# Technical Manual


ORIGINS
BY ELCHROM SCIENTIFIC

**P/N 2100CH ORIGINS by Elchrom™, 230 V, CH-plug**
**P/N 2100E ORIGINS by Elchrom™, 230 V, EU-plug**
**P/N 2100U ORIGINS by Elchrom™, 115 V, US-plug**

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# 1. General Information

## 1. 1 Introduction

ORIGINS by Elchrom™ Scientific is an advanced, easy-to-use electrophoresis apparatus developed with the aim to maximise the reproducibility and resolving power of pre-cast gels for DNA/RNA electrophoresis. ORIGINS by Elchrom™ Scientific features running buffer temperature control, improved homogeneity of the electric field and laminar buffer circulation. The combination of ORIGINS by Elchrom™ Scientific with Elchrom's ready-to-use gels provides unparalleled reproducibility, resolving power, throughput, speed and convenience. The ability to tightly control all relevant electrophoresis parameters makes the ORIGINS by Elchrom™ Scientific ideally suited to introduce new standards in high-throughput, routine and industrial electrophoresis applications.

Elchrom Scientific's products are intended for **research use only**!

## 1. 2 Symbols


**Danger:**
High risk for personal injury! Please follow the instructions provided carefully.

**Warning:**
Please follow the instructions carefully to avoid damages to equipment and/or accessories.

**Important:**
Please follow the instructions indicated to avoid unnecessary mistakes and/or errors.

## 1. 3 Important user information

**To ensure best performance of ORIGINS by Elchrom™, please read the following instructions carefully before operating the apparatus or other system components for the first time.**

The technical manual describes the use of the ORIGINS by Elchrom™, ready-to-use gels and accessories, and other additional tools. It thereby focuses on instructing the use of the apparatus in combination with Elchrom's ready-to-use gels. The use of casting trays for agarose gels is mentioned briefly in 5.2.

Elchrom Scientific reserves the right to make changes to the following instructions without notification. For the latest version of the technical manual, please refer to our web page: www.elchrom.com

## 1. 4 Product information

| Specifications | |
|---|---|
| Type | 2100CH (230 V, 50 Hz, CH-plug)<br>2100E (230 V, 50 Hz, EU-plug)<br>2100U (115 V, 60 Hz, US-plug) |
| Operating voltage | 115 or 230 V AC |
| Power consumption | ≈ 260 W |
| Electrodes | Platinum/Iridium<br>120 mm distance between cathode and anode |
| Main power fuse | 5 A |
| Pump delay [min] | 0/1.5/4.5/12 |

| Dimensions | |
|---|---|
| Width x depth x hight | 550 x 410 x 220 mm |
| Weight | 18 kg |
| Gel compartment | 108 x 278 mm |
| Buffer volume | 1.9 l |

## 1. 5 Technical features

- Integrated Peltier-elements for buffer cooling/heating.
- Integrated temperature probe to automatically control buffer temperature.
  Range: 4 - 55 °C
  ☞ constant running buffer temperature.
- Integrated pump for buffer circulation to eliminate temperature and pH-gradients.
  ☞ laminar buffer flow and constant pH even in the vicinity of the electrodes.
- Integrated pump start delay controller
  ☞ allows DNA/RNA to enter gel matrix before buffer circulation starts.
- Unique double-wired Platinum/Iridium electrode
  ☞ homogeneous electric field.
- Drainage system for easy buffer exchange.

## 1. 6 Performance

- **Versatility:** in combination with Elchrom Scientific's ready-to-use gels, the ORIGINS by Elchrom™ guarantees optimal results for different applications, such as: microsatellites, RFLP, SSCP, heteroduplex analysis, next generation sequencing, LAM-PCR, multiplex PCR, high-throughput PCR checking, and many others.
- **Unparalleled reproducibility:** all electrophoretic parameters are tightly controlled to insure identical running conditions for all the gels.
- **High resolution:** with Elchrom's proprietary gel matrix, size differences of down to 1 bp can be separated on only 8 cm running distance.
- **High sensitivity:** Elchrom's ready-to-use gels are significantly more sensitive than agarose gels (as low as 0.05 ng/band).
- **Fast runs:** temperature control allows high-voltage/amperage runs without the negative effects of increased buffer temperature.
- **High-throughput:** up to 400 samples per run (application dependent).
- **Cost effective:** ORIGINS by Elchrom™ offers a cost-effective alternative to capillary sequencing since it allows the analysis of PCR fragments generated without fluorescence-labeled primers.

# 2. Set Up

## 2. 1 Packaging content

- ORIGINS by Elchrom™
- Easy-Stain Gel Tray (P/N 2344)
- Peel-IT™ (P/N 2355)
- Power cord (CH, EU, or USA)
- 2 power cords for Power Supply (black: P/N 2100-501; red: P/N 2100-502)
- Flex-tube with quick-fit for buffer drainage (P/N 2100-503)
- Catamaran S-8, Mini gel (P/N 2008)
- Catamaran S-12, Mini gel (P/N 2012)
- Catamaran S-50/100, Wide Mini gel (PN 2020)
- Special forceps (PN 2366)
- 4 x 50 ml of 40 x running buffer
- Technical manual
- Short technical manuals for 9°, 20° and 55 °C
- Warranty
- Certificate of Conformity

Unpack the equipment and accessories carefully and *keep the packaging material for future transports or storage*.
Check all equipment and accessories for damages caused during transportation. Should you identify any damages, please inform Elchrom Scientific and our local representative immediately. Claims for missing parts, defects or damages should be placed with Elchrom Scientific within 3 days after receipt. Do NOT return equipment or accessories without prior instructions from Elchrom Scientific!

## 2. 2 Positioning

To set up the ORIGINS by Elchrom™ chose an even, clean and stable surface. **Please make sure that no obstacles block ventilation** (ventilation intakes located at the bottom plate of the apparatus).

## 2. 3 Safety instructions


Always unplug the ORIGINS by Elchrom™ when the unit is not in use. We do not warranty products against unauthorised modifications, improper maintenance or repair work. Repair work which is not carried out by a suitably qualified professional (not following the manufacturer's instructions) and not in accordance with local and national safety regulations will result in a loss of warranty rights and may be dangerous. In such case the manufacturer's liability is excluded. If you have any questions please contact the manufacturer.


Protect the power cord from mechanical damage. Should any inexplicable or unexpected problems occur during the initial set-up, unplug the unit immediately and contact Elchrom Scientific and our local representative.

## 2. 4 Installation

The following instructions will guarantee safe operation of the ORIGINS by Elchrom™ and minimise maintenance of the unit.

### Work space

Always keep the work bench of the ORIGINS by Elchrom™ clean and free of small movable objects (such as paper sheets, pipette tips, etc). The ventilation system of the ORIGINS by Elchrom™ generates a remarkably strong air influx. Free moving small object may therefore be sucked into the ventilation and damage the rotor or block cooling.

### Temperature

Ambient temperature should be between 15 and 28 °C. Avoid temperature fluctuations and keep the unit away from heating devices.

### Environment

The working environment should be free of dust, smoke and corrosive fumes. The unit must not be operated in a potentially explosive atmosphere.

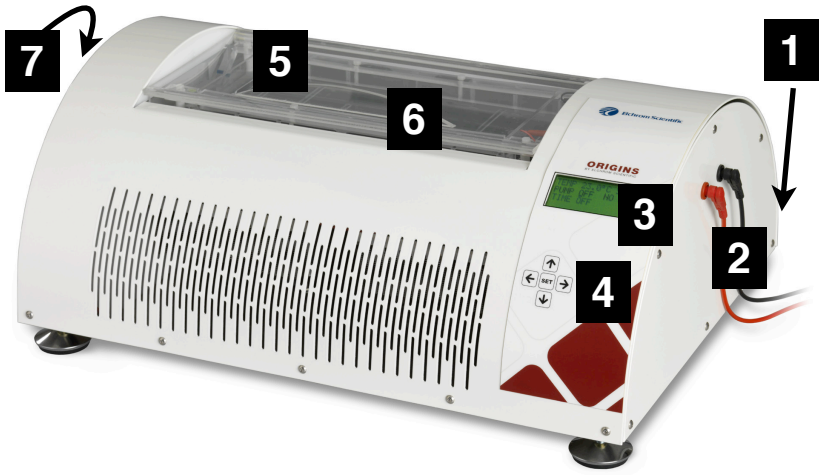
### Light exposure

Protect from direct sun light (overheating). Use sufficient light for gel manipulation and loading.

**Placement**
Place the unit firmly on a suitable and stable surface.

# 3. User Manual

## 3. 1 The ORIGINS by Elchrom™ Scientific

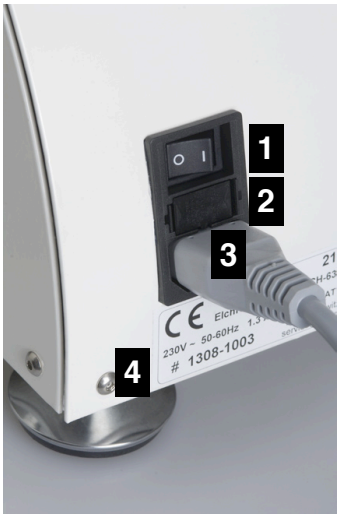



**Legend**

1) On/Off button (see below)
2) Cords to power supply
3) Display
4) Navigation for display
5) Electrodes
6) Cover
7) Outlet for running buffer

| P/N | Product description |
|---|---|
| 2100CH | ORIGINS by Elchrom™ (230 V, CH-plug) |
| 2100E | ORIGINS by Elchrom™ (230 V, EU-plug) |
| 2100U | ORIGINS by Elchrom™ (115 V, US-plug) |

## 3. 2 Power cord connection




**Legend**

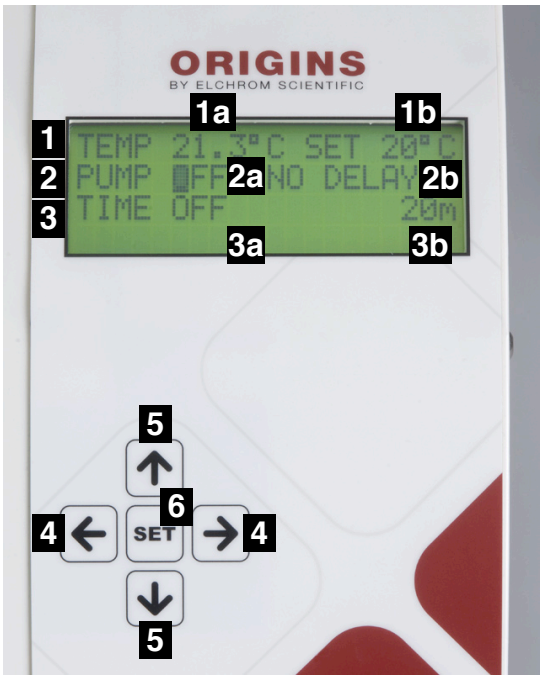
1) On/Off button

2) Fuse; 5 AT

3) Power cord (115/230 V AC)

4) Serial number

## 3. 3 Display




**Legend**

1) Temperature settings
   a. actual temperature of running buffer
   b. set temperature of running buffer
2) Circulation pump settings
   a. pump on/off
   b. pump delay
      - 0 minutes: no delay
      - 1.5 minutes delay
      - 4.5 minutes delay
      - 12 minutes delay
3) Timer settings
   a. timer on/off
   b. set time (elapsed time will be indicated left to the setting)

*Menu navigation*

4) Navigate through the menu: temperature, pump, timer settings
5) Change value of parameter
6) Confirm the selected value

## 3. 4 Exchanging the running buffer

The ORIGINS by Elchrom™ is equipped with a so called quick-fit connection to drain the running buffer from the unit. It allows for easy and spill-free running buffer exchange. The valve is located on the left side of the electrophoresis unit (see **7** in section **3.1**).

## 3. 5 Electrode arrangement

The anode and cathode of the ORIGINS by Elchrom™ consist of 2 parallel Platinum/Iridium wires, 1 and 7 mm above the gel tank bottom, respectively. Arranging the electrodes in the same panel as the gel leads to an unsurpassed homogeneous electric field. Simultaneously, this special geometry achieves a higher effective current density compared to a standard electrophoresis tank.
The distance between the anode and the cathode is 12 cm. This short distance creates substantially higher field strength at identical voltage setting than the longer distance in standard submarine units.

# 4. Electrophoresis

***Please also follow the tutorial movie on www.elchrom.com***

## 4. 1 Preparing ready-to-use gels

1. Choose the appropriate gel type for your application. To identify the best option, please refer to Elchrom's on-line software ("ElQuant" and "How to find the best gel" on www.elchrom.com).

2. Remove the aluminium bag by cutting one short side carefully with scissors.

3. Remove the inside plastic bag containing the gel and place it on the work bench. *Caution*: some gels may be immersed in a solution containing Ethidium Bromide (EtBr).

4. Cut the plastic bag on three sides and carefully remove the gel by gripping the plastic backing with the special forceps provided with the ORIGINS by Elchrom™.

5. All ready-to-use gels need to be pre-warmed to the relevant temperature prior to the run:

| Temperature | Pre-warming |
|---|---|
| 9 °C | No pre-warming |
| 20 °C | Allow to reach room temperature (RT; 20 to 30 min) |
| 55 °C | Allow to reach RT (20 to 30 min) first; subsequently, place gel onto Catamaran inside the pre-warmed ORIGINS by Elchrom™ for approximately 30 minutes. |

**Note:**
*Each half of a Wide Mini gel can be used individually. Separate the two halves by cutting through the gap between the two gels. Each side should retain approximately 2 mm of plastic backing for fixation with the Catamaran. The half to be run at a later time point, should be re-packed and re-sealed in the plastic as well as the aluminium bag. Close the latter tightly with tape and store the package at 4 °C/40 °F. Properly sealed gels can be kept for up to 2 weeks.*

## 4. 2 Preparing TAE running buffer

Elchrom's ready-to-use gels must be run in 1 x TAE running buffer. Elchrom Scientific offers a standardised 40 x Stock Solution (P/N 3031; 20 x 50 ml).

*Preparing a 40 x TAE stock solution:*

| Component | Amount for 1 litre (40 x) |
|---|---|
| Tris (hydroxymethyl) aminomethane | 145.37 g |
| $Na_2EDTA \bullet 2\ H_2O$ | 11.16 g |
| Acetic Acid (glacial) | 34.4 ml |

Dissolve Tris and $Na_2EDTA$ in 800 ml of $ddH_2O$. In a fume hood, add acetic acid and adjust to 1 litre with $ddH_2O$.
For electrophoresis, prepare 2 litres of 1 x running buffer by diluting 50 ml of the 40 x stock solution in 1.95 liters of $ddH_2O$. Fill the ORIGINS by Elchrom™ carefully with approximately 1.9 liters of 1 x TAE buffer. Ideal buffer level indicated by a blue/white mark on the left hand side of the ORIGINS by Elchrom™.

*Electrophoresis parameters:*
The correct buffer composition and fill level for electrophoresis should result in the following values for voltage and amperage (slight discrepancies can be adjusted by adding $ddH_2O$ or by removing buffer):

| Temperature | Voltage | Resulting Current |
|---|---|---|
| 20 °C | 120 V (10 V/cm) | 350 mA ± 50 mA |
| 55 °C | 120 V (10 V/cm) | 700 mA ± 100 mA |
| 9 °C | 108 V (9 V/cm) | 250 mA ± 50 mA |
| 9 °C | 72 V (6 V/cm) | 170 mA ± 20 mA |

**Note:**
*Using running buffers different from TAE with ready-to-use gels from Elchrom Scientific will result in inferior results.*

**Ready-to-use gels by Elchrom Scientific are NOT compatible with borate containing buffers!**

*Running buffer durability:*
In average, the running buffer can be re-used up to three times. However, durability can vary depending on running conditions (such as temperature, time, amperage, etc.). Low buffer capacity and quality may reflect in blurry DNA/RNA bands and reduced resolution. In this case, the running buffer should be changed before the next run.

*Running buffer for PCR CheckIT™:*
PCR CheckIT™ gels may alternatively be equilibrated to a running buffer different from TAE. Equilibration to the alternative buffer is performed in the ORIGINS by Elchrom™ for at least 2 hours at room temperature (pump switched on). For some running buffers (e.g. MOPS formaldehyde), overnight equilibration is recommended.

## 4. 3 Preparing DNA samples

*DNA concentration:*
The optimal DNA concentration depends on the detection method and the intercalating dye for detection. In the case of EtBr, the amount of DNA per band should be at approximately 2 to 20 ng. For SYBR Gold (or SYBR Green), we recommend to use 0.4 - 4 ng/band.

**Note:**
Compared to self-made agarose gels, ready-to-use gels from Elchrom Scientific are substantially more sensitive. Consequently, the amount of DNA per lane (and per band) is considerably lower, hence smaller quantities of DNA can be analysed.
For samples of unknown DNA concentration, we recommend to initially run dilution series (e.g. undiluted vs. 10 x diluted).

*Maximal loading volume per gel type:*

| | |
|---|---|
| Optimal loading volume: | 4 - 8 µl |
| Maximal loading volume: | |
| Mini Gel | 18 µl |
| Wide Mini S-2x13, S-4x13, S-2x104 | 25 µl |
| Wide Mini S-2x25, S-4x25, S-2x200 | 14 µl |

*Loading buffer:*
We strongly recommend to use 5 x loading buffer by Elchrom Scientific. Each gel box contains enough loading buffer stock solution for the total amount of sample wells of that particular box. Additional loading buffer can be ordered from Elchrom Scientific:

| P/N | Product description |
|---|---|
| 3033 | Sample Loading Buffer 10 ml (BPB) |

| P/N | Product description |
|---|---|
| 3034 | Sample Loading Buffer 50 ml (BPB) |
| 3035 | Sample Loading Buffer 10 ml (2 dyes: BPB and XC) |
| 3036 | Sample Loading Buffer 50 ml (2 dyes: BPB and XC) |

Ideally, add 1 µl of 5 x loading buffer to 4 µl of sample ⇒ load onto the gel.

**Note:**
High salt concentrations may lead to distorted bands. Desalting or diluting the sample may be required.

- Do not load more than 50 ng of DNA per band. Overloading severely impairs resolution.
- SDS concentration higher than 0.01% impair resolution.
- To bypass post-staining for PCR CheckIT™ gels, we recommend to supplement the 1 x TAE running buffer with 0.5 µg/ml of EtBr to avoid dye depletion during the run. Do not add EtBr to the sample.

## 4. 4 Preparing the ORIGINS by Elchrom™

1. Prepare 1 x TAE running buffer (see 4. 2) and use 1.9 litres to fill the electrophoresis chamber.

**Do not turn on the ORIGINS by Elchrom™ without running buffer.**
**Do not turn on the pump without running buffer.**

2. Connect the ORIGINS by Elchrom™ to the power supply.
*Power supplies from other suppliers my require special adapters!*

3. Switch on the ORIGINS by Elchrom™. The pump will turn on by default. The display shows the current running buffer temperature and will heat or cool according to the pre-set value. By default, the instrument stores the values form the previous run. For different parameters, re-program the unit accordingly (see chapter 3).

4. Depending on the application and gel type, different temperature settings will be used during the run. The following table indicates the pump delay applied for each situation:

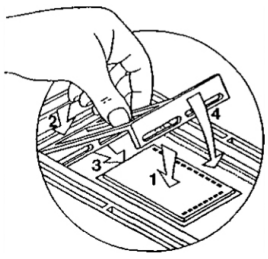
| Gel type | Voltage* | Pump delay | | |
|---|---|---|---|---|
| | | 1.5 min | 4.5 min | 12 min |
| Spreadex® gels | 120 V, 55 °C | X | | |
| Spreadex® gels | 120 V, 20 °C | | X | |
| Poly(NAT)® gels | 120 V, 55 °C | X | | |
| 6% Poly(NAT)® gels | 120 V, 20 °C | | X | |
| PCR CheckIT™ gels | 120 V, 20 °C | X | | |
| PCR CheckIT™ EB gels | 120 V, 20 °C | X | | |
| GMA | 72 - 84 V, < 10 °C | | | X |
| Agarose gels (< 2.5%) | > 84 V, 20 °C | X | | |
| Agarose gels (> 2.5%) | < 84 V, 20 °C | | X | |

*12 cm distance between electrodes

## 4. 5 Running ready-to-use gels

1. **Gel positioning:**
   After pre-warming (see 4. 1), turn off the pump and position the gel in the gel compartment of the ORIGINS by Elchrom™. To facilitate gel handling, special forceps are provided. Use those to grab the gel by the 2 mm overhang of the plastic backing. Make sure no air bubbles are trapped under the plastic backing or in the sample wells. The ORIGINS by Elchrom™ gel compartment provides enough space to run 1 Wide Mini presentation or 4 Mini gels (8 samples each) simultaneously.

2. **Catamaran:**
   (1) Chose the appropriate Catamaran for your gel type and format. Use the Catamaran to position the gel in the centre of the gel compartment.

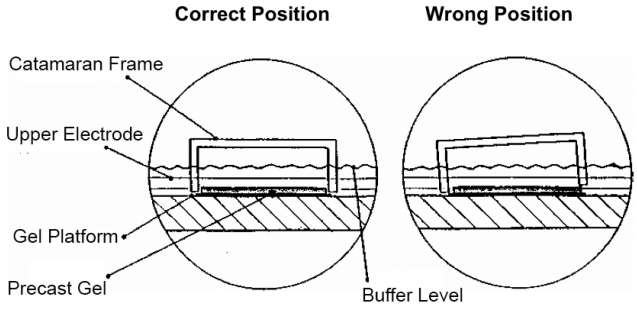



   (2) Position one side of the Catamaran on the side of the gel.
   (3) Move the Catamaran close to the gel until it rests on the plastic backing.
   (4) Lower the other side of the Catamaran until it entirely frames the gel and both sides sit precisely on the plastic backing.

The gel can be repositioned by carefully shifting the Catamaran. Similarly, the gel can be shifted closer to one or the other electrode.

**Wide Mini S-4x13 and S-4x25**
These gel formats consist of 4 gels on one presentation. On each side, the two gels are separated by a little gap. When positioning those gels, the opening in the Catamaran should align perfectly with the gap between the upper and lower gels to ensure proper buffer circulation.

(5) Check the correct Catamaran position. Both sides of the Catamaran are located on top of the gel backing (and not on top of the gel). The row of sample wells must be parallel to the electrodes.




3. **Buffer level:**
Ideally, the buffer level should be 2 to 3 mm above the upper electrode wire. A blue/white mark indicates the correct buffer level (see left side of gel compartment). If necessary, adjust buffer with a 20 - 50 ml syringe.

4. **Sample loading:**

**Before loading any samples, switch off the pump!**

Load samples with a 1 - 20 µl pipette. The optimal loading volume is 4 - 8 µl. Elchrom's ready-to-use gels are designed for standard pipette tips.

Wide Mini gels can be loaded with a multichannel pipette. S-2x13 and S-4x13 formats follow the SBS 96-well standards, the S-2x25 and S-4x25 formats the standards for 384-well plates.

5. After loading, close the cover of the ORIGINS by Elchrom™.

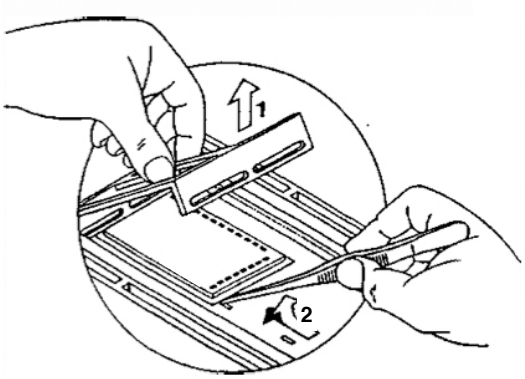
6. Check and adjust the values for voltage, running time and pump delay if necessary. Turn on the power supply and subsequently the timer of the ORIGINS by Elchrom™.

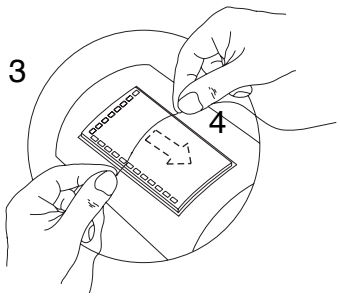
The pump delay controller will start the pump automatically after the pre-set time.

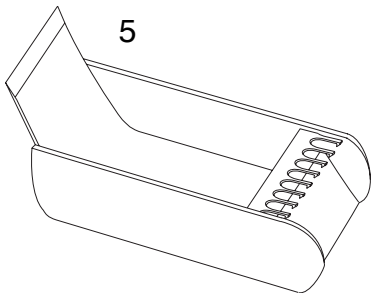
**Do not run gels in the ORIGINS by Elchrom™ without buffer circulation.**

7. **End of electrophoresis:**
The timer of the power supply will end the electrophoresis run after the pre-set time elapsed. The ORIGINS by Elchrom™ will signal the end of the run by an acoustic alarm.

8. **Post-staining:**
(1) Lift the Catamaran and remove the gel by sliding it carefully against one side of the Catamaran.
(2) Grab the plastic backing overhang with the special forceps and lift up the gel. Alternatively, use surgical injection needles to lift the plastic backing.
(3) Transfer the gel onto the Peel-IT™
(4) and detach the gel with the provided nylon string.
(5) Subsequently, the gel is transferred into the Easy-Stain Gel Tray and the plastic backing washed off in the staining solution.




Except for pre-stained PCR CheckIT™ gels, we recommend to detach all gels from the backing to increase staining and destaining efficiency. Elchrom Scientific provides a Destaining Solution (P/N 3037) to further reduce possible background.

For staining, Elchrom Scientific recommends to use SYBR Gold, SYBR Green or EtBr. However, alternative dyes may be used.

## 4. 6 High-resolution electrophoresis with Spreadex® and Poly(NAT)® gels

High-resolution gel electrophoresis is normally performed on Spreadex® and 9% or 12% Poly(NAT)® gels (for very short fragments, Short Fragment™ gels may be recommended). The gels are run at 55 °C to eliminate anomalous, sequence-dependent DNA migration. Furthermore, elevated temperatures significantly reduce running time (approximately by a factor of 2 at 55 °C).
Ready-to-use gels intended to run at 55 °C do require sequential pre-warming (see **4.1**):

- to RT for 20 to 30 minutes
- to 55 °C for 30 minutes

Pre-warming is essential to prevent the formation of small bubbles within the gel matrix during the run. Those may disturb the banding pattern and influence resolution.

**For pre-warming, place the gel *ON TOP* of the Catamaran in the pre-warmed ORIGINS by Elchrom™. Do not submerge the gel in running buffer for pre-warming.**

## 4. 7 Exchanging the running buffer

To exchange the running buffer of the ORIGINS by Elchrom™, connect the flex-tube for buffer drainage to the out-let for the running buffer (see #7 in section 3. 1).

**Note:**
Buffer drainage starts immediately after the flex-tube is connected. To suspend buffer drainage, disconnect the flex-tube by pressing the corresponding button on the quick-fit connection. The tube can be removed without buffer spill.


**Ethidium Bromide:**
Caution: Ethidium Bromide is a powerful mutagen! Wear appropriate protective clothing, gloves and safety googles. Solutions and gels contaminated with EtBr must be disposed of in compliance with local regulations.

For safe EtBr disposal, Elchrom Scientific recommends the use of Bind-ET™, an efficient and easy-to-use EtBr-removal system (P/N 2350).

Before refilling the unit with fresh 1 x TAE running buffer, it is recommended to clean the ORIGINS by Elchrom™ with dd$H_2O$: turn on the circulation pump for 5 min.
For profound decontamination, please refer to protocol #2 on our web page (elchrom/support/protocols).

# 5. Accessories

## 5. 1 Catamarans

Catamarans are plastic frames designed to properly position ready-to-use gels in the ORIGINS by Elchrom™. In addition, they prevent the gel from floating and orientate it perpendicularly to the electric field. Catamarans also optimise buffer circulation by directing it homogeneously across the gel surface. These factors guarantee uniform and constant temperature independent of running time and therefore ensure highly reproducible results.

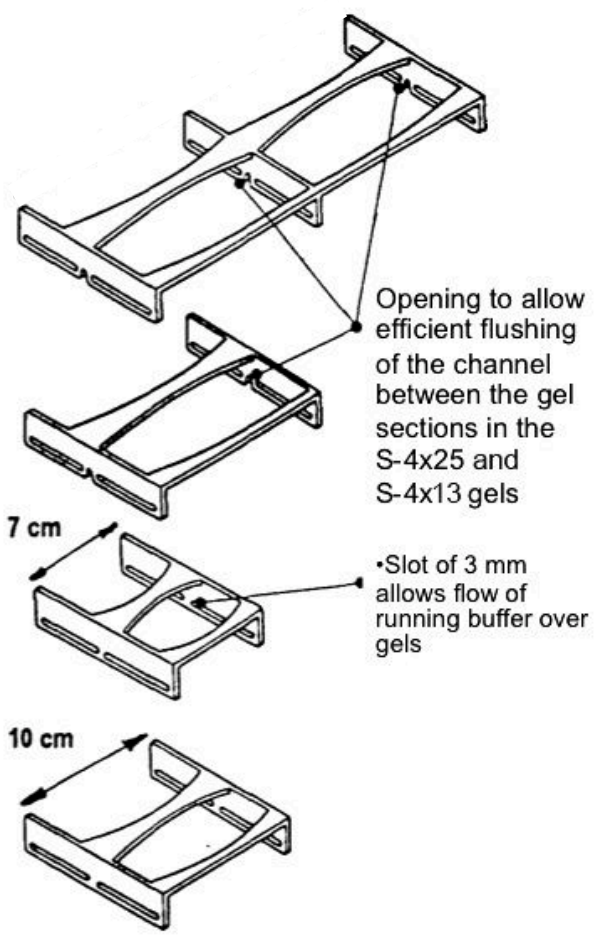
There is a variety of different Catamarans fitting to all different gel types: Mini, Wide Mini, high-throughput and Short Fragment™ gels.

**Catamaran S-50/100 (P/N 2020)**
Size: 10.8 x 26.5 x 2.7 cm
To position 1 Wide Mini presentation
(S-2x13; S-2x25; S-4x13; S-4x25)

**Catamaran S-13/50 (P/N 2015)**
Size: 10.8 x 13.5 x 2.7 cm
To position 1 Wide Mini gel
(consisting of 1 gel: S-2x13; S-2x25 or 2 gels: S-4x13; S-4x25)

**Catamaran S-8 (P/N 2008)**
Size: 10.8 x 7 x 2.7 cm
To position 1 Mini gel for 8 samples
(8.7 cm running distance)

**Catamaran S-12 (P/N 2012)**
Size: 10.8 x 10 x 2.7 cm
To position 1 Mini gel for 12 samples
(5.7 cm running distance.



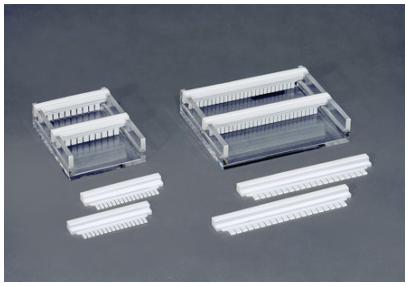

**Catamaran S-208/400 (P/N 2020-HT)**
Size: 10.8 x 26.5 x 2.7 cm
To position 1 Wide Mini High-throughput presentation
(S-2x104; S-2x104L;S-2x200)

**Catamaran S-50/100 (P/N 2020-SF)**
To position 1 Wide Mini presentation of Short Fragment™ gels SF50
(S-2x2, S-2x3, S-2x4, S-2x13; S-2x25; S-4x25)

**Catamaran S-208/400 (P/N 2021-HT)**
Size: 10.8 x 13.5 x 2.7 cm
To position 1 Wide Mini High-throughput gel
(S-2x104, S-2x104L, S-2x200)

**Catamaran S-13/100 (P/N 2021-SF)**
Size 10.8 x 26.5 x 2.7 cm
To position 1 Wide Mini gel of Short Fragment™ gels SF50
(S-2x2, S-2x3, S-2x4, S-2x13; S-2x25; S-4x25)

## 5. 2 Agarose gel casting trays



To run self-made agarose gels in the ORIGINS by Elchrom™, special casting trays are required to allow buffer circulation. The trays therefore possess circulation slots located 5 mm above the bottom of the tray.
Elchrom Scientific provides two different tray sizes, each to take two Teflon-combs.
For pouring, the trays are sealed with tape: agarose temperature < 60 °C.

**UV transparent mini agarose gel tray (P/N 2040)**

| | |
|---|---|
| Inner dimensions | 7 x 10.7 cm |
| maximum gel volume | 22 ml |
| Running distance | 10 cm with 1 comb<br>2 x 4.7 cm with 2 combs |
| Combs | 10 wells: 1.5 mm thick, 5 mm wide (P/N 2041)<br>16 wells: 1.5 mm thick, 3.5 mm wide (P/N 2042) |

*In the ORIGINS by Elchrom™, 3 mini agarose gel trays can be run simultaneously.*

**UV transparent wide mini agarose gel tray (P/N 2045)**

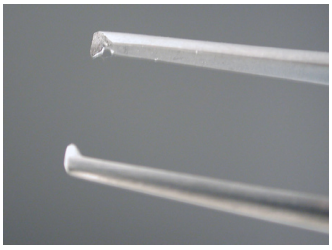
| | |
|---|---|
| Inner dimensions | 12.8 x 10.7 cm |
| maximum gel volume | 40 ml |
| Running distance | 10 cm with 1 comb<br>2 x 4.7 cm with 2 combs |

| | |
|---|---|
| Combs | 20 wells: 1.5 mm thick, 5 mm wide (P/N 2046) |
| | 13 wells: 1.5 mm thick, 7.3 mm wide (P/N 2048)<br>26 wells: 1.5 mm thick, 3.5 mm wide (P/N 2047)<br>**multi-channel pipette compatible!** |

*In the ORIGINS by Elchrom™, 2 wide mini gel trays can be run simultaneously.*

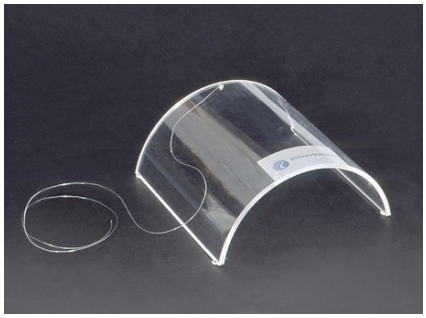
## 5. 3 Special forceps

To facilitate and ensure safe gel handling, all manipulations are done with special forceps. Sharp teeth at their tip guarantee a safe grip of the overhang of the plastic backing. The gels are covalently linked to the plastic backing which confers physical stability on the gels and protects them from damages.



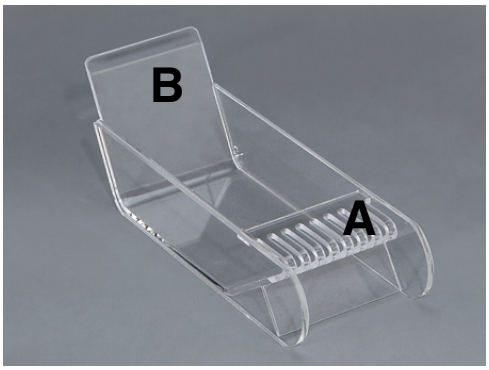
## 5. 4 Peel-IT™

For post-staining, ready-to-use gels are best detached from the plastic backing. This will increase diffusion of the dye significantly and therefore lead to more efficient staining.
Peel-IT™ has been designed to easily detach the gel matrix from the plastic backing. Peeling is mediated purely by physical detachment of the gel via a nylon string.



## 5. 5 Easy-Stain Gel Tray

The Easy-Stain Gel Tray has been specifically developed to post-stain Elchrom's ready-to-use gels. After peeling, the gels are relatively fragile and the Easy-Stain Gel Tray allows hands-free staining without the risk of breaking the gel. A special grid (A) allows easy buffer exchange and a scoop (B) to slide the gel on the transilluminator and back into the tray.
1 Easy-Stain Gel Tray is suitable to stain 1 Wide Mini gel or 2 to 4 Mini gels.



# 6. Customer Sample Analysis / Demonstrations

## 6. 1 Customer sample analysis

For interested new customers, Elchrom Scientific offers a sample analysis service. Hereby you have the opportunity to send us up to 10 samples from your lab for analysis. Not only will this service allow you to get a relevant impression of the advantages of the ORIGINS by Elchrom™ system, but it will also provide you with a detailed protocol tailored and optimised for those samples sent to us.
Please visit our web page (elchrom.com → FREE sample testing) for further details and contact us or our representative in your country.

## 6. 2 Demonstrations

Are you interested in a product demonstration? Our partners in your country are able to introduce the ORIGINS by Elchrom™ to you and provide you with demo-equipment. Please contact them or us for details.

# 7. Maintenance, Repair and Cleaning

## 7. 1 Maintenance and repair

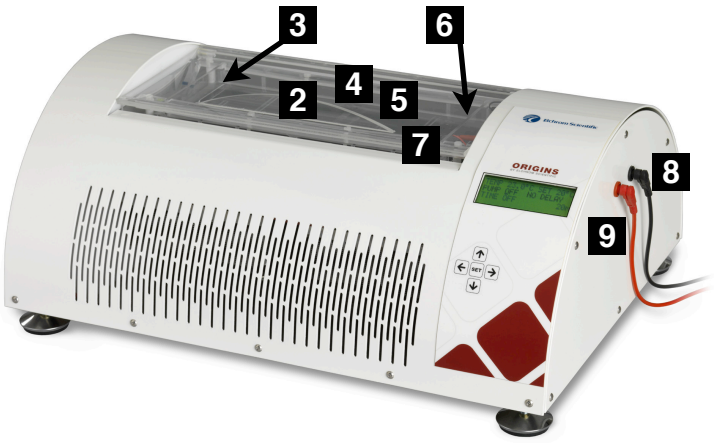
The ORIGINS by Elchrom™ does require very little maintenance. Depending on usage, electrodes may require periodical changing or re-tightening. Please contact us for details. For any necessary repair work, please inform our local representative and contact us directly.

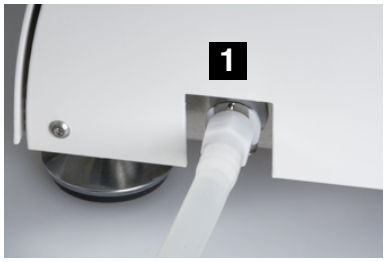

Elchrom Scientific does not warranty products against unauthorised modifications, improper maintenance or repair work. Repair work which is not carried out by a suitably qualified professional (not following the manufacturer's instructions) and not in accordance with local and national safety regulations will result in a loss of warranty rights and may be dangerous. In such case the manufacturer's liability is excluded. If you have any questions please contact the manufacturer.

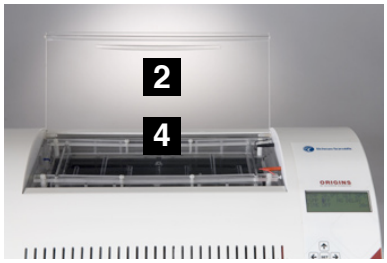
## 7. 2 Cleaning

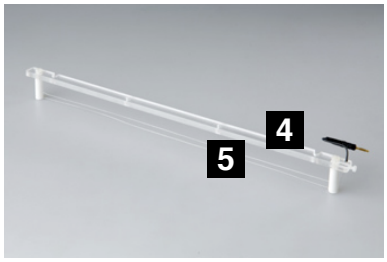
For cleaning, always use dd$H_2O$ or follow the instructions provided in protocol #2 on our web page (elchrom.com/protocols).
Do not use alcohols, acetone or chlorinated solvents for cleaning.

# 8. Spare Parts





| # | Product Number | Product description |
|---|---|---|
| 1 | 2100-503 | Flexible tube with Quick Fit for buffer emptying |
| 2 | 2100-220 | Cover |
| 3 | 2100-152 | Flow control barrier, left |
| 4 | 2100-100 | Electrode carriage support with Platinum wire, cathode, black |
| 5 | | Platinum wire* |
| 6 | 2100-151 | Flow control barrier, right |

| # | Product Number | Product description |
|---|---|---|
| 7 | 2100-101 | Electrode carriage support with Platinum wire, anode, red |
| 8 | 2100-501 | Power supply black cable |
| 9 | 2100-502 | Power supply red cable |
| | 2100-201 | Pump for buffer circulation, 230 V |
| | 2100-202 | Pump for buffer circulation, 150 V |
| | 2100-203 | Temperature probe |

* Platinum wires must be changed by Elchrom Scientific personal only!

**To order spare parts, please state the product number, product description and serial number (see 3. 2) of the ORIGINS by Elchrom™ in your order.**

# 9. Related Products

| Product Number | Product description |
|---|---|
| 2029CH | PSE Electrophoresis Power Supply, 200 V/2000 mA (230 V; CH-plug) |
| 2029E | PSE Electrophoresis Power Supply, 200 V/2000 mA (230 V; EU-plug) |
| 2029U | PSE Electrophoresis Power Supply, 200 V/2000 mA (115 V; US-plug) |
| 2350 | Bind-ET™ Ethidium Bromide removal system including cartridge |

# 10. Terms and Conditions

**Orders**
Orders can be placed by fax, e-mail or mail. For orders and shipping from countries other than Switzerland, please contact our local distributor.

**Prices /Terms**
All prices are based on delivery ex-works, Cham, Switzerland. Prices are subject to change without notice.

**Payment Terms within Switzerland**
Terms of sale are net 30 days from date of the invoice.
Elchrom Scientific AG maintains the ownership of all delivered products until the invoice is fully paid.

**Shipping**
Standard delivery time will be 1-3 weeks from receipt of your order.
For large quantities, please contact us directly for a better estimation of delivery time.

**Inspection and Returns**
Upon receipt, please inspect the goods immediately (within three days) and notify our Customer Services Department for any claims such as shortage, defects or damages. Authorisation for return shipments needs to be approved on beforehand by our Customer Services Department. No credit will be granted on returns that have not been priorly authorised.

Certain products cannot be authorised for return shipments due to temperature and packaging restrictions.

**Warranty**
Elchrom Scientific AG warrants that all products will perform according to the specifications stated on the Quality Control Certificate up until their respective expiry dates, and will repair any defective product.
We will not replace products that do not perform due to misuse or inappropriate storage. No other warranties are expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for any particular purpose. Elchrom Scientific AG is not liable for any incidental, indirect, special, exemplary or consequential damages.

All products should be handled only by qualified persons trained in laboratory safety procedures and familiar with the potential hazards. In addition, please read the product label and note the storage instructions and expiry date. We are not liable for a product after its expiry date, or for a product that has been misused or has become unusable due to improper storage or handling.

**Liability**
Our products are intended for laboratory and research use only and are not to be used for any other purposes. We are not responsible for damage due to the misuse of our products.

**Technical Assistance**
Elchrom Scientific AG provides high quality products and technical assistance and information. We make no warranty regarding such technical assistance or information.

**Applicable Law**
Swiss law

For additional information on Elchrom's products, please visit our web page.