Ordering Information

Catalog No.

EP-2000	**RunOne Electrophoresis System, 110V** RunOne Cell, RunOne Power Supply, RunOne Casting System, Agarose Gel Trays (1 set of 6), 2 combs
EP-2100	**RunOne Electrophoresis System, 110V** RunOne Cell, RunOne Power Supply with Timer, RunOne Casting System, Agarose Gel Trays (1 set of 6), 2 combs
EP-2014	**RunOne Electrophoresis System, with transformer for 220V Operation** RunOne Cell, RunOne Power Supply, RunOne Casting System, Agarose Gel Trays (1 set of 6), 2 combs, Step Down Transformer for use in 220V environments
EP-2114	**RunOne Electrophoresis System, with transformer for 220V Operation** RunOne Cell, RunOne Power Supply with Timer, RunOne Casting System,Agarose Gel Trays (1 set of 6), 2 combs, Step Down Transformer for use in 220V environments
EP-1001	RunOne Casting System
EP-2002	RunOne Tank and Lid for RunOne Systems
EP-1003	RunOne Power Supply (120V, 60 Hz) for all RunOne Systems
EP-1004	Combs (2)
EP-1005	Agarose Trays Set (4 mini, 2 landscape)
EP-1008	RunOne Amber Analytical and Prep Combs, 1.0mm. Dual reversible with (25,12,12) wells) and (10+2, 2+2 prep, 1+2 prep wells), 2/pk.
EP-1011	Landscape Tray for Agarose Gels (10.9 w x 5.9 l cm), 6ea
EP-1012	UVT Landscape Tray for Agarose Gels (10.9 w x 5.9 l cm), 4ea
EP-1013	UVT Mini Tray for Agarose Gels (5.7 w x 5.9 l cm), 4ea
EP-1014	RunOne Blue Combs dual reversible with 1.0mm (17,8,8) and 1.5 mm (25,12,12), 2/pk.
EP-1015	RunOne Comb Combo, 1 each of RunOne Analytical and Prep Comb and RunOne 1.0/1.5 comb
EP-1041	UVT Landscape Tray for PAGE Gels with cover (10.9 w x 5.9 l cm), 5ea
EP-1042	UVT Mini Tray for PAGE Gels with cover (10.9 w x 5.9 l cm), 4ea
EP-1043	Mini Tray for Agarose Gels (5.7 w x 5.9 l cm), 8ea

RunOne Pre-Cast Gels

Please request a catalogue for a complete listing of over 100 different pre-cast agaorse and polyacrylamide gels.

Buffer Concentrates

EC-1016	TAE Running Buffer (10X), 4.0 L (4 each 1.0 Liter Bottle)
EC-1017	TBE Running Buffer (5X), 4.0 L (4 each 1.0 Liter Bottle)
EC-1018	TAE Sample Buffer (5X), 1 Bottle of 30 ml
EC-1019	TBE Sample Buffer (5X), 1 Bottle of 30 ml

SmartMark™ Standards

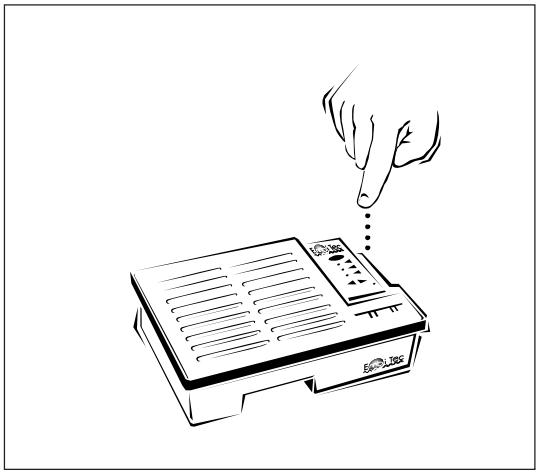
EC-1010	SmartMark 20 bp DNA Ladder, 40 µg 20 - 1000 bp; 50 bands in 20 bp increments
EC-1011	SmartMark 100 bp DNA Ladder, 40 µg 100 - 1000 bp; 10 bands in 100 bp increments
EC-1012	SmartMark 200 bp DNA Ladder, 40 µg 200 bp - 6 Kb; 30 bands in 200 bp increments
EC-1013	SmartMark 1 Kb DNA Ladder, 40 µg 1 Kb - >15 Kb; 15 bands in 1 Kb increments
EC-1024	SmartMark 100 bp - 500 bp Ladder, 40 µg 100 bp - 500 bp ; 5 bands in 100 bp increments

Embi Tec
Electrophoresis for Molecular Biology Innovations
1 858 684-3190 / w w w .e m b i t e c . c o m

RunOne™ System

Instruction Manual

Vers. 020411



DNA Electrophoresis

Maximum Input Voltage 120 Volts

CE

Embi Tec

RunOne System Specifications

RunOne System General Specifications

Equipment Pollution Degree	2
Equipment Installation Category	2
Maximum Relative Humidity	80%
Operating Temperature Range	4-40½C
Maximum Altitude	< 2000 Meters

RunOne Casting System

Casting Stand	Molded polycarbonate
Combs	Molded polycarbonate
Mini Trays	5.4 x 5.9 cm; 6 or 8 wells
Wide Trays	10.9 x 5.9 cm; 12 or 17 wells

RunOne Electrophoresis Cell

RunOne Cell Tank and Lid	Molded polycarbonate
Electrodes	Platinum wire
Dimensions	5.5 cm (H) x 14.1 cm (W) x 19.7 cm (L)

RunOne Power Supply with or without Timer

Voltage Outputs	25 V, 50 V, 75 V or 100 V
Input Voltage Maximum	120 VAC, 60 Hz
Over Current Limit	300 mA
Power Rating	70 W
Electrical Ratings	120 VAC, 60 Hz, 70 W, 600 mA
Dimensions	2.8 cm (H) x 4.4 cm (W) x 10.4 cm (L)

RunOne Pre-Cast Gels

Gel Types	Agarose, PAGE
Polyacrylamide Concentrations	4%, 6%, 7.5%, or 10%
Agarose Concentrations	1%, 2%, 3% or 4%
Buffers	TBE, TAE, MOPS
Mini	5.2 x 5.9 cm (wxl)
Landscape	10.7 x 5.9 cm (wxl)
Medium	8.9 x 11.5 cm (wxl)
Long	11.9 x 11.5 cm (wxl)
Portrait	6.0 x 11.0 cm (wxl)
XLong	13.0 x 24.0 cm (wxl)

APPENDIX 3: Staining Gels with Ethidium Bromide

Materials:

- 1 mini or wide agarose or polyacrylamide gel
- Staining container
- 10 mg/ml or 1% (w/v) ethidium bromide* (EtBr) solution
- Rotary shaker
- Deionized (DI) or nanopure water

***WARNING! Ethidium bromide is a known mutagen and suspected carcinogen. Always wear gloves and safety glasses when handling it. Follow appropriate hazardous materials disposal regulations.**

Method:

1. Set rotary shaker to approximately 70 r.p.m.
2. Pour 100 ml of DI water into the staining container and place on the shaker.
3. In the DI water, pipet 10.0 µl of the EtBr solution for Agarose gels or 20.0 µl for polyacrylamide gels. Allow the EtBr solution to mix for at least one minute for uniform dispersion.
4. Place one gel in the staining container and stain for 15 minutes.
5. After staining, decant the EtBr solution into an appropriate waste container.
6. Add 100 ml of DI water to the staining container and destain the gel for 10 minutes.
7. Visualize the DNA using a short wave (254 nm) UV transilluminator if you are leaving the gel in a UVT tray the optimal wavelength for visualization is 314 nm.

APPENDIX 4: Explanation of Symbols

Caution, risk of electric shock

Caution

Equipment protected throughput by DOUBLE INSULATION or REINFORCED INSULATION

This product meets the IEC Publication 1010-1 Edition 1990

Table of Contents

I. General Information

The RunOne Electrophoresis System is designed for easy and fast DNA separations in an ultra-compact, horizontal format. The System includes the: 1) RunOne Casting System, 2) RunOne Electrophoresis Cell, and 3) RunOne Power Supply with or without timer.

The RunOne Casting System includes a horizontal casting stand which contains 6 individual compartments, allowing agarose and polyacrylamide gels to be cast at the same time in the stand. Up to 4 mini (5.2 x 5.9 cm) and 2 wide (10.7 x 5.2 cm) gels may be cast simultaneously. Agarose gel trays (smoke tinted) are provided. The gel trays are formulated of special plastics designed to optimize consistent gel performance for hand cast agarose gels.

The RunOne Cell accommodates two mini gels or one wide gel per run. The RunOne Cell comes with its own dedicated power supply. The palm-sized RunOne Power Supply with or without timer connects with and becomes an integral part of the RunOne Cell.

Embi Tec offers RunOne Pre-Cast Polyacrylamide Gels in concentrations of 4%, 6%, 7.5%, or 10%. RunOne Gels are available in a mini (7 wells) or wide (12 wells) format. RunOne Gels are for use with 1X TAE/TBE (pH 8.2) sample and running buffer.

The RunOne Electrophoresis System is intended for *in vitro* research use only.

Unpacking

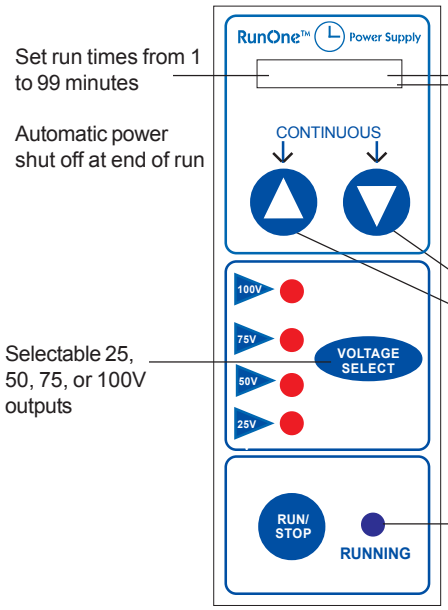
When you receive the RunOne System, inspect the shipping container for any damage which may have occurred during shipping. Damage to the shipping container may indicate damage to the contents. If you determine the contents were damaged during shipping, immediately file a claim with the carrier. The Embi Tec warranty does not cover damage which occurs during shipping.

Please confirm that the RunOne System is complete and contains the following components. Please contact Embi Tec immediately if any part is missing or damaged.

RunOne System Packing List:

RunOne Casting System	Number
Casting Stand	1
Combs	2
Agarose Mini Gel Trays (smoke tinted, 5.2 x 5.9 cm)	4
Agarose Wide Gel Trays (smoke tinted, 10.7 x 5.9 cm)	2

RunOne™ Power Supply



Set run times from 1 to 99 minutes

Automatic power shut off at end of run

LCD displays run time that decreases by seconds so you know your run has started

Selectable 25, 50, 75, or 100V outputs

Press the down and up arrows simultaneously to run without time control

The blue LED light will automatically shut off at the end of a timed run - indicating no more power to the gel. However, the alarm will continue to beep and the timer will continue counting up until the RUN STOP is pressed.

QUICK REFERENCE GUIDE

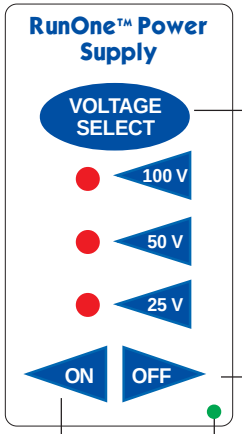
- Power to power supply indicated by blue LED.
- Change voltage DURING run by pressing VOLTAGE SELECT
- For an un-timed run, press ▲ and ▼ simultaneously. "Cont" will display on LCD screen.
- For timed runs press ▲ or ▼ to reach desired time. Hold down for faster scroll. Press RUN STOP to start run, blue "RUNNING" LED indicates power to electrophoresis chamber.
- At the end ot a timed run, the power to the gel will automatically shut off. To stop the alarm and timer count up, press RUN STOP
- Time can be changed up or down DURING run.
- Lifting lid during run cuts power to running chamber but does NOT stop timer.

AUDIO / VISUAL INDICATORS

- Blue "RUNNING" LED is off, indicates power to gel is shut off.
- End of run: Blue running LED shuts off and audible alarm at 2 beeps/second will continue until RUN STOP is pressed.
- High current surge shut off: blinking voltage LED, high pitched audible alarm 2 beeps per second. Power to gel is shut off.
- Crossover to constant current: audible alarm 1 beep every 2 seconds, power to gel set at 350 mA, gel will continue to run to end of allotted time.

APPENDIX 2: POWER SUPPLY OPERATION, FEATURES, AND MAINTENANCE

Power Supply without Timer



Press VOLTAGE SELECT to choose a 100 V, 50 V, or 25 V output. When VOLTAGE SELECT is pressed, the voltage chosen is indicated by one of the three red voltage indicator LEDs.

Press OFF to turn off the Power Supply. When the Power Supply is turned off, none of the red voltage indicator LEDs will be lit. The green LED located in the lower right hand corner of the keypad will remain lit until the Power Supply is unplugged from the wall outlet.

Press ON to turn on the Power Supply. The red LED light indicates the selected voltage.

The green LED will light when the Power Supply is plugged into a wall outlet (120 V only); however, **no voltage is delivered until ON is pressed**. If the green LED does not light when the Power Supply is plugged into a wall outlet, call Embi Tec for technical service.

Current Overload Protection:

The RunOne Power Supply protects against overheating by monitoring the level of current. If the current exceeds the safety limit of 400 mA, the voltage LED will flash on and off continuously to indicate current overload. The Power Supply automatically shuts down to prevent overheating. Excessive current may be caused by too concentrated running buffer or too much running buffer volume. In either situation, it may take several minutes for the current to exceed the safety limit; hence it is important to always monitor the gel during electrophoresis.

Voltage Memory Feature:

When the Power Supply is turned off and disconnected from the RunOne Cell, the last voltage setting used will be retained in memory provided the Power Supply remains plugged into the wall outlet. When the Power Supply is reconnected to the RunOne Cell and turned on, the voltage retained in memory will be automatically selected.

Maintenance:

Never rinse or submerge the RunOne Power Supply in water. Keep the Power Supply clean and dry by wiping it with a soft cloth. **DO NOT OPEN POWER SUPPLY – WARRANTY VOID IF UNIT OPENED.**

RunOne System Packing List (cont.) — Number

RunOne Cell	
Running Tank	1
Running Tank Lid	1

RunOne Power Supply with or without timer	1
Power Supply Cord	1

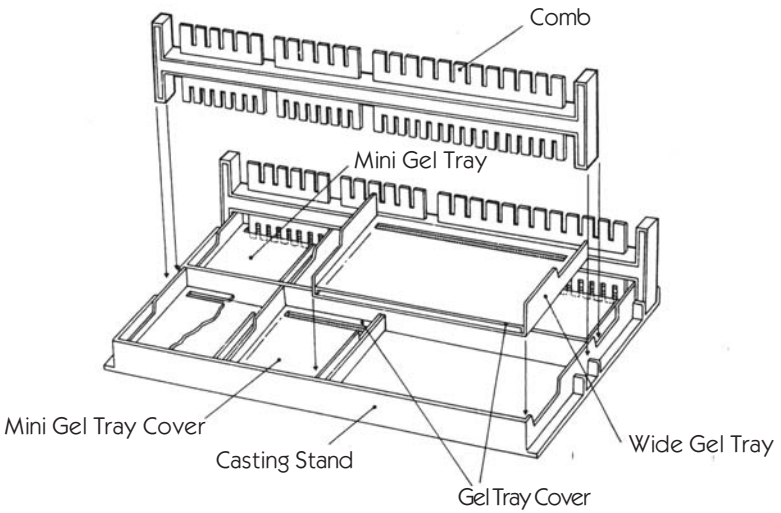


Figure 1: RunOne Casting System

II. SAFETY

Always wear protective gloves and safety glasses in the laboratory. The RunOne Electrophoresis System is intended for laboratory research use only. Power is supplied to the RunOne Electrophoresis Cell by the RunOne Power Supply. The RunOne Power Supply is a dedicated power supply designed for use with the RunOne Electrophoresis Cell only. Do not attempt to use the RunOne Power Supply with any other electrophoresis apparatus; and do not attempt to use the RunOne Cell with any other power supply. The RunOne Cell and Power Supply should not be modified or altered in any way.

Disconnect Power Supply from wall before opening.

Embi Tec is not responsible for any injury or damage caused by the use of this system for purposes other than for which it was intended or by modifications to the system not performed by Embi Tec.

III. INSTALLATION

Place lid on Running Unit. Lid should sit flush with the Running Unit – If the lid is not flush with the running tank the power supply connection will not be made. The High Voltage warning label should be in the bottom right corner. Next slide the Power Supply into place. As the Power Supply slides into position you will hear an audible 'snap' - continue pushing the Power Supply until it can go no further.
NOTE: Unit will not function if lid and power supply are not in place.

IV. CASTING AGAROSE GELS

Remove the casting accessories from the casting stand. **Use the agarose gel trays (smoke tinted)**; make sure they are clean and lint free before each use. See Appendix 1 for agarose gel selection guidelines and preparation of agarose gel solutions.

1. Place the casting stand on a level surface to ensure uniform gel thickness.
2. Each mini gel requires 15 ml of gel solution; each wide gel requires 30 ml of gel solution. Note: These recommended gel solution volumes yield a gel 4.5 mm thick.
3. Place the agarose gel trays in the casting stand (see Figure 1). **Allow the agarose gel solution to cool to 65-70° C before pouring. Failure to do so could warp the gel tray.**
4. Pour the gel solution into the gel tray. Check for and remove any bubbles in the gel solution. Note: A small amount of gel solution will flow underneath the tray. This will not affect gel solidification or performance.
5. Insert the desired side of the comb into the gel solution and allow to solidify for at least 30 minutes. The gels will appear opaque when they are completely solidified. Note: For gels < 0.8% agarose, cast at room temperature, then place the casting stand in a 4° C refrigerator for complete solidification.

5. Custom Polyacrylamide Gels:

Polyacrylamide gels of any desired concentration can be prepared using the following method.

A. Calculate the amount of 40% stock acrylamide solution (29:1) needed (V1) using the equation:

$$V1 = \frac{(C2) \times (V2)}{C1}$$

where
V1 = volume of stock acrylamide required
C1 = concentration of stock acrylamide
C2 = desired concentration of acrylamide
V2 = desired volume of acrylamide

B. Add 10X running buffer. The amount of 10X running buffer needed is 10% of the final volume.

C. Bring to final volume with deionized (DI) water. Add 1 µl TEMED per ml of gel solution. Add 10 µl of 10% ammonium persulfate (APS) per ml of gel solution.

D. Example: To prepare 100 ml of 6% acrylamide gel solution,

a. $V1 = \frac{(6\%\ \text{acrylamide}) \times (100\ \text{ml})}{(40\%\ \text{acrylamide})}$, V1 = 15 ml of 40% acrylamide

b. 10% of 100 = 10 ml, so add 10 ml 10X running buffer

c. Desired final volume: 100 ml

We have:	-15	ml acrylamide
	-10	ml 10X running buffer
We need:	75	ml DI water

d. Add 100 µl of TEMED and 1 ml of 10% APS.

6. 10X TAE Running Buffer, 1 Liter Recipe (Catalog No. EC-1016)

Tris-base (m.w. 121.14)	48.4 g
Glacial Acetic Acid	10.0 ml
EDTA (Free Acid, f.w. 292.25)	2.92 g
DI Water	to 1.0 L

Store at Room Temperature

7. 5X TAE Sample Buffer (Catalog No. EC-1018)

10X TAE Running Buffer	1.125 ml
100% Glycerol Solution	6.0 ml
Bromophenol Blue	0.075 g
Xylene Cyanol	0.075 g
DI Water	to 30.0 ml

Store at 4° C

APPENDIX 1: Gel Selection Charts; Gel and Buffer Preparation

1. Agarose Gel Selection Chart

Gel (%)	Optimum Separation Range (Kb)
0.3	5 - 60
0.6	1 - 20
0.7	0.8 - 10
0.9	0.5 - 7
1.2	0.4 - 6
1.5	0.2 - 3
2.0	0.1 - 2

2. Acrylamide Gel Selection Chart:

Gel (%)	Optimum Separation Range (bp)
3.5	100 - 2000
4	140 - 2000
6	80 - 1500
7.5	40 - 1000
10	40 - 900

3. Agarose Gel Preparation: (mini/wide)

Gel (%)	Agarose (g)	1X Running Buffer
0.4	0.06 / 0.12	15 / 30
0.5	0.075 / 0.15	15 / 30
0.6	0.09 / 0.18	15 / 30
0.8	0.12 / 0.24	15 / 30
1.0	0.15 / 0.30	15 / 30
1.2	0.18 / 0.36	15 / 30
1.5	0.225 / 0.45	15 / 30
2.0	0.30 / 0.60	15 / 30
4.0	0.60 / 1.20	15 / 30

4. Acrylamide Gel Preparation (mini/wide):

Gel (%)	40% Acrylamide (ml)	TEMED (µl)	10% APS (µl)	1X Running Buffer (ml)
4	1.2 / 2.4	12 /24	120 / 240	10.7 / 21.4
5	1.5 / 3.0	12 /24	120 / 240	10.4 / 20.8
6	1.8 / 3.6	12 /24	120 / 240	10.0 / 20.0
7.5	2.25 / 4.5	12 /24	120 / 240	9.6 / 19.2
8	2.4 / 4.8	12 /24	120 / 240	9.5 / 19.0
9	2.7 / 5.4	12 /24	120 / 240	9.2 / 18.4
10	3.0 / 6.0	12 /24	120 / 240	8.9 / 17.8
12	3.6 / 7.2	12 /24	120 / 240	8.3 / 16.6

6. Before removing the comb from the solidified gel, wet the area around the comb with 1X running buffer. Remove the comb by gently pulling upwards.

7. Remove the gel tray from the casting stand by gently squeezing in on the sides of the gel tray while pulling upward. Remove any excess solidified agarose from the bottom of the gel tray with a lint-free tissue. **Keep the gel in the tray during sample loading and electrophoresis, or when storing gels in the refrigerator.**

8. To store the gels for up to one week, line an airtight container with a paper towel (or other absorbent material) which has been saturated with running buffer. Place the gels in the casting stand in the container and cover with another buffer-saturated paper towel. Seal the storage container and store at 4° C.

V. CASTING POLYACRYLAMIDE GELS

Remove the casting accessories from the casting stand. **Use the polyacrylamide gel trays and tray covers (clear plastic)**; make sure they are clean and lint free before each use. See Appendix 1 for polyacrylamide gel selection guidelines and preparation of acrylamide gel solutions.

1. Place the casting stand on a level surface to ensure uniform gel thickness and even polymerization.

2. Each mini gel requires 12 ml of acrylamide solution and yields a 3 mm thick gel. Each wide gel requires 24 ml of acrylamide solution and yields a 3 mm thick gel. Note: Only a 3 mm thick polyacrylamide gel can be cast; otherwise, the gel tray cover will not seat properly, allowing exposure to oxygen and inhibition of polymerization.

3. Place the polyacrylamide gel trays into the casting stand. Pour or pipet the acrylamide gel solution into the gel tray. Note: A small amount of gel solution will flow underneath the tray. This will not affect gel polymerization or performance.

4. Orient the gel tray cover so that the slot is at the top of the gel. Place the bottom end of the cover in the gel tray. Use the casting spatula to gently lower the cover onto the tray with capillary action as shown in Figure 2.

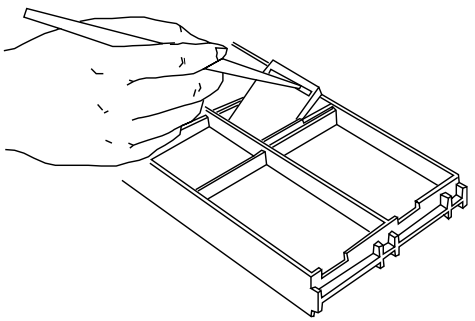


Figure 2: Use the spatula to lower the cover onto the gel tray containing polyacrylamide gel solution.

5. Check for any air bubbles trapped under the cover. If air bubbles are present, remove the cover and repeat step 4.

6. Insert the desired side of the comb into the slot at the top of the tray cover. It may be necessary to adjust the tray cover by gently sliding it toward the top or bottom of the gel tray.

7. Allow the gel solution to polymerize for 60 minutes at room temperature (20-25° C).

8. Before removing the comb from the polymerized gel, wet the area around the comb with 1X running buffer. Remove the comb by gently pulling upwards.

9. Remove the gel tray and its cover from the casting stand by gently squeezing in on the sides of the gel tray while pulling upward. Use a lint free tissue to remove any excess polymerized acrylamide from the bottom of the gel tray. **Keep the gel in the tray and do not separate the cover from the gel tray during sample loading and electrophoresis, or when storing gels in the refrigerator.**

10. To store the gels for up to one week, line an airtight container with a paper towel (or other absorbent material) which has been saturated with running buffer. Place the gels in the casting stand in the container and cover with another buffer-saturated paper towel. Seal the storage container and store at 4° C. (Note: For optimum storage conditions, please make sure that the refrigerator temperature does not drop below 2° C during the cooling cycle.)

VI. CASTING GELS USING EMBI TEC ACRYLAMIDE GEL SOLUTIONS

Embi Tec Acrylamide Gel Solutions are available in concentrations of 5%, 6%, or 7.5%. These solutions are blended with 1X TAE buffer and TEMED. **Use the polyacrylamide gel trays and tray covers (clear)**; make sure they are clean and lint free before each use. Each mini gel requires 12 ml of Embi Tec Gel Solution; each wide gel requires 24 ml of solution.

1. Pour or pipet the amount of Embi Tec polyacrylamide gel solution needed into a beaker and add 10 µl of 10% Ammonium persulfate (APS) solution per 1 ml of gel solution. (For example, one mini gel would require 12 ml of gel solution plus 120 µl of 10% APS solution, to yield a total volume of 12.12 ml).

2. Follow steps 1 -10 of Section IV on pages 4 and 5.

X. MAINTENANCE & CLEANING

Never submerge the RunOne Cell or RunOne Power Supply in water. Disconnect the Power Supply from the RunOne Cell before cleaning. Keep the Power Supply and RunOne Cell clean by wiping the surfaces with a soft cloth. The inside of the running tank may be cleaned with a suitable laboratory soap and water. Rinse the inside of the running tank with distilled, deionized water, taking care not to wet the Power Supply connector terminals of the running unit. Immediately dry the Power Supply connector terminals if they become wet.

The components of the RunOne System are not compatible with organic solvents such as acetone or ethanol. The use of organic solvents voids all warranties. Do not open Power Supply – Warranty VOID if opened**.**

XI. REPLACEMENT OF CONSUMABLE PARTS

The RunOne Electrophoresis System has no consumable parts. Call 858 684 3190 or 800 255 1777 for any service issues.

XII. WARRANTY

The RunOne Electrophoresis System is warranted to be free of defects in materials and workmanship for a period of one year from the date of purchase. If a defect is found during this warranty period, Embi Tec will replace the defective parts at no charge, provided the product is returned within the warranty period. This warranty specifically excludes:

Defects caused by improper operation.
Damage caused by improper handling or accidental misuse.
Damage caused by the use of organic solvents.
Common replacement parts including platinum wire and fuses.
Damage incurred during shipping.

RunOne System Warranty Information

Date of Delivery: _____

Invoice Number: _____

Purchase Order Number: _____

The RunOne System is manufactured by

Embi Tec
7738 Arjons Drive
San Diego, CA 92126 USA

9Q. What should I do if the green LED in the lower right corner of the power supply keypad does not light when the power supply is plugged into a wall outlet?

9A. If the green LED does not light, check the fit between the lid, running tank and power supply. Lid should fit flush with the running tank and the power supply should be slid into place. If all components are in place and the green LED still does not light, call Embi Tec for technical service.

10Q. During a run, the red voltage indicator LED begins blinking on and off continuously. What does this mean?

10A. The current has exceeded the safety limit of 400 mA and the RunOne power supply has shut down. Check to make sure the running buffer was correctly prepared and diluted to 1X concentration.

11Q. During electrophoresis, the bromophenol blue and xylene cyanol dye fronts did not migrate into the gel.

11A. Check to make sure the gel was properly placed on the running platform with the wells on the right side of the tank next to the power supply. DNA migrates from right to left in the RunOne Cell as indicated by the polarity arrow on the tank lid.

12Q. After staining the gel, I don't see any sample bands. What could be causing this?

12A. If the standard is staining properly, try lengthening the staining procedure. If the sample is still not seen, there may not be enough DNA in the sample.

VII. RunOne POLYACRYLAMIDE PRE-CAST GELS

RunOne Pre-Cast Polyacrylamide Gels are for use with 1X TAE (pH 8.2) sample and running buffer. (See Appendix 1 for preparation of TAE sample and running buffers.) Select a RunOne gel according to the following chart:

Performance Range:	RunOne Pre-Cast Gel	Best Resolution (bp)
	4%	140 - 2000
	6%	80 - 1500
	7.5%	40 - 1000
	10%	40 - 900

	Mini Gel (7 wells)	Wide Gel (12 wells)
Well volume:	10 µl	15 µl
Sample Load:	0.1 - 0.5 µg	0.1 - 0.5 µg

1. Tear open the pouch at the notched edge. Carefully remove the gel tray from the pouch. **Do not remove the slotted cover from the gel tray.** Note: Bubbles may occur between the gel and the tray or tray cover; these will not affect gel performance.

2. Follow steps 1-6 of Section VII.

3. At 100 V, the approximate run times in the RunOne Cell are:

RunOne Polyacrylamide Gel	Approximate Run Time (min)
4%	45
6%	52
7.5%	57
10%	65

Note: Run times are based on the time required for the bromophenol blue dye front to migrate to the bottom of the gel.

VIII. SAMPLE LOADING AND RUNNING GELS

DNA migrates from the cathode (-) to anode (+) (right to left) in the RunOne Cell as indicated by the polarity arrow on the cell lid. The running platform accommodates two mini gels or one wide gel. **The lid can be removed from the unit while the power supply is in place. When the lid is removed the circuit is broken and if the power supply was on removal of the lid will stop the power flow to the unit. When the lid is replaced the unit will continue to operate at the power setting selected before the circuit was disrupted.**

1. Place the agarose gel tray or polyacrylamide gel tray with cover on the running platform of the RunOne Cell. Orient the gel so that the wells are next to the Power Supply on the right side of the tank.

2. Flush the wells with 1X running buffer to remove any debris. Check the wells for air bubbles and remove any with a pipet.

3. Pour 300 ml of 1X running buffer into the RunOne tank. Note: RunOne Pre-Cast Polyacrylamide gels are for use with TAE sample and running buffer (pH 8.2) only. Make sure that the agarose gel or polyacrylamide tray cover is fully submerged.

4. Load the samples into the wells.

Gel Type	Sample Volume (µl)	Maximum Load (µg DNA)
Agarose		
Small Wells	10	0.05
Large Wells	15	0.2
Hand Cast Polyacrylamide		
Small Wells	10	0.1 - 0.5
Large Wells	15	0.1 - 0.5
RunOne Pre-Cast Polyacrylamide		
Mini (7 wells)	8	0.1 - 0.5
Wide (12 wells)	10	0.1 - 0.5

5. Place the tank lid on the RunOne Cell.

6. If the RunOne Power Supply is not already in place, then attach the power cord to the RunOne Power Supply and connect the Power Supply to the RunOne Cell. Plug the Power Supply cord into a wall outlet (120 V only) . NOTE: The green LED in the lower right corner of the Power Supply keypad will light, indicating that the power supply is plugged into a wall outlet. Please call Embi Tec if the green LED does not light when the Power Supply is plugged into a wall outlet. See Appendix 2 for additional information regarding Power Supply operation.

7. Press VOLTAGE SELECT to choose the desired voltage output. Press ON to turn on the Power Supply and begin electrophoresis. Press OFF to turn off the Power Supply when electrophoresis is finished.

IX. FREQUENTLY ASKED QUESTIONS

1Q. Can I cast thinner polyacrylamide gels (less than 3 mm)?
1A. No, not with the current gel tray and cover configuration. The distance between the polyacrylamide gel tray and cover is 3 mm. Oxygen inhibits polymerization of acrylamide; therefore, the gel solution must completely fill the space in between the polyacrylamide gel tray and cover in order to eliminate contact with oxygen and ensure good polymerization.

2Q. Is it a problem if some of the gel solution gets under the gel tray while casting?
2A. No. A small amount of gel solution will flow underneath the tray, but this will not affect gel performance. After the gel is polymerized, remove the thin layer with a tissue before running.

3Q. When casting polyacrylamide gels, air bubbles are sometimes trapped between the cover and the gel solution when I lower the cover onto the gel solution. What would solve this?
3A. Use the spatula provided to slowly lower the cover at an angle onto the gel solution as shown in Figure 2, page 4.

4Q. The gels (especially higher percentage polyacrylamide gels) are sometimes difficult to remove from the casting stand. What do you suggest?
4A. The small amount of gel solution that gets under the gel tray will slightly adhere it to the casting stand. Remove the gel tray by pushing inward on the two side tabs of the gel tray (toward the center of the gel), then pull the gel tray up and out of the stand.

5Q. Sometimes when removing a polyacrylamide gel tray and cover from the casting stand, air bubbles get trapped in between the gel and the tray or in between the gel and the tray cover. Will this affect gel performance?
5A. No. Air pockets may be introduced when the gel tray is removed from the casting stand, but they will not affect the running of the gel.

6Q. Sometimes the gel tray floats above the running platform after I add running buffer to the RunOne Cell tank. How do I get the gel tray to seat properly?
6A. To anchor the gel to the running platform, push it down and slide it slightly sideways.

7Q. Why do I occasionally have trouble loading my sample into a well?
7A. One possibility is insufficient sample buffer density.

8Q. Why is electrophoresis taking much longer than the expected run time?
8A. Check to make sure the running buffer was correctly prepared and diluted to 1X concentration. Excessive salt concentration in the buffer produces higher current levels and results in a lower voltage gradient and longer run times.