A Geno Technology, Inc. (USA) brand name

Horizontal Electrophoresis Units

Cat. No. BT101, BT102, BT103, BT104

1-800-628-7730 ♦ 1-314-991-6034 ♦ info@BTLabSystems.com

Before using the instrument, please read the operation instruction handbook carefully.

WARRANTY

Our company guarantees that this unit is warranted against defective material and workmanship for a period of one year from the date of shipment. We will repair or replace the defective equipment returned during the warranty period free if the equipment has been used under normal laboratory conditions and in accordance with the instruction in this manual, the following defects are specifically excluded:

1. Damage caused by accident, misuse or abuse
2. Damage caused by disaster
3. Repair or modification by anyone else without our authorization
4. Corrosion due to the use of improper solvent or sample
5. Defects caused by improper operation
6. Use of fittings or other spare parts supplied by anyone else.

This warranty does not apply to platinum wire and all the accessories.

A return authorization must be obtained from us before returning any product for repair on a freight prepaid basis.

For any inquiry or request for repair service, please contact BT Lab Systems at the following info.

E-Mail: info@BTLabSystems.com

INTRODUCTION

BT Lab Systems Horizontal Electrophoresis Units should be used together with an electrophoresis power supply. They are designed for years of reproducible and rigorous use and have many features that make casting and running the gels simple and efficient.

1. The lids and the main tank bodies (buffer tanks) are transparent, molded, exquisite, durable, good seal, no chemical pollution; chemical-resistant and pressure-resistant.
2. Each model of the electrophoresis cell has its own gel casting device.
3. Electrodes are made by pure platinum (the purity quotient of the noble metal ≥99.95%), which have the features of corrosion resistance o and withstand high temperature, while offering excellent conductivity.
4. Withdrawable electrode is easy to clean and provide a simple way to replace electrode wires.
5. Sample wells are often difficult to see, so the black band on the gel tray makes it convenient to observe and to load the samples.
6. Power fails when you open the lid for the user's safe.
7. The special comb design of makes one comb have two different size teeth.

UNIT COMPONENTS

Each unit consists of Main tank body (Buffer tank), Lid, Leads, Gel Tray(s), Gel Casting Device(s) and Combs (Figure 1).

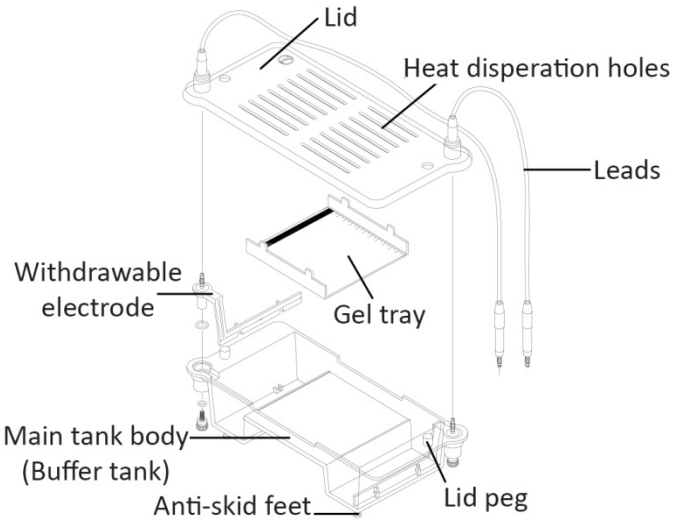

Figure 1

Description	Small BT101	Medium BT102	Large BT103	X-Large BT104
Main tank body	1	1	1	1
Lid	1	1	1	1
6/8 teeth comb (1.5mm)	1			
11 teeth comb (1.0/1.5mm)	1			
25/(11+11) teeth comb (1.0mm)			1	
13/(6+6) teeth comb (1.5mm)			1	
18/(8+8) teeth comb (1.5mm)			1	
(3+2)/(3+3) teeth comb(2.0mm)			1	
8/15 teeth comb (1.0mm)		1		
8/15 teeth comb (1.5mm)		1		
17 teeth comb (1.5mm)				4
34 teeth comb (1.5mm)				4
Gel casting device	1	1	1	1
Gel tray (60 X 60 mm)	2		2	
Gel tray (60 X 120 mm)			1	
Gel tray (120 X 60 mm)			1	
Gel tray (100 X 70 mm)		2		
Gel tray (120 X 120 mm)			1	
Gel tray (200 X 176 mm)				1
Gel tray (150 X 176 mm)				1
Lead X 1 pair	1	1	1	1
Gel delivery holder				2

SPECIFICATIONS

Cat. #	BT101	BT102	BT103	BT104
Gel Size (mm)	60 x 60	100 x 70	60 x 60 120 x 60 60 x 120 120 x 120	150 x 160 200 x 160
# of samples	6, 8, 11	8 ,15	2, 3 ,6, 8, 13, 18, 11, 25	17, 34
Comb Thickness (mm)	1.0, 1.5	1.0, 1.5	1.0, 1.5, 2.0	1.5
Max. Input Voltage (V)	100	100	200	500
Max Current (mA)	50	50	100	200
Continuous Working Time	≥24 hours			
Buffer volume (ml)	150	300	8000	1000
Overall Dimensions (L x W x H) (mm)	197 x 96 x 64	260 X 116 X 76	310 X 150 X 90	360 X 195 X 100
Weight (kg)	0.5	1.0	1.0	1.5

OPERATING INSTRUCTIONS

Important

Connecting the electrophoresis cell with electrophoresis power supply is strictly forbidden before starting the experiment. Electric current to the electrophoresis cell, provided from the electrophoresis power supply, enters the unit through the lead and lid assembly, providing a safety interlock to the user. Electric current to the electrophoresis cell is broken when the lid is opened and removed. Please don't attempt to use the electrophoresis cell without the lid, and remember to turn the electrophoresis power supply off before opening and removing the lid.

1. Before you start the experiment, please select the right gel tray(s) and the comb(s) according to your requirement and the model of the electrophoresis cell:

Model	Comb Thickness (mm)	# of teeth	Total volume/ well (µl)
BT101	1.5	6	63
		8	50
	1.0	11	18
BT102	1.5	15	38
		8	60
	1.0	15	25
		8	40
BT103	1.0	11	18
		25	
	1.5	6	63
		13	
		8	41
		18	
	2.0	2	60 / 492
		3	180
		3	60 / 240
BT104	1.5	17	99
		34	41

2. **Casting the gel:** You can cast small gel, wide gel, long gel and square gel according to the requirements of the experiment. Please see table below for gel volume requirements of each gel tray.

Model	Gel Tray (mm)	Volume for 50mm thick gel (ml)
BT101	60 x 60	18
BT102	100 x 70	35
BT103	120 x 120	72
	120 x 60	36
	60 x 120	
	60 x 60	18
BT104	20 x 16	160
	15 x 16	120

3. The gel casting methods are as follows:

    a. Small gel (60mm × 60mm): Framework 1 and framework 2 are for two pieces of small gel. Put two pieces of the small gel trays (60mm × 60mm) in parallel into the frameworks, then insert the comb as shown below. Pour the heated agarose gel into the gel casting device.
    Note: The temperature of the gel should be about 60°C. Wells for loading sample should be close to the cathode.

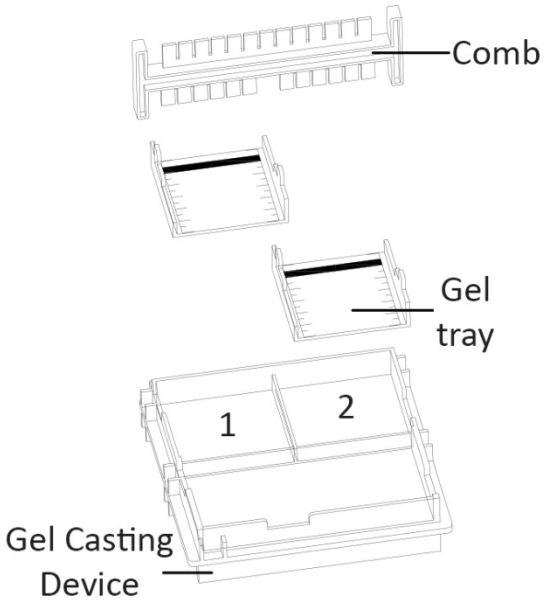

Figure 2

    b. Wide gel (120mm x 60mm): Framework 3 is only for one piece of wide gel. Put the wide gel tray (120mm × 60mm) into the framework, then insert the comb as shows in figure 3. Pour the heated agarose gel into the gel casting device.

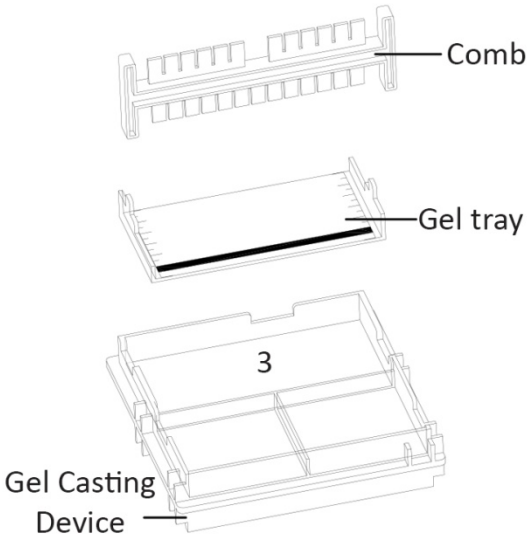

Figure 3

c. Long gel (60mm x120mm):Framework 3 is also for one piece of long gel. Put the long gel tray (60mm x 120mm) into the framework, then insert the comb as shows in Figure 4. Pour the heated agarose gel into the gel casting device.

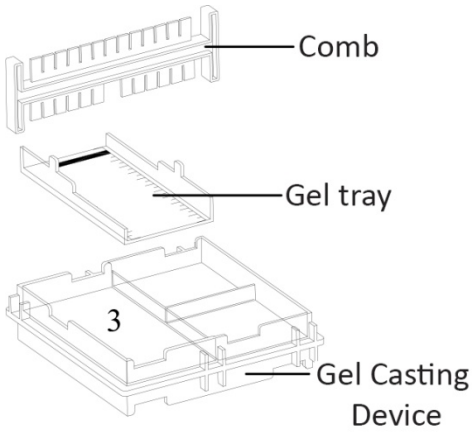

Figure 4

d. Square gel (120mm x 120mm): Framework 4 is for one piece of square gel. Put the square gel tray (120mm x 120mm) into the framework, then insert the comb as shows in Figure 5. Pour the heated agarose gel into the gel casting device.

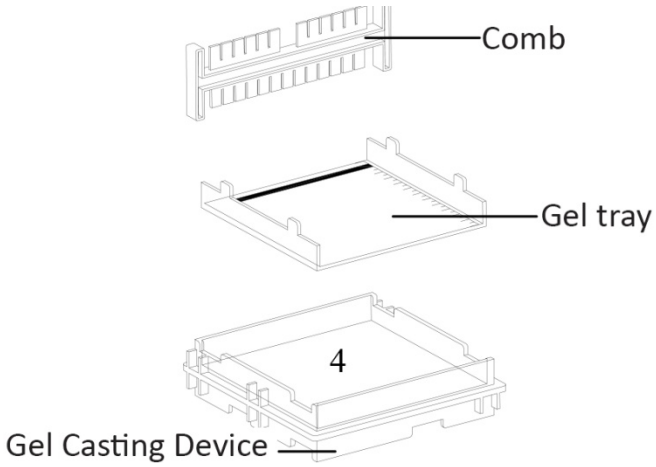

Figure 4

4. Loading the sample and running the gel:

   a. Allow the gel to polymerize for about 30 minutes at room temperature. And after the gel become solid, take the comb away carefully and softly, and then put the gel tray into the main tank body (buffer tank).
   Note: Please add some buffer solution on the gel surface along the comb before you pull out the comb, which can protect the wells from the damage. The side of the gel tray with the sample wells should be near the cathode (black). Samples will migrate toward the anode (red) during electrophoresis.

b. Pour the buffer solution to the buffer tank and make all the gel immerged. And the surface of the buffer solution should be higher (1mm) than the surface of the gel, and please don't fill the main tank body with the buffer solution too much.

c. Load the samples into the wells with standard pipette.
Note: Avoid the air bubbles when you load the samples. Take care not to damage the sides or the bottoms of the wells. Sample volume is dependent on the type of the comb(s) (like comb thickness and length) and the thickness of the gel. For the maximum sample loading volumes, please see Step 1 above.

d. Cover with the lid and do not disturb the samples.

e. Connect the unit to the electrophoresis power supply correctly.

f. Set the parameter (Voltage), and then start the running. Longer gels need higher voltage.

g. Parameters requirements vary depending on the gel thickness, length and concentration, and the type of the electrophoresis buffer used. High voltage: time for the experiment will be shorter, but the heat will be high and the resolution will be low. High voltage is suitable for selecting the samples or detecting the purity of the sample; Low voltage: the heat will be low and the resolution will be high but the time for the experiment will be longer.
Note: Don't move the apparatus during the running. During the running, very low quantities of gases are produced, in order to disperse the gases, please make sure that the apparatus is running in a well ventilated area. For the operating parameters, please see the table below

Model	Buffer volume (ml)	Voltage (V)	Current (mA)
BT101	150	40	10
BT102	300	80	30
BT103	800	120	60
BT104	1,000	200	70

h. After the running is finished, turn off the power supply, disconnect the electrophoresis cell from the power supply. Open the lid and take out the gel tray. Remove the gel and visualize bands under UV light.

MAINTENANCE

Each unit is supplied preassembled with the withdrawable leads in place. It is very easy to replace the broken electrode wires by removing the withdrawable electrode and ordering a new one from us.

1. Remove the screw and cushion ring (2) from the plug of the main tank body to release the withdrawable electrode rack. Do not discard the screw and cushion ring (2) (keep these parts with the main tank body for continuous use).
2. Remove the broken electrode wire with the withdrawable electrode rack by lifting upward on the plug. Discard it.
3. Insert the new withdrawable electrode into the main tank body, please don't miss the cushion ring (1).
4. Tighten the screw and cushion ring (2) to secure the withdrawable electrode in the main tank body properly and to form a leak-free seal.

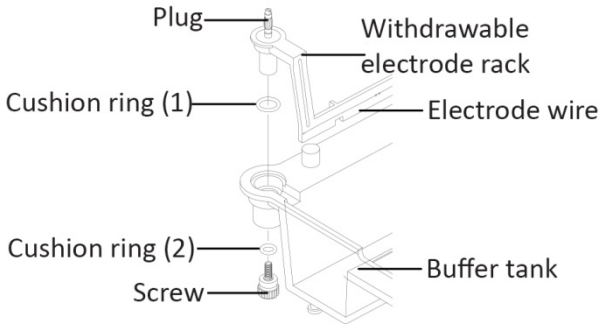

Figure 2

The main body of the electrophoresis cells and some of their accessories are fragile, so falls from a high position and bump or collision is forbidden during the course of packing, transportation and experiment. The platinum installed in the chamber is easy to break off, so you should pay more attention to it during the period of experiment, especially when you clean the electrophoresis cell.

The product should be stored at ambient temperature in relative humidity of ≤93%.

Please clean the electrophoresis tank thoroughly after use. You can clean it with sponge. Rinse the main

tank body (buffer tank), gel-casting device thoroughly with distilled water after every use. Wash the gel tray and combs with a lab detergent, and then wash them with deionized water. Air-dry them for the next use.

TECHNICAL SUPPORT

BT Lab Systems offers technical support for all of its products. If you have any questions about the product's use or, operation, please contact BT Lab Systems at the following info.

E-Mail: info@BTLabSystems.com