Consort

MANUAL

E3800

July 2009

CONSORT guarantees that the unit you have received has been thoroughly tested and meets its published specification.

This unit (excluding all accessories) is warranted against defective material and workmanship for a period of twelve (12) months from the date of shipment ex factory.

CONSORT will repair all defective equipment returned during the warranty period without charge, provided the equipment has been used under normal laboratory conditions and in accordance with the operating limitations and maintenance procedures outlined in this instruction manual and when not having been subject to accident, alteration, misuse or abuse.

No liability is accepted for loss or damage arising from the incorrect use of this unit. **CONSORT**'s liability is limited to the repair or replacement of the unit or refund of the purchase price, at **CONSORT**'s option. **CONSORT** is not liable for any consequential damages.

CONSORT reserves the right to alter the specification of its products without prior notice. This will enable us to implement developments as soon as they arise.

CONSORT products are for research use only.

A return authorisation must be obtained from **CONSORT** before returning any product for warranty repair on a freight prepaid basis.

- 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 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.
- Always isolate electrophoresis units from their power supply before removing the safety cover. Isolate the power supply from the mains **first** then disconnect the leads.
- **Do not** exceed the maximum operating voltage or current.
- **Do not** operate the electrophoresis units in metal trays.
- Acrylamide is a volatile, cumulative neurotoxin and suspected carcinogen. Wear effective protective clothing and follow recommended handling and disposal procedures.
- Polymerised gels contain some unpolymerised monomer. Handle with gloves only. Following the replacement of a platinum electrode have the unit inspected and approved by your safety officer prior to use.
- **Do not** fill the unit with running buffer above the maximum fill lines.
- **Do not** move the unit when it is running.
- **Caution:** during electrophoresis very low quantities of various gases are produced at the electrodes. The type of gas produced depends on the composition of the buffer employed. To disperse these gases make sure that the apparatus is run in a well ventilated area.

- Units are best cleaned using warm water and a mild detergent. **Water at temperatures above 60°C 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 dish washing liquid, hexane and aliphatic hydrocarbons). The units should not be left to in detergents for more than 30 minutes.
- **The units 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 alkalis.
- **In case of Rnase Decontamination** clean the units with a mild detergent as described above. Wash with 3 % hydrogen peroxide (H_2O_2) 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.) RNaseZAP™ (Ambion) can also be used. Please consult the instructions for use with acrylic gel tanks.

Environmental conditions

- This apparatus is intended for indoor use only.
- This apparatus can be operated safely at an altitude up to 2000 m.
- The normal operating temperature range is between 4°C and 65°C.
- Maximum relative humidity 80 % for temperatures up to 31°C decreasing linearly to 50 % relative humidity at 40°C.
- The apparatus is rated **Pollution Degree 2** in accordance with IEC 664. **Pollution Degree 2** states that: “Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected”.

Setting up the cooling plate

The cooling plate can be connected to a recirculating chiller. This will prevent over heating of the IEF strips. The cooling plate contains sealing ports. When removed these will seal the cooling plate. These should be removed before connecting to the chiller by pressing down on the metal button at the top of each port.

1. Connect the tubing from the chiller to both port sealers.
2. Insert the port sealers onto the ports; this will now render these in the open position.

Installation and preparation

1. Position the unit on the bench in a convenient position in the laboratory.
2. Insert prepared cooling plate in the base unit. Ensure it locates properly with the pipes protruding from the cut outs in the side wall.
3. If not already fitted, mount the electrofocusing electrodes on the electrode holder by simply lifting and placing these into the slots. The electrodes are colour coded for correct polarity orientation.
4. Place the electrode plate onto the unit. The electrode holder should locate snuggly onto the cooling plate with the connectors in the correct position to plug into the correct anode/cathode socket of the base unit.
5. Set the desired temperature of the cooler/circulator if to be used and switch on at least 10 minutes prior to electrophoresis to allow the cooling plate to reach the desired temperature.
6. The unit is now ready for electrofocusing or electrophoresis.

Iso electric focusing

The composition and running of IEF gels varies considerably depending on the range of pH required, the application (native or denaturing) and the format of the gels. The following instructions are general instructions for IsoElectric focusing applications where the gels are hand poured or precast in a horizontal format on a gel support. Please consult a suitable reference text for gel compositions, recommended temperatures, voltages and run times.

1. Apply 1...5 ml of Triton X100 non-ionic detergent to the surface of the cooling plate. This will act as a heat transfer agent between the cooling plate and the gel, during the electrophoresis run.

2. Place one end of the gel on its support onto the cooling plate in the position required, making contact with the applied Triton x100 on the lower edge. Slowly lower the gel so that the Triton spreads under the gel support plate, expelling any air and ensuring a good contact to the cooling plate surface.
3. If on lowering air is trapped raise the gel plate so that it is released then lower the gel again.
4. Align the gel with the relevant electrode etchings (if applicable). Remove all excess Triton from the cooling plate.
5. Prepare two electrode strips, one cathode, one anode, by cutting strips of filter paper 5 mm wide and slightly shorter than the gel width.
6. Moisten the electrode strips with the relevant electrode solutions. Drain if required.
7. Place the electrode strips 2 mm from the cathode and anode edges of the gel. The etched positions will help in positioning. Ensure the electrode strips are slightly shorter then the gel on which they are applied. This will prevent electrical contact along the edges of the gel.
8. Apply the samples and proceed with steps 9 to 13 if pre-focusing is not required. If prefocusing is required then proceed with steps 9 to 13 before loading samples and repeating these steps. Pre-focusing is generally performed at lower voltage than the following separation step.
9. Using the markings on the electrode holder which correspond to the positions of the electrodes on the cooling plate, align the electrodes in the correct position. This is achieved by loosening the screws on the electrode and sliding them within the channel on the plate holder and retightening the location screws.
10. Place the electrode holder into the unit and lower carefully so that the platinum wire of the electrodes makes contact with the filter paper wicks on the gel.
11. Connect the electrodes to their respective sockets in the base unit.
12. Replace the safety lid and connect to a suitable power supply.
13. The unit is now ready to be switched on for the run.

Electrophoresis/electrofocusing using precast gel

1. Horizontal precast gels can be run on the electrophoresis unit for many different applications. The manufacturers instructions should be followed and the unit used in the configuration most appropriate for the method recommended.
2. When using filter paper strips or buffer strips which are applied to the surface of the gel the connection should be using the suspended electrodes/electrode plate. When using liquid buffer the connections should be made between the buffer in the lower chamber and the gel by use of filter paper wicks or equivalent.

Electrophoresis using the lower buffer chambers

In addition to the use of the unit with the electrodes applied directly to the gel surface by means of the suspended electrodes/ electrode plate, the tank can be used with buffer in the lower chambers. In this format the electrode plate and attached electrodes are not required. The following instructions are general instructions for Electrophoresis where the gels are handpoured or precast gels in a horizontal format on a gel support. Please consult a suitable reference text for gel compositions, recommended temperatures, voltages and run times.

1. Remove the cooling plate and fill the lower chambers of the base unit with the required electrode solutions. Do not overfill the chambers. Ensure that the buffer level is below the level where the cooling plate locates.
2. Replace the cooling plate in the base unit.
3. Apply 1...5 ml of Triton x100 non-ionic detergent to the surface of the cooling plate. This will act as a heat transfer agent between the cooling plate and the gel, during the electrophoresis run.
4. Place one end of the gel on its support onto the cooling plate in the position required, making contact with the applied Triton x100 on the lower edge. Slowly lower the gel so that the Triton spreads under the gel support plate, expelling any air and ensuring a good contact to the cooling plate surface.
5. If on lowering air is trapped, raise the gel plate so that it is released then lower the gel again.
6. Remove any excess Triton from around the gel with a tissue.
7. Cut filter paper wicks long enough to reach from the lower buffer chambers to the edge of the gels.

8. Dip the anode wick in the anode buffer, allow to wet. Form a bridge between the lower anode buffer and the anode edge of the gel. Apply the filter paper to the gel surface so that it overlaps by 5...10 mm and makes good contact.
9. Dip the cathode wick in the cathode buffer, allow to wet. Form a bridge between the lower cathode buffer and the cathode edge of the gel. Apply the filter paper to the gel surface so that it overlaps by 5...10 mm and makes good contact.
10. Apply the samples to the gel.
11. Replace the safety lid.
12. Connect to a suitable power supply.
13. The unit is now ready for electrophoresis.

At the end of the run

1. Turn the power supply and chiller off. The chiller should be disconnected by pressing the metal button on the sealing ports. If these are not used, liquid from the chiller can leak from the chiller and cooling plate.
2. Remove the safety lid and electrode holder (if applicable).
3. Carefully remove the electrode wicks if used.
4. Proceed with processing the gel.
5. After electro-focusing, remove the electrodes from the electrode holder and rinse carefully with distilled water to prevent corrosion by the strong acidic and basic solutions. **Do not submerge the socket connector!**
6. After electrophoresis, rinse the buffer chambers with distilled water again taking care not to submerge the socket connector. Dry the chambers by using a vacuum line taking care not to damage the platinum electrodes.

DECLARATION OF CONFORMITY

We declare under our sole responsibility that the product

Horizontal Apparatus

content of the type numbers

E3800

to which this declaration relates is in conformity
with the following standards

EN61010

LOW VOLTAGE DIRECTIVE 73/23/EEG

EN50081-1
EN50082-1
EN60555-2

EMC DIRECTIVE 89/336/EEG

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