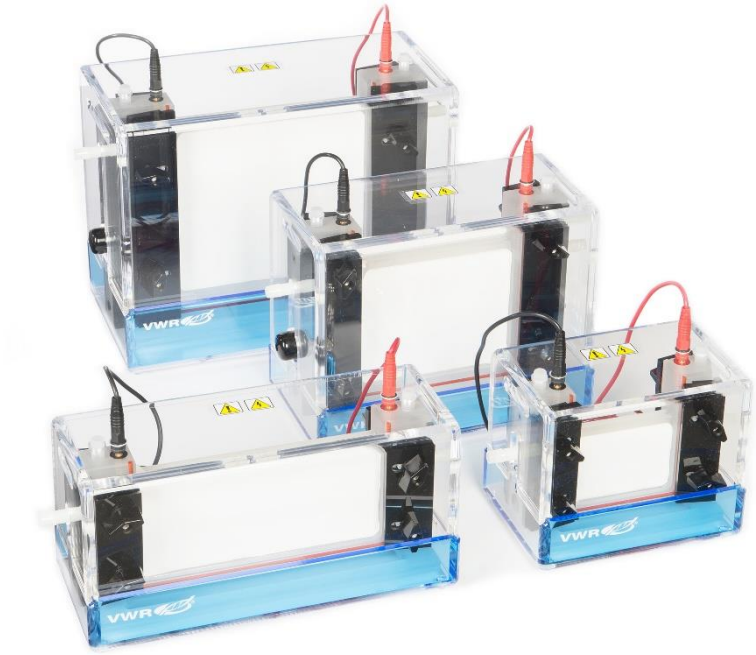
VWR® PerfectBlue™ Vertical Double Gel Systems Twin S, M, L & ExW S

Instruction Manual



European Catalogue Numbers:

Twin S	**700-0931**
Twin S w/o gel caster	**700-0937**
Twin M	**700-0955**
Twin M w/o gel caster	**700-0961**
Twin L	**700-1080**
Twin L w/o gel caster	**700-1205**
Twin ExW	**700-0980**
Twin ExW w/o gel caster	**700-0986**

Version: 1

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Legal Address of Manufacturer

VWR International bvba

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http://be.vwr.com

Country of Origin

United States

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.

Safety Precautions

To avoid electrical shock:

- Please, read this Instruction Manual carefully before using the gel system.
- Only use a CE marked DC power supply.
- Always disconnect the system from the power supply before removing the safety lid.
- Always disconnect the gel system from the power supply when it is not in use or before moving it.
- Running conditions for this unit should not exceed the maximum operating voltage or current.
- The flow rate for cooling should not exceed 2 liter per minute if the chamber is connected to a water tab. If using a water circulator the flow should not exceed 12 liter per minute.

Intended Use

Use this product only for its intended purpose as described in this manual. Do not use this product if the power leads are damaged or if any of its surfaces are cracked.

For research use only. Not intended for use in diagnostic or therapeutic applications.

Packaging List

The following items are included in shipment for the models Twin S, Twin M, Twin L and Twin ExW S:

Twin S (700-0937)	Twin M (700-0961)
▪ Upper buffer chamber with electrodes	▪ Upper buffer chamber with electrodes
▪ Lower buffer chamber	▪ Lower buffer chamber
▪ Safety Lid with power cords	▪ Safety Lid with power cords
▪ 4 blank glass plates	▪ 4 blank glass plates
▪ 2 notched glass plates	▪ 4 notched glass plates
▪ 2 notched alumina ceramic plates	▪ 4 clamp assemblies
▪ 4 clamp assemblies	▪ 2 combs, 1.5 mm thick, 10 teeth
▪ 2 combs, 0.8 mm thick, 10 teeth	▪ 2 combs, 1.5 mm thick, 15 teeth
▪ 4 side spacers, 0.8 mm thick	▪ 8 side spacers, 1.5 mm thick
▪ 2 bottom spacers, 0.8 mm thick	▪ 4 bottom spacers, 1.5 mm thick
▪ 2 replacement gaskets	▪ 2 replacement gaskets
▪ 4 replacement spring pegs	▪ 4 replacement spring pegs
▪ 1 blocking plate for single gel operation	▪ 1 blocking plate for single gel operation
▪ 1 SpacerPlacer for easy spacer alignment	▪ 1 SpacerPlacer for easy spacer alignment

Twin S (700-0931)	Twin M (700-0955)
as the 700-0937 but including casting base	as the 700-0961 but including casting base

Twin ExW S (700-0986)	Twin L (700-1205)
▪ Upper buffer chamber with electrodes	▪ Upper buffer chamber with electrodes
▪ Lower buffer chamber	▪ Lower buffer chamber
▪ Safety Lid with power cords	▪ Safety Lid with power cords
▪ 4 blank glass plates	▪ 4 blank glass plates
▪ 4 notched glass plates	▪ 4 notched glass plates
▪ 4 clamp assemblies	▪ 4 clamp assemblies
▪ 2 combs, 0.8 mm thick, 15 teeth	▪ 2 combs, 1.5 mm thick, 15 teeth
▪ 2 combs, 0.8 mm thick, 20 teeth	▪ 2 combs, 1.5 mm thick, 20 teeth
▪ 8 side spacers, 0.8 mm thick	▪ 8 side spacers, 1.5 mm thick
▪ 4 bottom spacers, 0.8 mm thick	▪ 4 bottom spacers, 1.5 mm thick
▪ 2 replacement gaskets	▪ 2 replacement gaskets
▪ 4 replacement spring pegs	▪ 4 replacement spring pegs
▪ 1 blocking plate for single gel operation	▪ 1 blocking plate for single gel operation
▪ 1 SpacerPlacer for easy spacer alignment	▪ 1 SpacerPlacer for easy spacer alignment

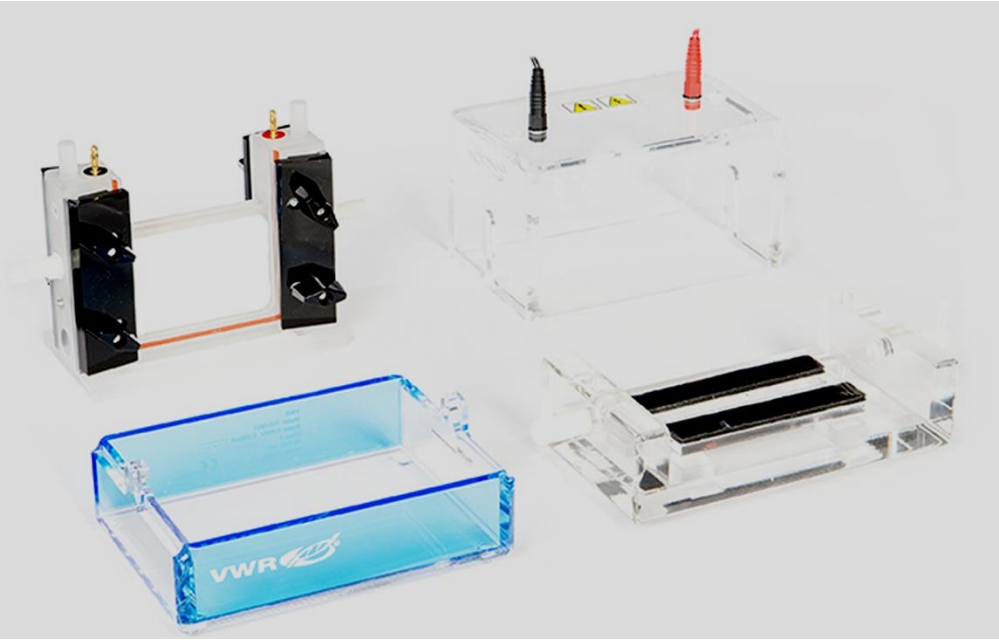
Twin ExW S (700-0980)	Twin L (700-1080)
as the 700-0986 but including casting base	as the 700-1205 but including casting base

System Overview

PerfectBlue™ vertical double gel systems Twin S, M, L and ExW S are characterized by sophisticated design and durable construction. With their unique arrangement of 3 cathodes and an extended anode surrounding the complete base of the electrophoresis chamber, electrophoretic separations of exceptional high quality can be achieved. All of the systems are equipped with an alumina ceramic cooling system for water circulation matching effective cooling and high migration rates without negatively affecting separation results. Using the casting system developed for the PerfectBlue™ vertical double gel systems up to 2 gels can get poured at once, conveniently and without leakage. Designed for convenience, the glass plates do not have to be re-assembled after polymerization and electrophoresis can performed straight away. This time saving step further eliminates potential sources of error. PerfectBlue™ vertical double gel systems are available in 4 different formats, each one including a wide range of accessories for increased versatility. The systems are constructed using solid parts, precisely machined from 0.6 mm thick acrylic by CNC milling. The use of specialized adhesives neutralizes mechanical forces and thermal expansions making the system durable and reliable. We are therefore confident of our guarantee, a full 3 year warranty on the whole range of PerfectBlue™ electrophoresis and blotting equipment.

Upper buffer chamber (UBC) with side clamps and electrodes

Safety lid with power cords



Lower buffer chamber (LBC)

Casting base

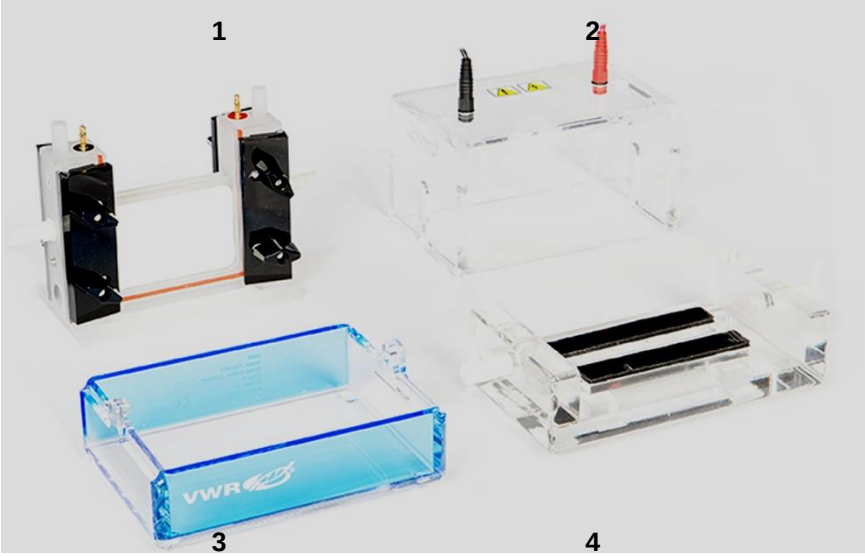
Technical Properties

PerfectBlue™	Cat. No.	Gel size (W x L)	required buffer volume	Maximal Voltage	max. current per gel	Typical running time
Twin S	700-0931/ 700-0937	10 x 10 cm	250 ml	up to 500 V	15 - 35 mA	30 - 90 min
Twin M	700-0955/ 700-0961	16 x 14 cm	650 ml	up to 500 V	15 - 50 mA	60 - 120 min
Twin L	700-1080/ 700-1205	20 x 20 cm	1250 ml	up to 500 V	15 - 75 mA	60 - 180 min
Twin ExW S	700-0980/ 700-0986	20 x 10 cm	650 ml	up to 500 V	30 - 45 mA	30 - 90 min

Short Instruction

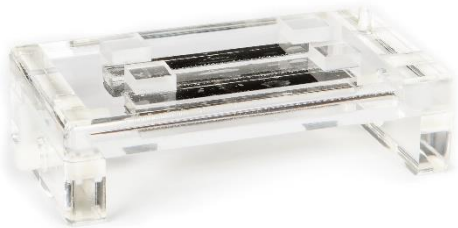
Systems Overview

1. Upper buffer chamber (UBC) with side clamps and electrodes
2. Safety lid with power cords
3. Lower buffer chamber (LBC)
4. Casting base



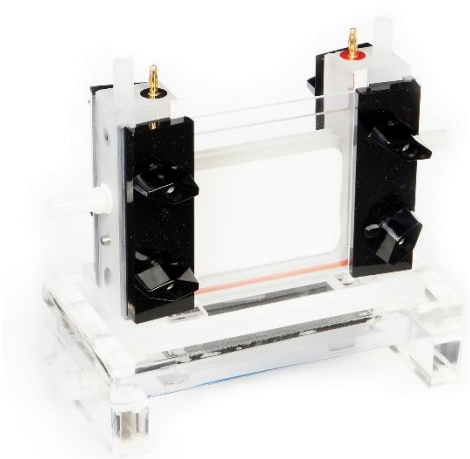
Leak Proof Sealing of Glass Plates

Invert casting base, so the black silicone mats face downward and the acrylic square upward.



Place UBC on inverted casting base. Arrange gel assemblies and place on each side of the UBC. It is important that the bottom of the glass plates and the spacers sit flat on the acrylic square of the inverted casting base.

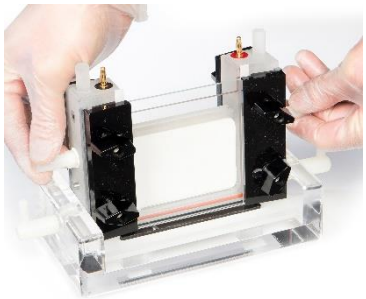
Tighten side clamps. Tighten the blocking plate in a similar way at the other side of the UBC in case of casting only one gel.

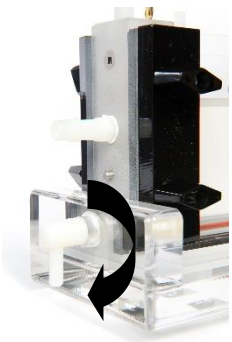


Invert casting base and turn out the cams.

Wet the silicone mats with e.g. water or buffer to prolong their life span.

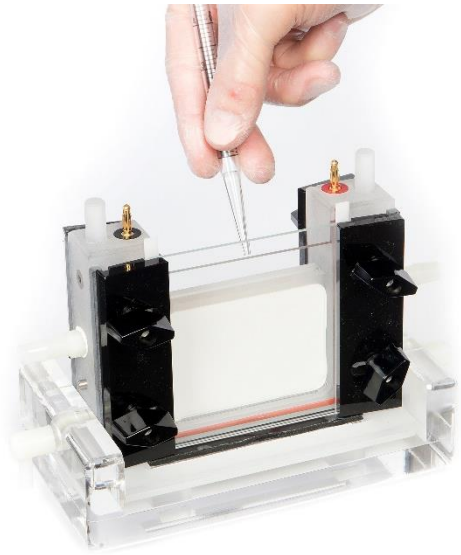
Place UBC on the gaskets and turn the handles at the same time, half a turn.





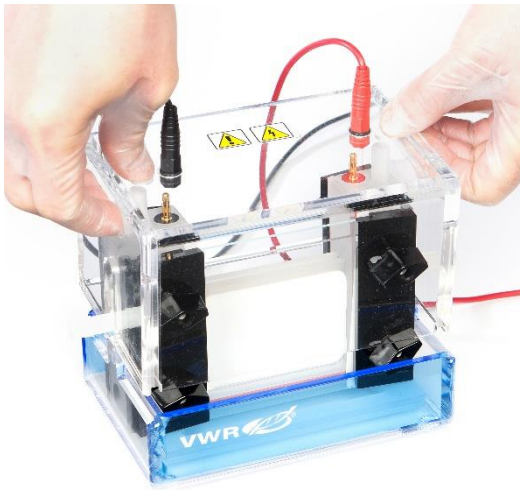
Assembling the System and Electrophoresis

The gel can now be poured. Pour slowly to avoid bubbles.



After polymerization, lift UBC from casting base and place into the LBC. Add buffer to the UBC. Load the samples. Add buffer to the LBC.

Place safety lid onto the unit and start the run. After the run is completed turn off the power supply and remove lid. Lift UBC from LBC, loosen side clamps to remove gel assembly for further analysis.



General Instructions

Leak Proof Sealing of Glass Plates

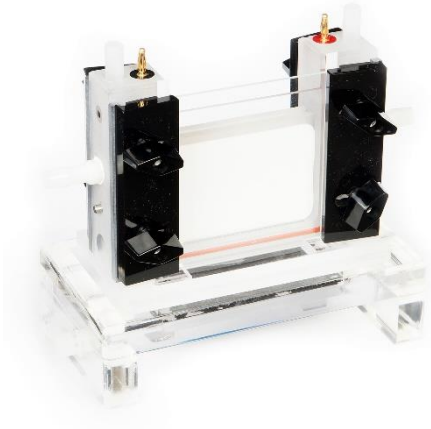
When casting acrylamide gels, we recommend using the upper buffer chamber (UBC) for the fixation of glass plates and the casting base for plate sealing. The casting base is included in delivery or can be purchased separately. In addition the Cast-It™ gel caster is available for sealing glass plates and pouring gels while the upper buffer chamber is used for electrophoresis. (see 'Technical Support and Ordering Information').

1. The upper buffer chamber (UBC) is attached to the lower buffer chamber (LBC) with a safety interlocking pin and slot arrangement. The UBC may be removed for cleaning by sliding the pin out of the slot in the center fixture of the LBC and lifting it out. For casting the gel remove the UBC and loosen the black knobs and slide the side clamps sideways to the outermost position. The clamps will remain in place once positioned due to the spring design.

2. Invert the casting base so that the black silicone mats face downward. Inverting the casting base is essential for proper alignment of glass plates and spacers before clamping them inside the UBC assuring perfect sealing later on.

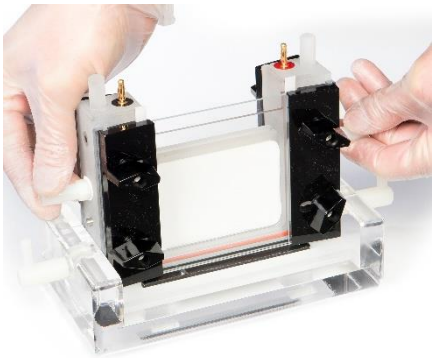
3. Place the UBC flat on the inverted casting base. Arrange a gel assembly including a notched glass plate, side spaces and blank glass plate onto the gasket of one side of the UBC, making sure to place the notched plate next to the gasket (this will allow buffer access to the gel during operation). Make sure that the bottom of the glass plates and the spacers sit flat on the acrylic squares of the inverted casting base. The usage of the Spacer Placer facilitates the arrangement of the spacers. Slide the side clamps over the assembly until the gasket of the UBC is slightly flattened by the glass plates (do not over tighten).

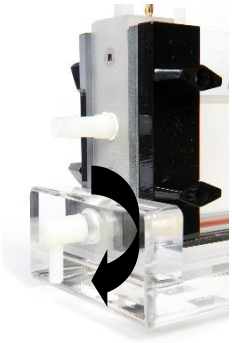
   Place a second gel assembly or the blocking plate on the other side to create the upper buffer reservoir.



4. After aligning and clamping the glass plate assembly the UBC will be removed and the casting base has to be turned around so that the black silicone mats are facing upward. Wet the silicone mats with e.g. water or buffer to prolong their life span.

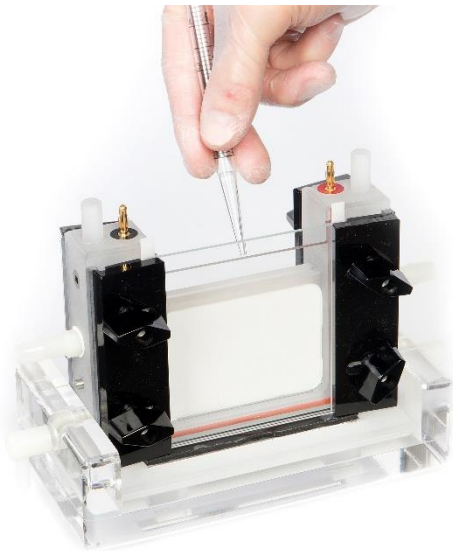
5. Place the UBC onto the casting base. Insert the casting cams (with handles pointing up) into the holes in the UBC. Simultaneously turn cams one half turn to tighten the assembly onto the silicone gaskets of the casting base. The eccentric effect of the cams presses the UBC and therefore the lower angles of the glass plates downward onto the silicone mats of the casting base.





6. Once the glass plates are secured into the casting base, the gel may be poured. Take care to avoid air bubbles while pouring the gel. Immediately after the gel is poured insert an appropriate comb for the creation of wells.

   There is no need to apply the casting base when using pre-cast gels. Since glass or plastic plates of pre-cast gels are often very thin take care not to over tighten the side camps when fixing the gel assembly into the UBC.



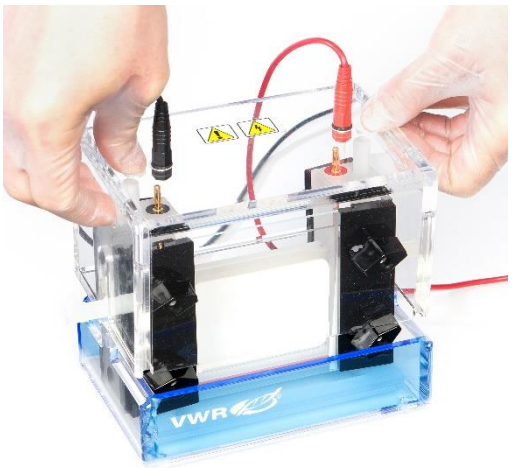
Assembling the System and Electrophoresis

1. To reassemble, place the upper buffer chamber (UBC) into the lower buffer chamber (LBC) on the open side of the slot in the center fixture of the LBC. Slide the UBC towards the center of the LBC until the pins lock into the slot. This interlocking pin and slot arrangement guarantees a tighter fit of the UBC in the LBC and allows a reproducibility of the electric conditions.

2. For cooling through a cold water tap or recirculator chiller, flexible lab tubing can get attached to each hose barb on the UBC marked as 'in' and 'out'. The inner diameter of the adapters of the integrated cooling system is 6 mm, the outer diameter is 9 mm. Note the marks indicating 'in' and 'out' at the adapters to assure the right flow direction. Water flow should not exceed 2 L per minute for the water tap and 12 L per minute for the recirculator.

3. Add electrophoresis buffer to the UBC to approximately 5 mm from the top of the gel assemblies, making sure the level is above the gap formed by the 'ears' of the notched plate. Be sure that no buffer is leaking from the UBC to the LBC.
4. Remove comb and rinse wells with buffer. Load samples onto the gel.
5. Add buffer to the LBC to approximately 2-3 mm above the base of the gel. The open bottom end of the gel assembly should be in contact with buffer in order for electrophoresis to take place.

6. Set the safety lid onto the unit. Because of its asymmetrical design this will only work in the proper orientation, connecting the electrode of the lower buffer reservoir (typically the anode) with the red power cord and the electrodes of the upper buffer reservoir (typically the cathodes) with the black power cord.
7. For cooling, turn on the water and allow it to circulate through the system. Water flow should not exceed 2 L per minute for the water tap and 12 L per minute for the recirculator.
8. When water has started to circulate through the system, connect the power cords to a power supply (red to red and black to black) and start the run by defining an appropriate voltage or current (see 'Technical properties').
9. Turn off power supply and water after the electrophoresis is complete.



10. Remove the lid by pushing on the acrylic thumb pegs protruding through the lid on the top of the unit. Slide and lift UBC from LBC and drain buffer chambers separately.
11. Loosen side clamps and remove gel assemblies to further proceed with analysis.

Cleaning

Lower buffer chamber, upper buffer chamber, silicone gaskets of the casting base, glass plates, spacers and combs should get cleaned thoroughly under running water after use. Use a mild detergent to get rid of any debris then rinse with distilled water to avoid formation of salt spots. It is recommended to allow the chamber to air dry rather than drying with a towel to avoid damage to the electrode wires. Each part should get completely dry before storage.

Do not use ethanol or other organic solvents to clean acrylic products, because organic solvents cause acrylic to 'craze' or crack!

Required Materials and Recipes

Required Gel Volumes

These volumes have been calculated for glass plates and spacers available at VWR.

PerfectBlue™ double gel system	Twin S	Twin M	Twin ExW S	Twin L
0.8 mm Spacer	8 ml	18 ml	16 ml	32 ml
1.5 mm Spacer	15 ml	34 ml	30 ml	60 ml

Required Buffer Volumes

PerfectBlue™ double gel system	Twin S	Twin M	Twin ExW S	Twin L
	250 ml	650 ml	650 ml	1250 ml

Tris-Glycine SDS-PAGE

10 x Tris-Glycine electrophoresis buffer

30 g/l Tris-Base [0.25 M]

144 g/l Glycine [1.92 M]

10 g/l SDS [1 %, w/v]

Adjust volume to 1 L using distilled H_2O

Resolving gels for Tris-Glycine SDS-PAGE

	6 %	8 %	10 %	12 %	15 %
H_2O	5.3	4.6	4.0	3.3	2.3
30 % Acrylamide mix	2.0	2.7	3.3	4.0	5.0
1.5 M Tris-HCl (pH 8.8)	2.5	2.5	2.5	2.5	2.5
10 % SDS	0.1	0.1	0.1	0.1	0.1
10 % Ammonium persulfate (APS)	0.1	0.1	0.1	0.1	0.1
TEMED	0.008	0.006	0.004	0.004	0.004

All amounts in ml per 10 ml gel solution

5 % Stacking gels for Tris-Glycine SDS-PAGE

	1 ml	2 ml	3 ml	5 ml	10 ml
H_2O	0.68	1.4	2.1	3.4	6.8
30 % Acrylamide mix	0.17	0.33	0.5	0.83	1.7
1.0 M Tris-HCl (pH 6.8)	0.13	0.25	0.38	0.63	1.25
10 % SDS	0.01	0.02	0.03	0.05	0.1
10 % Ammonium persulfate (APS)	0.01	0.02	0.03	0.05	0.1
TEMED	0.001	0.002	0.003	0.005	0.01

All amounts in ml

3 x Sample buffer for Tris-Glycine SDS-PAGE

1.75 ml 1 M Tris-HCl pH 6.8

1.5 ml Glycerine

5 ml SDS (10 %)

0.5 ml β-Mercaptoethanol

1.25 ml Bromophenol blue

Tris-Tricine SDS-PAGE

1 x Tris-Tricine electrophoresis buffer

Cathode buffer	12.11 g/l Tris-Base [0.1 M]
	17.92 g/l Tricine [0.1 M]
	1 g/l SDS [0.1 %, w/v]
	Adjust volume to 1 L using distilled H_2O
Anode buffer	0.2 M Tris-HCl, pH 8.9

Resolving gels for Tris-Tricine SDS-PAGE

	6 %	8 %	10 %	12 %
H_2O	2.1	1.4	0.6	0.0
Glycerin	1.4	1.4	1.4	1.4
30 % Acrylamide mix	2.1	2.8	3.5	4.2
3 M Tris-HCl (pH 8.45)	4.3	4.3	4.3	4.3
10 % SDS	0.1	0.1	0.1	0.1
10 % Ammonium persulfate (APS)	0.1	0.1	0.1	0.1
TEMED	0.008	0.006	0.004	0.004

All amounts in ml per 10 ml gel solution

10 % Stacking gels for Tris-Tricine SDS-PAGE

	1 ml	2 ml	3 ml	5 ml	10 ml
H_2O	0.03	0.06	0.08	0.16	0.32
30 % Acrylamide mix	0.32	0.65	1.0	1.62	3.24
3 M Tris-HCl (pH 8.45)	0.62	1.24	1.86	3.10	6.20
10 % SDS	0.02	0.03	0.06	0.1	0.2
10 % Ammonium persulfate (APS)	0.005	0.01	0.015	0.025	0.05
TEMED	0.001	0.001	0.002	0.005	0.01

All amounts in ml

2 x Sample buffer for Tris-Tricine gels

1 ml Tris-HCl (pH 6.8)

0.8 g SDS

2.4 ml Glycerine

0.31 g DTT

2 mg Coomassie Blue G-250

Adjust volume to 10 ml using distilled H_2O

3 x Sample buffer for native gel electrophoresis

4.5 ml Glycerine

0.31 g Bis-Tris-Base

adjust to pH 7 with HCL

Adjust volume to 10 ml using distilled H_2O

Troubleshooting

Below are some possible solutions to potential problems. If these suggestions are unsuccessful, do not hesitate to contact us (see 'Technical Support and Ordering Information').

Problem	Cause	Solution
Leakage of gel solution	Glass plates and spacers have not been aligned correctly	For correct alignment of glass plate sandwich it is necessary to place the upper buffer chamber on top of the inverted casting base. The bottom of the glass plates and the spacers need to sit flat on the acrylic squares.
	Glass plates or spacers are dirty	Clean thoroughly.
	Uneven edges of glass plates	Only use glass plates with polished edges.
	Silicone gaskets of casting base are dirty	Clean thoroughly with a mild detergent and rinse with distilled water, dry without smearing, i.e. hand dry with a lint free towel.
	Silicone gaskets of casting base are brittle or worn out	Replace silicone gaskets which can be easily removed. New gaskets will stick due to their own adherence. Also, wet silicone mats with e.g. water or buffer before placing UBC onto the casting base to prolong their life span.
Upper buffer chamber is leaking	Gaskets of the upper buffer chamber are deformed, too old or dirty	Remove gasket, wash in warm water to remove excess salts, and place the gasket back in the groove. If the gaskets are too old or brittle, they should be replaced. If the clamps have been over tightened in the past, the gasket can be pushed too far into the gasket groove and will not make a seal.
	Leakage of buffer through gel sides/spacers	Do not move spacers after the gel polymerized. Make sure that the glass plates are seated firmly against the gasket. Always use combs and spacers of the same thickness.

Problem	Cause	Solution
Run time is too long	Buffer is too dilute	After a certain running time the ions might be exhausted, so the electric resistance increases and the current decreases at constant voltage, so that the maximum voltage is not enough to keep the current constant. Check buffer recipe and try again with new buffer. Check if voltage and current of the different runs is the same.
	Upper buffer chamber is leaking	See above 'Upper buffer chamber is leaking'.
	Running at too low current or voltage	Make sure you are running using the suggested running conditions for this unit (see 'Technical properties'). When running at constant current, the current value is per gel.
Running too fast	Buffers are too concentrated	Check buffer recipe; remake and try again. If voltage is lower than usual when running at constant current, the buffer is probably too concentrated.
	Voltage or current set too high.	Turn down electrical settings.
Smiling of dye front	Center of gel is running hotter than the ends	Use the cooling option of the unit. Turn down the electrical settings.
Bands spreading outwards	Diffusion of sample when loading	Make sure that the samples are loaded quickly and the power is applied as soon as possible after loading.
	Diffusion of sample during run in the stacking gel	Increase percentage of stacking gel or increase current by 25 % when stacking.
	Lower ionic strength of sample	Match the ionic strength of sample with that of the gel.
Bands are narrower than sample wells	Ionic strength of sample is higher than of the gel	De-salt the sample or use sample buffer of the same ionic strength as the gel.
Broad lanes at bottom of gel	Will occur when adjoining lanes are loaded with samples with different buffers. Normal in gradient gels.	Use the same sample buffer for all of the samples loaded per gel.
Skewed bands	Gel has not polymerized properly at wells.	De-gas gel solution before 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 sample.	Desalt the samples by dialysis, desalting columns or precipitation/resolving.
	Resolving gel is uneven at top.	Overlay gel carefully using water saturated n-butanol and make sure casting stand is level.
	The upper buffer chamber is leaking either through the gel or along the side spacers.	Check gel to make sure that it is a solid slab inside the glass and check the setup of the apparatus to ensure a seal with the gasket. Always use combs and spacers of the same thickness.

Problem	Cause	Solution
Streaked bands	Overloading of sample.	Use less protein or sample when next loading.
	Sample has precipitated.	Centrifuge sample before adding sample buffer or use a lower percentage acrylamide gel.
'Frowning' of outside lanes	Leakage of buffer along sides or along spacers inside the gel assembly.	Do not move spacer after polymerization of gel. Make sure that the glass plates are pressed firmly against the gasket of the UBC.
Silicone mats wear out quickly	Sticky surface of the mats adheres too strongly to the glass plates. Upon removal of UBC silicone mats are torn apart.	Wet the silicone mats with e.g. water or buffer before placing UBC onto the casting base to prolong their life span.
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.

Technical Support and Ordering Information

For technical questions and more detailed information on VWR's products please contact your local VWR office or visit the VWR website at **vwr.com**.

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

PerfectBlue™ Double Gel System Twin S

Item	Description			Cat. No.
Double gel system Twin S	system for gels 10 x 10 cm (W x L), without casting base			700-0937
	system for gels 10 x 10 cm (W x L), with casting base			700-0931
Casting base S	including silicone gaskets and cams			700-0932
Cast-It™ S gel caster	complete system for sealing up to 2 gels			700-0935
Silicone gaskets	2 replacement silicone gaskets for Casting base S			700-0933
Replacement gaskets	2 replacement gaskets for upper buffer chamber S			700-0936
Side clamps	2 side clamps for fixation of glass plates			700-0934
Wing screws	2 wing screws for fixation of side clamps			700-0944
Notched glass plate	clear, 10 x 10 x 0.24 cm			700-0920
Blank glass plate	clear, 10 x 10 x 0.24 cm			700-0919
Notched alumina plate	white, 10 x 10 x 0.10 cm			700-0921
Standard combs	1.5 mm	6 teeth	230 µl*	700-0927
	1.5 mm	8 teeth	160 µl*	700-0929
	1.5 mm	10 teeth	120 µl*	700-0918
	1.5 mm	12 teeth	90 µl*	700-0923
	0.8 mm	6 teeth	120 µl*	700-0926
	0.8 mm	8 teeth	85 µl*	700-0928

	0.8 mm	10 teeth	60 µl*	700-0917
	0.8 mm	12 teeth	45 µl*	700-0922
Preparative combs	1.5 mm	2 teeth	1500/100 µl*	700-0939
	0.8 mm	2 teeth	800/60 µl*	700-0938
SpacerPlacer	Facilitates the correct alignment of Spacers			700-0942
Spacer Sets	1.5 mm	0.7 cm wide	3 pieces	700-0941
(2 side & 1 bottom spacer)	0.8 mm	0.7 cm wide	3 pieces	700-0940

* volumes are calculated for a well length of 14 mm

PerfectBlue™ Double Gel System Twin M

Item	Description			Cat. No.
Double gel system Twin M	system for gels 16 x 14 cm (W x L), without casting base			700-0961
	system for gels 16 x 14 cm (W x L), with casting base			700-0955
Casting base M	including silicone gaskets and cams			700-0956
Cast-It™ M gel caster	complete system for sealing up to 2 gels			700-0959
Silicone gaskets	2 replacement silicone gaskets for Casting base M			700-0957
Replacement gaskets	2 replacement gaskets for upper buffer chamber M			700-0960
Side clamps	2 side clamps for fixation of glass plates			700-0958
Wing screws	2 wing screws for fixation of side clamps			700-0944
Notched glass plate	clear, 16 x 14 x 0.32 cm			700-0948
Blank glass plate	clear, 16 x 14 x 0.32 cm			700-0947
Standard combs	1.5 mm	10 teeth	310 µl*	700-0946
	1.5 mm	15 teeth	180 µl*	700-0950
	1.5 mm	20 teeth	115 µl*	700-0952
	1.5 mm	24 teeth	85 µl*	700-0954
	0.8 mm	10 teeth	165 µl*	700-0945
	0.8 mm	15 teeth	95 µl*	700-0949
	0.8 mm	20 teeth	60 µl*	700-0951
	0.8 mm	24 teeth	45 µl*	700-0953
Preparative combs	1.5 mm	2 teeth	3900/155 µl*	700-0963
	0.8 mm	2 teeth	2095/80 µl*	700-0962
SpacerPlacer	Facilitates the correct alignment of Spacers			700-0966
Spacer Sets	1.5 mm	1.0 cm wide	3 pieces	700-0965
(2 side & 1 bottom spacer)	0.8 mm	1.0 cm wide	3 pieces	700-0964

* volumes are calculated for a well length of 20 mm

PerfectBlue™ Double Gel System Twin L

Item	Description	Cat. No.
Double gel system Twin L	system for gels 20 x 20 cm (W x L), without casting base	700-1205
	system for gels 20 x 20 cm (W x L), with casting base	700-1080
Casting base L	including silicone gaskets and cams	700-1087
Cast-It™ L gel caster	complete system for sealing up to 2 gels	700-1093

Silicone gaskets	2 replacement silicone gaskets for Casting base L			700-1089
Replacement gaskets	2 replacement gaskets for upper buffer chamber L			700-1098
Side clamps	2 side clamps for fixation of glass plates			700-1092
Wing screws	2 wing screws for fixation of side clamps			700-0944
Notched glass plate	clear, 20 x 20 x 0.32 cm			700-1034
Blank glass plate	clear, 20 x 20 x 0.32 cm			700-1020
Standard combs	1.5 mm	10 teeth	405 µl*	700-0999
	1.5 mm	15 teeth	245 µl*	700-1014
	1.5 mm	20 teeth	165 µl*	700-1017
	1.5 mm	25 teeth	115 µl*	700-1046
	0.8 mm	10 teeth	215 µl*	700-0998
	0.8 mm	15 teeth	130 µl*	700-1013
	0.8 mm	20 teeth	85 µl*	700-1015
	0.8 mm	25 teeth	60 µl*	700-1043
Preparative combs	1.5 mm	2 teeth	4915/155 µl*	700-1210
	0.8 mm	2 teeth	2620/80 µl*	700-1209
SpacerPlacer	Facilitates the correct alignment of Spacers			700-1215
Spacer Sets	1.5 mm	1.0 cm wide	3 pieces	700-1214
(2 side & 1 bottom spacer)	0.8 mm	1.0 cm wide	3 pieces	700-1211

* volumes are calculated for a well length of 20 mm

PerfectBlue™ Double Gel System Twin ExW S

Item	Description			Cat. No.
Double gel system	system for gels 20 x 10 cm (W x L), without casting base			700-0986
Twin ExW S	system for gels 20 x 10 cm (W x L), with casting base			700-0980
Casting base ExW	including silicone gaskets and cams			700-0981
Cast-It™ ExW S gel caster	complete system for sealing up to 2 gels			700-0984
Silicone gaskets	2 replacement silicone gaskets for Casting base ExW S			700-0982
Replacement gaskets	2 replacement gaskets for upper buffer chamber ExW S			700-0985
Side clamps	2 side clamps for fixation of glass plates			700-0983
Wing screws	2 wing screws for fixation of side clamps			700-0944
Notched glass plate	clear, 20 x 10 x 0.30 cm			700-0971
Blank glass plate	clear, 20 x 10 x 0.30 cm			700-0970
Standard combs	1.5 mm	10 teeth	285 µl*	700-0969
	1.5 mm	15 teeth	170 µl*	700-0974
	1.5 mm	20 teeth	115 µl*	700-0976
	1.5 mm	25 teeth	80 µl*	700-0978
	0.8 mm	10 teeth	150 µl*	700-0968
	0.8 mm	15 teeth	90 µl*	700-0973
	0.8 mm	20 teeth	60 µl*	700-0975
	0.8 mm	25 teeth	40 µl*	700-0977

Micro titer combs	1.5 mm	18 teeth	135 µl*	700-0991
	1.5 mm	36 teeth	55 µl*	700-0989
	0.8 mm	18 teeth	70 µl*	700-0990
	0.8 mm	36 teeth	30 µl*	700-0988
Preparative combs	1.5 mm	2 teeth	3575/110 µl*	700-0993
	0.8 mm	2 teeth	1905/60 µl*	700-0992
SpacerPlacer	Facilitates the correct alignment of Spacers			700-0996
Spacer Sets	1.5 mm	1.2 cm wide	3 pieces	700-0995
(2 side & 1 bottom spacer)	0.8 mm	1.2 cm wide	3 pieces	700-0994

* volumes are calculated for a well length of 14 mm

Power Supplies

Do not hesitate to contact us for advice on which Power Supply is most suitable for your application.

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