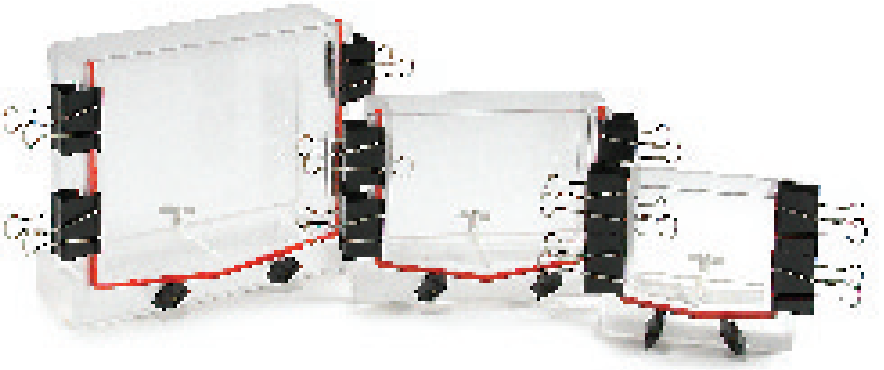
Owner's Manual



The Rabbit™ Multiple Gradient Caster

Models P7-CST, P1-CST, and P2-CST

Manual No.: P7,1,2,0602
Rev. Date: 11/2002

Owl Separation Systems

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Rabbit Multiple Gradient Caster System

Safety Information

Important Safety Information!
Please read carefully before operating!

- *This manual contains important operating and safety information. In order to benefit from the use of this apparatus, you must carefully read and understand the contents of this manual prior to use of this apparatus.*

- *Statement of Proper 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.*

General Information

SECTION 1

INTRODUCTION

The Rabbit Multiple Gradient Caster System features an easy-to-use casting base and spacer plates for quick casting of high quality linear or gradient gels. Using the acrylic and foam spacer plates allows you to cast from one to five gels simultaneously. A silicone gasket provides a leak proof seal and casting port allows the casting of gradient gels from the base of the caster.

Before starting, unpack the unit and inventory your order. If any parts are missing, refer to the warranty section of this manual and contact Owl immediately at 800-242-5560.

Reference the order or catalog number on your invoice and check the corresponding parts list.

Table 1-1 Parts List

Description	P7-CST	Qty:	P1-CST	Qty:	P2-CST	Qty:
Casting Stand	-	1	-	1	-	1
Front Plate	P7-CST-007	1	P1-CST-007	1	P2-CST-007	1
Knobs	R10446	2	R10446	2	R10446	2
Acrylic Spacer Plate 1/2"	P7-CST-006	1	P1-CST-006	1	P2-CST-006	1
Acrylic Spacer Plate 3/8"	JGC4-006	1	P1-CST-005	1	P2-CST-005	1
Acrylic Spacer Plate 1/4"	P7-CST-004	3	P1-CST-004	3	P2-CST-004	3
Blank Glass	P7-10G	1	P1-14G	1	P10-20G	1
Foam Spacer Plate 3/8"	R10711	2	R10707	2	R10709	2
Foam Spacer Plate 1/8"	R10712	1	R10708	1	R10710	1
Spacer Placer	R10559	1	R10359	1	R10360	1
Binder Clamps	CL-12	4	CL-12	4	CL-12	4
Stopcock	R10717	1	R10717	1	R10717	1

Table 1-2 Specifications

Unit/Model Number	P7-CST	P1-CST	P2-CST
Gel size	10cmW x 10cmL 10cmW x 8cmL	16cmW x 14cmL 16cmW x 16cmL	20cmW x 20cmL
Sample Capacity	20	30	40
Dimensions (cm) W x D x H	15 x 13 x 13	20 x 13 x 18	25 x 13 x 23
Glass Size (cm)W x L	10 x 10	16 x 14	20 x 20
Compatible with Owl Units	P8DS, P82	P9DS	P10DS

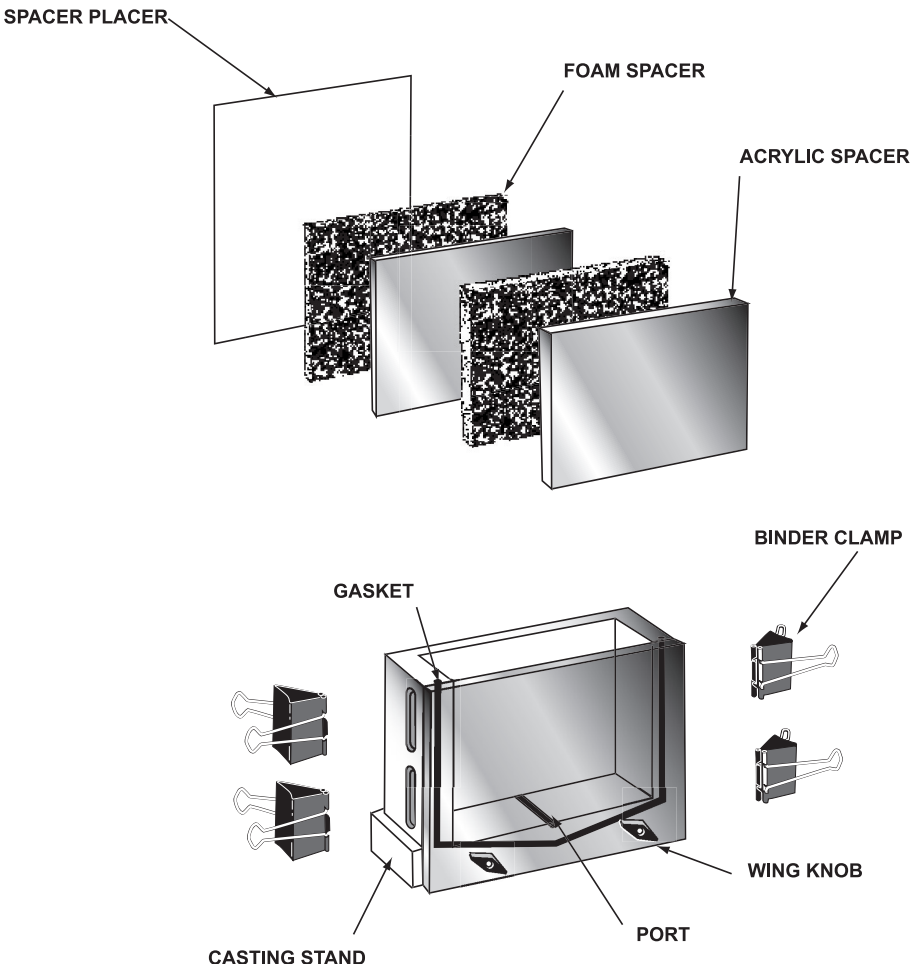
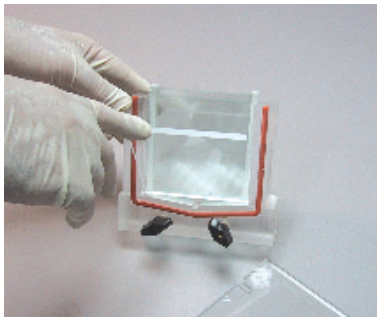


Figure 1-1 Parts Diagram

Gel Cassette Assembly

STEP 1

Attach the casting valve to the port located on the back of the caster base.



STEP 2

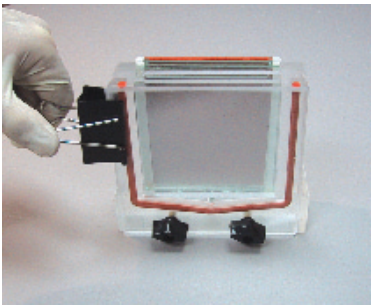
Assemble glass plates and spacers in this order: blank plate, spacers, notched plate. Continue to assemble glass and spacers in this order for as many gels as are going to be cast. Place the gel assembly into the caster. One to five gels may be cast simultaneously in the unit.

STEP 3

Foam and acrylic spacer plates are provided for casting less than five gels. The foam spacer plates can be used in combination with the acrylic spacer plates to achieve a tight fit. These spacer plates are designed to fill the gap between the glass plates and the front plate. A Spacer Placer ™ aligner is provided to assist in the alignment of spacers by slipping it between the spacers of each gel assembly.

STEP 4

Once the glass plates and spacer plates are assembled, place the front plate onto the unit so that the notches on the front plate fit onto the screws.

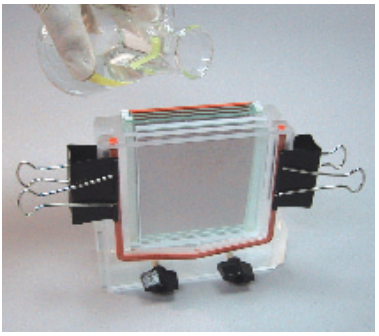


STEP 5

Clamp the front plate to the caster using the 4 binder clamps provided. The binder clamps fit into the groove located on each side of the caster.

STEP 6

Place the knobs onto the screws of the caster and tighten to create a seal between the front plate and the gasket.



STEP 7

Gels may either be cast from the top of the unit by pouring acrylamide solution into the top of the caster or from the base by pumping acrylamide into the port. If casting from the base is desired, attach tubing to inlet of valve. The casting valve is in the open position when the white toggle switch is parallel to the valve. Conversely, the casting valve is closed when the white toggle switch is perpendicular to the valve.

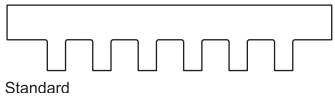
STEP 8

If pouring linear gels from the top of the caster is desired, be sure valve is in the closed (white toggle switch perpendicular to valve) position before pouring gels.

Combs

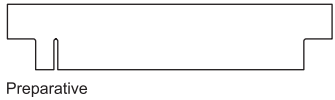
STANDARD

- 0.5mm(A), 0.8mm (C) and 1.5mm (D) thicknesses



PREPARATIVE

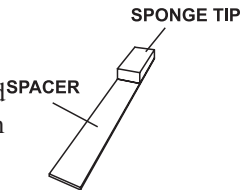
- One long well and one marker lane



CUSTOM COMBS

Call Owl Customer Service for more information, 800-242-5560.

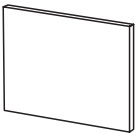
Offset vs. Notched Glass



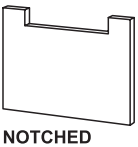
All units require a blank piece of glass and an offset or notched piece of glass. Offset glass is glass that is about 2cm shorter than the blank piece without "ears" on the sides. Notched glass has two "ears" that are left behind when a cut is made in the middle of the top of the glass. Both offset glass and notched glass allow the gel and samples to make contact with the upper buffer chamber. Offset glass has to be used with sponge tips, which take the place of the notches on the glass. The advantage of offset glass is that this glass is more rigid. Notched glass is easier to use and does not require the addition of sponge tips.

Glass

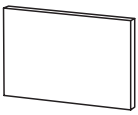
BLANK
The plate which faces you during electrophoresis. All gel sandwiches require one piece of blank glass.


BLANK

NOTCHED
The plate which faces the chamber during electrophoresis. Spacers are placed over the "ears" of the plate when casting vertical gels. Buffer accesses the gel between the ears.


NOTCHED

OFFSET
Offset plates may be used in place of notched plates. They require sponge tips mounted on the spacers. Sponge tips take the place of the "ears", and prevent buffer from running out of the upper buffer chamber from the sides.


OFFSET

FROSTED
Frosted plates are used for vertical agarose electrophoresis. One side of the plate has a rough surface to prevent agarose from sliding down.

Spacers

STANDARD
Protein spacer sets include two side spacers and one bottom spacer. Spacers and combs must be of identical thickness to be used together.

WEDGE
Linear wedge spacers (0.4 – 0.8mm) provide a current gradient allowing a single percent gel to separate disparate sized DNA fragments.

Reagent Information

RUNNING BUFFER

TGS

Tris - 3.0285g/L
Glycine - 14.4g/L
SDS - 1.0g/L
pH 8.3 (Laemmli, 1970)
q.s. to 1L

Note: For Native Protein Electrophoresis do not add SDS.

Table 5-1 Sample Buffer

2X Concentration Stock		/L	/10 mL	Final Concentration With Sample*
2%	SDS	20g	0.2	1%
10%	BME	10mL	0.1	5%
250mM	Tris	6.057g	.0606g	125mM
30%	Glycerol	300 mL	3 mL	15%
0.002%	Bromo Phenol Blue	.02g	.0002g	0.001%

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

Caution: 2X Sample Buffer containing 2-mercaptoethanol should be prepared in a fume hood. 0.2M (final concentration) Dithiothreitol (DTT) may be used in place of 2-mercaptoethanol.

Acrylamide*

Table 5-2 Gel Prepartion (SDS-Page continuous buffer system)

	% Acrylamide*				
Stock Solution	20.0	15.0	12.5	10.0	5.0
Acrylamide-Bisacrylamide (30:0.8)	20.0	15.0	12.5	10.0	5.0
0.5 M Sodium Phosphate Buffer pH 7.2	6.0	6.0	6.0	6.0	6.0
10% (w/v) SDS	0.3	0.3	0.3	0.3	0.3
Water	2.2	7.2	9.7	12.2	17.2
1.5% (w/v) APS	1.5	1.5	1.5	1.5	1.5
TEMED	0.015	0.015	0.015	0.015	0.015

Electrophoresis buffer: 0.1 M sodium phosphate pH 7.2, 0.1% (w/v) SDS.

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

Troubleshooting

Below are some possible solutions to potential problems. If these suggestions are unclear or unsuccessful, contact Owl Technical Service at 1-800-242-5560.

PROBLEM	SOLUTION
Polyacrylamide is leaking from front plate.	• Remove the front plate and take out the gasket. Rinse the gasket thoroughly and reseat the gasket making sure that it is firmly and evenly placed within the groove.
Separating individual "gel sandwiches" is difficult.	• This occurs because small amounts of acrylamide will polymerize between the plates. This problem may be eliminated by placing a piece of plastic wrap or wax paper between each gel assembly. Be sure to cut the plastic wrap or wax paper larger than the plates so you will have a "tab" to hold onto and lift plates apart.
Acrylamide is polymerizing to the caster and in the port.	• If pouring gels from the top of the caster, pump a small amount of glycerol into the caster base from the port located at the base of the unit before pouring acrylamide. Be sure to close the valve before pouring gels. • If casting gels using the port in the base of the caster, pump a small amount of glycerol into the caster base after the acrylamide has been pumped into the caster. This will prevent the acrylamide from polymerizing directly onto the caster.

A Few Tips About Caring for Your System

WARNING!

Organic solvents cause acrylic to "craze" or crack. Clean all Owl acrylic systems with warm water and a mild detergent. Do not use ethanol or other organic solvents to clean Owl products. Do not autoclave, bake, or microwave your unit. Temperatures over 50˚C can do damage to the acrylic.

NOTE:
If an RNase free electrophoresis system is desired, there are various methods to rid the system of RNA contamination. For fast and easy decontamination, use RNase Away®*. Spray, wipe or soak labware with RNase Away® then wipe or rinse the surface clean; it instantly eliminates RNase. RNase Away® eliminates the old methods that include treatment with 0.1% Diethyl Pyrocarbonate (DEPC) treated water and soaking in dilute bleach. DEPC is suspected to be a carcinogen and should be handled with care. This electrophoresis system should never be autoclaved, baked, or placed in a microwave.

To order RNase Away®, contact Molecular BioProducts 800-995-2787 (U.S. and Canada) or 858-453-7551:

Part Number	
7000	250ml bottle
7002	475ml spray bottle
7003	1 liter bottle
7005	4 liter bottle

**Rnase AWAY® is a registered trademark of Molecular BioProducts*

Care of Acrylic

The following chemical compatibility chart is supplied for the convenience of our customers. Although acrylic is compatible with most solvents and solutions found in the biochemical laboratory, some solvents can cause substantial damage. Keep this chart handy to avoid harm to your apparatus by the use of an inappropriate solvent.

Codes:

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

Table 7-1 Chemical Compatibility for Acrylic-Based Products

Chemical	Code	Chemical	Code	Chemical	Code
Acetic acid (5%)	S	Ethyl alcohol (50%)	A	Naptha	S
Acetic acid (Glacial)	D	Ethyl alcohol (95%)	U	Nitric acid (10%)	S
Acetic Anhydride	A	Ethylene dichloride	D	Nitric acid (40%)	A
Acetone	D	Ethylene glycol	S	Nitric acid concentrate	U
Ammonia	S	2-Ethylhexyl Sebacate	S	Oleic acid	S
Ammonium Chloride (saturated)	S	Formaldehyde (40%)	S	Olive oil	S
Ammonium Hydroxide (10%)	S	Gasoline, regular, leaded	S	Phenol 5% solution	U
Hydroxide (10%)	S	Glycerine Heptane (commercial grade)	S	Soap solution (Ivory)	S
Ammonium Hydroxide concentrate	S	Hexane	S	Sodium carbonate (2%)	S
Aniline	D	Hydrochloric acid (10%)	S	Sodium carbonate (20%)	S
Benzene	D	Hydrochloric acid concentrate	S	Sodium chloride (10%)	S
Butyl Acetate	D	Hydrofluoric acid (40%)	U	Sodium hydroxide (1%)	S
Calcium chloride (saturated)	S	Hydrogen peroxide (3% solution)	S	Sodium hydroxide (10%)	S
Carbon tetrachloride	U	Hydrogen peroxide (28% solution)	U	Sodium hydroxide (60%)	S
Chloroform	D	Isooctane	S	Sodium hydrochlorite (5%)	S
Chromic acid (40%)	U	Isopropyl alcohol (100%)	A	Sulfuric acid (3%)	S
Citric acid (10%)	S	Kerosene (no. 2 fuel oil)	S	Sulfuric acid (30%)	S
Cottonseed oil (edible)	S	Lacquer thinner	D	Sulfuric acid concentrate	U
Detergent Solution (Heavy Duty)	S	Methyl alcohol (50%)	A	Toluene	D
Diesel oil	S	Methyl alcohol (100%)	U	Trichloroethylene	D
Diethyl ether	U	Methyl Ethyl Ketone	U	Turpentine	S
Dimethyl formamide	U	Methylene chloride	D	Water (distilled)	S
Dioctyl phthalate	A	Mineral oil (white)	S	Xylene	D
Ethyl acetate	D				

This list does not include all possible chemical incompatibilities and safe compounds. Owl's acrylic products should be cleaned with warm water, a mild detergent such as Alconox™, and can also be exposed to a mild bleach solution (10:1). In addition, RNAse removal products are also safe for acrylic. Please contact Owl's Technical Service at 1-800-242-5560 with any questions.

Optional Equipment

Contact the customer service department at Owl to order replacement parts and accessories 800-242-5560.

Table 8-1 Accessories

Description	P7-CST	P1-CST	P2-CST
Blank glass plates 3/32" Thick	P7-10G, 10cmW x 10cmL	P1-14G, 16cmW X 14cmL	P2-20G, 20cmW x 20cmL
Blank glass plates 1/8" Thick			P10-20G, 20cmW x 20cmL
Blank glass plates 1/8" Thick			P10-18G, 20cmW x 18cmL
Notched glass plates 3/32" Thick	P7-10R, 10cmW x 10cmL	P1-14R, 16cmW x 14cmL	P2-20R, 20cmW x 20cmL
Notched glass plates 1/8" Thick			P10-20R, 20cmW x 20cmL
Frosted Notched glass plates 3/32" Thick	P7-10FR, 10cmW x 10cmL	P1-14FR, 16cmW x 14cmL	P2-20FR, 20cmW x 20cmL
Frosted Blank Glass Plates 3/32" Thick	P7-10FG, 10cmW x 10cmL	P1-14FG, 16cmW x 14cmL	P2-20FG, 20cmW x 20cmL
Offset Glass 3/16" Thick			P2-18G, 20cmW x 18cmL
Notched Alumina Plates 1.0mm Thick	P7-10RA, 10cmW x 10cmL		
Spacers, 0.5mm Thick	P7-SA		
Spacers, 0.8mm Thick	P7-SC	P1-CS	P2-CS
Spacers, 1.5mm Thick		P1-SD	P2-SD
Blocking Plate for Single Gel Operation	P8DS-016	P9DS-006	P10DS-006
Spacer Placer (pkg of 3)	JG4-PL	JG2-PL	JG3-PL

Table 8-2 Replacement Parts

Description	P7-CST	P1-CST	P2-CST
Front Plate	P7-CST-007	P1-CST-007	P2-CST-007
Knob	R10446	R10446	R10446
Acrylic Spacer Plate 1/2"	P7-CST-006	P1-CST-006	P2-CST-006
Acrylic Spacer Plate 3/8"	JGC4-006	P1-CST-005	P2-CST-005
Acrylic Spacer Plate1/4"	P7-CST-004	P1-CST-004	P2-CST-004
Foam Spacer Plate 3/8"	R10711	R10707	R10709
Foam Spacer Plate 1/8"	R10712	R10708	R10710
Spacer Placer Package of 3	JG4-PL	JG2-PL	JG3-PL
Binder Clamps Package of 12	CL-12	CL-12	CL-12
Stopcock	R10717	R10717	R10717

Table 8-3 Combs Options

Model P7-CST

Catalog Number	Comb Type	Number of Teeth	Thickness of Tooth (mm)	Width of Teeth (mm)	EST Well Volume (ul)
MP-6A	Well	6	0.5	11.1	89
MP-6C	Well	6	0.8	11.1	142
MP-6D	Well	6	1.5	11.1	266
MP-8A	Well	8	0.5	7.7	62
MP-8C	Well	8	0.8	7.7	99
MP-8D	Well	8	1.5	7.7	185
MP-10A	Well	10	0.5	5.7	46
MP-10C	Well	10	0.8	5.7	73
MP-10D	Well	10	1.5	5.6	134
MP-12A	Well	12	0.5	4.3	34
MP-12C	Well	12	0.8	4.3	55
MP-12D	Well	12	1.5	4.3	103
MP-15A	Well	15	0.5	2.9	23
MP-20A	Well	20	0.5	1.6	13
XCM	Custom		0.5, 0.8		

Model P1-CST

Catalog Number	Comb Type	Number of Teeth	Thickness of Tooth (mm)	Width of Teeth (mm)	EST Well Volume (ul)
P1-10C	Well	10	0.8	10.4	183
P1-10D	Well	10	1.5	10.4	343
P1-15C	Well	15	0.8	6.1	107
P1-15D	Well	15	1.5	6.1	201
P1-20C	Well	20	0.8	3.9	69
P1-20D	Well	20	1.5	3.9	129
P1-24C	Well	24	0.8	2.9	51
P1-24D	Well	24	1.5	2.9	96
P1-PREP	Prep	2	1.5	119.7/4.7	3630/152
XCM	Custom		0.5, 0.8		

0

Model P2-CST

Catalog Number	Comb Type	Number of Teeth	Thickness of Tooth (mm)	Width of Teeth (mm)	EST Well Volume (ul)
P2-10C	Well	10	0.8	13.6	239
P2-10D	Well	10	1.5	13.6	449
P2-15C	Well	15	0.8	8.2	144
P2-15D	Well	15	1.5	8.2	271
P2-20C	Well	20	0.8	5.5	97
P2-20D	Well	20	1.5	5.5	182
P2-25C	Well	25	0.8	3.9	69
P2-25D	Well	25	1.5	3.9	129
P2-PREP	Prep	2	1.5	148.1/4.7	4885/155
XCM	Custom		0.5, 0.8		

Warranty Information

THE OWL SEPARATION SYSTEMS WARRANTY

A three-year quality and material warranty covers all products manufactured by Owl Separation Systems. Owl will repair or replace any equipment found to be defective at no cost. This warranty does not cover equipment damage due to misuse or abuse. After the warranty expires, Owl will repair products at a reasonable cost. All shipping claims must be made within 48 hours from date received.

To activate your warranty, complete and return the enclosed postage paid warranty card. Please note that the card must be completely filled out in order to process your warranty.

RETURNING EQUIPMENT

Be environmentally friendly – and speed up your return – by saving all packing materials cartons and documents until you have thoroughly inspected your shipment. Should you find that your order is incorrect or damaged, verify the problem with the shipper, save all packing material, and call Owl for return instructions within 48 hours. All returns, exchanges, and credits must be pre-approved by Owl.

IMPORTANT DOCUMENTS ENCLOSED

Model #: _____

Serial #: _____

C.T.: _____

Thank You!

We at Owl Separation Systems thank you for your order and appreciate your business. Please contact us regarding our complete line of electrophoresis equipment and reagents for DNA, RNA and protein separations. While innovation and quality are our foremost objectives, we pride ourselves on exceptional customer response and service.

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