EVS3x00

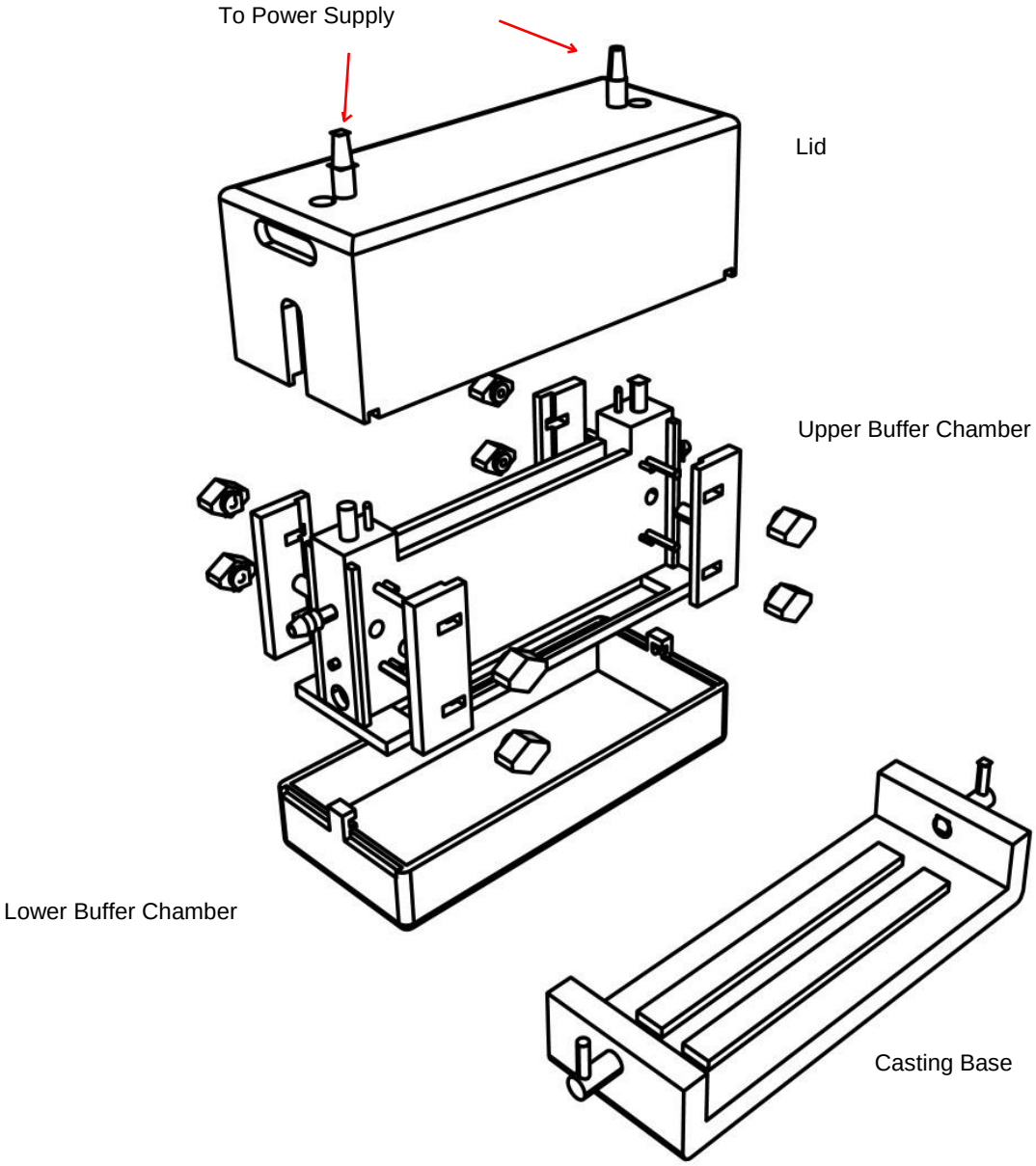
Vertical Electrophoresis Systems

MANUAL

EVS3100
EVS3200
EVS3300

Rev. 26/2019

System components



This manual applies to the following Consort Vertical Electrophoresis Systems:

EVS3100 - EVS3200 - EVS3300


WARNING

THESE UNITS ARE CAPABLE OF DELIVERING POTENTIALLY LETHAL VOLTAGE WHEN CONNECTED TO A POWER SUPPLY AND ARE TO BE OPERATED ONLY BY QUALIFIED TECHNICALLY TRAINED PERSONNEL.

PLEASE READ THE **ENTIRE** OPERATOR'S MANUAL THOROUGHLY BEFORE OPERATING THIS UNIT.

Consort is not responsible for any injury or damage caused by operating this electrophoresis system in a manner not specified in this manual.

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List of Contents

Warranty

Consort guarantees that the horizontal electrophoresis system you have received has been thoroughly tested and meets its published specification.

Immediately upon arrival, please check carefully to see that the unit has been received complete and has not been damaged in shipping. Please refer to the System Lists in this manual to confirm that the unit has been received with all the accessories. To report any kind of damage, please notify Consort or your Consort distributor. Please retain all packing materials until the delivery has been completely checked, this will speed the return of goods if required and reduce environmental impact.

This guarantee is valid for 36 months only if the product and functions have been used according to the user manual. No Liability is accepted for loss or damage arising from incorrect use. **Consort's** liability is limited to the repair or replacement of the unit or refund of the purchase price, at **Consort's** option. **Consort** is not liable for any consequential damages.

Consort reserves the right to alter the specification of the Horizontal Electrophoresis Systems without prior notice. This will enable us to implement developments as soon as they arise.

Safety precautions

Please, read the User Manual carefully before using the Vertical Gel Electrophoresis Unit. This manual contains important operating and safety information. Our electrophoresis units are designed to perform flawlessly for years in the most demanding laboratories. Please take the time to read the manual to ensure that you understand the safety and operating instructions. Alterations could cause serious injury to the user or the system.

Power to the unit is supplied by an external power supply. The power supply must meet safety standards for IEC 1010-1 regulations and must be ground isolated and incorporate a no load detecting circuit.

- Power is supplied to the gel through the lid of the system. Users should not attempt to operate this unit without the safety lid in place. **Always** isolate the units from their power supply before removing the safety lid.
- **Always** disconnect the unit from the power supply to avoid the risk of personal shock. Isolate the power supply from the main power source **FIRST** then disconnected the power cords.
- Running Conditions should not exceed the maximum operating voltage or current.
- Do not fill the Lower Buffer Chamber with running buffer above the maximum fill line.
- **Always** disconnect the unit from the power supply when you want to move the unit or add running buffer.
- Use this apparatus only for its intended purpose as described in this manual. Do not use this product if the power cords are damaged or if any of its surfaces are cracked.

Introduction

Thank you for your purchase of a **Consort** Vertical Gel Electrophoresis System!

Our vertical systems allow for fine resolution of protein or nucleic acid fragments on one or two acrylamide gels (PAGE). PAGE separation offers the superior resolution necessary to separate native or denatured proteins and nucleic acids in applications such as SSCP or dinucleotide repeat analysis using western blotting and also for automated protein sequencing analysis.

All models in the **Consort Vertical Gel Electrophoresis Series** incorporate inspired design features and exceptional manufacturing methods that ensure dependable performance over years of continuous use. A comprehensive offering of combs and accessories, plus the compatibility of the EVS3100 with most commercially available pre-cast mini gels, ensures maximum system utility to exceed the separation demands of most research laboratories.

Outstanding Features Ensure Trouble-Free Use

- ✓ Robust Acrylic construction stands up to daily usage without breakage, warping or leakage
- ✓ Rugged, spring-loaded clamp mechanism, alignment pins & hollow gaskets guarantee reliable leak-proof gel installation
- ✓ Precision Glass Plates Provide Exceptional Flatness and Finished Edges to Ensure Uniform Separation
- ✓ Casting Base Enables Casting Directly on the Upper Buffer Chamber Obviating Need to Move Gels once Polymerized

Intelligent Design Results in Exceptional Resolution

- ✓ Electrode Configuration Assures Uniform Field, Straight Lanes and Rapid Runs – Saving Time and Improving Data Generation Rate
- ✓ Proximal Upper Buffer Chamber Exploits Specific Heat of Aqueous Buffer to Provide Uniform Temperature and No Smiling
- ✓ Efficient Water-Cooling System, Available on All Systems, Prevent Band Distortion
- ✓ Optional Notched Alumina Plates available for the mini 10 cm x 10 cm unit enhance heat dissipation.

Wide Variety of Options Maximize Product Versatility

- ✓ Devices available for different gel sizes, including the wide mini EVS3200 that accommodate 72 samples, supporting most PAGE applications.
- ✓ Optional additional upper buffer chambers allow for simultaneous use of the systems, improving data output rate
- ✓ Non-cooled 10cm x 10cm & 20cm x 10cm upper buffer chambers available
- ✓ Wide selection of combs, plus glass and blocking plates available for all units
- ✓ Units are compatible with pre-cast acrylamide gels from most manufacturers and vertical Agarose (VAGE) separation.

Specifications

Table A:

Unit Model Number	EVS3100	EVS3200	EVS3300
Gel Size	10cmW x 10cmL or 10cmW x 8cmL	20cmW x 10cmL	20cmW x 20cmL
Upper Buffer Chamber Capacity	170ml (non cooled slightly more)	400ml (non cooled slightly more)	600ml
Lower Buffer Chamber Capacity	~ 240ml	~ 450ml	~ 800ml
Total Running Buffer	~ 450ml	~ 750 ml	~ 1250ml
Total Buffer Capacity	~ 450ml	~ 1100-1300 ml	~ 1250ml
Current (mA), Constant	15-35mA/gel	30-45mA/gel	15-75mA/gel
Maximum Voltage (volts)	600V	600V	600V
Time Requirements	30-90 minutes	30-90 minutes	60-180 minutes
Sample Capacity	24	72	50

Environmental conditions for use

- This unit is intended for indoor use only
- This unit can be operated safely at an altitude of 2,000 m
- The normal operating temperature range is between 4ºC and 65ºC
- Maximum relative humidity 80% for temperatures up to 31ºC decreasing linearly to 50% relative humidity at 40ºC

General Care & Cleaning

- Before using, clean and dry unit with **DISTILLED WATER ONLY**; dry parts with clean tissues or air dry. Use care when cleaning or drying the unit near the platinum wire. The connectors should be clean and dry before usage or storage.

- Do **not** use abrasive creams or scourers.

- Do **not** use cleaning brushes in the electrode area

- A thorough rinse with distilled water is all that is generally required to clean the unit after use. A mild detergent may also be used. Acrylic can also be exposed to a mild bleach solution (10:1). In addition, RNAse removal products are also safe for acrylic.
  1.

WARNING!

Acrylic is not resistant to aromatic or halogenated hydrocarbons, ketones or esters. Organic solvents cause acrylic to "craze" or crack. Do not use ethanol or other organic solvents to clean your unit. Do not autoclave, bake or microwave your unit.

Please refer to the Chemical Compatibility Chart at the end of the manual for our most complete assessment of Laboratory Chemicals and their effect on acrylic.

General instructions

GEL PLATE PREPARATION

Clean the glass plates, spacers and combs in mild laboratory detergent.

DO NOT use abrasive creams or scourers. If a particularly clean finish is required (e.g. for silver-stained gels) glass plates can be soaked in chromic acid overnight, rinsed with water, then wiped successively with ethanol, acetone then ethanol again.

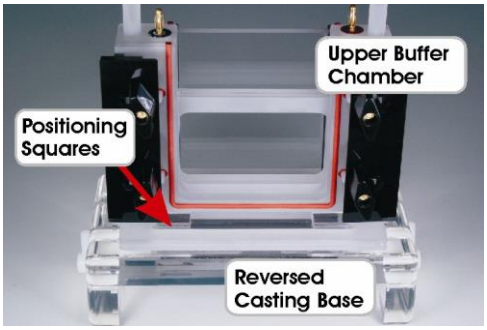
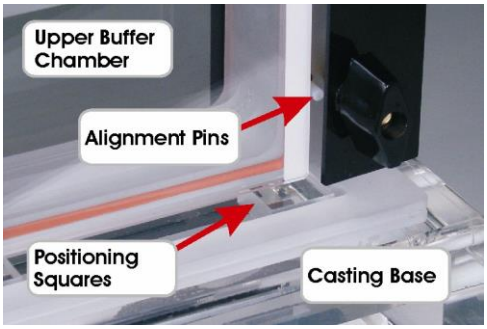
DO NOT ALLOW organic solvents or chromic acid to come into contact with the acrylic components of your vertical system.

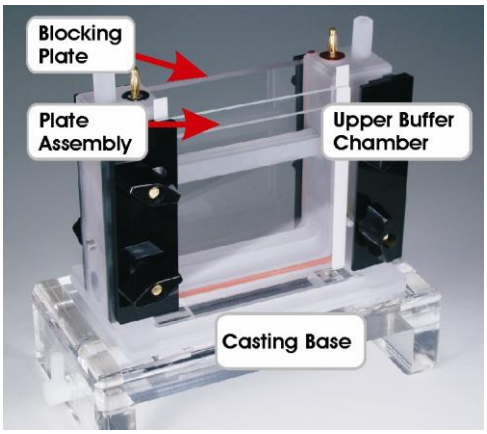
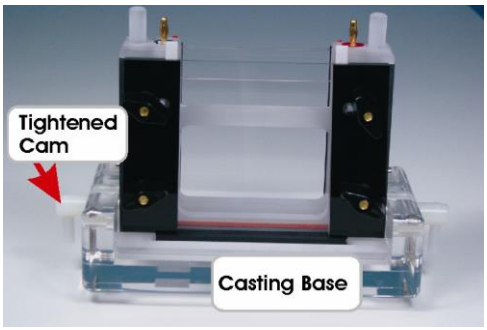
Handle clean plates with gloved hands (remove any finger prints with acetone)

GEL PLATE (CASSETTE) ASSEMBLY

On a clean level bench, position the two side spacers flush with the edges of the blank glass plate and overlay the notched plate.

UNIT ASSEMBLY FOR CASTING AND RUNNING GELS

1. Turn Over the Casting Base so that the four acrylic positioning squares are on the top. 2. Place the Upper Buffer Chamber on the Casting Base. The precision-machined Upper Buffer Chamber should fit over the four squares snugly.	
3. Loosen the wing nuts and slide the clamp bars outward. Please note the nylon alignment pins. These pins assure that the glass plates are properly placed over the Upper Buffer Chamber gasket, while the acrylic squares on the casting base assure that the glass is positioned evenly and at the proper place for optimum sealing on the casting base gaskets. 4. Place the gel plate assemblies (cassettes) with the notched glass plate innermost against the gasket of the Upper Buffer Chamber. The assemblies should rest on the positioning squares of the Casting Base and between the nylon alignment pins.	

5. To clamp the assembly to the Upper Buffer Chamber slide the clamp bars towards the middle. Tighten the wing nuts until a seal is formed between the gasket and the glass. The hollow gasket allows for a superb seal without over-tightening the wing nuts. Over-tightening may cause the glass to break. 6. If casting and running two gels, repeat steps 4 – 6 for the second gel plate assembly. If you desire to run only one gel, secure the blocking plate to the second side. Note: a combination of two gel assemblies or one gel assembly and the Blocking Plate are necessary to form the walls of the Upper Buffer Chamber.	
7. Lift the assembled Upper Buffer Chamber and turn the Casting Base over. Turn the cams so that the handle is pointing up and pull out. Place the Upper Buffer Chamber on the gaskets. Note: A protective plastic film is left on the gaskets for shipping. A piece of clear tape has been fastened to the end of the film to assist the user in removing it. 8. Insert the cam pins and simultaneously turn the handles one half turn to tighten the assembly down onto the gasket base. Once the Upper Buffer Chamber assembly has been secured onto the casting base an initial leak test using a small amount of water is recommended – add 2ml-3ml of water and let stand for 2 minutes. If no leakage is visible, empty water and proceed with gel casting.	

CASTING THE GEL

To ensure reproducibility and uniform polyacrylamide cross-linking we recommend de-ionizing, de-gassing and filtration of acrylamide gel solutions prior to use. Acrylamide solutions should be stored in a cool, dark environment such as a refrigerator and allowed to reach room temperature prior to pouring. Avoid exposure to heat and sunlight.

Polymerization conditions should be adjusted to effect polymerization within about 5-10 minutes. Test a small volume in a vial prior to pouring the gel. As a rough guide, 100 ml of degassed 6% acrylamide gel will set in about 5 minutes at room temperature when gently mixed with 450 µl of freshly prepared 10% (w/v) Ammonium persulphate plus 200 µl TEMED. The setting time increases to about 10 minutes if the TEMED volume is reduced to 100 µl and to approximately 15 minutes with 75 µl. The amount of catalysts may need to be reduced under warm conditions. Do not pour under direct sunlight.

1. Prepare the appropriate volume of acrylamide gel solution using Table B below as a guide. These volumes have been calculated using the glass and spacers provided by Consort and subtracting the volume of the spacers and the notch. The volumes are approximate.

TABLE B: Approximate Gel Solution Volumes for Various Cassette Configurations

Unit	Plate Width	Plate Length	Spacer	Gel Volume
EVS3100	10cm	10cm	0.8mm	7.5ml
	10cm	10cm	1.5mm	15ml
	10cm	8cm	0.8mm	6ml
	10cm	8cm	1.5mm	12ml
EVS3200	20cm	10cm	0.8mm	15ml
	20cm	10cm	1.5mm	30ml
EVS3300	20cm	20cm	0.8mm	24.6ml
	20cm	20cm	1.5mm	49.1ml

2. Run the acrylamide gel solution mix slowly down the inside edge of the gel cassette. Avoid aeration. Place the comb in the gel plate assembly.

   If a stacking gel is to be used, carefully overlay the gel solution to a depth of 3-5mm with 1x gel buffer or water-saturated butanol. Following polymerization of the separating gel, pour off the overlay layer (rinse off butanol with electrophoresis gel buffer) and pour a stacking gel if required. Insert the comb ensuring bubbles are not trapped around comb teeth. Once the stacking gel has polymerized use the gel immediately or store wrapped in a damp paper towel and plastic film at 4 Cº. Wait a minimum of 15 minutes for the gel to polymerize. Repeat process as required.

3. Release the cams and pull away from the Upper Buffer Chamber and gels. Wash off any residual acrylamide. Place the Upper Buffer Chamber into the Lower Buffer Chamber. Stainless Steel pins are located on the lower sides of the Upper Buffer Chamber that slide into the precision machined clear sides of the Lower Buffer Chamber to set it in place.

4. Add the appropriate volume of running buffer to the upper buffer chamber (Table A gives approximate volumes), making sure the running buffer is 3 mm below the top of the blank glass, ensuring sufficient contact with the top of the gel surface. Be sure that the running buffer is not leaking from the upper buffer chamber to the lower buffer chamber. If buffer is leaking, you will need to drain the UBC and reset the gel cassettes.

   NOTE: When running only one gel, a blocking plate is required on the other side of the unit to retain the top buffer level

GEL AND BUFFER VOLUMES

Some guidelines for general operating conditions are given in Table A, but conditions vary according to the number of gels, their composition, length, and cross-sectional area.

- The current requirement will increase in proportion to the number of gels or gel thickness providing that the voltage is not limiting, e.g. 2 gels require twice the current of 1, but the same voltage.
- Longer gels require proportionally higher voltages. By increasing the gel concentration, the electrical resistance is increased and the rate of migration decreases. Higher voltages can be applied but be careful not to overheat the gel.
- The conductivity of non-dissociating buffer systems gels vary enormously and conditions must be determined empirically.

The run conditions are to be taken as a guideline only and apply to SDS Tris-glycine gels. If the plates become hot increase the water flow rates within the recommended limits or reduce the power settings.

SAMPLE LOADING

- If a native gel is being used, pre-electrophorese the gel for 15-40 minutes prior to loading samples. SDS gels do not need this step.
- Centrifuge samples at 12,000 x g for 5 minutes. If this step is omitted samples may streak during electrophoresis.
- Carefully remove the sample comb and immediately flush the wells with electrophoresis buffer using a syringe.
- Load the samples using a gel loading pipette tip. See TABLE D on the next page for approximate well volumes, etc. If possible, avoid taking liquid from the pellet area at the bottom of the tube. During sample loading the pipette tip should be 1-2 mm above the bottom of the well to minimize dilution of the sample and to keep the sample as a tight layer.
- Fill unused wells with the equivalent volume of sample buffer to maintain uniform electrical resistance across the gel.
- Add buffer to the lower buffer chamber to approximately 2-3 mm above the base of the gel using the Fill Line as a guide. The bottom end of the gel assembly should be in contact with the running buffer.
- Set the safety lid onto the unit so that the power cords are connected in the proper position (red to red, black to black)

TABLES C1, C2 & C3 : Comb Options

Table C1 - **EVS3100**				
Catalogue Number	Number of Teeth	Thickness of Tooth	Width of Teeth (mm)	EST Well Volume (ul)
EVS3100-C6-0.8	6	0.8	11.1	142
EVS3100-C6-1.5	6	1.5	11.1	266
EVS3100-C8-0.8	8	0.8	7.7	99
EVS3100-C8-1.5	8	1.5	7.7	185
EVS3100-CMT9-	9	0.8	6.6	84
EVS3100-CMT9-	9	1.5	6.6	160
EVS3100-C10-0.8	10	0.8	5.7	73
EVS3100-C10-1.5	10	1.5	5.7	136
EVS3100-C12-0.8	12	0.8	4.3	55
EVS3100-C12-1.5	12	1.5	4.3	103
EVS3100-C15-0.8	15	0.8	3.0	38
EVS3100-C15-1.5	15	1.5	3.0	72

Table C2 – **EVS3200**				
Catalogue Number	Number of Teeth	Thickness of Tooth	Width of Teeth (mm)	EST Well Volume (ul)
EVS3200-C10-0.8	10	0.8	13.6	239
EVS3200-C10-1.5	10	1.5	13.6	449
EVS3200-C15-0.8	15	0.8	8.2	144
EVS3200-C15-1.5	15	1.5	8.2	271
EVS3200-CMT18-	18	0.8	6.5	78
EVS3200-CMT18-	18	1.5	6.5	156
EVS3200-C20-0.8	20	0.8	5.5	97
EVS3200-C20-1.5	20	1.5	5.5	182
EVS3200-C25-0.8	25	0.8	3.9	69
EVS3200-C25-1.5	25	1.5	3.9	129
EVS3200-CMT36-	36	0.8	2.7	32
EVS3200-CMT36-	36	1.5	2.7	64

Table C3 - **EVS3300**				
Catalog Number	Number of Teeth	Thickness of Tooth	Width of Teeth (mm)	EST Well Volume (ul)
EVS3300-C10-0.8	10	0.8	13.6	239
EVS3300-C10-1.5	10	1.5	13.6	449
EVS3300-C15-0.8	15	0.8	8.2	144
EVS3300-C15-1.5	15	1.5	8.2	271
EVS3300-C20-0.8	20	0.8	5.5	97
EVS3300-C20-1.5	20	1.5	5.5	182
EVS3300-C25-0.8	25	0.8	3.9	69
EVS3300-C25-1.5	25	1.5	3.9	129
EVS3300-CPREP	2	1.5	148.1/4.7	4885/155

COOLING OPTION

As previously noted, all sizes of **Consort Vertical Gel Electrophoresis Units** are available with optional water-cooling. Sometimes cooling is needed when running gels at higher current or when the bioactivity of an enzyme has to be preserved. Heating of the gel can cause smiling and other problems with the resolution of protein bands. This is particularly pronounced on larger gels. We recommend running coolant or water through the cooling core in the upper buffer chamber. When ramping up voltage or current, consider at least tap water cooling.

TO UTILIZE OPTIONAL COOLING:

- Attach a separate piece of 3/8" ID clear flexible lab tubing to each hose barb on the upper buffer chamber marked as "in" and "out"
- Attach the tubing from the cathode (black) side of the unit, marked "in" to either a cold- water tap or a re-circulator/chiller.
- Water flow should not exceed 2 L per minute at 30 psi.
- Attach the drain tube on the anode (red) side marked as "out" to the re-circulator chiller or put into the sink drain.
- Turn on the water. Once the water has started to circulate through the system, connect the power cords to the power supply

STARTING/ENDING THE RUN

STARTING:

- Connect the chamber to the power supply and connect the power supply to the main electrical source. Turn all settings to zero before turning on the main source of electricity. Adjust the controls to the desired settings. Follow manufacturer's instructions.

ENDING:

- Turn power supply settings to zero, turn off the main electrical source and disconnect the power cords. Turn off the water (if using optional cooling).
- Remove the lid by pushing on the acrylic alignment pins protruding through the top of the lid with your thumbs. Slide and lift the upper buffer chamber out of the lower buffer chamber and drain buffer chambers separately.
- Loosen wing nuts and slide clamp bars outward to remove gel cassettes. It is not necessary to remove the clamp bars from the upper buffer chamber to remove the gel cassette.
- After the gel cassette(s) has been removed the gel(s) are ready for staining and blotting. Separate the plates with a strong broad blade. When using notched glass plates DO NOT pry them apart at the notches. Spread the load over a wide area.
- Rinse the chambers with distilled water then dry the electrode connectors with tissue. Ensure that the connectors are clean and dry before usage or storage.

TROUBLESHOOTING

Many factors may affect the quality of vertical gel preparations. For example, preparation of gel and sample buffers; gel casting and tank assembly and/or run conditions. Reading and following the instructions in this operating manual can solve most problems. Below we list some of those most commonly experienced problems along with suggestions for solving them.

Problem: Acrylamide Solution Leaks During Casting

- Ensure that the sealing surfaces of the glass plates and spacers are clean
- Ensure that each plate is free of chips
- Ensure that the wing-knobs on the upper buffer chamber are tightened (use care not to over-tighten)
- Ensure that the glass plates and spacers have been set in place using the positioning squares on the "Flip-Side" of the Gel Casting Base.
- Ensure that the Cams in the Casting Base have been turned equally to tighten down the Upper Buffer Chamber on the gaskets

Problem: Bubbles Do Not Appear on the Electrodes

- Check to see if the Power Supply is operating properly

Problem: Gels Fail to Polymerize

- May be caused by low temperatures, oxygen, insufficient/degraded catalyst, or low acrylamide concentrations

Problem: Run Takes Longer Than Usual

- Buffers may be too concentrated or at the wrong pH. Gel concentration may be too high. Check Buffer Recipe and try again. See if voltage produced by the current you are running at is the same. If it differs significantly, your buffer may not have been made up correctly.
- Upper Buffer Chamber may be leaking buffer: Make sure the gel assembly is seated firmly against the gasket. Remove gasket, wash in warm water to remove excess salts, and place the gasket back in the groove.
- Running at too low a current: Use running conditions given in this manual. When running at constant current, the current value listed is per gel.

Problem: Running Too Fast

- Check buffer recipe; remake and try again. If voltage is lower than usual when running at constant current, the buffer is probably too dilute.
- Voltage or current may be set too high: turn down current setting.

Problem: "Smiling" of Dye Front

- The centre of the gel is running hotter than at the edges: use coolant or cold tap water in cooling core and/or turn down current setting.

Problem: Vertical Streaking

- Excessive sample or particles in the sample: either dilute sample or reduce voltage. Centrifuge samples to remove particulate contamination.
- Sample has precipitated: Centrifuge sample before adding sample buffer or use a lower % acrylamide gel.

Problem: Bands Spread Laterally

- Diffusion of sample: make sure the samples are loaded quickly and the power is applied as soon as possible after loading.
- Diffusion of sample during the run in the stacking gel: increase % of stacking gel or increase current by 25% when stacking.
- Lower ionic strength of the sample: match the ionic strength of the sample with that of the gel.

Problem: Bands are Narrower than the Sample Wells

- Ionic strength of the sample is higher than that of the gel: De-salt the sample or use sample buffer of the same strength as the gel.

Problem: Distorted Sample Wells

- Incomplete polymerization produces poorly defined wells: De-gas gel solution prior to casting and increase APS and TEMED concentrations. The comb can be wiped with TEMED just prior to casting to improve polymerization.
- Salt concentration is too high in the sample: Dialyze sample or use desalting column.

Problem: Resolving gel is uneven at the top

- Overlay gel carefully using water saturated n-butanol and make sure casting stand is level.

Problem: Poorly Resolved Bands

- May be caused by too much sample for well width or gel thickness: Dilute sample. Lower volumes generally give better resolution.
- Excessively high voltages cause fast run times, but poor resolution. Sample may have degraded.

Problem: Frowning of Outside Lanes

- Leakage of Buffer along the sides or along the spacers inside the gel assembly: Do not move spacers after polymerization and make sure that the gasket is seated firmly against the glass.

Problem: Double Bands – "Doublets"

- Due to re-oxidation or insufficient reduction of the sample: If using a reducing agent, prepare fresh sample buffer every 30 days. Increase the concentration of 2-mercaptoethanol or dithiothreitol in the sample.

Problem: Fewer Bands than Expected with Heavy Band at Dye Front

- Caused by more than one band migrating to the dye front: increase total monomer concentration (%T).
- Sample may have degraded due to incorrect storage and/or contamination.

REAGENT INFORMATION

RUNNING BUFFER

TGS

Tris 3.0285g/L

Glycine 14.4g/L

SDS 1.0g/L

pH 8.3 (Laemmli, 1970)

Q.s to 1L

Note: For Native Protein Electrophoresis do not add SDS

Table D1 Sample Buffer

2X Concentration Stock				**Final Concentration With Sample***
		/L	/10mL	
2%	SDS	20g	0.2	1%
10%	BME	10mL	0.1	5%
25mM	Tris	6.057g	0.0606g	125mM
30%	Glycerol	300mL	3mL	15%
0.002%	Bromo Phenol Blue	.02g	.0002g	0.001%

** add sample buffer 1:1 with sample solution*

Caution: 2X Sample Buffer containing 2-mercaptoethanol should be prepared in a fume hood.

0.2M (final concentration) Dithiothreitol (DTT) may be used in place of 2-mercaptoethanol.

DDT should be added before use and made fresh

ACRYLAMIDE SOLUTION

Stock acrylamide solution for D2 = 29.2g Acrylamide and .8 bis-Acrylamide, q.s. 100mL H20

TABLE D2 - Gel Preparation (SDS-Page continuous buffer system)

	% Acrylamide*				
Stock Solution	**20.0**	**15.0**	**12.5**	**10.0**	**5.0**
Acrylamide-Bisacrylamide (30:08)	20.0	15.0	12.5	10.0	5.0
0.5 M Sodium Phosphate Buffer pH 7.2	6.0	6.0	6.0	6.0	6.0
10% (w/v) SDS	0.3	0.3	0.3	0.3	0.3
Water	2.2	7.2	9.7	12.2	17.2
1.5% (w/v) APS	1.5	1.5	1.5	1.5	1.5
TEMED	0.015	0.015	0.015	0.015	0.015

** The columns represent volumes (ml) of stock solutions required to prepare 30ml of gel*

REPLACEMENT PARTS

DESCRIPTION	EVS3100	EVS3200	EVS3300
Upper Buffer Chamber Replacements Gaskets	EVS3100–UBCGASKET	EVS3200-UBCGASKET	EVS3300-UBCGASKET
Casting Base Replacement Gaskets	EVS3100–BASEGASKET	EVS3200-BASEGASKET	EVS3300-BASEGASKET
Blank Glass Plate, 3/32" (2.4mm)	EVS3100-GLASS		
Blank Glass Plate, 1/8" (3.0mm)		EVS3200-GLASS	EVS3300-GLASS
Notched Glass Plate, 3/32" (2.3mm)	EVS3100—NGLASS		
Notched Glass Plate, 1/8" (3.0mm)		EVS3200-NGLASS	EVS3300-NGLASS
Notched Alumina Plate, 1.0mm	EVS3100-ALU		
Blocking Plate for Running One Gel	EVS3100-DUMMY	EVS3200-BPL	EVS3300-BPL
Spacers, 0.8mm (2x)	EVS3100–SP-0.8	EVS3200-SP-0.8	EVS3300-SP-0.8
Spacers, 1.5mm (2x)	EVS3100–SP-1.5	EVS3200-SP-1.5	EVS3300-SP-1.5
Gel Casting Base	EVS3100–BASE	EVS3200-BASE	EVS3300-BASE

Chemical compatibility of Acrylic

This chart is supplied for your convenience. Acrylic is compatible with most solvents and solutions found in the biochemical laboratory. However, some solvents can cause substantial damage. Keep this chart handy to avoid harm to your unit.

This list does not include all possible chemical incompatibilities and safe compounds. Consort products should be cleaned with a mild detergent and warm water. They may also be exposed to a mild bleach solution (10:1). In addition, RNAse removal products are also safe for acrylic.

Chemical Compatibility for Acrylic-Based Products

Codes:
- S — Safe (No Effect, except possibly some staining)
- A — Attacked (Slight attack by, or absorption of, the liquid; Slight crazing or swelling, but acrylic has retained most of its strength)
- U — Unsatisfactory (Softened, swollen, slowly dissolved)
- D — Dissolved (in seven days or less)

Chemical	Code	Chemical	Code
Acetic Acid (5%)	S	Acetic Anhydride	A
Ammonia	S	Dioctyl Phthalate	A
Ammonium Chloride (saturated)	S	Ethyl Alcohol (50%)	A
Ammonium Hydroxide (10%)	S	Isopropyl Alcohol (100%)	A
Ammonium Hydroxide concentrate	S	Methyl Alcohol (50%)	A
Calcium Chloride (saturated)	S	Nitric Acid (40%)	A
Citric Acid (10%)	S		
Cottonseed Oil (edible)	S	Carbon Tetrachloride	U
Detergent Solution (Heavy Duty)	S	Chromic Acid (40%)	U
Diesel Oil	S	Diethyl Ether	U
2-Ethylhexyl Sebacate	S	Dimethyl Formamide	U
Ethylene Glycol	S	Ethyl Alcohol (95%)	U
Formaldehyde (40%)	S	Hydrofluoric Acid (40%)	U
Gasoline, regular, leaded	S	Hydrogen peroxide (28% solution)	U
Glycerine Heptane (commercial grade)	S	Methyl Alcohol (100%)	U
Hexane	S	Methyl Ethyl Ketone	U
Hydrochloric Acid (10%)	S	Nitric Acid concentrate	U
Hydrochloric Acid concentrate	S	Phenol 5% solution	U
Hydrogen peroxide (3% solution)	S	Sulfuric Acid concentrate	U
Hydroxide (10%)	S		
Isooctane	S		
Kerosene (no. 2 fuel oil)	S	Acetone	D
Mineral Oil (white)	S	Aniline	D
Naptha	S	Benzene	D
Nitric Acid (10%)	S	Butyl Acetate	D
Oleic Acid	S	Chloroform	D
Olive Oil	S	Ethyl Acetate	D
Soap Solution (Ivory)	S	Ethylene Dichloride	D
Sodium Carbonate (2%)	S	Lacquer Thinner	D
Sodium Carbonate (20%)	S	Methylene Chloride	D
Sodium Chloride (10%)	S	Toluene	D
Sodium Hydrochlorite (5%)	S	Trichloroethylene	D
Sodium Hydroxide (1%)	S	Xylene	D
Sodium Hydroxide (10%)	S		
Sodium Hydroxide (60%)	S		
Sulfuric Acid (3%)	S		
Sulfuric Acid (30%)	S		
Turpentine	S		
Water (distilled)	S		