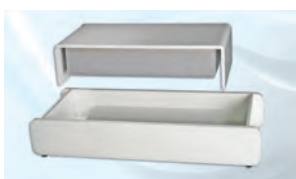
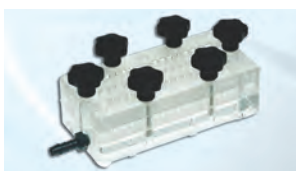
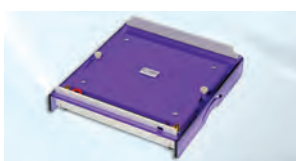


blotting

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Blotting Systems

Blotting, a technique that entails immobilisation of proteins or nucleic acids on a solid membrane support and then detection using a specific antibody or probe of complementary nucleic acid sequence, significantly increases the potential for identification and characterisation of proteins and nucleic acids. Upon transfer to a membrane support proteins and nucleic acids become far more accessible to detection by antibodies and probes than they would otherwise be within a gel. Size-fractionation by gel electrophoresis followed by blotting is an excellent way to identify specific molecules within a mixed population of nucleic or protein molecules, and the two techniques are often used in tandem.



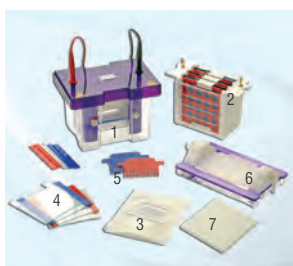
Blot Transfer Systems Overview

Cleaver Scientific offers five types of system:

- **Electroblotters** – combine PAGE and transfer techniques within the same tank (see pg 50).
- **Tank transfer systems** – are ideal for protein identification. Full flexibility is offered in selecting voltage settings, blotting times, and cooling options. These systems, which are available with either plate or wire electrodes, support efficient, quantitative transfers over a wide molecular weight range. Plate electrode systems are faster through greater field strength, while wire electrodes are usually more economical, consuming less current and generating less heat (see pg 52).
- **Semi-dry transfer systems** – perfect for rapid, high-intensity transfers of mid-range proteins, 10-100kD in size (see pg 54).
- **Microfiltration (dot and slot blotting)** – a technique that does not require the resolving power of electrophoresis which is used to determine the working conditions for a new blotting assay, antibody titres and antibody-antigen specificity. Also suitable for nucleic acids (see pg 54).
- **Capillary transfer systems** – the classical method for transfer of nucleic acids to a nylon membrane (available to order only; please enquire).

Blotting System Selection Guide

		Blotting Area (w x l)	Transfer Parameters					Gel Capacity				
			Number of blotting Cassettes	Required Buffer Volume	Electrode Distance	Typical Transfer Time	Cooling	omniPAGE Gels (w x h) / blotting cassette				
								CVS10 Mini 8x8.5cm	VS10W Mini Wide 16x8.5cm	VS20 Maxi 16x17.5cm	VS20 WAVE 16x17.5cm	VS30 Maxi Plus 26x20cm
Electroblotters	CVS10CBS	10x10cm	4 with wire/ 2 with plate electrodes	1.2L	8cm wire/ 2cm plate	1-2h / <1h	Cool pack	1	–	–	–	–
	VS10WCBS	20x10cm	3	2.8L	6cm	1-2h		2	1	–	–	–
	VS20CBS	20x20cm	3	5.6L	6cm	5-20h		4	2	1	1	–
	WAVECBS	20x20cm	4 with wire/ 1 with plate electrodes	6.4L	8cm wire/ 4cm plate	5-20h / 1-5h	Coil	4	2	1	1	–
Tank Transfer	SB10	10x10cm	4 with wire/ 2 with plate electrodes	1.2L	8cm	1-2h / <1h	Cool pack	1	–	–	–	–
	SB10W	20x10cm	3	2.8L	6cm	1-2h		2	1	–	–	–
	SB20	20x20cm	3	5.6L	6cm	5-20h		4	2	1	1	–
	SW20	20x20cm	4 with wire/ 1 with plate electrodes	6.4L	8cm wire/ 4cm plate	5-20h / 1-5h	Coil	4	2	1	1	–
	EBM10	10x10cm	5	1.5L	12cm	1-2h	Cool pack	1	–	–	–	–
	EBM20	20x20cm	5	1.6L	15cm	5-20h		4	2	1	1	–
Semi-dry transfer	SD10	10x10cm	–	5ml	As per sandwich thickness	15-30 min	–	1	–	–	–	–
	SD20	20x20cm	–	20ml		15-30 min	–	4	2	1	1	–
	SD33	33x45cm	–	75ml		15-30 min	–	20	10	5	5	2
	SD50	20x50cm	–	50ml		15-30 min	–	30	16	2	2	1



omniPAGE Mini electroblotting system components:

1. Tank, lid and PAGE insert
2. Blotting insert
3. Cool Pack
4. Glass plates & spacers
5. Combs
6. Casting base
7. Dummy plate & gel-release tool

omniPAGE Mini Complete Electroblotting System

The omniPAGE Mini electroblotting system allows PAGE and blotting to be performed using the same universal tank and lid. Interchangeable modules dedicated to PAGE or blotting facilitate simultaneous transfer of up to four 10x10cm gels. Features include:

- Transfer capability for up to four 10x10cm gels in as little as an hour; low-intensity transfers may also be performed overnight
- Platinum-wire electrodes 8cm apart generate a powerful electric field for efficient transfer; an optional plate-electrode insert is available for rapid 2-gel transfers
- Cool pack which, when frozen an hour before use, slots conveniently into the tank to provide a low-cost, efficient heat sink during fast high-intensity transfers
- Open design, rigid cassettes maximise current transfer and eliminate 'shadow band' formation; colour-coded to ensure proper orientation within the blotting system.

Technical Specifications	
	Mini
Maximum Gel Size	8x8.5cm (active gel dimensions)
Gel Capacity	4x CVS10 Mini Gels; 2 with plate-electrode insert
Buffer volume	1.2L Max.
Running conditions	35V overnight to 100V high-intensity, <1-2 hours
Recommended power supply	CS-3AMP; CS-300V also recommended (pg 61)

Ordering Information

Code	Complete Mini System for electrophoresis and blotting, comprising:
CVS10CBS	1x Mini Vertical Unit which includes: PAGE insert, 2x2mm thick notched glass plates, 2x2mm thick plain glass plates with 1mm thick bonded spacers, 1x dummy plate, 2x combs (1mm thick 12 samples), 1x casting base, silicone mat, cooling pack; plus: 1x Mini Standard Electroblotting Module which includes: Mini Platinum Wire Blotting Insert, 4x 10x10cm compression cassettes and 16x fibre pads
CVS10CBS-HI	1x Mini Vertical Unit which includes: PAGE insert, 2x2mm thick notched glass plates, 2x2mm thick plain glass plates with 1mm thick bonded spacers, 1x dummy plate, 2x combs (1mm thick 12 samples), 1x casting base, silicone mat, cooling pack; plus: 1x Mini Standard Electroblotting Module which includes: Mini Plate-electrode Blotting Insert, 2x 10x10cm compression cassettes and 8x fibre pads
VS10BI	1x Mini Blotting Insert, 4x compression cassettes and 16x fibre pads
VS10BI-HI	1x Mini High Intensity Blotting Insert, 2x compression cassettes and 8x fibre pads



CVS10CBS-HI



VS10BI



VS10BI-HI

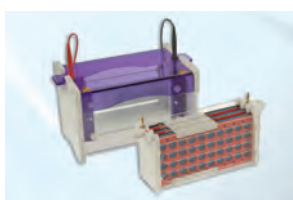
omniPAGE Mini Wide and Maxi Complete Electroblotting Systems

The omniPAGE Mini Wide and Maxi electroblotting systems share the same features as the omniPAGE Mini, to facilitate simultaneous transfer of up to three 20x10cm Mini Wide and 20x20cm Maxi gels respectively.

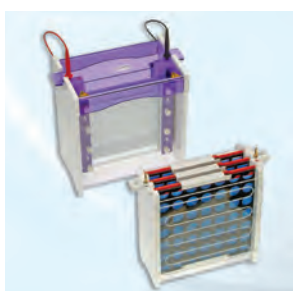
Technical Specifications		
	Mini Wide	Maxi
Maximum Gel Size	17.5x8.5cm (active)	16x17.5cm (active)
Gel Capacity	6x Mini, 3x Mini Wide	12x Mini, 6x Mini Wide & 3x Maxi
Buffer Volume	2.8L Max.	5.6L Max.
Running conditions	35V overnight to 100V high-intensity 1-2 hours	100V 5-20h
Recommended power supply	CS-3AMP; CS-300V & CS-500V	CS-3AMP

Ordering Information

Code	Complete Mini Wide System for electrophoresis and blotting, comprising:
VS10WCBS	1x Mini Wide Vertical Unit which includes: PAGE insert, 2x4mm thick notched glass plates, 2x4mm thick plain glass plates with 1mm thick bonded spacers, 1x dummy plate, 2x combs (1mm thick 24 samples), 1x casting base, silicone mat, cooling pack; plus: 1x Mini Standard Electroblotting Module which includes: Mini Platinum Wire Blotting Insert, 3x 20x10cm compression cassettes and 12x fibre pads
VS20CBS	1x Maxi Vertical Unit which includes: PAGE insert, 2x4mm thick notched glass plates, 2x4mm thick plain glass plates with 1mm thick bonded spacers, 1x dummy plate, 2x combs (1mm thick 24 samples), 1x casting base, silicone mat, cooling pack; plus: 1x Maxi Standard Electroblotting Module which includes: Maxi Platinum Wire Blotting Insert, 3x 20x20cm compression cassettes and 12x fibre pads

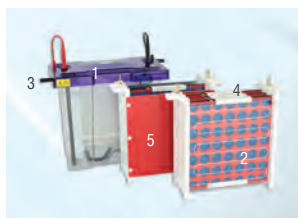


VS10WCBS



VS20CBS

blotting



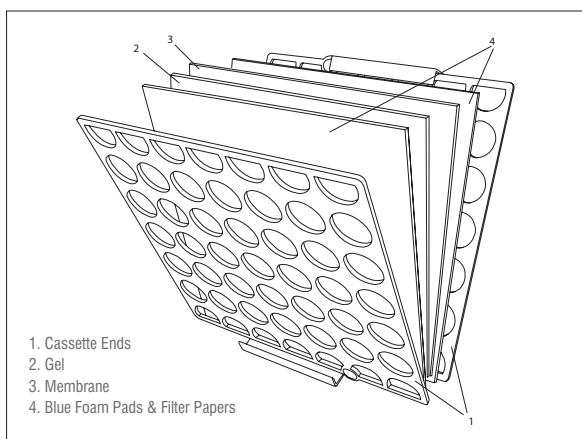
the VS20 WAVE electroblotting system

The VS20 WAVE complete electroblotting system provides all necessary components for performing transfers from vertical slab gels.

VS20 WAVE electroblotting system components:

1. Tank, lid and PAGE insert
2. Blotting insert – wire-electrode
3. Cooling coil
4. Gel cassettes
5. High-intensity blotting insert

- Interchangeable modular inserts combine vertical PAGE with electro-transfer using the same universal tank and lid
- Multi-transfer capability for up to 4 WAVE Maxi gels, 8 omniPAGE Mini Wide and 16 omniPAGE Mini gels
- Complete flexibility with power settings as experimental needs dictate: perform overnight transfer at voltages as low as 35V; and rapid, high-intensity transfers at 200V in 1-2 hours
- Standard insert with platinum wire electrodes 8cm apart for increased capacity; and a high-intensity insert with plate electrodes 4cm apart for transfer rapidity
- Detachable cooling coil, which connects to the laboratory water supply or a recirculating chiller, prevents buffer depletion to allow overnight transfers and fast high-intensity blots, and maintains the low temperatures important for protein stability during native transfers
- Open design, rigid cassettes maximise current transfer and eliminate 'shadow band' formation
- Colour-coded cassettes prevent polarity reversal



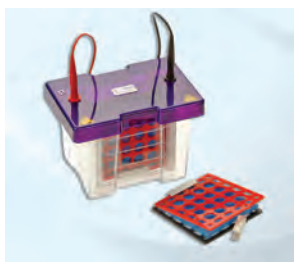
Technical Specifications

Maximum Gel Size	17.5x18cm (active gel dimensions)	
Gel Capacity	Standard Blotting Insert	4x WAVE Maxi Gels
	High-intensity Blotting Insert	1x WAVE Maxi Gels
Electrode types	Standard Blotting Insert	Platinum wire
	High-intensity Blotting Insert	Platinum-coated titanium & stainless steel
Outer Tank Buffer Volume	5.3L working volume to 6.4L max.	
Running conditions	35V overnight to 200V high-intensity 1-2 hours	
Recommended power supply	CS-3AMP (pg 61)	

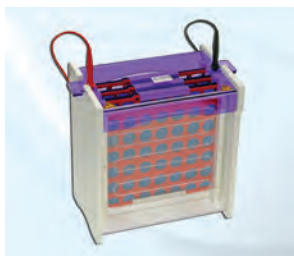
Exploded view of gel cassette for VS20 Wave electroblotting system.

Ordering Information

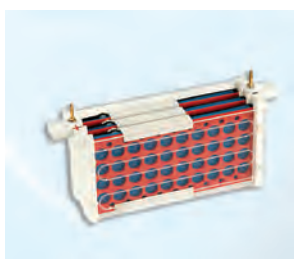
WAVECBS	Complete WAVE Maxi System for electrophoresis and blotting, comprising:
	1x WAVE Maxi Vertical Unit which includes: PAGE insert, 2x4mm thick notched glass plates, 2x4mm thick plain glass plates with 1mm thick bonded spacers, 1x dummy plate, 2x combs (1mm thick 24 samples), 1x casting base, silicone mat, cooling pack; plus: 1x WAVE Standard Electroblotting Module which includes: WAVE Maxi Platinum Wire Blotting Insert, 4x compression cassettes and 18x fibre pads
WAVECBS-HI	Complete WAVE Maxi System for high intensity electrophoresis and blotting, comprising: 1x WAVE Maxi Vertical Unit which includes: PAGE insert, 2x4mm thick notched glass plates, 2x4mm thick plain glass plates with 1mm thick bonded spacers, 1x dummy plate, 2x combs (1mm thick 24 samples), 1x casting base, silicone mat, cooling pack; plus: 1x WAVE High Intensity Electroblotting Module which includes: WAVE Maxi Plate Electrode Blotting Insert, 1x compression cassettes and 6x fibre pads
WAVEBI	WAVE Maxi Platinum Wire Blotting Insert, 4x compression cassettes and 18x fibre pads – standard
WAVEBI-HI	WAVE Maxi Plate Electrode Blotting Insert, 1x compression cassette and 6x fibre pads – high-intensity



SB10



SB20



VS10WBI



omniPAGE Sub Blot Systems

Available in Mini, Mini Wide and Maxi formats, omniPAGE Sub Blot systems are complete stand-alone units for submarine blotting. Each unit comprises an omniPAGE tank and lid, electroblotting insert, and cassettes and fibre pads. The versatile design of the omniPAGE tank and lid allows the unit to be easily adapted for vertical PAGE or IEF with capillary tube gels, using the relevant optional insert. Other features include:

- Multi-transfer capability for up to 3 Maxi gels, 6 Mini Wide and 12 Mini gels in the Maxi System; 3 Mini Wide and 6 Mini gels in the Mini Wide system; and 4 Mini gels in the Mini system
- Complete run-time flexibility from overnight to as short as a couple of hours
- Cool pack for environmentally friendly low-cost cooling during high-intensity transfers
- Open design, rigid cassettes maximise current transfer and eliminate 'shadow band' formation
- Cassettes colour-coded prevent polarity reversal to ensure transfer in the correct orientation

Technical Specifications			
	SB10 Mini	SB10W Mini Wide	SB20 Maxi
Max. Gel Size	8x8.5cm	16x8.5cm (active)	16x17.5cm (active)
Gel Capacity	4x Mini	6x Mini, 3x Mini Wide	12x Mini, 6x Mini Wide & 3x Maxi
Buffer Volume	1.2L Max.	2.8L Max.	5.6L Max.
Running conditions	100V 1-2h	100V 1-2h	100V 5-20h
Recommended power supply	CS-3AMP & CS-300V	CS-3AMP, CS-300V & CS-500V	CS-3AMP

Ordering Information			
SB10	omniPAGE Blot Mini, 10 x 10cm System including blotting insert, tank and lid, 4 cassettes, 16 fibre pads, cooling pack	SB10W	omniPAGE Blot Mini Wide, 20 x 10cm System including tank and lid, 3 cassettes, 12 fibre pads, cooling pack
SB20	omniPAGE Blot Maxi, 20 x 20cm System including tank and lid, 3 cassettes, 12 fibre pads, cooling pack	VS10BI	omniPAGE Blot Mini Insert – includes 4 cassettes and 16 fibre pads
VS10WBI	omniPAGE Blot Mini Wide Insert – includes 3 cassettes and 12 fibre pads	VS20BI	omniPAGE Blot Maxi Insert – includes 3 cassettes and 12 fibre pads
SB10C	omniPAGE Blot Mini Cassette	SB10WC	omniPAGE Blot Mini Wide Cassette
SB20C	omniPAGE Blot Maxi Cassette	SB20F	Fibre Pads – pk/6
SB10F	Fibre Pads – pk/8	SB10WF	Fibre Pads – pk/6

The WAVE Sub Blot System

With greater throughput capacity than the omniPAGE SB20 Maxi, the WAVE Sub Blot system is the complete stand-alone unit for submarine blotting of up to four 20x20cm Maxi gels. Sharing the same innovative features for blotting as the VS20 WAVE electroblotting system, its universal tank and lid design enables trouble-free conversion to vertical PAGE and IEF. The WAVE Sub Blot system is supplied complete with standard 4-blot insert, detachable cooling coil, tank and lid, and colour-coded compression cassettes and fibre pads.

Specifications	
	SW20 WAVE
Max. Gel Size	20x20cm
Gel Capacity	16x Mini, 6x Mini Wide & 3x Maxi
Buffer Volume	5.3L working volume to 6.4L max.
Running conditions	100V 5-20h
Recommended power supply	CS-3AMP

Ordering Information	
SW20	WAVE Sub Blot, 20 x 20cm System Including tank and lid, 4 cassettes, 18 fibre pads, cooling coil
WAVEBI	WAVE Maxi Platinum Wire Blotting Insert, 4x compression cassettes and 18x fibre pads – standard
SW20C	WAVE Sub Blot Cassette
SB20F	WAVE Fibre Pads – pk/6



SB10-HI



SW20-HI

Sub Blot Mini and WAVE High Intensity Transfer Systems

The Sub Blot Mini and WAVE high intensity transfer systems combine the cooling capacity of wet submarine blotting units with the speed of semi-dry transfer systems. Both systems utilise plate electrodes to create a higher strength electric field and greater current density than conventional wire-electrode systems. This allows transfer of broad range molecular weight proteins to be achieved typically within an hour in the Sub Blot Mini, and in 1-2 hours using the WAVE Sub Blot System. Features offered by the Sub Blot Mini and WAVE are as follows:

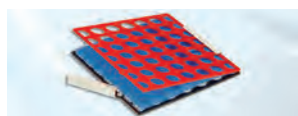
- Plate-electrodes 2cm apart in the Sub Blot Mini facilitate fast transfer of two stacked 8x8.5cm mini gels; and 4cm apart in WAVE Sub Blot system for transfer of one Maxi gel
- Multi-transfer capability in the WAVE also allows transfer of 4 omniPAGE Mini and 2 omniPAGE Mini Wide gels arranged side-by-side
- Two cooling options: a cool pack supplied with the Sub Blot Mini for environmentally friendly low-cost cooling; and active cooling in the Sub Blot WAVE by a detachable cooling coil connected to a recirculating chiller (pg 81)
- Magnetic stirring bars fit conveniently beneath the cooling coil within the WAVE tank to maximise buffer circulation and heat dissipation, while preventing ion gradient formation; both tanks sit comfortably on most stirring plates
- Open design, rigid cassettes maximise gel-to-membrane compression for efficient current transfer; colour-coded to prevent polarity reversal

Specifications		
	SB10-HI	SW20 WAVE-HI
Max. Gel Size	10x10cm	20x20cm
Gel Capacity	2x Mini	4x Mini, 2x Mini Wide & 1x Maxi
Buffer Volume	1.3L Max.	7L
Running conditions	100-200V 1-2h	100-200V 1-2h
Cooling	Cool Pack	Cooling Coil
Recommended power supply	CS-3AMP	CS-3AMP

Ordering Information	
SB10-HI	omniPAGE Blot Mini, 10 x 10cm, High Intensity System including tank and lid, 2 cassettes, 8 fibre pads, cooling pack
VS10BI-HI	omniPAGE Blot Mini Insert – includes 2 cassettes and 8 fibre pads
SB10C	omniPAGE Blot Mini Cassette
SB10F	Fibre Pads – pk/8
SW20-HI	WAVE Sub Blot, 20 x 20cm, High Intensity System including tank and lid, 1 cassettes, 6 fibre pads, cooling coil
WAVEBI-HI	WAVE Sub Blot High Intensity Insert – includes 1 cassette and 6 fibre pads
SW20C	WAVE Sub Blot Cassette
SB20F	Fibre Pads – pk/6



EBM20



tank sub electroblotters

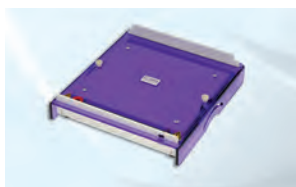
Designed primarily for wet electroblotting of proteins, TankSub Electroblotters offer a combination of increased capacity with economy saving features. Both units, Mini 10 x 10cm and Maxi 20 x 20cm, have increased capacity over standard systems with up to five gel blot cassettes utilised at any one time. This is especially useful in high throughput laboratories.

A uniform electric field is provided by a high intensity coiled electrode and ensures uniform transfer across the blot surface. The cassette's open architecture ensures the maximum blot area allows direct transfer of current. Its rigid construction ensures contact between the gel and membrane is retained throughout the blot and an even pressure is maintained. These units are compatible with magnetic stirrers to aid heat dispersal and prevent pH drifts in the buffer due to incomplete buffer mixing. Each system includes a cooling pack to further enhance transfer efficiency by removing excess heat. This also saves on buffer for added economy.

- Ideal for wet electroblotting of proteins - Western blotting
- Up to five gel blot cassettes utilised at any one time
- Hinged cassettes for added convenience
- Accommodates gel thicknesses from 0.25 up to 3mm

Technical Specifications		
Unit dimensions (W x H x D)	Mini	19 x 13 x 19cm
	Maxi	24 x 16 x 26cm
Max. sample, capacity	Mini	5 Blots, 10 x 10cm
	Maxi	5 Blots, 20 x 20cm
		20 Blots, 10 x 10cm
Buffer volume	Mini	Min 1000ml; Max 1500ml
	Maxi	Min 4300ml; Max 6000ml

Ordering Information			
EBM10	Electro Blot Mini, 10 x 10cm System for five cassettes, with tank and lid, 5x cassettes, 24x fibre pads and cooling pack		
SB10C	Tank Blot Mini Cassette	SB10F	Fibre pads - pk/8
EBM20	Electro Blot Maxi, 20 x 20cm System for five cassettes, with tank and lid, 5x cassettes, 24x fibre pads and cooling pack		
SB20C	Tank Blot Maxi Cassette	SB20F	Fibre pads - pk/6



semi dry blotters

These Semi Dry Blotters offer rapid transfer times for DNA, RNA and protein blotting – typically 15 to 30 minutes. All units can be used for all types of blotting: western, Southern and northern via uncomplicated buffer and set up procedures and are compatible with gel thicknesses from 0.25 up to 10mm without the need for additional equipment. Each unit is compatible with their respective omniPAGE vertical gel system.

Semi Dry Blotting has the added benefit of economic transfers due to very low buffer volumes – typically only a few millilitres of buffer are required per transfer. These Semi-Dry Blotters utilise a screw down lid, which secures the blot sandwich and allows complete control of pressure ensuring even transfer. The electrodes, comprising platinum coated anode and stainless steel cathode, will exhibit practically no corrosion and so provide many years of trouble free use.

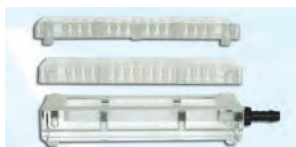
Uniform heat dispersion across the blot sandwich ensures stable transfer times and no heat induced sample loss or transfer distortions. Being translucent, it allows viewing of the blot sandwich to ensure correct positioning and transfer is occurring correctly. Electrode plates are fully separated to prevent arcing or damage.

- Rapid transfer times
- Western, Southern and Northern Blots
- Economic Transfers due to very low buffer volumes
- Screw down lid – gels from 0.25 up to 10mm thick can be blotted
- Uniform heat dispersion
- Long life electrodes

Technical Specifications		
Unit dimensions (w x h x d)	Mini	16 x 16 x 7cm
	Maxi	26 x 26 x 7cm
	Maxi Plus	33 x 45 x 7cm
	Maxi Long	26 x 56 x 7cm
Max. sample, capacity	Mini	1 Blot, 8 x 8.5cm
	Maxi	4 Blots, 8 x 8.5cm 2 Blots, 16 x 8.5cm
		1 Blot, 16 x 17.5cm
	Maxi Plus	20 Blots, 8 x 8.5cm 2 Blots, 26 x 20cm
		10 Blots, 16 x 8.5cm 1 Blot, 33 x 45cm
		5 Blots, 16 x 17.5cm
	Maxi Long	13 Blots, 8 x 8.5cm 2 Blots, 26 x 20cm
		6 Blots, 16 x 8.5cm 1 Blot, 20 x 50cm
2 Blots, 16 x 17.5cm		
Buffer volume	Mini	5ml
	Maxi	20ml
	Maxi Plus	75ml
	Maxi Long	50ml



Ordering Information	
SD10	Semi Dry Mini, 10 x 10cm System
SD20	Semi Dry Maxi, 20 x 20cm System
SD33	Semi Dry Maxi Plus, 33 x 45cm System
SD50	Semi Dry Maxi Long, 20 x 50cm System



- Low cost
- Simple construction
- Easy assembly
- Four sample configurations
- Alpha-numeric sample identification



dot and slot blotters

Four different sample number size and style of Hybridisation Manifold are offered:- two types of dot blotter and two types of slot blotter.

Typical applications include clone screening with DNA / RNA probes in Southern/northern blots and immunological screening with antibodies in western blots.

The units incorporate precision lapped surfaces to ensure uniform blotting membrane contact and a leak proof gasket. These prevent lateral transfer of samples – smudging – by ensuring that a complete vacuum is formed. Six thumbscrews ensure even and tight sealing for fast sample suck down.

Dot blotters are available in 48 and 96 well versions and slot blotters in 24 and 48 well.

Model	CSL-D48	CSL-D96	CSL-S24	CSL-S48
Configuration	3 x 16	8 x 12	2 x 12	3 x 16
Size of well	6mm diameter 12mm deep	6mm diameter 12mm deep	6 x 0.5mm 12mm deep	6 x 0.5mm 12mm deep
Vacuum required	----- 600mg Hg 0.8 BAR with cold trap -----			
Unit dimensions	60 x 95 x 100cm	60 x 105 x 140cm	60 x 74 x 83cm	60 x 95 x 100cm
Membranes size required	12.1 x 4.4cm	11 x 7.4cm	12.1 x 4.4cm	12.1 x 4.4cm

Ordering Information			
CSL-D48	48-well Dot Blot Manifold, 3 x 16 array	CSL-S24	24-well Slot Blot Manifold, 2 x 12 array
CSL-D96	96-well Dot Blot Manifold, 8 x 12 array	CSL-S48	48-well Slot Blot Manifold, 3 x 16 array