Instruction Manual

OmniPAGE Vertical Electrophoresis Units

Catalogue Numbers

VS10D, VS10DSYS, VS10PRE

VS10D, VS10DSYS, VS10PRE, VS10DCAST

VS10WD, VS10WDSYS

VS20D, VS20DSYS, VS20DCAST,

VS30D, VS30DSYS, VS30DCAST

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Contents

Section 1

General Information

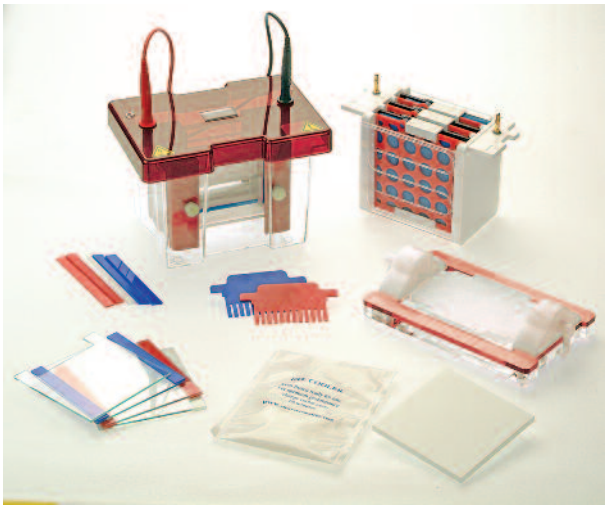
1.1) Safety Instructions

- WHEN USED CORRECTLY, THESE UNITS POSE NO HEALTH RISK. HOWEVER, THESE UNITS CAN DELIVER DANGEROUS LEVELS OF ELECTRICITY AND ARE TO BE OPERATED ONLY BY QUALIFIED PERSONNEL FOLLOWING THE GUIDELINES LAID OUT IN THIS INSTRUCTION MANUAL.
- ANYONE INTENDING TO USE THIS EQUIPMENT SHOULD READ THE COMPLETE MANUAL THOROUGHLY.
- THE UNIT MUST NEVER BE USED WITHOUT THE SAFETY LID CORRECTLY IN POSITION.
- THE UNIT SHOULD NOT BE USED IF THERE IS ANY SIGN OF DAMAGE TO THE EXTERNAL TANK OR LID.
- ACRYLAMIDE IS A POWERFUL NEUROTOXIN IN SOLUTION FORM. POLYMERIZED GELS CAN CONTAIN SOME UNPOLYMERIZED SOLUTION AND PROTECTIVE GLOVES AND CLOTHING MUST BE WORN.
- THESE UNITS COMPLY WITH THE STATUTORY CE SAFETY DIRECTIVES: 73/23/EEC: LOW VOLTAGE DIRECTIVE: IEC 1010-1:1990 plus AMENDMENT 1:1992

  EN 61010-1:1993/BS EN 61010-1:1993

1.2) Introduction

The Biocom omniPAGE range of Vertical Gel Units combines ease of use with high resolution separations. Four sizes, Mini 10 x 10cm, Mini Wide 20 x 10cm and Maxi 20 x 20cm, VS 30 x 30cm share a host of common features including a guaranteed leak proof seal required for trouble free, rapid and uncomplicated gel casting. Utilising a built in gel running module eliminates time consuming transfer of glass plates during casting, a process which can cause gel damage and misalignment. Glass plates with permanently bonded spacers guarantee perfect spacer alignment. The glass plate sandwich is then simply inserted between pressure bars and the new zero screw slide clamps clicked into position. This ensures fast set up times while even pressure bars and ultra soft seals guarantee leak proof casting. Once the gel has polymerised, the gel running module is just inserted into the gel tank for electrophoresis.



1.3) Product Information

Biocoms' vertical electrophoresis units comes as a complete package including Gel Tank, Safety Lid, Gel Casting Inner Module, Glass plates with bonded spacers, Combs, Multipurpose Key, Power Cables and Cooling pads. Detailed description of all the components is written below.

Gel Tank and Safety Lid	-Injection moulded gel tank and safety lid provides a sealed electrophoresis system which is compatible with all major types of 8 x 10cm and 10 x 10cm precast gel. All omniPAGE tanks are equipped with specially designed thumb locators for lifting up the safety lid easily. -All safety lids are designed to accommodate the polarity design of the unit. They have special tapped holes which connect with the leading edge of the power cables.
Inner Module	Injection moulded inner module gives a twofold effectiveness for gel casting and running, thus no need of transferring the glass plates after casting the gel.
Glass Plates	2mm thick glass plates for the omniPAGE mini and 4mm thick glass plates for rest of the range prevents breakage and have bonded spacers for convenience. All our spacers are colour coded depending upon their thickness.
Multipurpose Key	CVS10KEY or the multipurpose key can be easily used to separate your notched and plain glass plate to release the gel. The same key can be used to open the VS10 clamping doors. Note: Not for VS20 and VS30.
Power Cables	Biocoms' power cables are designed with protective retractable connectors which are compatible with most power supplies.
Cooling Pads	Rapid set up cooling packs enhance resolution eliminating the need of a chiller.
Combs with special gel loading guides.	Special combs also known as the Combicombs are designed with special oval shaped gel loading guides on the other end of an ordinary comb which can be used

1.4) Packing List

The packing lists should be referred to as soon as the units are received to ensure that all components have been included. The unit should be checked for damage when received. Please contact your supplier if there are any problems or missing items.

1.4.1) omniPAGE Mini

VS10D, VS10DSYS, VS10PRE, VS10D, VS10DSYS, VS10PRE, VS10DCAST

Each unit includes a tank, lid, internal module, electrodes and the following accessories:-

	Glass Plates	Combs	Casting base	Cooling Pack	Cables	SCREWS
VS10D VS10D	VS10NG – Notched, Pk/2 VS10PGS1 – Plain with bonded 1mm spacers, Pk/2 VS10-DP – Dummy Plate	2 of VS10-12-1 1mm thick, 12 sample		VS10ICB	CSL-CAB	VS10-SCREW x 4
VS10DSYS VS10DSYS	VS10NG – Notched, Pk/2 VS10PGS1 – Plain with bonded 1mm spacers, Pk/2 VS10-DP – Dummy Plate	2 of VS10-12-1 1mm thick, 12 sample	VS10DCAST VS10DCAST VS10DCASTM - Mat	VS10ICB	CSL-CAB	VS10-SCREW x 4
VS10PRE VS10PRE	VS10-DP – Dummy Plate			VS10ICB	CSL-CAB	VS10-SCREW x 4
VS10DCAST			VS10DCAST VS10DCASTM - Mat			

1.4.3) omniPAGE Mini Wide

VS10WD, VS10WDSYS

Each unit includes a tank, lid, internal module, electrodes and the following

	Glass Plates	Combs	Casting base	Cooling Pack	Cables
VS10WD	VS10WNG - Notched, Pk/2 VS10WPGS1 – Plain with bonded 1mm spacers, Pk/2 VS10W-DP – Dummy Plate	2 of VS20-24-1 1mm thick, 24 sample		VS20ICB	CSL-CAB
VS10WDSYS	VS10NG – Notched, Pk/2 VS10PGS1 – Plain with bonded 1mm spacers, Pk/2 VS10-DP – Dummy Plate	2 of VS10-12-1 1mm thick, 12 sample	VS20DCAST VS20DCASTM - Mat	VS20ICB	CSL-CAB
VS20DCAST	VS10-DP – Dummy Plate		VS20DCAST VS20DCASTM - Mat		

1.4.3) omniPAGE Maxi

VS20D, VS20DSYS, VS20DCAST

Each unit includes a tank, lid, internal module, electrodes and the following accessories:-

	Glass Plates	Combs	Casting base	Cooling Pack	Cables
VS20D	VS20NG - Notched, Pk/2 VS20PGS1 – Plain with bonded 1mm spacers, Pk/2 VS20-DP – Dummy Plate	2 of VS20-24-1 1mm thick, 24 sample		VS20ICB	CSL-CAB
VS20DSYS	VVS20NG - Notched, Pk/2 VS20PGS1 – Plain with bonded 1mm spacers, Pk/2 VS20-DP – Dummy Plate	2 of VS20-24-1 1mm thick, 24 sample	VS20DCAST VS20DCASTM - Mat	VS20ICB	CSL-CAB
VS20DCAST			VS20DCAST VS20DCASTM - Mat		

1.4.5) omniPAGE VS30

VS30D, VS30DSYS, VS30DCAST

Each unit includes a tank, lid, internal module, electrodes and the following accessories:-

	Glass Plates	Combs	Casting base	Cooling Pack	Cables
VS30D	VS30NG - Notched, Pk/2 VS30PGS1.5 – Plain with bonded 1.5mm spacers, Pk/2 VS30-DP – Dummy Plate	2 of VS30-1-1.5 1.5mm thick, 1 sample		VS30ICB	CSL-CAB
VS20DSYS	VVS20NG - Notched, Pk/2 VS20PGS1 – Plain with bonded 1mm spacers, Pk/2 VS20-DP – Dummy Plate	2 of VS30-1-1.5 1.5mm thick, 1 sample	VS30DCAST VS30DCASTM - Mat	VS30ICB	CSL-CAB
VS30DCAST			VS30DCAST VS30DCASTM - Mat		

Packing list checked by _____ Date _____

The packing lists should be referred to as soon as the units are received to ensure that all components have been included. The unit should be checked for damage when received.
Please contact your supplier if there are any problems or missing items.

1.5) Specifications

	omniPAGE Mini	omniPAGE Mini Wide	omniPAGE Maxi	omniPAGE VS30
Plate Dimensions **Gel Dimensions (W x L)**	10x10cm, 7.5x8cm	20 x 10cm, 18 x 8cm	20 x 20cm, 16 x 17.5cm	30 x 22cm, 28 x 20cm
Unit Dimensions, **(W x H x D)**	19x13x15cm	26 x 16 x 16cm	26 x 16 x 28cm	36 x 33 x 18cm
Max Sample Capacity	80 Samples 20 Samples per Gel	192 Samples, 48 Samples per Gel	192 Samples, 48 Samples per Gel	300 Samples per Run, 75 Samples per Gel
Buffer Volume	Min 250ml, Max 1200ml	Min 600ml, Max 2800ml	Min 1200ml, Max 5600ml	Min1800ml, Max 8400ml
Combs Available **No. of Teeth Thickness**	1, 5, 8MC, 9, 10, 12, 16MC, 20 0.75, 1, 1.5, 2mm	1, 5, 10, 18MC, 24, 30, 36MC, 48 0.75, 1, 1.5, 2mm	1, 5, 10, 18MC, 24, 30, 36MC, 48 0.75, 1, 1.5, 2mm	1, 2, 4, 28MC, 56MC, 75 0.25, 0.35, 0.5, 1, 1.5, 2.0mm
Environmental Operating Conditions	Maximum Altitude 2,000 m Temperature Range 4°C - 65°C Humidity Upto 80% Not for outdoor Use	Maximum Altitude 2,000 m Temperature Range 4°C - 65°C Humidity Upto 80% Not for outdoor Use	Maximum Altitude 2,000 m Temperature Range 4°C - 65°C Humidity Upto 80% Not for outdoor Use	Maximum Altitude 2,000 m Temperature Range 4°C - 65°C Humidity Upto 80% Not for outdoor Use

This apparatus is rated POLLUTION DEGREE 2 in accordance with IEC 664.
POLLUTION DEGREE 2, states that: “Normally only non-conductive pollution occurs.
Occasionally, however, a temporary conductivity caused by condensation must be expected”.

1.6) Care and Maintenance

- Cleaning Large Format Vertical Units
  Units are best cleaned using warm water and a mild detergent. Water at temperatures above 600 C can cause damage to the unit and components.
  The inner module should be thoroughly rinsed with warm water or distilled water to prevent build up of salts but care should be taken not to damage the enclosed electrode and vigorous cleaning is not necessary or advised. Air drying preferably before use.

- The units should only be cleaned with the following:-
  Warm water with a mild concentration of soap or other mild detergent.
  Compatible detergents include dishwashing liquid, Hexane and Aliphatic hydrocarbons. The units should not be left in detergents for more than 30 minutes.

- The units should never come into contact with the following cleaning agents, these will cause irreversible and accumulative damage:-
  Acetone, Phenol, Chloroform, Carbon tetrachloride, Methanol, Ethanol, Isopropyl alcohol, Alkalis.

- RNase Decontamination
  This can be performed using the following protocol:-
  Clean the units with a mild detergent as described above.
  Wash with 3% hydrogen peroxide (H202) for 10 minutes.
  Rinsed with 0.1% DEPC- (diethyl pyrocarbonate) treated distilled water,
  Caution: DEPC is a suspected carcinogen. Always take the necessary precautions when using. RNaseZAP™ (Ambion) can also be used. Please consult the instructions for use with acrylic gel tanks.

Section 2

Operating Instructions

2.1) Setting up the omniPAGE Gel Tank

Note: Before setting up the Gel Tank please ensure that it has been properly cleaned and dried.

1. Note the position of the lid on the unit. This shows the correct polarity and the correct orientation of the cables, black is negative and red positive.
2. Remove the lid from the unit.
   Note: If the lid is not removed, fitting the cables may result in un-tightening of the gold plug and damage the electrode.
3. Screw the cables into the tapped holes as fully as possible so that there is no gap between the lid and the leading edge of the cable fitting.
4. Refit the lid and the unit is now ready to be used.

2.2) Gel casting for VS10, VS10W, VS20 and VS30

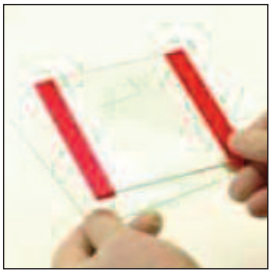
2.2.1) Cleaning the Glass Plates

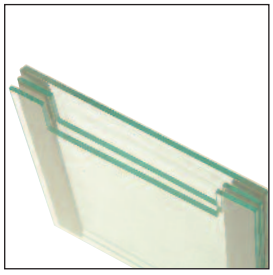
- Clean a set of glass plates for each gel first with distilled water and then with 70 % ethanol.
- One set of glass plates constitutes one notched glass plate and one plain glass plate with bonded spacers.
- When using a triple glass plate sandwich, two notched glass plates are required, one set of free spacers and a set of plain glass plates with bonded spacers. The plain glass plate is positioned outermost, then a notched glass plate, free spacers and second notched glass plate. Alternatively, accessory notch glass plates with bonded spacers are available.

  Note: All glass plates, gel casting modules, casting base and accessories must be completely dry before the set – up. Wet components are more likely to miss-align and cause leaks.

2.2.2) Glass cassette Assembly

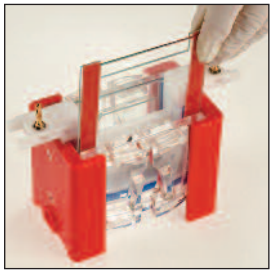
- Assemble the glass plates so that the bottom of the glass plates and the spacers are perfectly aligned.
- For triple plate sandwiches, the free spacers Need to be perfectly aligned which is best performed using a small spacer or comb to push the spacers apart. Notched glass plates with bonded spacers do not need manual alignment.



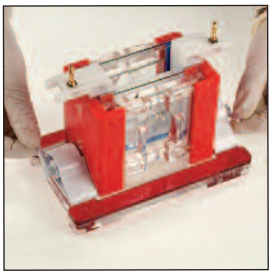


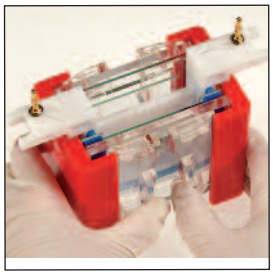
NOTE: The glass plates with bonded spacers have an arrow in the top of the spacers which are slightly longer than the glass plate to indicate the top.

2.2.3) Casting Stand Assembly



- Position the Slab Gel Insert on a flat surface.
- Insert the glass plates into the Slab Gel Insert between the pressure bar and the blue gasket.
- The Slab Gel Insert contains pressure bars which impart even pressure onto the glass plates and allow even screw pressure transfer onto the sealing edge of the glass plate, ensuring complete sealing. Ensure that the pressure bars are adequately open for the thickness of spacer used. The bar can be opened by loosening the screws or by sliding the clamps. When using a triple glass plate sandwich, the pressure bars will need to be in the completely open position.
- Then fully tighten the pressure bar screws in the order top then bottom.

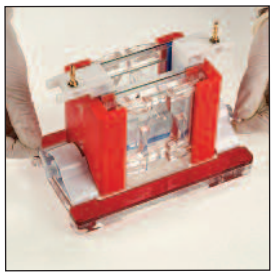


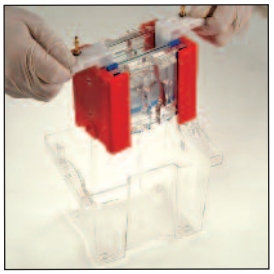


- Fully tighten the screw for the Mini vertical and the screws sequentially and in an even manner for the maxi vertical in the order middle two, top then bottom, making sure not to wobble the unit. When using the Slide Clamp Mini version, simply slide both gates outwards until fully tightened. When only one gel is being run, the dummy plate must be used in the second position and fully tightened.

NOTE: At this stage, check that the bottom edges of the spacers and glass plates are perfectly aligned.

- Position the Slab Gel Insert in the casting base such that the Cam pins have handles pointing downwards and are located in the insert holes. The top of the GRM may need to be pushed down very slightly to locate the cam pins.





- With the cam pin handles facing directly downwards, turn the cam pins fully through 1800 or until the insert has tightened onto the silicone mat.

NOTE: It is best to turn the cams in opposite directions to each other. Do not overturn as this will cause the glass plates to push upwards and the assembly will be more likely to leak. The unit is now ready for gel preparation and pouring

Always reverse the silicone mat after casting to avoid indentations from persisting. Never leave the casting up-stand with glass plates tightened into the casting base for long periods of time as this will also cause indentations in the silicone mat.

The slide clamp version VS10 also includes screws. This system can be used either with the slide clamps or screws as preferred by the user. For those that prefer to use the screws rather than clamps, the screws can be simply inserted into the screw holes. The clamps can be removed by placing each clamp in the fully open position and gently bending the clamp upwards from the slanted end. The holding pin will then slowly release and the clamp can be removed.

2.2.4) Gel Pouring

Casting a gel with stacking layer:-

1) Place a comb into the gel cassette assembly with any gel and mark the glass plate below the comb teeth. This is the reference level to which the resolving gel should be poured.
2) Prepare the resolving gel solution. Mix well and avoid generating air bubbles.
3) Fill the glass plates smoothly till the mark avoiding generating any air bubbles. Filling must be performed quickly before the TEMED causes the gel to become too viscous.
4) Overlay the gel extremely carefully with 1 ml of Isobutanol, Isopropanol or distilled water. When using distilled water extra care must be taken to ensure there is no mixing with the gel solution.
5) Let the resolving gel polymerize. Usually this takes around 15 to 30 minutes but this can vary due to the freshness of the reagents used. If polymerization is taken a lot longer than this, use fresher stock solutions or add more APS and TEMED.
6) Prepare the stacking gel solution.
7) Before casting the stacking gel, insert a piece of filter paper to dry the area in between the glass plates above the resolving gel. Take care not to touch the surface of the gel.
8) Carefully pour the stacking gel solution, avoiding generating air bubbles.
9) Carefully insert the comb making sure that no air bubbles get trapped under the ends of the comb teeth as these will inhibit sample progression.
10) Allow the stacking gel polymerize.
11) Once the gel is polymerized it is ready for the electrophoresis run.

Casting a gel without stacking layer:-

1) Prepare the resolving gel solution. Mix well and avoid generating air bubbles.
2) Pour the solution smoothly into the glass plates avoiding any air bubbles until the top of the notched glass plate is reached.
3) Carefully insert the comb making sure that no air bubbles get trapped under the ends of the comb teeth as these will inhibit sample progression.
4) Let the gel polymerize. Usually this takes from 15 to 30 minutes but this can vary due to the freshness of the reagents used. If polymerization is taken a lot longer than this, use fresher stock solutions or add more APS and TEMED.
5) Once the gel is polymerized it is ready for the electrophoresis run.

Using Precast Gels:-

1) omniPAGE mini is compatible with all the precast gels available in the market.
2) Simply remove the precast gel from the storage pouch.
3) Gently remove the comb.
4) Keep the Inner module upstand on a flat surface and place the precast gel between the pressure bar and the blue gasket.

2.3) omniPAGE module assembly and Sample loading

1) If desired, fit the cooling pack(s) into the end of the tank. These should be pre-frozen and fitted with the longest side positioned sideways with the end(s) of the tank and pressed into the recess. Or these can be fitted down the front of the tank.
   Note: NEVER FIT THESE UNDERNEATH THE MODULE IN THE BOTTOM OF THE TANK AS THIS WILL PREVENT THE FLOW OF CURRENT THROUGH THE GEL AND CAUSE SLOW RUNS AND OVER-HEATING.
   Note one pack is supplied as standard. Additional packs can be purchased.
2) Transfer the Inner gel module containing cast gels into the main tank in the correct orientation as indicated - +ve on the module aligned with +ve on the tank, -ve on the module aligned with –ve on the tank.
3) Fill the outer tank with 1 x reservoir buffer. See Page 22 for recommended running buffer solution. Table 7 shows the volume of buffer required.
4) Load the samples into the wells using a pipette tip taking care not to damage the wells or induce any air bubbles.
5) Fill any unused wells with 1 X sample buffer.
6) It is a good idea to note the orientation and order the samples were loaded in. This can be done by noting which samples were loaded adjacent to each electrode.

2.4) Gel Running:-

1) Fit the lid and connect to a power supply.
2) Consult Table 8 for details on recommended power supply voltage settings.

2.5) Gel Removal:-

1) Turn the power supply off when the loading dye reaches the bottom of the gel, sooner if your proteins are below 4Kd in size.
2) Remove the gel running module, first emptying the inner buffer into the main tank. Buffer can be re-used but this may affect run quality if continued.
3) Unscrew the glass plates with the Screw version. To open the sliding door version insert the CVS10KEY into the recess arch of the clamping door. Twist key applying pressure to both the clamping door and the VS10D side cheek. The door will now click open. Repeat this process until you have opened both the doors.

4) Remove the glass plates. Then using CSLKEY separate notched and the plain glass plates. Place the wedged end of the key between the two plates and gently twist until the plates pull apart. The gel will usually stick to one of the plates and can be removed by first soaking in buffer and then gently lifting with a spatula.

5) The gel is now ready to be stained with Coomassie or silver stain or the proteins in the gel can be transferred to a membrane by electroblotting for specific band identification and further analysis.

Section 3
Gel Preparation

3.1) Gel Selection

Care should be taken when selecting the pore size of the gel to be used. The pore size or % of gel determines the resolving ability given different sizes of protein.
See Table 1 below explaining which percentage of gel to use to separate the sizes of proteins indicated.

Table 1

Acrylamide Percentage	Separating Resolution
5 %	60 - 220 KD
7.5 %	30 - 120 KD
10 %	20 - 75 KD
12%	17 – 65 KD
15 %	15 -45 KD
17.5%	12 – 30 KD

3.2) Volumes required per gel

Table 2 & 3 below shows the total amount of gel solution required.

Table 2

omniPAGE Mini VS10D, VS10DSYS, VS10D, VS10DSYS			omniPAGE Mini Wide VS10WD, VS10WDSYS		
Number of gels	Gel Thickness (mm)	Volume (ml)	Number of gels	Gel Thickness (mm)	Volume (ml)
Single – one gel, one dummy plate	0.5	3.8	Single – one gel, one dummy plate	0.5	8.75
	1	7.5		1	17.5
	1.5	11.3		1.5	26.3
	2	15		2	35
Double – two gels	0.5	7.5	Double – two gels	0.5	17.5
	1	15		1	35
	1.5	22.5		1.5	52.5
	2	30		2	70
Using a Triple Plate sandwich – four gels	0.5	10	Using a Triple Plate sandwich – four gels	0.5	35
	1	30		1	70
	1.5	45		1.5	105
	2	60		2	140

Table 3

omniPAGE Maxi – VS20D, VS20DSYS			omniPAGE - VS30
Number of gels	Gel Thickness (mm)	Volume (ml)	For different thicknesses of gel, multiple the amounts by the spacer thickness. * multiply by 1.5 for VS30 gels
Single – one gel, one dummy plate	0.5	17.5	
	1	35	
	1.5	52.5	
	2	70	
Double – two gels	0.5	35	
	1	70	
	1.5	105	
	2	140	
Using a Triple Plate sandwich – four gels	0.5	70	
	1	140	
	1.5	210	
	2	280	

3.3) Gel Preparation

Prepare gel solutions as per tables below. These give the volumes of solutions from the standard stock solutions. These should be gently mixed avoiding generation of bubbles which will inhibit polymerization by removing free radicals.

Table 4:

Preparation of the separating gel solution for two 10 x 10cm (C)VS10D gels using 1 mm spacers.

Solution	5%	7.50%	10%	12%	15%	17.50%
Distilled Water	8.7ml	7.5ml	6.3ml	5.25ml	3.75ml	2.5ml
30 % Stock Acrylamide Solution	2.5ml	3.75ml	5ml	6ml	7.5ml	8.75ml
4 X Resolving Tris Solution	3.75ml	3.75ml	3.75ml	3.75ml	3.75ml	3.75ml
10 % Ammonium Persulphate	150µl	150µl	150µl	150µl	150µl	150µl

Table 5:

Preparation of the separating gel solution for two 20 x 20cm VS20D gels using 1 mm spacers. Divide by two for VS10W gels. Multiply by 1.5 for VS30 gels

Solution	5%	7.50%	10%	12%	15%	17.50%
Distilled Water	41ml	35.25ml	29.6ml	24.7ml	17.6ml	11.7ml
30 % Stock Acrylamide Solution	11.7ml	17.6ml	23.5ml	28.2ml	35.25ml	41.1ml
4 X Resolving Tris Solution	17.6ml	17.6ml	17.6ml	17.6ml	17.6ml	17.6ml
10 % Ammonium Persulphate	700µl	700µl	700µl	700µl	700µl	700µl

Add 15µl of TEMED to the resolving gel solution for (C)VS10D sized gels, 35 µl for VS10W, 70µl for VS20D and 105 µl for VS30D gels and mix well but avoid generating air bubbles.

3.4) Stacking Gel Preparation

Prepare the stacking gel using Table 6 below as a guide.

Table 6:

Solution	VS10D	VS10W	VS20D	VS30D
Distilled Water	4.2ml	8.4ml	16.8ml	25.2ml
30 % Stock Acrylamide Solution	0.65ml	1.3ml	2.6ml	3.9ml
4 X Stacking Gel Tris Solution	1.6ml	3.2ml	6.4ml	9.6ml
10 % Ammonium Persulphate	67µl	134µl	195µl	268µl

3.5) Buffer Volume

Table 7:

Buffer Volume	(C)VS10D VS10WD	VS20D, VS30D
Minimum – Inner tank is filled to above the wells. Outer Tank is filled to just flood the bottom of the glass plates. Cooling potential is at a minimum which may affect resolution.	250ml 500ml	1.2 Litres 1.8 Litres
Maximum – Inner tank is filled to above the wells. Outer Tank is filled to the maximum fill line. Cooling is high offering good resolution of samples.	1200ml 2.8 Litres	5.6 Litres 8.4 Litres
Using the cooling packs – Inner tank is filled to above the wells. Cooling packs are inserted behind the gels. Outer Tank is filled to the maximum fill line. Cooling is at a maximum.	1000ml 2.3 Litres	4 .6Litres 6.9 Litres

3.6) Gel Running Conditions

Table 8:

Recommended Voltages and Resultant Current for 1mm thick, 12% gels.	(C)VS10D, VS10WD	VS20D VS30D
One gel	90-225V	120-250V
	20-45mA	20-45mA
Two gels	90-225V	120-250V
	40-90mA	40-90mA
Three gels	90-225V	120-250V
	60-135mA	60-135mA
Four gels	90-225V	120-250V
	80-180mA	80-180mA

3.7) Preparation of denatured protein samples for loading:

The instructions given below are for denatured samples. For Native samples, please consult a laboratory handbook.

1. Prepare the protein samples for loading. The volume of sample depends on the capacity of the wells (See Comb specifications pages 22 and 23).
2. Using a 0.5 ml micro-centrifuge tube or other convenient receptacle, combine the protein sample and 4 X sample buffer. It is always advisable to use protein markers in one of the end lanes to indicate sizes of bands. These should be prepared according to the manufacturer's instructions.
3. Heat the samples in a water bath or heating block for 2 minutes to denature the samples.
4. Centrifuge the samples in a micro-centrifuge for 20 seconds at 12,000 rpm. The protein samples are now ready to load.

Section 4
Stock Solutions

Stock Solutions for SDS PAGE gels:-

Stock 30% Acrylamide Gel Solution:-

30.0 g acrylamide

0.8 g methylene bisacrylamide

Distilled Water to 100ml

Stock 4 X Resolving Gel Tris (1.5 M Tris.HCl pH8.8, 0.4 % SDS)

To 110ml Distilled Water add 36.4 g of Tris base

Add 8ml of 10 % SDS

Adjust pH to 8.8 with 1N HCl

Adjust the final volume to 200ml with Distilled Water.

Stock 4 X Stacking Tris (0.5 M Tris.HCL pH6.8, 0.4 % SDS)

To 110ml Distilled Water add 12.12 g of Tris base

Add 8ml of 10 % SDS

Adjust pH to 6.8 with 1N HCl

Add Distilled Water to a final volume of 200ml

Stock 4 X Tris-glycine tank buffer - SDS

36 g Tris base

172.8 g glycine

Distilled Water to 3 L

1 x Tris-glycine tank buffer - SDS

750ml of 4 X Tris-glycine reservoir buffer - SDS

30ml of 10 % SDS

Distilled Water to 3L

10 % AP (ammonium persulphate solution)

0.1 g ammonium persulphate

1ml Distilled Water

TEMED

Stock 4 X Sample Buffer

4ml glycerol

2ml 2-mercaptoethanol

1.2 g SDS

5ml 4 X Stacking Tris

0.03 g Bromophenol blue

Aliquot into 1.5ml micro centrifuge tubes. Store at -20°C.

Section 5 Ordering Information

5.1) omniPAGE Mini

Catalogue Number	Description
VS10D	omniPAGE Mini, 10 x 10cm Dual, 2 sets of Glass Plates, 1mm thick bonded Spacers, 2 x 12 sample, 1mm thick combs. CLAMP VERSION
VS10DSYS	omniPAGE Mini, 10 x 10cm Dual, 2 sets of Glass Plates, 1mm thick bonded Spacers, 2 x 12 sample, 1mm thick combs including caster. CLAMP VERSION
VS10PRE	omniPAGE Mini, 10 x 10cm Dual. No accessories. CLAMP VERSION
VS10DSYS-CU	omniPAGE Mini, 10 x 10cm Dual, 2 sets of Glass Plates, 1mm thick bonded Spacers, 2 x 12 sample, 1mm thick combs including caster. CLAMP VERSION, External casting upstand
	omniPAGE Mini Accessories
VS10EXCASTER	External Casting Stand - No Casting Base
VS10EXCASTERSYS	External Casting System - Upstand+ Base
VS10DCAST	10 x 10cm Casting Base
VS10DCASTM	Replacement Silicone Mat for 10 x 10cm Casting Base
VS10DIRM*	Inner Running Module
VS10DIRM†	Inner Running Module
VS10ICB	Mini Cooling Pack
VS10-X-LG	Loading Guides x = sample number
VS10NG	10 x 10cm Notched Glass Plates 2mm thick (pk/2)
VS10PG	10 x 10cm Plain Glass Plates 2mm thick (pk/2)
VS10NGS0.75	10 x 10cm Notched Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS10PGS0.75	10 x 10cm Plain Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS10NGS1	10 x 10cm Notched Glass Plates with 1mm Bonded Spacers (pk/2)
VS10PGS1	10 x 10cm Plain Glass Plates with 1mm Bonded Spacers (pk/2)
VS10NGS1.5	10 x 10cm Notched Glass Plates with 1.5mm Bonded Spacers (pk/2)
VS10PGS1.5	10 x 10cm Plain Glass Plates with 1.5mm Bonded Spacers (pk/2)
VS10NGS2	10 x 10cm Notched Glass Plates with 2mm Bonded Spacers (pk/2)
VS10PGS2	10 x 10cm Plain Glass Plates with 2mm Bonded Spacers (pk/2)
VS10DP	Dummy Plate, 10 x 10cm
VS10S0.75	10cm Spacers - 0.75mm (pk/2)
VS10S1	10cm Spacers - 1mm thick (pk/2)
VS10S1.5	10cm Spacers - 1.5mm thick (pk/2)
VS10S2	10cm Spacers - 2mm thick (pk/2)
RPW-0.2	Replacement Platinum Wire - 0.2mm, 50cm
	Multiple Minigel Casting
CSL-6CAST	6 gel caster for 8 x 10cm or 10 x 10cm gels
CSL-12CAST	12 gel caster for 8 x 10cm or 10 x 10cm gels
CSL-24CAST	24 gel caster for 8 x 10cm or 10 x 10cm gels

Variety of combs available with VS10D,
MC denotes Multi Channel Pipette compatible.

Code	Description	Sample Volume µl for a 5mm thick gel
VS20-1-0.75	Comb 1 Prep, 1 Marker, 0.75mm thick	1100
VS20-5-0.75	Comb 5 sample, 0.75mm thick	160
VS20-10-0.75	Comb 10 sample, 0.75mm thick	80
VS20-18-0.75MC	Comb 18 sample MC, 0.75mm thick	40
VS20-24-0.75	Comb 24 sample, 0.75mm thick	30
VS20-30-0.75	Comb 30 sample, 0.75mm thick	25
VS20-36-0.75MC	Comb 36 sample MC, 0.75mm thick	20
VS20-48-0.75	Comb 48 sample, 0.75mm thick	15
VS20-1-1	Comb 1 Prep, 1 Marker, 1mm thick	1500
VS20-5-1	Comb 5 sample, 1mm thick	200
VS20-10-1	Comb 10 sample, 1mm thick	100
VS20-18-1MC	Comb 18 sample, 1mm thick	50
VS20-24-1	Comb 24 sample, 1mm thick	40
VS20-30-1	Comb 30 sample, 1mm thick	35
VS20-36-1MC	Comb 36 sample MC, 1mm thick	25
VS20-48-1	Comb 48 sample, 1mm thick	20
VS20-1-1.5	Comb 1 Prep, 1 Marker, 1.5mm thick	2200
VS20-5-1.5	Comb 5 sample, 1.5mm thick	320
VS20-10-1.5	Comb 10 sample, 1.5mm thick	160
VS20-18-1.5MC	Comb 18 sample, 1.5mm thick	80
VS20-24-1.5	Comb 24 sample, 1.5mm thick	60
VS20-30-1.5	Comb 30 sample, 1.5mm thick	50
VS20-36-1.5MC	Comb 36 sample MC, 1.5mm thick	40
VS20-48-1.5	Comb 48 sample, 1.5mm thick	30
VS20-1-2	Comb 1 Prep, 1 Marker, 2mm thick	3000
VS20-5-2	Comb 5 sample, 2mm thick	400
VS20-10-2	Comb 10 sample, 2mm thick	200
VS20-18-2MC	Comb 18 sample, 2mm thick	100
VS20-24-2	Comb 24 sample, 2mm thick	80
VS20-30-2	Comb 30 sample, 2mm thick	70
VS20-36-2MC	Comb 36 sample MC, 2mm thick	50
VS20-48-2	Comb 48 sample, 2mm thick	40

5.2) omniPAGE Mini Wide

Catalogue Number	Description
VS10WD	omniPAGE Mini Wide, 20 x 10cm Dual, 2 sets of Glass Plates with 1mm thick bonded Spacers, 2 x 24 sample, 1mm thick combs, cooling pack
VS10WDSYS	omniPAGE Mini Wide, 20 x 10cm Dual, 2 sets of Glass Plates with 1mm thick bonded Spacers, 2 x 24 sample, 1mm thick combs, cooling pack including caster
VS10WDSYS-CU	omniPAGE Mini Wide, 20 x 10cm Dual, 2 sets of Glass Plates, 1mm thick bonded Spacers, 2 x 24 sample, 1mm thick combs including caster, External casting upstand
	Accessories
VS10WEXCASTER	VS10W External Casting Stand - No Casting Base
VS20CAST	20 x 10cm Casting Base
VS20DCASTM	Replacement Silicone Mat for 20 x 10cm Casting Base
VS10WDIRM	Inner Running Module
VS20-x -LG	Loading guides for omniPAGE mini combs, x = comb well number
VS10WNG	20 x 10cm Notched Glass Plates 4mm thick (pk/2)
VS10WPG	20 x 10cm Plain Glass Plates 4mm thick (pk/2)
VS10WNGS0.75	20 x 10cm Notched Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS10WPGS0.75	20 x 10cm Plain Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS10WNGS1	20 x 10cm Notched Glass Plates with 1mm Bonded Spacers (pk/2)
VS10WPGS1	20 x 10cm Plain Glass Plates with 1mm Bonded Spacers (pk/2)
VS10WPGS1.5	20 x 10cm Plain Glass Plates with 1.5mm Bonded Spacers (pk/2)
VS10WPGS2	20 x 10cm Plain Glass Plates with 2mm Bonded Spacers (pk/2)
VS10WDP	Dummy Plate, 20 x 10cm
RPW-0.2	Replacement Platinum Wire - 0.2mm, 50cm
VS20ICB	Maxi Cooling Pack

5.3) omniPAGE Maxi

Catalogue Number	Description
VS20D	omniPAGE Maxi, 20 x 20cm Dual with Glass Plates with bonded 1mm thick spacers, 2x 24 sample combs, cooling pack, dummy plate
VS20DSYS	omniPAGE Maxi, 20 x 20cm Dual with Glass Plates with bonded 1mm thick spacers, 2x 24 sample combs, cooling pack, dummy plate and Casting Base
VS20DSYS-CU	omniPAGE Maxi, 20 x 20cm Dual, 2 sets of Glass Plates, 1mm thick bonded Spacers, 2 x 24 sample, 1mm thick combs including caster, External casting upstand
	Accessories
VS20WEXCASTER	VS20 External Casting Stand - No Casting Base
VS20DCAST	20 x 20cm Dual Casting Base
VS20DCASTM	Replacement Silicone Mat for 20 x 20cm Casting Base
VS20DIRM	Inner Running Module
VS20ICB	Maxi Cooling Pack
VS20-x -LG	Loading guides for omniPAGE maxi combs, x = comb well number
VS20NG	20 x 20cm Notched Glass Plates 4mm thick (pk/2)
VS20PG	20 x 20cm Plain Glass Plates 4mm thick (pk/2)
VS20NGS0.75	20 x 20cm Notched Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS20PGS0.75	20 x 20cm Plain Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS20NGS1	20 x 20cm Notched Glass Plates with 1mm Bonded Spacers (pk/2)
VS20PGS1	20 x 20cm Plain Glass Plates with 1mm Bonded Spacers (pk/2)
VS20PGS1.5	20 x 20cm Plain Glass Plates with 1.5mm Bonded Spacers (pk/2)
VS20PGS2	20 x 20cm Plain Glass Plates with 2mm Bonded Spacers (pk/2)
VS20DP	Dummy Plate, 20 x 20cm
VS20S0.75	20cm Spacers - 0.75mm (pk/2)
VS20S1	20cm Spacers - 1mm thick (pk/2)
VS20S1.5	20cm Spacers - 1.5mm thick (pk/2)
VS20S2	20cm Spacers - 2mm thick (pk/2)
RPW-0.2100	Replacement Platinum Wire - 0.2mm, 100cm

5.4) Variety of combs available with VS20D, VS10WD:-

Code	Description	Sample Volume µl for a 5mm thick gel
VS20-1-0.75	Comb 1 Prep, 1 Marker, 0.75mm thick	1100
VS20-5-0.75	Comb 5 sample, 0.75mm thick	160
VS20-10-0.75	Comb 10 sample, 0.75mm thick	80
VS20-18-0.75MC	Comb 18 sample MC, 0.75mm thick	40
VS20-24-0.75	Comb 24 sample, 0.75mm thick	30
VS20-30-0.75	Comb 30 sample, 0.75mm thick	25
VS20-36-0.75MC	Comb 36 sample MC, 0.75mm thick	20
VS20-48-0.75	Comb 48 sample, 0.75mm thick	15
VS20-1-1	Comb 1 Prep, 1 Marker, 1mm thick	1500
VS20-5-1	Comb 5 sample, 1mm thick	200
VS20-10-1	Comb 10 sample, 1mm thick	100
VS20-18-1MC	Comb 18 sample, 1mm thick	50
VS20-24-1	Comb 24 sample, 1mm thick	40
VS20-30-1	Comb 30 sample, 1mm thick	35
VS20-36-1MC	Comb 36 sample MC, 1mm thick	25
VS20-48-1	Comb 48 sample, 1mm thick	20
VS20-1-1.5	Comb 1 Prep, 1 Marker, 1.5mm thick	2200
VS20-5-1.5	Comb 5 sample, 1.5mm thick	320
VS20-10-1.5	Comb 10 sample, 1.5mm thick	160
VS20-18-1.5MC	Comb 18 sample, 1.5mm thick	80
VS20-24-1.5	Comb 24 sample, 1.5mm thick	60
VS20-30-1.5	Comb 30 sample, 1.5mm thick	50
VS20-36-1.5MC	Comb 36 sample MC, 1.5mm thick	40
VS20-48-1.5	Comb 48 sample, 1.5mm thick	30
VS20-1-2	Comb 1 Prep, 1 Marker, 2mm thick	3000
VS20-5-2	Comb 5 sample, 2mm thick	400
VS20-10-2	Comb 10 sample, 2mm thick	200
VS20-18-2MC	Comb 18 sample, 2mm thick	100
VS20-24-2	Comb 24 sample, 2mm thick	80
VS20-30-2	Comb 30 sample, 2mm thick	70
VS20-36-2MC	Comb 36 sample MC, 2mm thick	50
VS20-48-2	Comb 48 sample, 2mm thick	40

5.5) omniPAGE VS30

Code	Description
VS30D	omniPAGE Maxi Plus, 30 x 22cm Dual with Glass Plates with bonded 1.5mm spacers, 2 x 28 sample combs, 2 x 2-D combs, cooling pack, dummy plate
	Accessories
VS30DSYS	VS30D with Casting Base
VS30BI	omniPAGE VS30 Blot Maxi Insert - includes 3 cassettes and 6 fibre pads.
VS30DCAST	30 x 22cm Dual Casting Base
VS30DCASTM	Replacement Silicone Mat for 30 x 22cm Casting Base
VS30DIRM	Inner Running Module
VS30ICB	Maxi Cooling Pack
VS30-x -LG	Loading guides for omniPAGE maxi combs, x = comb well number
VS30NG	30 x 22cm Notched Glass Plates 4mm thick (pk/2)
VS30PG	30 x 22cm Plain Glass Plates 4mm thick (pk/2)
VS30NGS0.75	30 x 22cm Notched Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS30PGS0.75	30 x 22cm Plain Glass Plates with 0.75mm Bonded Spacers (pk/2)
VS30NGS1	30 x 22cm Notched Glass Plates with 1mm Bonded Spacers (pk/2)
VS30PGS1	30 x 22cm Plain Glass Plates with 1mm Bonded Spacers (pk/2)
VS30PGS1.5	30 x 22cm Plain Glass Plates with 1.5mm Bonded Spacers (pk/2)
VS30PGS2	30 x 22cm Plain Glass Plates with 2mm Bonded Spacers (pk/2)
VS30DP	Dummy Plate, 30 x 22cm
VS30S0.75	22cm Spacers - 0.75mm (pk/2)
VS30S1	22cm Spacers - 1mm thick (pk/2)
VS30S1.5	22cm Spacers - 1.5mm thick (pk/2)
VS30S2	22cm Spacers - 2mm thick (pk/2)
RPW-0.2100	Replacement Platinum Wire - 0.2mm, 100cm

Variety of combs available with VS30D:-

Code	Description	Sample Volume µl for a 5mm thick gel
VS30-1-1	Comb 1 Prep, 1 Marker, 1mm thick	2250
VS30-2-1	Comb 2 sample, 1mm thick	1125
VS30-4-1	Comb 4 sample, 1mm thick	550
VS30-28-1MC	Comb 28 sample, 1mm thick MC compatible	80
VS30-56-1MC	Comb 56 sample, 1mm thick MC compatible	40
VS30-75-1.5	Comb 75 sample, 1mm thick	25
VS30-1-1.5	Comb 1 Prep, 1 Marker, 1.5mm thick	3375
VS30-2-1.5	Comb 2 sample, 1.5mm thick	1680
VS30-4-1.5	Comb 4 sample, 1.5mm thick	825
VS30-28-1.5MC	Comb 28 sample, 1.5mm thick MC compatible	120
VS30-56-1.5MC	Comb 56 sample, 1.5mm thick MC compatible	60
VS30-75-1.5	Comb 75 sample, 1.5mm thick	37

Section 6 Warranty

The Biocom Ltd. Electrophoresis units have a warranty against manufacturing and material faults of twelve months from date of customer receipt.

If any defects occur during this warranty period, Biocom will repair or replace the defective parts free of charge.

This warranty does not cover defects occurring by accident or misuse or defects caused by improper operation.

Units where repair or modification has been performed by anyone other than Biocom or an appointed distributor or representative are no longer under warranty from the time the unit was modified.

Units which have accessories or repaired parts not supplied by Biocom or its associated distributors have invalidated warranty.

Biocom cannot repair or replace free of charge units where improper solutions or chemicals have been used. For a list of these please see the Care and Maintenance subsection.

If a problem does occur then please contact your supplier or Biocom on:-

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e-mail: support@biocomdirect.com
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