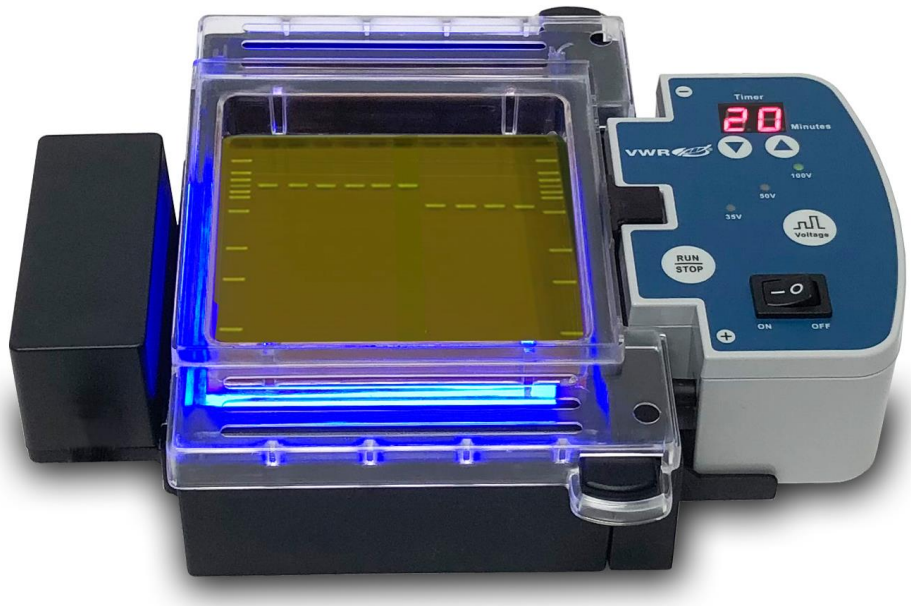
Instruction manual

VWR® Real-Time Electrophoresis System

North American Catalog Number: 76359-756

European Catalogue Number: 700-1473

European version includes plugs for Europe and UK



This product is for research use only

Version 1
Issued: 08, 2021

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United States

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Country of origin: China

Contents

1. Introduction

Thank you for purchasing the VWR Real-Time Electrophoresis System.

This operating manual includes a product introduction, operating and safety information. Before using the Real-Time Electrophoresis System, please read this manual in its entirety and be sure to fully understand the features and methods for proper operation. Keep this manual for future reference.

Please check the list of included components in section 1.1, and if there are any parts missing, damaged, or incorrect, please contact your distributor or VWR's Customer Service Department. See contact information pg 17.

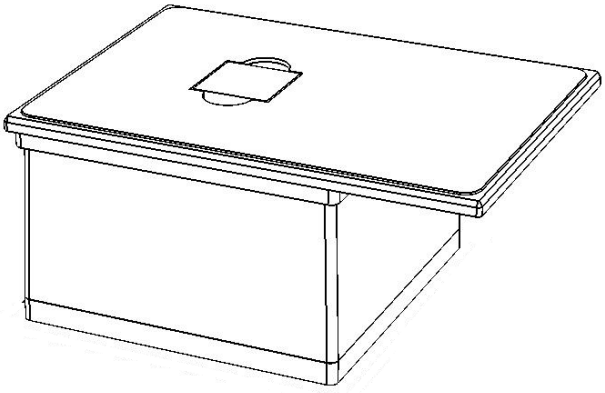
The Real-Time Electrophoresis System is a complete horizontal electrophoresis system that includes a power supply, gel running tank, safety lid with viewing filter, blue LED transilluminator, and a gel casting set. The system is designed for separating nucleic acids in agarose gels and allows viewing the stained DNA bands during electrophoresis without removing the gel from the tank. All components and accessories are included for casting and running agarose gels. The blue LED transilluminator and viewing filter are compatible with green fluorescent stains such as VWR's EZ Vision Products, SYBR® Green, and other similar stains that fluoresce under 465nm blue light.

Before use, please read this operating manual in its entirety.

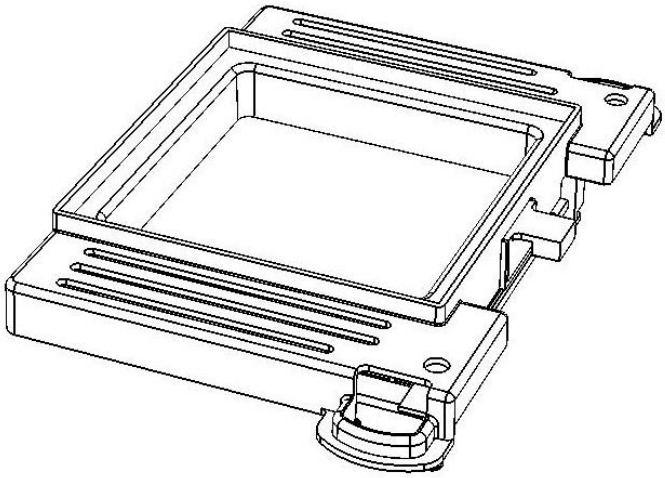
1.1 Included Components

Power Supply	1pc
Gel Running Tank Assembly	1 pc
Blue Light LED Illuminator	1 pc
12VDC Power Supply (for LED Illuminator)	1 pc
Power cord for 115V/230V outlet	1 pc
Gel Casting Stand	1 pc
Gel Casting Divider	1 pc
Long Gel Tray (10.5 x 10cm)	1 pcs
Short Gel Tray (10.5 x 6cm)	2 pcs
Double Sided Comb (12/22 teeth)	2 pcs
AC transformer (only included with 230V model)	1 pc
User Manual	1 pc

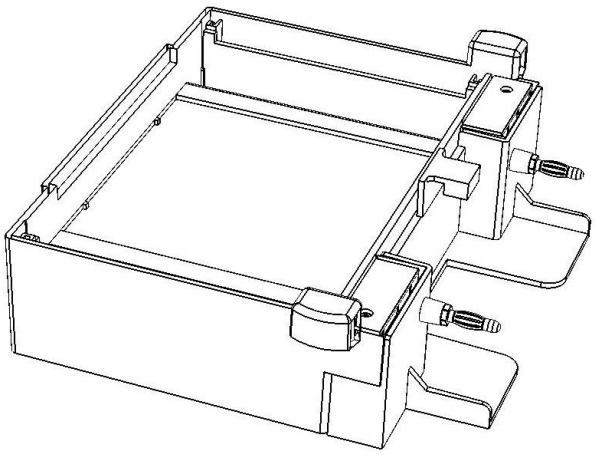
1.2 Diagrams of Included Components



Smart phone imaging enclosure with photo filter



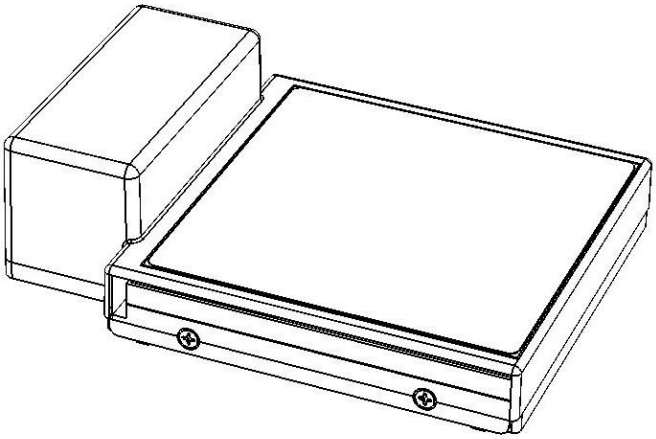
Safety Lid with Integral Viewing Filter



Gel Running Tank

Power Supply

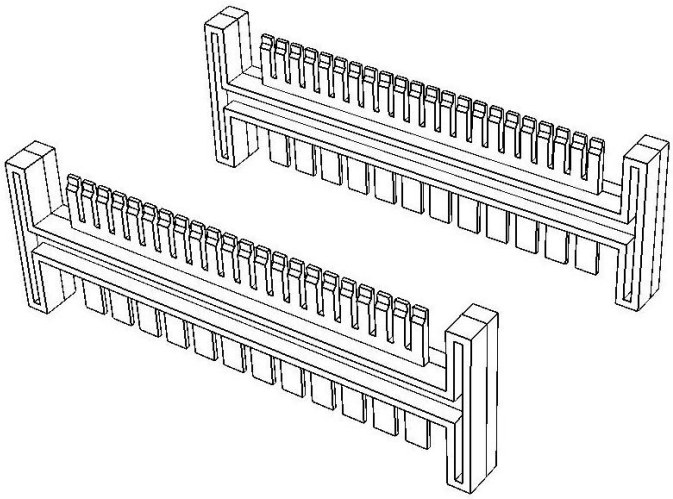
Transformer and Plugs



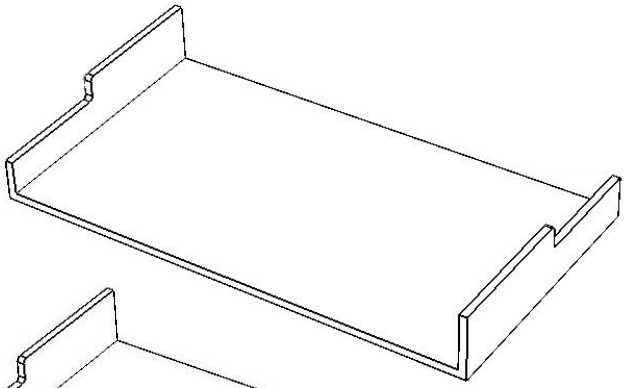
Blue LED Transilluminator

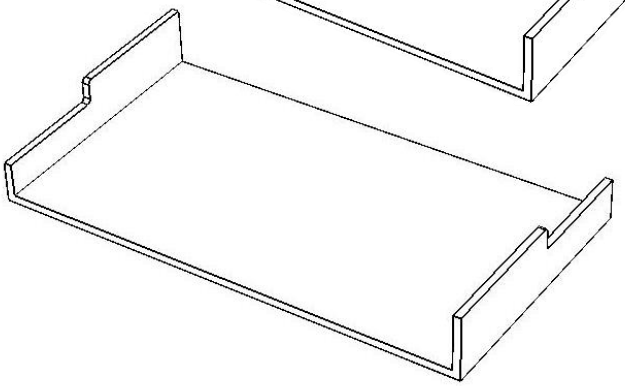
12V Power Adapter

Diagram of Included Components (Gel Casting Set)

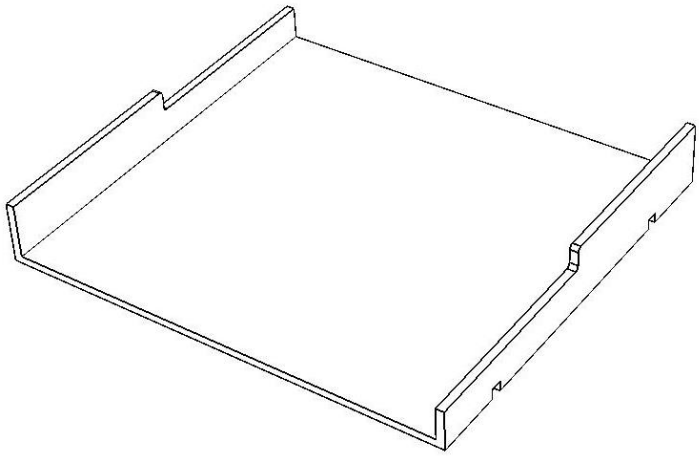


Double Sided Comb (12/22 teeth)

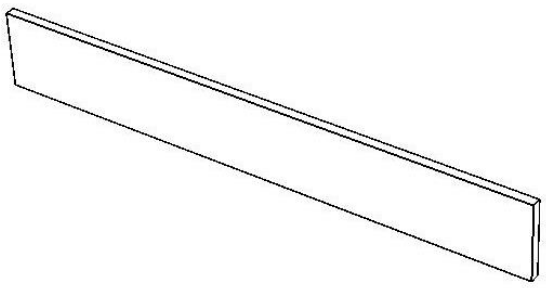




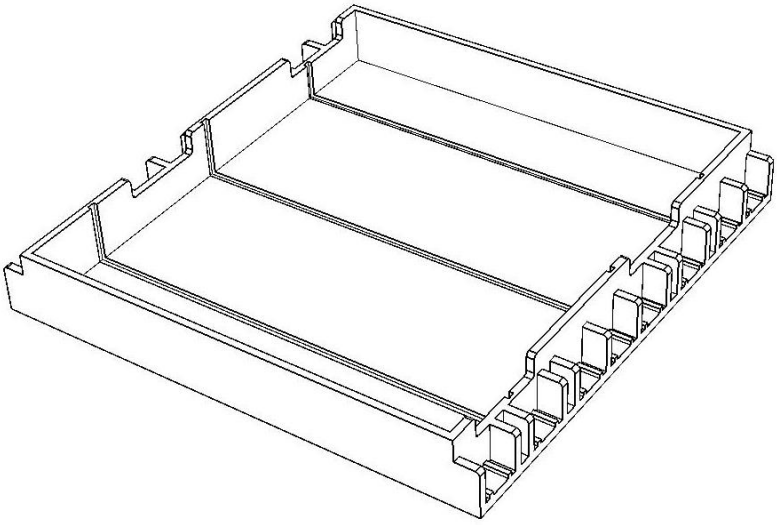
Short Gel Trays (10.5 x 6cm)



Long Gel Tray (10.5 x 10cm)



Gel Casting Divider



Gel Casting Stand

1.3 Product Specifications

Power Supply	
Input voltage	230V 50/60Hz (Transformer included with 230V input model)
Output voltage	35V, 50V, 100V
Max power	40 Watt
Timer	0 ～ 99min
Fuse	250V, 2A
Migration Tank	
Dimension	120mm×110mm×45mm（inner dimension）
Buffer volume	200ml-225ml
Electrodes	Platinum wire
Blue LED Transilluminator	
Viewing area dimension	10.5cm x 10.5cm
Wavelength	465nm
Input voltage	12VDC (Power Adapter included for 100VAC to 240VAC input)
Gel Casting Set	
Gel casting stand	Accommodates 10.5cm x 11cm and 10.5cm×6cm trays (Divider included)
Comb specifications	Teeth width x Teeth thickness x Teeth no.） 3mm×1mm×22 5.6mm×1mm×12
Gel trays	10.5cm x 11cm and 10.5cm×6cm

2. Installation

Place the electrophoresis system on a smooth, level surface.
Connect one end of the power cord to the instrument and the other end to an appropriate outlet, the input voltage should be between 100~120VAC. When the input voltage is 220VAC, use the transformer inline.

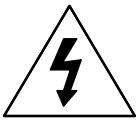
2.1. Intended Use

This electrophoresis system is designed for use in a research laboratory for the application of separating nucleic acid molecules in agarose gels.

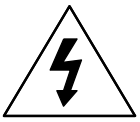
3. Warnings

Symbols and Conventions

	CAUTION This symbol indicates a potential risk and alerts you to proceed with caution
	CAUTION This symbol indicates the presence of high voltage and warns the user to proceed with caution



To avoid electrical shock, do not use this product with wet hands.



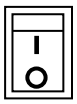
When operating, do not move or bump the system, do not put your finger or any other objects into the migration tank.

Do not detach the power supply module from the migration tank when the power is on. Attempting to do so can cause damage.

Please carefully read this instruction manual before operation to avoid any personal injury. Only trained laboratory personnel should operate the system.

Do not attempt to open or repair Real-Time Electrophoresis System . Contact VWR for service.

Always use the Real-Time Electrophoresis System in an environment with low humidity and low dust, also keep away from water, direct sunli ght / strong light, corrosive gas, high magnetic fields, heaters, fires an d other heat sources.

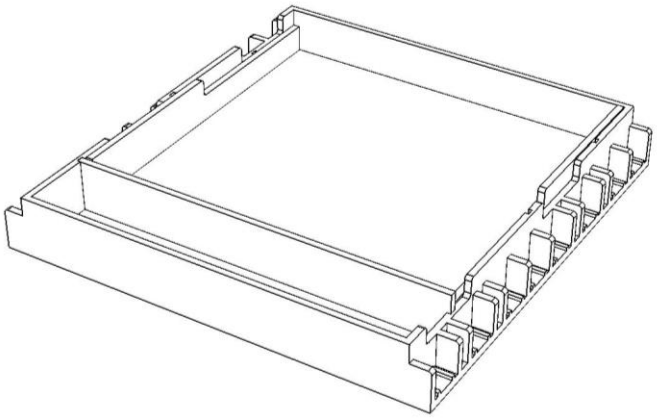


The power switch for the power supply is located on the top of the control panel, press “I” to power on, “O” to turn off.

Always turn off the power after operation. When not in use, detach the power supply and store in an area that is free from moisture and dust.

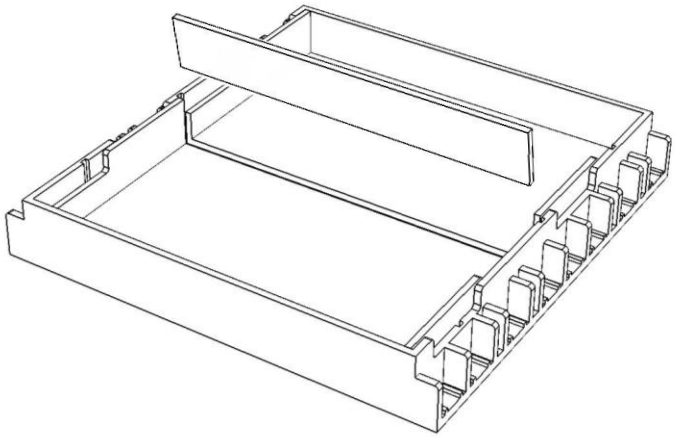
4. Gel Preparation

Place the gel casting stand on a level surface and place the divider and desired gel trays into the proper positions in the stand.

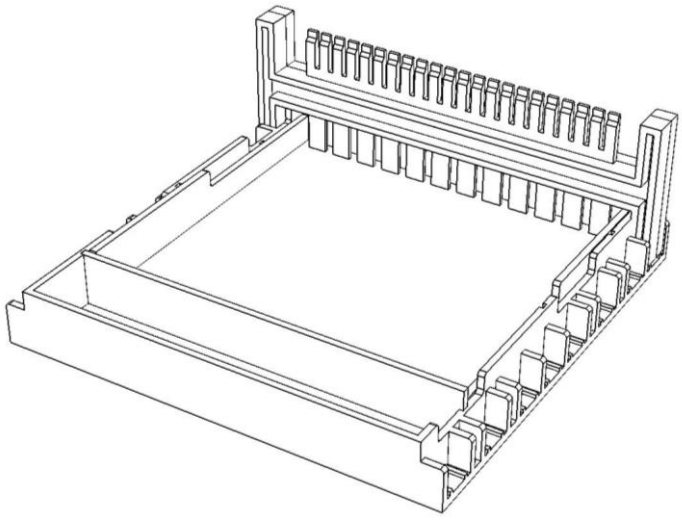


Either one long gel tray, or two short trays can be inserted into the casting stand (see diagrams on right)

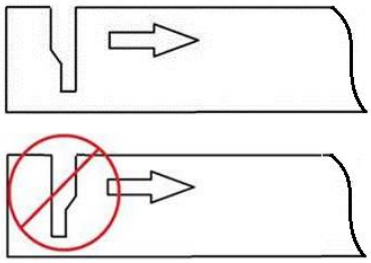
Note: If the gel tray is not level, the thickness of the gel will not be uniform and DNA migration may be uneven.



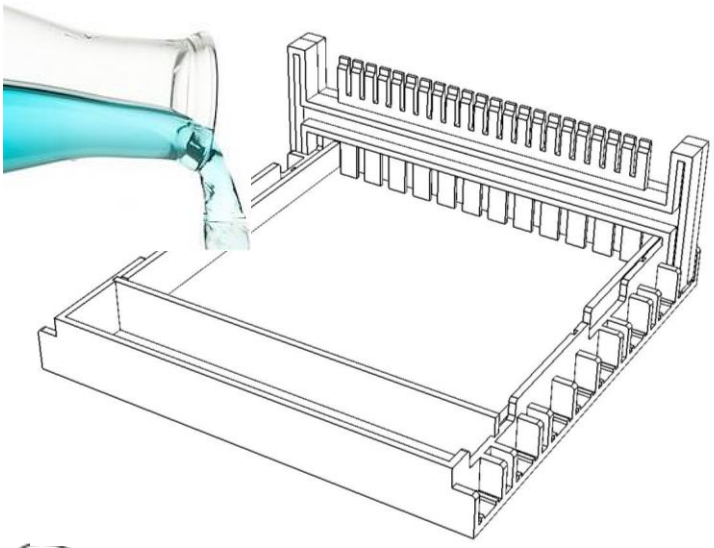
Insert the comb(s) into the gel casting stand as per photo on the right. Multiple combs can be inserted depending on the number of samples and desired run distance.



Note: when using the fine-toothed comb, the flat side of the well comb should be facing the direction of DNA travel. See figure below.

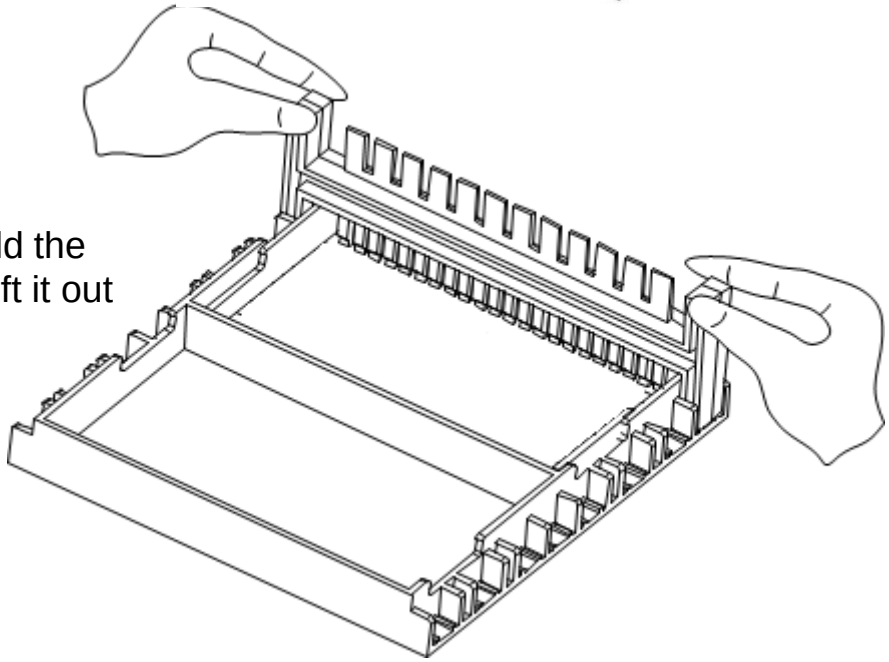


Pour the agaose gel/DNA stain solution into the gel tray to make a gel approximately 4mm thick. Each 6x10.5cm tray requires about 25ml of agarose.

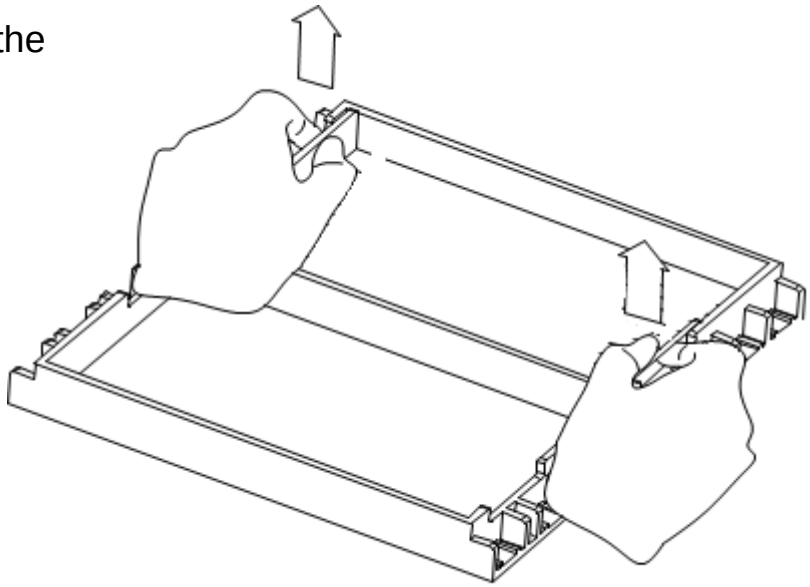


Note: After mixing and heating agarose solution, let it cool to approximately 60° C before pouring into the gel trays

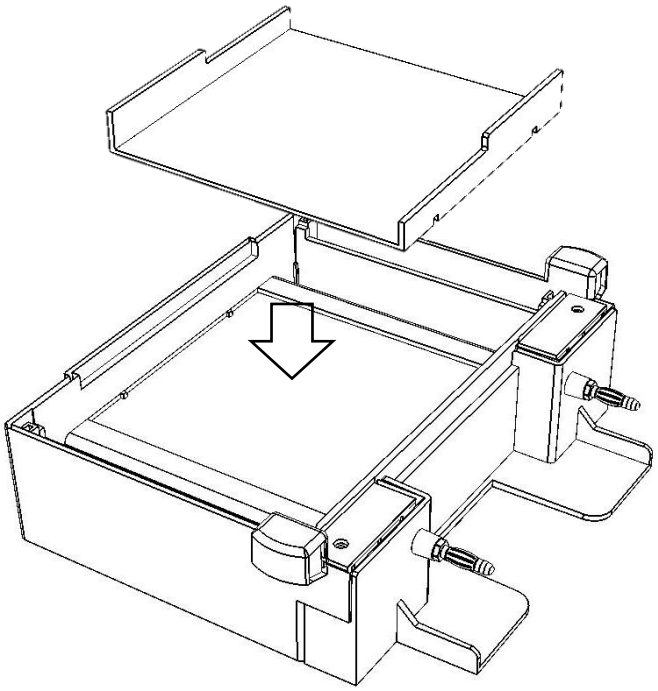
After the gel has solidified (approximately 20 minutes) hold the two sides of comb and gently lift it out of the gel. The wells should be straight and undamaged.



Carefully remove the gel tray with the gel from the stand and place it into the migration tank in the correct orientation. (DNA samples will migrate from the – to + electrode).

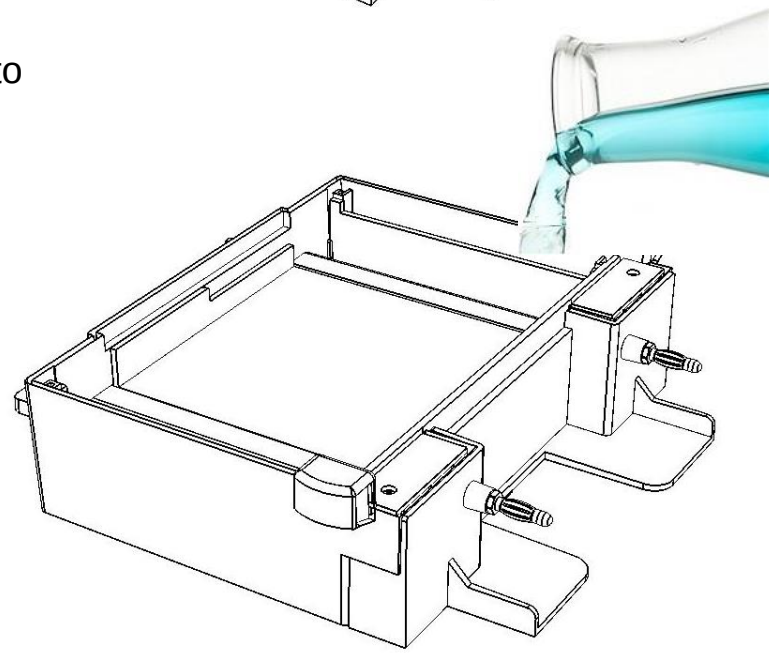


5. Gel Tank Set Up



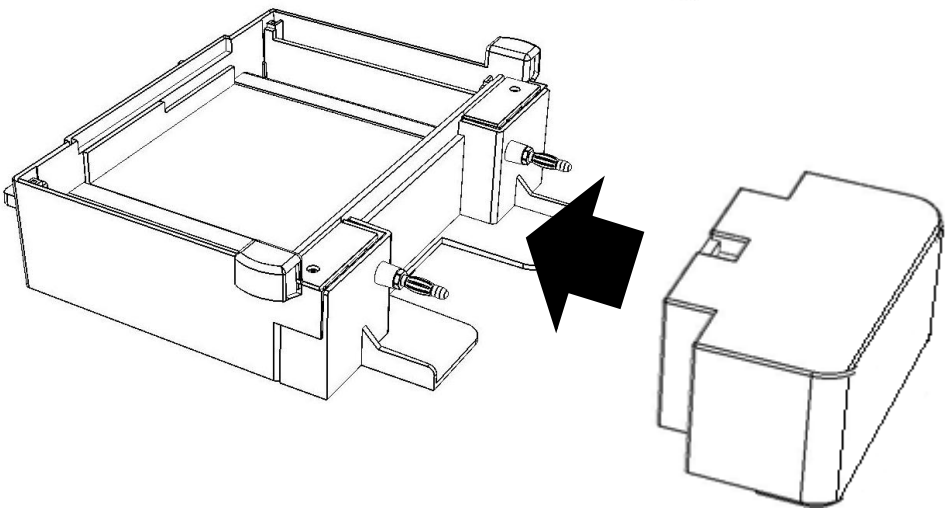
Note: Make sure that the Real-Time Electrophoresis System is installed on a stable and level surface. This will ensure even sample migration.

Place a prepared gel, together with the gel tray onto the gel bed inside the gel tank.



Carefully pour an appropriate buffer solution to a level about 2 mm above the surface of the gel. Typically, 200ml of buffer is required.

It is recommended to use TAE or TBE at a concentration of 0.5X.

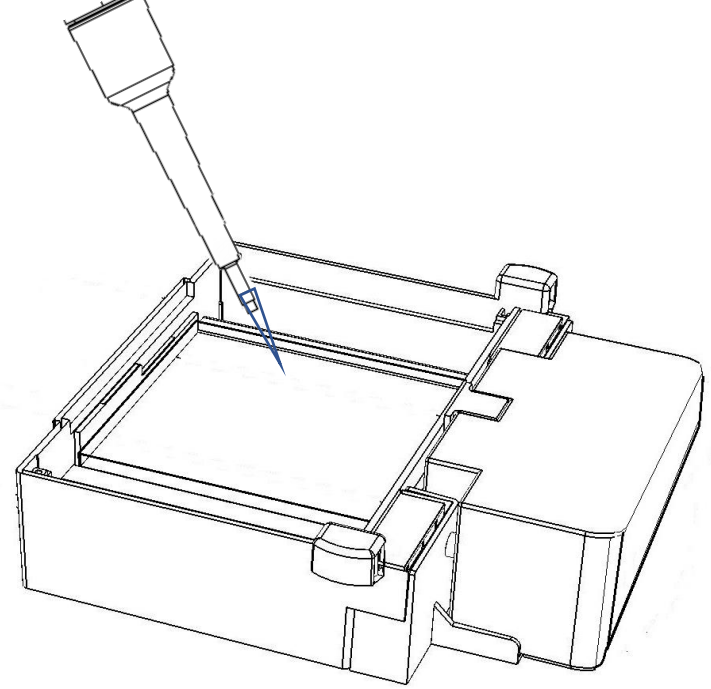


Connect the power supply to the migration tank.

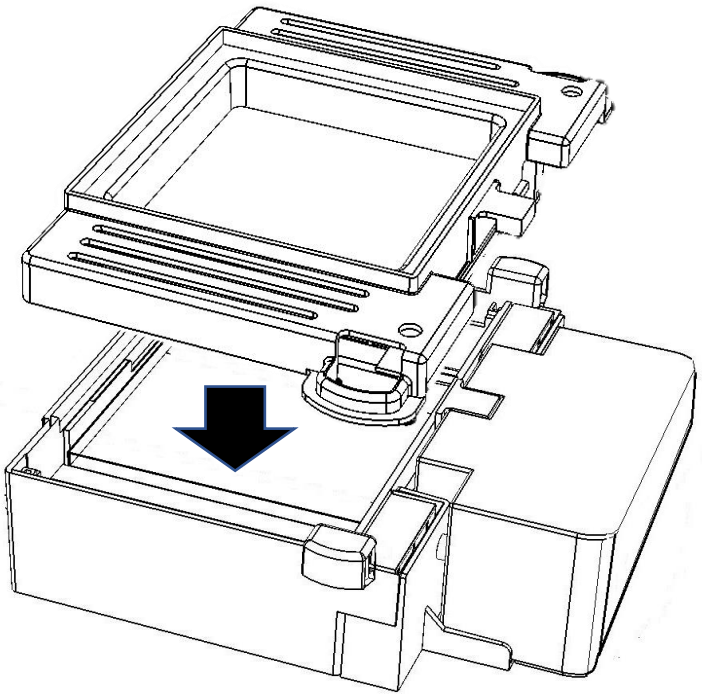
Add DNA samples to the gel

Use an appropriate pipette to carefully dispense samples into the wells of the gel.

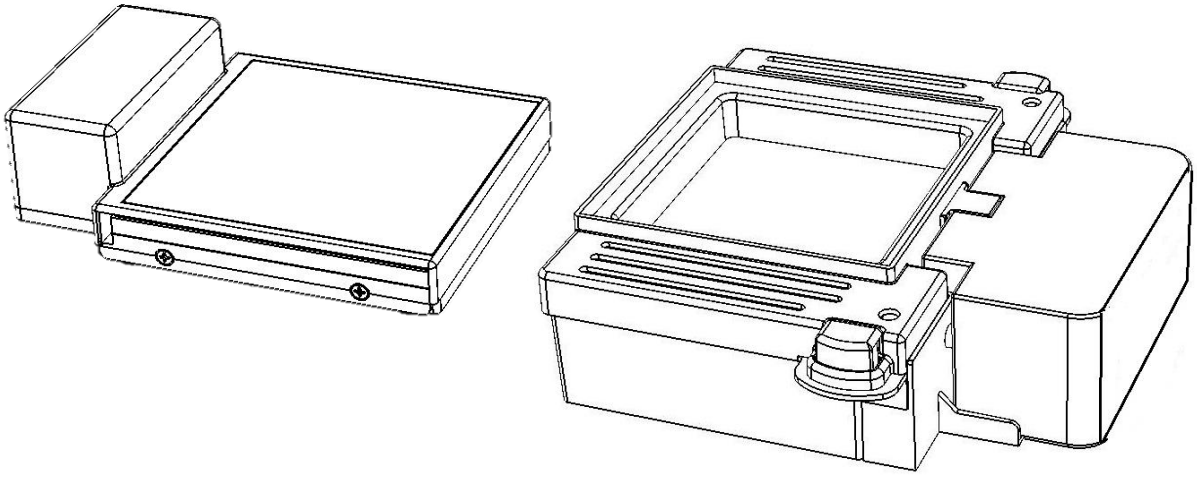
Note: Loading buffer should be mixed with the DNA samples so they will sink to the bottom of the wells.



Carefully lower the safety cover onto the gel tank, making sure to align the magnet with the sensor recess. The orange viewing filter should fully contact the surface of the buffer so there are no bubbles visible. If the buffer level is too low, remove the cover, and add more buffer to the tank.

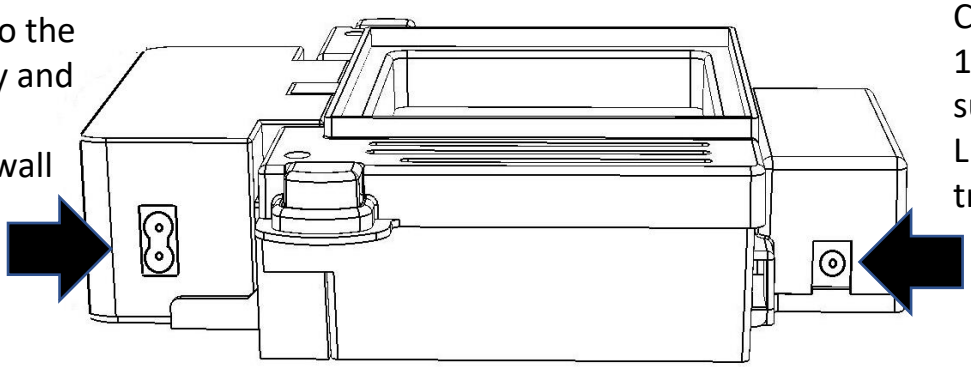


Slide the blue LED illuminator under the gel tank..



6. Power Supply Operation / Electrophoresis

Connect the power cord to the power supply and plug into the appropriate wall outlet.



Connect the 12V power supply to the LED transilluminator

Press▲▼ to set the run time from 1 to 99 min. For a continuous run, set the timer to “00”.

Press the Voltage Selector button to toggle through and select the appropriate output voltage. The LED for the selected voltage will light.

Press the “Start/Stop” button once to start a run. The set output voltage LED will blink to indicate a run is in process. At the end of a timed run, the alarm will beep 3 times, and the display will show “Ed” to indicate END. Press any key to clear “Ed” and set up another run.

To stop a run in process, press and hold “Start/Stop” for 3 second. The voltage LED will stop blinking to indicate the run has stopped.

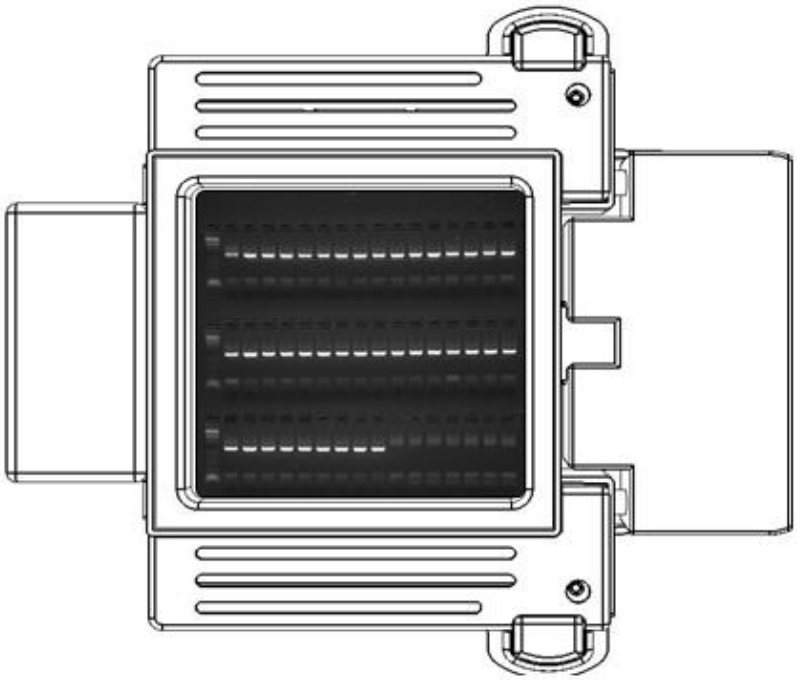
If removing the gel the end of an electrophoresis run, turn off the power remove the lid and remove the gel tray.

7. Viewing Electrophoresis Progress

To visualize the DNA separation in the gel during electrophoresis, turn on the blue LED illuminator using the ON/OFF switch.

It may be necessary to dim or turn off ambient lights for best viewing results.

The LED illuminator has a built-in timer, so the light will automatically switch off after 5 minutes.

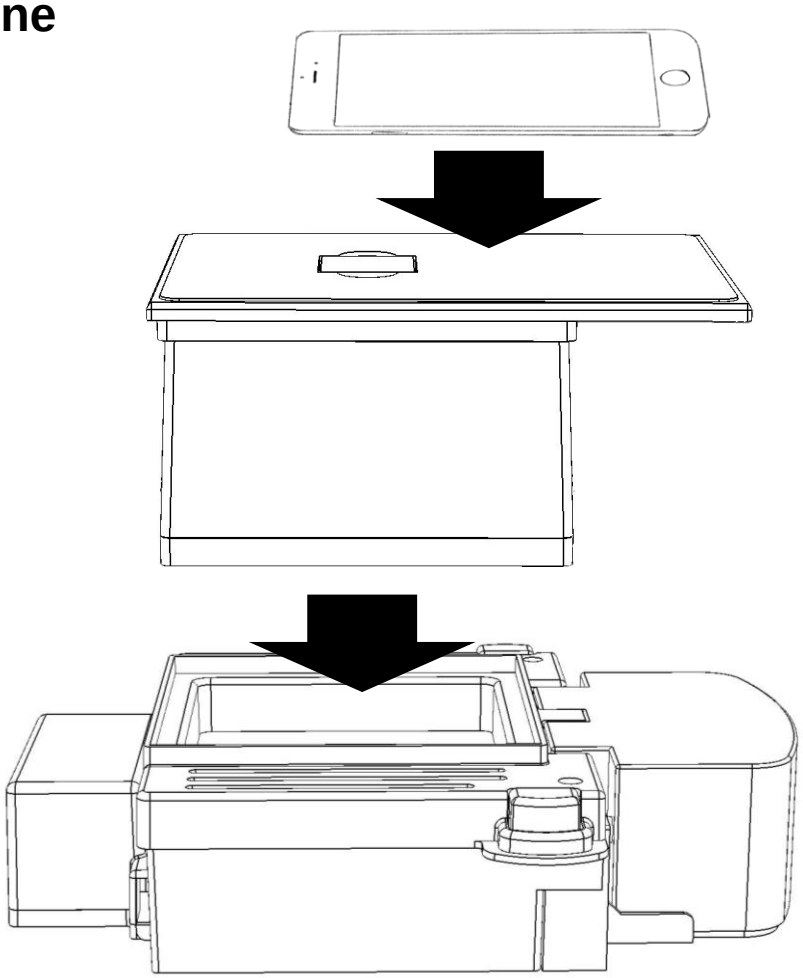


8. Imaging using a smart phone

To take a picture of the gel using a smart phone camera, fit the imaging enclosure onto the lid of the gel running tank.

Insert the included orange photo filter into the top platform of the enclosure. Turn on the smart phone's camera application and align the camera lens with the photo filter.

Zoom and focus as necessary to optimize the image and take the picture.



9. Maintenance

Always disconnect the power cords for cleaning. When cleaning the surfaces of the instrument and LED transilluminator, use a damp cloth with mild detergent if needed. Do not use any corrosive solutions that could damage plastic.

When cleaning the gel tank, first separate the Power Supply. Use water or neutral cleaner.
Use caution when cleaning the areas near the platinum electrodes at the bottom edges of the gel tank.

Do not submerge the power supply or LED transilluminator in water.

Clean gel casting stands, gel tray and combs with water or a neutral cleaner.

10. Troubleshooting

Problem	Causes	Resolutions
No display	Power not connected. Switch failure. Fuse blown. Controller failure.	Check power supply, Unplug and re-attach power cord. Check fuse. Contact VWR for repair.
No Migration	Power switch off, no power, gel inserted backwards	Turn on power switch. Check that gel is properly oriented (DNA will migrate towards + electrode) Contact VWR for repair.
Abnormal Electrophoresis Distance	Incorrect input voltage	Check main power supply.
Abnormal heating of buffer or gels	Buffer concentration too high, voltage too high	Use 0.5X TAE/TBE buffer or reduce running voltage.
Key function failure	Control panel switch failure	Contact VWR for repair.

Troubleshooting (continued)

Problem	Causes	Resolutions
Error E1	Lid opened during run or magnet switch problem.	Seat lid properly. Check magnet on lid..
Error E3	Lid not closed upon start or magnetic switch problem.	Seat lid properly. Check magnet on lid.
Error E5	Electric current not flowing normally. Buffer missing, or concentration too high.	Check proper buffer level in the tank. Check buffer concentration (1X or 0.5X TAE or TBE is standard). Check electrodes and connections.
Error E7	Buffer concentration too high, current too high, power over 50W, or internal electronic problem	Check buffer concentration. Replace electronic board.

11. 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

12. Technical Service and Warranty

Web Resources

Visit the VWR website at **www.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. 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.

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