BIOBASE®

# Horizontal Electrophoresis
# ET-H1 /2 /3
# User Manual

**BIOBASE GROUP**

**Version 2020.07**

# Content

# I. Safety

WHEN USED CORRECTLY, THESE UNITS POSE NO HEALTH RISK. HOWEVER, THESE UNITS CAN DELIVER DANGEROUS LEVELS OF ELECTRICITY AND ARE TO BE OPERATED ONLY BY QUALIFIED PERSONNEL FOLLOWING THE GUIDELINES LAID OUT IN THIS INSTRUCTION MANUAL.

ANYONE INTENDING TO USE THIS EQUIPMENT SHOULD READ THE COMPLETE MANUAL THOROUGHLY.

THE UNIT MUST NEVER BE USED WITHOUT THE SAFETY LID CORRECTLY IN POSITION.

THE UNIT SHOULD NOT BE USED IF THERE IS ANY SIGN OF DAMAGE TO THE EXTERNAL TANK OR LID.

**PACKING LISTS:**

| **Accessory** | **Quantity** |
|---|---|
| Body Tank（includes electrodes） | 1 |
| Gel Tray(120×120mm) | 1 |
| Gel Tray(120×60mm) | 1 |
| Gel Tray(60×120mm) | 1 |
| Gel Tray(60×60mm) | 2 |
| Gel Caster Chamber | 1 |
| Comb(3 wells, 1.5 thickness) | 1 |
| Comb(6/13 wells, 1.0mm thickness) | 2 |
| Comb(8/18 wells, 1.0mm thickness) | 2 |
| Comb(11/25 wells, 1.0mm thickness) | 2 |
| Electrical Cables | 1 |

# II. Maintenance

## Cleaning Horizontal Units

Units are best cleaned using warm water and a mild detergent. Water at temperatures above 60℃ can cause damage to the unit and components.
The tank should be thoroughly rinsed with warm water or distilled water to prevent build up of salts but care should be taken not to damage the enclosed electrode and vigorous cleaning is not necessary or advised.
Air drying is preferably before use.

## The units should only be cleaned with the following

Warm water with a mild concentration of soap or other mild detergent.
Compatible detergents include dishwashing liquid, Hexane and Aliphatic hydrocarbons.
The units should not be left to in detergents for more than 30 minutes.
The unit should never come into contact with the following cleaning agents, these will cause irreversible and accumulative damage:-
Acetone, Phenol, Chloroform, Carbon tetrachloride, Methanol, Ethanol, Isopropyl alcohol.
Rnase Decontamination
This can be performed using the following protocol:-
Clean the units with a mild detergent as described above.
Wash with 3% hydrogen peroxide (H2O2) for 10 minutes.
Rinsed with 0.1% DEPC-(diethyl pyrocarbonate) treated distilled water.

## Caution

DEPC is a suspected carcinogen. Always take the necessary precautions when using.
RNaseZAPTM (Ambion) can also be used. Please consult the instructions for use with acrylic gel tanks.

# III. User Instructions

## 3.1 Setting up the Horizontal Gel Tanks

**Instructions for fitting Electrode Cables**

1) Note the position of the lid on the unit. This shows the correct polarity and the correct orientation of the cables, black is negative and red positive.
2) Remove the lid from the unit, Note if the lid is not removed, fitting the cables may result in un-tightening of the gold plug and damage to the electrode.
3) Screw the cables into the tapped holes as fully as possible to that there is no gap between the lid and the leading edge of the cable fitting.
4) Refit the lid.

## 3.2 Gel Preparation

1. For a standard 0.7% agarose gel, add 0.7grammes of agarose to 100ml of 1x TAE or TBE solution. The same 1x solution should be used in the tank buffer solution.
2. Add the agarose power to a conical flask.
3. Add the appropriate amount of 1Xtae or TBE solution from the table above. To prevent evaporation during the dissolving steps below, the conical flask should be covered with parafilm.
4. Dissolve the agarose power by heating the agarose either on a magnetic hot plate with stirring bar or in a microwave oven. If using the microwave method, the microwave should be set an around a 400 watt or medium setting and the flask swirled every minute. The solution should be heated until all crystals are dissolved. This is best viewed against a light background. Crystals appear as translucent crystals. These will interfere with sample migration if not completely dissolved.
The gel must be cooled to between 50℃ and 60℃ degrees before pouring.

## 3.3 Gel Pouring

**Using The Gel Caster Chamber**

1. Fit the Gel Caster Chamber over each end of the tray and place onto a level surface. The Gel Caster Chamber should be fitted so that there is no gap between the sides of the tray. This will ensure that there is no possibility of gel leakage.
2. Place the comb(s) in the grooves.
3. Pour in the agarose carefully so as not to generate bubbles.
4. Allow the agarose to set, ensuring that the gel remains undisturbed.
5. Carefully remove the gel tray and comb and transfer the gel including tray to the main tank.

## 3.4 Running the Gel-

1. Mix the sample to be loaded with sample buffer- see solutions for common sample buffers. Usually 3ul of sample buffer is adequate but less may be used with sample volumes of less than 10ul.
2. Fill the unit with buffer until the gel is just flooded with buffer. This will give the fastest resolution times. For enhanced quality of resolution of sample, fill the unit to 5mm above the gel.
3. Load the samples into the wells using pipettes. Multi-channel pipettes can be used for loading samples with MC compatible combs, see listing in accessories for identification of these.
4. Carefully place the lid on the tank and connect to a power supply.

5. Typically gels are run at between 90 and 150 volts. However, maximum Voltages are indicated on the serial badge of each unit. It should be notes that higher voltages generally give faster but poorer quality sample resolution.

## 3.5 Gel Staining and Viewing

1. Transfer the gel to a vessel containing the appropriate volume of 0.5ug/ml ethidium bromide stain for 15~30 minutes, see solutions for stock stain concentration and adjust to the volume used accordingly. The entire gel should be covered.

**NOTE:-** Ethidium bromide is a suspected carcinogen and the necessary safety precautions should be undertaken.
2. De-stain the gel for 10~30 minutes in distilled water again ensuring the gel is completely immersed.
3. Rinse the gel twice for a couple of seconds with distilled water.
4. Transfer the gel to a UV Transilluminator.
5. The samples will often appear as brighter, clearer bands when photographed or viewed using a gel documentation system. However if the gel bands are too faint then the staining procedure should be adjusted so that there is less de-staining. If there is too much background then the staining procedure should be adjusted so that there is more de-staining.

**Solutions:-**
**1x TAE** 40mM tris (PH 7.6), 20mM acetic acid, 1mM EDTA.
50X (1L) dissolve in 750ml distilled water:
242g tris base (FW=121)
57.1ml glacial acetic acid
100ml 0.5M EDTA (PH 8.0)
Fill to 1 litre with distilled water.

**1X TBE** 89mM tris (PH 7.6), 89Mm boric acid, 2mM EDTA
10x (1L) dissolve in 750ml distilled water:
108g tris base (FW=121)
55g boric acid (FW=61.8)
40ml 0.5M EDTA (PH 8.0)
Fill to 1 litre with distilled water.

**Sample Loading Dye**
10x sample buffer stock consists of 50% glycerol, 0.25% bromophenol blue, and 0.25% xylene cyanole FF in 1x TAE buffer. Only 1-10ml of the 10x loading dye should be prepared.

**Ethidium Bromide Solution**
Add 10mg of Ethidium Bromide to 1ml distilled water.

# IV. Warranty

The Horizontal Electrophoresis tank is warranted for 1 year against defects in materials and workman ship. If any defects should occur during this warranty period, we will replace the defective parts without charge (Except the Platinum wire). However, the following defects are specifically excluded:

1. Defects caused by improper operation.
2. Repair or modification done by anyone other than our company or their authorized agent.
3. Use with cables or connectors not specified by our company for this power supply.
4. Deliberate or accidental misuse.
5. Damage caused by disaster.

For inquiry or request for repair service, contact your local agent.

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