



## **Western Blotting** Products

A Complete Source for All Your Blotting Needs

**BIO-RAD**

# A History of Innovation and Leadership

A pioneer of western blotting apparatus, Bio-Rad has come to be considered the industry leader in innovative and powerful blotting equipment.

Decades of experience, combined with Bio-Rad's traditional high-quality standards, ensure western blotting success — your proteins will be transferred reproducibly every time.

From protein transfer through detection, Bio-Rad is the obvious choice for all of your western blotting needs.

## Turn to Bio-Rad for:

- Gel blotting equipment for a variety of gel sizes
- Microfiltration devices
- Multiple sample screening devices
- Membranes to accommodate every binding requirement
- Protein standards and colorimetric and chemiluminescent detection reagents

# The Mini Trans-Blot® Cell

Ideal for quick, efficient electrophoretic transfer of mini format gels

The Mini Trans-Blot cell is the perfect complement to the Mini-PROTEAN 3 vertical electrophoresis system.

- Transfers two mini format (7.5 x 10 cm) gels in as little as 1 hour
- Unique Bio-Ice™ cooling unit prevents buffer depletion during high-intensity transfers
- Cell performs low-intensity transfers by running at low voltage overnight
- Sturdy molded design protects platinum wire electrodes from breaking

The modular electrode assembly is compatible with the Mini-PROTEAN® 3 vertical electrophoresis cell.



**Transfer type:** Tank

**Blotting area:** 7.5 x 10 cm

**# of cassettes:** 2

**Buffer requirement:** 450 ml

**Electrode distance:** 4 cm

**Transfer time:** 60 min

**Cooling:** Bio-Ice cooling unit



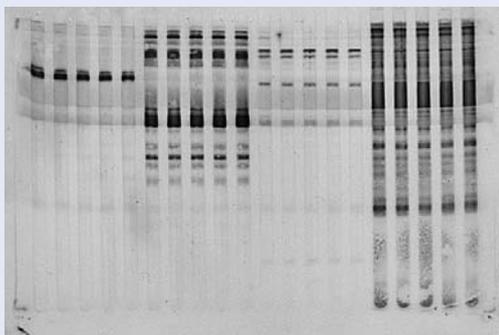
# Mini-PROTEAN® II Multiscreen Apparatus

The innovative screening  
accessory for your  
Mini Trans-Blot cell

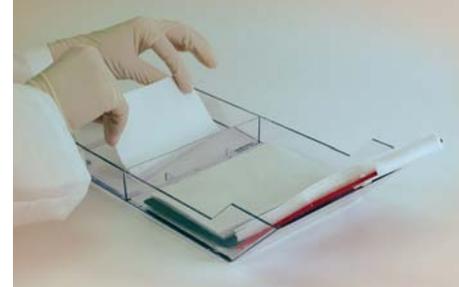


Screen up to 40 different antibodies or sera quickly and efficiently, without having to cut a western blot into individual strips.

- Perform precise side-by-side comparisons from a single blot
- Titer antibodies quickly without cutting strips
- Screen one or two 7 x 8 cm blots in the two separate, detachable sample templates
- Reduce use of expensive primary antibodies; the multiscreen apparatus requires only 600 µl of solution per channel



A western blot was screened with 20 antibody samples using the Mini-PROTEAN II multiscreen apparatus. Human serum was electrophoresed in a mini gel, blotted to nitrocellulose, and probed with various rabbit antibodies to human serum proteins. Bio-Rad's goat anti-rabbit AP conjugate and color development reagents, BCIP and NBT, were used to visualize the positive antigens.



# The Criterion™ Blotter

The ultimate combination of blotting efficiency and flexibility in a unit that is incredibly easy to use

The Criterion blotter, part of the Criterion precast gel system, contains closely spaced electrodes for maximum field strength and provides excellent, efficient transfer in under an hour.

- Designed to blot 2 Criterion gels (9.4 x 15 cm) in a single run; also accommodates 4 Mini-PROTEAN 3 or Ready Gel® precast gels
- Offers a choice of economical wire electrodes or plate electrodes for more rapid, efficient transfers

- Sealed ice block or optional cooling coil prevents buffer depletion during high-intensity transfers
- Assembly tray and roller facilitate gel soaking and sandwich assembly and ensure correct orientation of gel and blot



**Transfer type:** Tank

**Blotting area:** 9.4 x 15 cm

**# of cassettes:** 2

**Buffer requirement:** 1.3 L

**Electrode distance:** 4.3 cm

**Transfer time:** 30 min (plate electrodes)  
60 min (wire electrodes)

**Cooling:** Sealed ice block and/or cooling coil

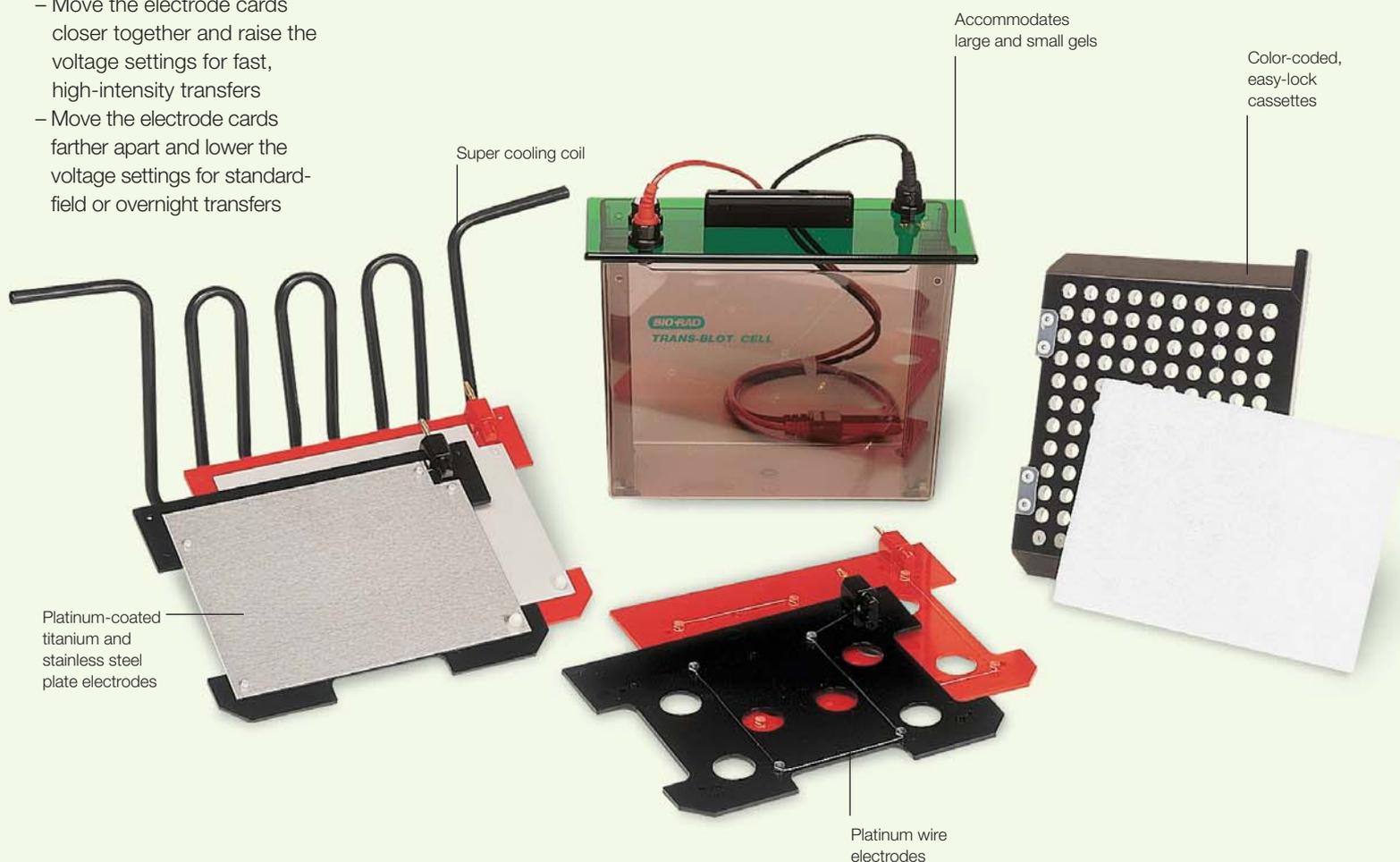
# The Trans-Blot® Cell

The ideal choice for a wide variety of blotting applications

The Trans-Blot cell represents the flexibility and efficiency of a truly versatile tank transfer system.

- Transfer of up to three 16 x 20 cm gels or up to 12 mini format gels simultaneously
- Flexible electrode placement and variable power conditions allow standard or high-intensity transfers
  - Move the electrode cards closer together and raise the voltage settings for fast, high-intensity transfers
  - Move the electrode cards farther apart and lower the voltage settings for standard-field or overnight transfers

- Maintain constant buffer temperature and prevent buffer depletion with the super cooling coil
- Choose durable plate electrodes for higher current densities and faster, more efficient transfer of even high molecular weight proteins, or more economical wire electrodes



**Transfer type:** Tank

**Blotting area:** 16 x 20 cm

**# of cassettes:** 1 for high-intensity transfer  
2 with cooling  
3 without cooling

**Buffer requirement:** 2.5 L

**Electrode distance:** Flexible; 2 positions,  
4 and 8 cm

**Transfer time:** 30 min (plate electrodes)  
60 min (wire electrodes)

**Cooling:** Super cooling coil





## The Trans-Blot® Plus Cell

A versatile, powerful large-format blotting apparatus

The Trans-Blot Plus cell is the perfect blotter to use with the large format gels run in Bio-Rad's PROTEAN® II XL and PROTEAN® Plus Dodeca™ cells

- Performs high-quality, efficient transfers of up to three large format (26.5 x 28 cm) gels, 12 Criterion precast gels, or 27 Mini-PROTEAN 3 or Ready Gel precast gels in as little as 30 minutes
- Plate electrodes create a high-strength electrical field with high current densities to produce faster, more efficient transfers

- 3 variable electrode placements offer a range of transfer conditions
- Innovative cassette design facilitates assembly and ensures even, tight contact between gel and membrane for uniform transfers
- Temperature regulation with the super cooling coil and a refrigerated circulator — ideal for native enzyme or high-intensity transfers and for minimizing buffer depletion during extended transfers
- Roller facilitates sandwich assembly, eliminating bubbles and ensuring tight contact between gel and membrane
- Optional assembly tray — designed for large format gels and the Trans-Blot Plus cell gel holder cassettes — facilitates cassette assembly

Tank contains handles and a convenient drain port



**Transfer type:** Tank

**Blotting area:** 26.5 x 28 cm

**# of cassettes:** 3

**Buffer requirement:** 10–12 L

**Electrode distance:** Flexible; 3 positions, 4, 7, and 10 cm

**Transfer time:** 15–60 min

**Cooling:** Super cooling coil

# The Trans-Blot® SD Semi-Dry Cell

Transfers at top speed

The workhorse of blotting equipment, the Trans-Blot SD is an ideal choice when you want fast routine qualitative blotting results.

- Requires minimal buffer volumes
- Achieves fast transfers with the highest possible field strength of any blotting apparatus due to closely set electrodes
- Performs DNA or RNA transfers from agarose gels with plastic support frame
- Transfers large or small gels



DNA/RNA agarose support frame



**Transfer type:** Semi-dry

**Blotting area:** 24 x 16 cm

**# of cassettes:** Not applicable

**Buffer requirement:** <200 ml

**Electrode distance:** Determined by sandwich thickness

**Transfer time:** 15–60 min

**Cooling:** Not applicable



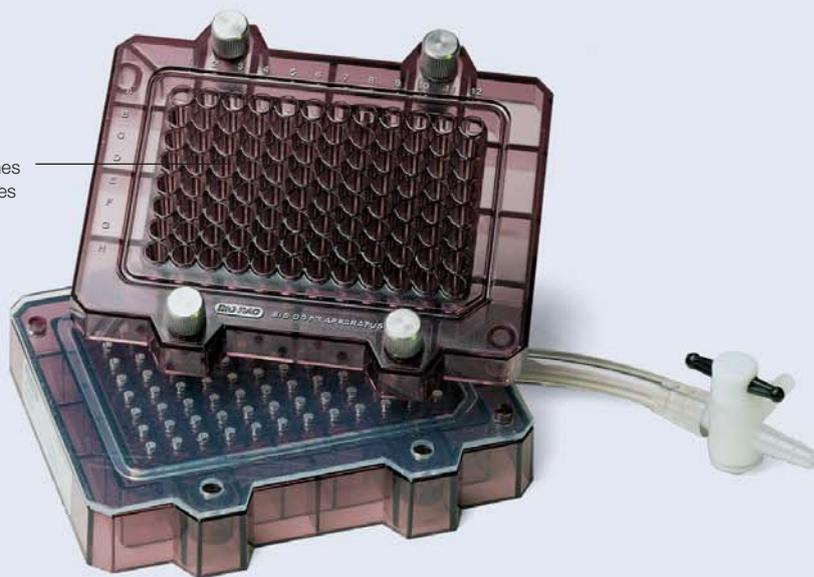
# Bio-Dot® and Bio-Dot SF Microfiltration Apparatus

Quick, reproducible screening of multiple samples

Bio-Dot and Bio-Dot SF (slot format) microfiltration units provide easy, reproducible methods for binding proteins and nucleic acids in free solution to membranes.

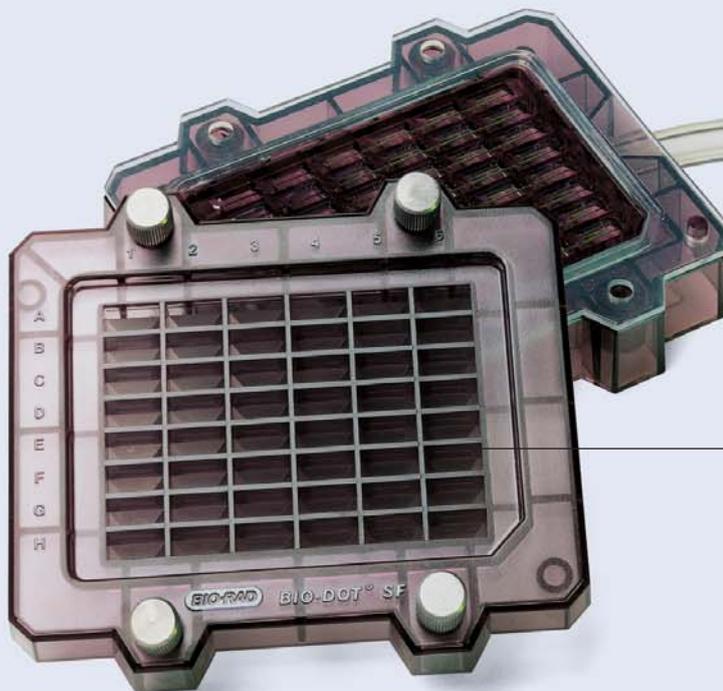
- Quickly screen solutions for your protein of interest
- Eliminate cross-contamination between sample wells with patented sealing gaskets; no troublesome O-rings to replace
- Easily sterilize the Bio-Dot and Bio-Dot SF units by autoclaving or chemical treatment to remove RNases

Dot format matches 96-well microplates



Modular design provides one base plate for use with either the Bio-Dot (dot blot) or Bio-Dot SF (slot format) templates

The three-way vacuum valve allows sample loading by gravity and quick washes



Slot format allows easy densitometric analysis to determine relative amounts of protein

## Bio-Dot



## Bio-Dot SF



Multiple sample comparisons are simplified with the Bio-Dot and Bio-Dot SF microfiltration units. Antigen (human transferrin, 0.1–10 ng) was applied to nitrocellulose using the Bio-Dot (top) and Bio-Dot SF (bottom) apparatus. The membranes were then incubated with rabbit anti-human transferrin, followed by Bio-Rad's goat anti-rabbit AP conjugate and color development reagents, BCIP and NBT.

# A Complete Line of Blotting Apparatus

Which best suits your needs?

Bio-Rad offers a complete line of apparatus for the transfer of proteins from gels or from solution.

## Electrophoretic Transfer Systems for Transfer of Proteins From Gels

**Tank transfer systems** are recommended for most routine protein work and offer flexibility in choosing voltage settings, blotting times, and cooling requirements. Tank transfer systems provide efficient and quantitative protein transfers over a broad molecular weight range.

**Semi-dry transfers** are rapid, high-intensity transfers best suited for mid-range proteins (10–100 kD); use of a discontinuous buffer system enhances transfer of high molecular weight proteins.



	Tank Transfer				Semi-Dry Transfer
	Mini Trans-Blot Cell	Criterion Blotter	Trans-Blot Cell	Trans-Blot Plus Cell	Trans-Blot SD Cell
Blotting area	7.5 x 10 cm	9.4 x 15 cm	16 x 20 cm	26.5 x 28 cm	24 x 16 cm
<b>Transfer Parameters</b>					
# of cassettes	2	2	1 for high-intensity transfer 2 with cooling 3 without cooling	3	Not applicable
Buffer requirement	450 ml	1.3 L	2.5 L	10–12 L	<200 ml
Electrode distance	4 cm	4.3 cm	Flexible; 2 positions, 4 and 8 cm	Flexible; 3 positions, 4, 7 and 10 cm	Determined by sandwich thickness
Transfer time (high-intensity)	60 min	30 min (plate electrodes) 60 min (wire electrodes)	30 min (plate electrodes) 60 min (wire electrodes)	15–60 min	15–60 minutes
Cooling	Bio-Ice cooling unit	Sealed ice block and/or cooling coil	Super cooling coil	Super cooling coil	Not applicable
<b>Gel Capacity</b>					
PROTEAN Plus	25.6 x 23 cm	—	—	1 gel per cassette	—
Dodeca cell	25 x 20.5 cm	—	—	3 cassettes	—
	20 x 20.5 cm	—	—	—	—
	19.9 x 17.5 cm	—	—	—	1 (2 with stacking)
	18.3 x 19.3 cm	—	—	—	1 (2 with stacking)
PROTEAN II XL cell	18.5 x 20 cm	—	—	1 gel per cassette 3 cassettes	—
PROTEAN II xi cell	16 x 20 cm 16 x 16 cm	— —	—	1 gel per cassette Standard transfer: 3 cassettes High-intensity transfer: 1 cassette	1 (2 with stacking) 1 (2 with stacking)
Criterion cell	13.3 x 8.7 cm	— — —	1 gel per cassette 2 cassettes	2 gels per cassette Standard transfer: 3 cassettes High-intensity transfer: 1 cassette	3 side-by-side
Mini-PROTEAN 3 cell	8.3 x 7.3 cm 8.6 x 6.8 cm	1 gel per cassette 2 cassettes	2 gels per cassette 2 cassettes	4 gels per cassette Standard transfer: 3 cassettes High-intensity transfer: 1 cassette	4 side-by-side 4 side-by-side



## Microfiltration Devices for Transfer of Proteins in Solution

Microfiltration, or dot-blotting devices, are used to determine working conditions for a new blotting assay or in any other situation where the resolving power of gel electrophoresis is not needed.

	Bio-Dot	Bio-Dot SF
Format	Dot blot	Slot
Samples	96-well 8 x 12 format	48-well 6 x 8 format
Sample volume	50–600 ml	50–500 ml
Well size	3 mm diameter	7 x 0.75 mm
Quantitation with densitometer	Yes, but Bio-Dot SF recommended	Yes
Overnight incubations	Yes	No
Membrane size	9 x 12 cm	9 x 12 cm

For more details on western blotting products, contact your local Bio-Rad sales representative.

Bio-Rad offers technical support for all your blotting questions, including the popular **Protein Blotting Guide**, a complete resource for technical questions, theory, and applications.

### Other Bio-Rad bulletins you may find helpful:

- 1529** Western Blotting Troubleshooter
- 2134** Increased Transfer Efficiency  
Using a Discontinuous Buffer  
System With the Trans-Blot SD Cell
- 1714** DNA/RNA Blotting With the  
Trans-Blot SD Semi-Dry  
Electrophoretic Transfer Cell
- 1787** Wall Chart: Protein  
Standards for Electrophoresis  
and Blotting
- 1600** Maximize Sensitivity  
With the Amplified  
Alkaline Phosphatase  
Immun-Blot® Assay Kit

## Ordering Information

Catalog # Description



### Mini Trans-Blot Cell and Systems

- 170-3930 Mini Trans-Blot Electrophoretic Transfer Cell, includes 2 gel holder cassettes, 4 fiber pads, modular electrode assembly, Bio-Ice cooling unit, lower buffer tank, lid with power cables, instructions
- 170-3935 Mini Trans-Blot Module, without lower buffer tank and lid
- 170-3989 Mini Trans-Blot Cell and PowerPac Basic Power Supply
- 170-3836 Mini Trans-Blot Cell and PowerPac HC Power Supply



### Criterion Blotter and Systems

- 170-4070 Criterion Blotter With Plate Electrodes, includes cell assembled with plate electrodes, lid with cables, 2 Criterion gel holder cassettes, 4 fiber pads, 1 pack precut blot absorbent filter paper, gel/blot assembly tray, roller, sealed ice block, instructions
- 170-4071 Criterion Blotter With Wire Electrodes, includes cell assembled with plate electrodes, lid with cables, 2 Criterion gel holder cassettes, 4 fiber pads, 1 pack precut blot absorbent filter paper, gel/blot assembly tray, roller, sealed ice block, instructions
- 165-6024 Criterion Gel/Plate Blotter System, includes Criterion cell and Criterion blotter with plate electrodes
- 165-6025 Criterion Gel/Wire Blotter System, includes Criterion cell and Criterion blotter with plate electrodes
- 170-3872 Criterion Blotter With Plate Electrodes and PowerPac HC Power Supply
- 170-3874 Criterion Blotter With Wire Electrodes and PowerPac HC Power Supply
- 170-4076 Optional Criterion Blotter Cooling Coil



### Trans-Blot Cell and Systems

- 170-3939 Trans-Blot Cell With Plate Electrodes and Super Cooling Coil, includes 2 gel holder cassettes, buffer tank, lid with power cables, 4 fiber pads, 1 package of precut blot absorbent filter paper
- 170-3853 Trans-Blot Cell With Plate Electrodes, Super Cooling Coil, and PowerPac HC Power Supply
- 170-3946 Trans-Blot Cell With Plate Electrodes, includes 2 gel holder cassettes, buffer tank, lid with power cables, 4 fiber pads, 1 pack precut blot absorbent filter paper
- 170-3850 Trans-Blot Cell With Plate Electrodes and PowerPac HC Power Supply
- 170-3910 Trans-Blot Cell With Wire Electrodes, includes 2 gel holder cassettes, buffer tank, lid with power cables, 4 fiber pads, 1 pack precut blot absorbent filter paper
- 170-3825 Trans-Blot Cell With Wire Electrodes, and PowerPac HC Power Supply

Catalog # Description



### Trans-Blot Plus Cell

- 170-3990 Trans-Blot Plus Cell With Plate Electrodes and Super Cooling Coil, includes 3 gel holder cassettes, buffer tank, lid with power cables, 6 fiber pads, 1 pack blot absorbent paper (26.5 x 28 cm; 30 sheets), roller, stirbar
- 170-3991 Trans-Blot Plus Cell and PowerPac HC Power Supply
- 170-3992 Trans-Blot Plus Cell and PowerPac Universal Power Supply



### Trans-Blot SD Semi-Dry Cell and Systems

- 170-3940 Trans-Blot SD Semi-Dry Electrophoretic Transfer Cell, complete unit
- 170-3848 Trans-Blot SD Cell and PowerPac HC Power Supply, 100–120/220–240 V
- 170-3849 Trans-Blot SD Cell and PowerPac Universal Power Supply, 100–120/220–240 V



### Bio-Dot/Bio-Dot Slot Format

- 170-3938 Bio-Dot Microfiltration System, includes Bio-Dot (170-6545) and Bio-Dot SF (170-6543) templates, vacuum manifold base, gasket support plates, gaskets
- 170-6545 Bio-Dot Apparatus, includes Bio-Dot sample template, vacuum manifold base, gasket support plate, gasket
- 170-6547 Bio-Dot Module, without vacuum manifold base, for conversion of Bio-Dot SF to Bio-Dot apparatus
- 170-6542 Bio-Dot SF Apparatus, includes Bio-Dot SF sample template, vacuum manifold base, gasket support plate, gasket, filter paper
- 170-6543 Bio-Dot SF Module, without vacuum manifold base, for conversion of Bio-Dot to Bio-Dot SF apparatus



### Mini-PROTEAN II Multiscreen Apparatus

- 170-4017 Mini-PROTEAN II Multiscreen Apparatus, includes 2 sample templates, 2 gaskets, base plate

**BIO-RAD**

**Bio-Rad  
Laboratories, Inc.**

Life Science  
Group

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