cytiva

SE 250/260 Mighty Small II

Operating Instructions

Original instructions

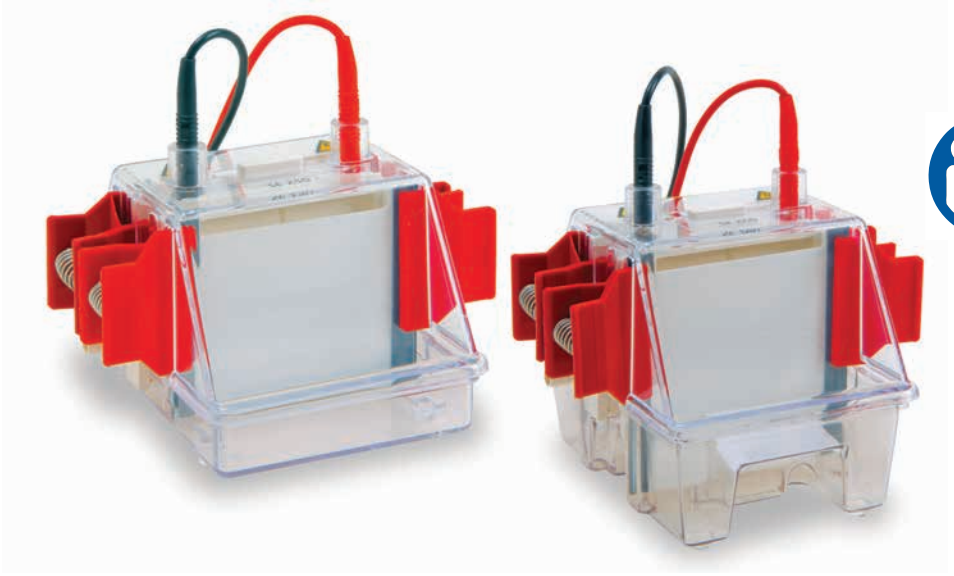

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Table of Contents

1 Introduction

About this chapter

This chapter contains important user information, descriptions of safety notices, regulatory information, and intended use of the SE 250/260 Mighty Small II.

In this chapter

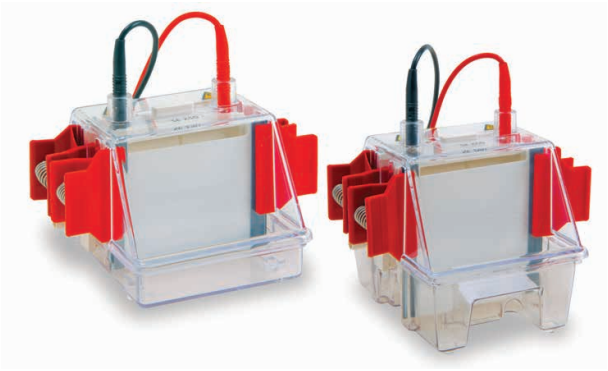
1.1 About this manual

Purpose of this manual

The *Operating instructions* provide you with the information needed to install, operate and maintain the product in a safe way.

Scope of this manual

The *Operating Instructions* covers the SE 250/260 Mighty Small II. The illustration below shows the SE 250/260 Mighty Small II.



Illustrations

The images and annotations in this document are for illustrative purposes only. The configuration of individual products may vary, and therefore illustrations may not reflect the actual system delivered.

1.2 Important user information

Read this before operating the product

All users must read the entire *Operating instruction* before installing, operating or maintaining the product.

Always keep the *Operating instruction* at hand when operating the product.

Do not operate the product in any other way than described in the user documentation. If you do, you may be exposed to hazards that can lead to personal injury and you may cause damage to the equipment.

Intended use of the product

The SE 250/260 Mighty Small II small format vertical slab gel unit is intended for rapid electrophoresis of protein or nucleic acid samples. Most samples can be run in 45 minutes, and only a minimal amount of sample is required.

The SE 250/260 Mighty Small II accommodates one or two 10 × 8 cm gel sandwiches. The SE 250/260 Mighty Small II accommodates one or two 10 × 8 cm or 10 × 10.5 cm gel sandwiches. In both SE 250/260 Mighty Small II units, the upper buffer chamber is formed when the notched side of a gel sandwich is sealed against the silicone rubber gasket.

The upper buffer chamber core serves as a heat exchanger if cooling is required. The core is hollow and equipped with ports on either side for coolant circulation.

SE 250/260 Mighty Small II is intended for research use only, and shall not be used in any clinical procedures, or for diagnostic purposes.

Prerequisites

In order to operate the SE 250/260 Mighty Small II in the way it is intended:

- The user must have a general understanding of gel electrophoresis.
- The user must read and understand the Safety Instructions chapter in the *Operating Instructions*.
- The SE 250/260 Mighty Small II must be installed in accordance with the instructions in the *Operating Instructions*.

Notes and tips

Note: *A note is used to indicate information that is important for trouble-free and optimal use of the product.*

Tip: *A tip contains useful information that can improve or optimize your procedures.*

2 Safety information

About this chapter

This chapter describes safety precautions, labels and symbols that are attached to the equipment. In addition, the chapter describes emergency and recovery procedures, and provides recycling information.

Important

WARNING

Before installing, operating or maintaining the product, all users must read and understand the entire contents of this chapter to become aware of the hazards involved.

In this chapter

2.1 Safety precautions

Introduction

The SE 250/260 Mighty Small II is powered by an external power supply. Before installing, operating or maintaining the system, you must be aware of the hazards described in this manual.

Follow the instructions provided to avoid injury to the operator or other personnel, to the product, or to other equipment in the area.

The safety precautions in this section are grouped into the following categories:

- General precautions
- Personal protection
- Using flammable liquids
- Installing and moving the product
- Power supply
- System operation
- Maintenance

Always follow the instructions below to avoid injury when using the SE 250/260 Mighty Small II.

Definitions

This user documentation contains safety notices (WARNING, CAUTION, and NOTICE) concerning the safe use of the product. See definitions below.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. It is important not to proceed until all stated conditions are met and clearly understood.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. It is important not to proceed until all stated conditions are met and clearly understood.

NOTICE

NOTICE indicates instructions that must be followed to avoid damage to the product or other equipment.

General precautions

WARNING

Before installing, operating or maintaining the product, all users must read and understand the entire contents of this chapter to become aware of the hazards involved.

WARNING

Only properly trained personnel may operate and maintain the product.

WARNING

Do not operate the SE 250/260 Mighty Small II in any other way than described in the SE 250/260 Mighty Small II Operating Instructions.

WARNING

Do not damage the power supply cord by bending, twisting, heating or allowing them to become pinned under the equipment. Using damaged power cords could result in fire or electric shock.

If the power supply cords are damaged, contact your local Cytiva representative for replacements.

WARNING

The safety lid must be in place before connecting the power leads to a power supply.

WARNING

Any liquid on the equipment must be dried off before connecting the power supply.

CAUTION

Circulate only water or 50/50 water/ethylene glycol through the heat exchanger. Never use anti-freeze or any organic solvent in the heat exchanger.

CAUTION

Never introduce anti-freeze or any organic solvent into any part of the instrument. Organic solvents will cause irreparable damage to the instrument.

Personal protection

WARNING

Always use appropriate Personal Protective Equipment (PPE) during operation and maintenance of this product.

WARNING

Hazardous substances and biological agents. When using hazardous chemical and biological agents, take all suitable protective measures, such as wearing protective clothing, glasses and gloves resistant to the substances used. Follow local and/or national regulations for safe operation and maintenance of this product.

WARNING

Spread of biological agents. The operator must take all necessary actions to avoid spreading hazardous biological agents. The facility must comply with the national code of practice for biosafety.

CAUTION

Handle the glass components with care! Wear appropriate personal protective equipment (PPE).

Using flammable liquids

WARNING

A fume hood or similar ventilation system shall be installed when flammable or noxious substances are used.

Installing and moving the product

CAUTION

When lifting and moving the instrument be careful not to drop it. This may cause injury.

CAUTION

Make sure that the system is placed on a stable, level bench with adequate space for ventilation.

CAUTION

Turn off the power switch and remove connecting cables before moving the equipment.

CAUTION

The electrophoresis unit is heavy, especially when filled with buffer. Handle the unit with care to avoid personal injury.

Power supply

WARNING

Power cord. Only use power cords with approved plugs delivered or approved by Cytiva.

WARNING

The safety lid must be in place before connecting the power leads to a power supply.

WARNING

Make sure that there is access to the instrument power supply cord at all times.

Operation

WARNING

The high voltage power supply must always be disconnected when the safety lid of the electrophoresis unit is taken off. The high voltage power supply must never be switched on unless the safety lid is on the electrophoresis unit.

WARNING

Acrylamide is a neurotoxin. Always wear gloves and observe all laboratory safety procedures.

WARNING

Never exceed the operating limits stated in this document and on the system label. Operation of the product outside these limits can damage equipment and cause personal injury or death.

WARNING

Turn all power supply controls off and disconnect the power leads before removing the safety lid.

WARNING

Always disconnect the high voltage leads from the power supply before removing the lid from the unit.

CAUTION

Circulate coolant through the heat exchanger to minimize heating. Overheating will cause irreparable damage to the unit! Do not connect the heat exchanger to a water tap or any coolant source where the water pressure is unregulated.

CAUTION

Do not operate with buffer temperatures above the maximum specified technical specifications. Overheating will cause irreparable damage to the unit!

CAUTION

Devices must only be operated with a certified power supply capable of limiting the voltage and current to specified ratings.

NOTICE

After initial monitoring, do not leave the unit unattended for more than 45 min before checking the progress of the bands and the buffer level.

NOTICE

If running only one gel, block off the unused part of the core with a glass plate. Do not fill this side with buffer.

Maintenance

WARNING

Decontaminate before maintenance. To avoid personnel being exposed to potentially hazardous substances, make sure that the SE 250/260 Mighty Small II is properly decontaminated and sanitized before maintenance or service.

WARNING

Only spare parts and accessories that are approved or supplied by Cytiva may be used for maintaining or servicing the product.

WARNING

Disconnect power. Always disconnect power from the instrument before performing any maintenance task.

WARNING

Decommissioning. Decontaminate the equipment before decommissioning to make sure that hazardous residues are removed.

NOTICE

Cleaning. Keep the exterior of the instrument dry and clean. Wipe regularly with a soft damp tissue and, if necessary, a mild cleaning agent. Let the instrument dry completely before use.

2.2 Labels

Introduction

This section describes the system label and other safety or regulatory labels that are attached to the product.

Description of symbols on the system label

The table below describes the various symbols that may be found on the system label.

Label	Meaning
	**Warning!** Read the user documentation before using the system. Do not open any covers or replace parts unless specifically stated in the user documentation.
Serial no.:	Serial number of the product
Manufac-tured:	Year (YYYY) and month (MM) of manufacture

Safety labels

The table below describes the various symbols that may be found on the product.

Symbol/text	Description
	**Warning!** Read the user documentation before using the system. Do not open any covers or replace parts unless specifically stated in the user documentation.
	**Warning! High Voltage**. Always make sure that the system is disconnected from electric power before removing the lid.

2.3 Emergency procedures

Introduction

This section describes how to shut down of the SE 250/260 Mighty Small II in an emergency situation, and the procedure for restarting the SE 250/260 Mighty Small II.

The section also describes the result in the event of power failure.

Precautions

WARNING

Make sure that there is access to the instrument power supply cord at all times.

Emergency shutdown

In an emergency situation, shut down the power supply in accordance with its emergency procedure.

Power failure

In case of power failure to the SE 250/260 Mighty Small II, the run is interrupted immediately.

Restart after emergency shutdown or power failure

To restart the run after an emergency shutdown or power failure, follow these steps:

Step	Action
1	Make sure all connections are in place.
2	Start the power supply as described in the power supply's User Manual.

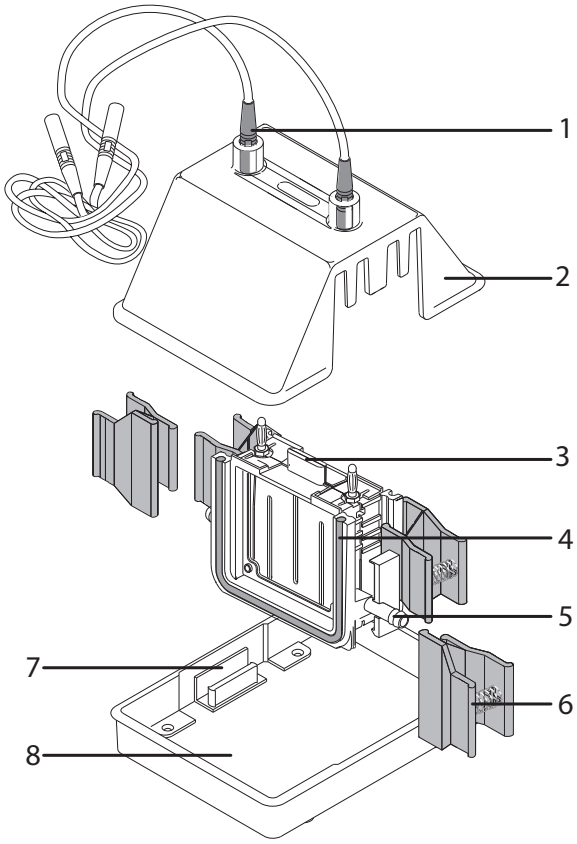
3 System description

About this chapter

This chapter gives an overview of the SE 250/260 Mighty Small II.

Illustration of the instrument

The illustration below shows the SE 250/260 Mighty Small II instrument.



Part	Function
1	Color-coded leads (2)
2	Safety lid

Part	Function
3	Upper buffer chamber core
4	Foam gasket
5	Coolant port (2)
6	Spring clamps (4)
7	Positioning tabs
8	SE 250/260 Mighty Small II Lower buffer chamber

The following parts are included, but not shown in the illustration:

- Glass plates
- Notched alumina plates
- Gel seal, 1/4 oz.
- Spacer-Mate
- Well-locating decal

Note: *Power supply with a minimum rating of 250 V, 50 mA, constant current or constant voltage is required, but not included.*

4 Installation

About this chapter

This chapter provides required information to enable users and service personnel to unpack the SE 250/260 Mighty Small II instrument.

Safety precautions

CAUTION

When lifting and moving the instrument be careful not to drop it. This may cause injury.

CAUTION

Make sure that the system is placed on a stable, level bench with adequate space for ventilation.

Unpacking procedure

Unwrap all packages carefully.

Inspect all visible parts for damage or missing pieces. If any damage is observed, record this on the receiving documents and inform your Cytiva representative. Make sure to keep all packing material for damage claims or to use should it become necessary to return the unit.

5 Operation

About this chapter

This chapter gives instructions on how to operate the product in a safe way.

Safety precautions

WARNING

The high voltage power supply must always be disconnected when the safety lid of the electrophoresis unit is taken off. The high voltage power supply must never be switched on unless the safety lid is on the electrophoresis unit.

WARNING

Acrylamide is a neurotoxin. Always wear gloves and observe all laboratory safety procedures.

WARNING

Never exceed the operating limits stated in this document and on the system label. Operation of the product outside these limits can damage equipment and cause personal injury or death.

CAUTION

Do not operate with buffer temperatures above the maximum specified technical specifications. Overheating will cause irreparable damage to the unit!

CAUTION

Circulate only water or 50/50 water/ethylene glycol through the heat exchanger. Never use anti-freeze or any organic solvent in the heat exchanger.

CAUTION

Devices must only be operated with a certified power supply capable of limiting the voltage and current to specified ratings.

NOTICE

After initial monitoring, do not leave the unit unattended for more than 45 min before checking the progress of the bands and the buffer level.

NOTICE

If running only one gel, block off the unused part of the core with a glass plate. Do not fill this side with buffer.

In this chapter

5.1 Preparations

Prepare the gel sandwich

Both precast and self-cast gels can be run in the SE 250/260 Mighty Small II units. This unit accepts gels in 10 × 8 cm plates, which can be cast in SE215, SE245, or SE275 gel casters.

Each unit includes notched alumina plates and rectangular glass plates. If casting your own polyacrylamide gels, we recommend using a notched alumina ceramic back plate because it transfers heat 40 times more rapidly than glass. For applications that are not heat sensitive, a notched glass plate is available.

Before installing the gels into the electrophoresis unit, the separating gel should already be completely polymerized. Clean away any gel adhering to the notched alumina back plate. The stacking gel (if applicable) can be cast in place on the electrophoresis unit. Load liquid samples after the gel sandwich is installed.

Maintenance before use

Rinse the instrument before each use. Before using the first time, disassemble the unit completely and wash with a dilute solution of a laboratory detergent and thoroughly rinse with water and distilled water.

Check the gasket. Periodically remove the gray silicone rubber gasket from the core. Inspect for nicks and wear. If the gasket is intact, apply a light film of Gel seal, and replace it in the groove. Avoid stretching the gasket. Lay it onto the groove and press it into place.

Disassemble a fully assembled unit

Step	Action
1	Remove the safety lid by pressing on the handle at the top of the upper buffer chamber core while lifting the lid by the bottom edges.
2	Empty all buffer chambers and remove any gel sandwiches.
3	Depress both release tabs and lift out the upper buffer chamber core.

Optional cooling

Circulating pressure must not exceed 0.8 bar (12 psi) above ambient pressure. Do not connect the cooling core to an unregulated coolant source such as a water tap.

To connect the cooling core to a circulator bath, follow these steps:

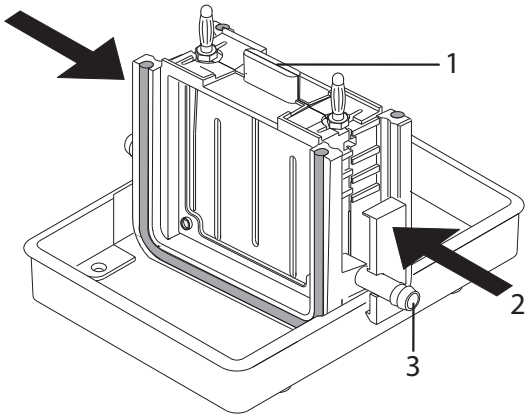
Step	Action
1	Slide hose clamps (4 in total) onto each end of two lengths of 8 mm (5/16") vinyl or silicone tubing.

Step	Action
2	Attach one end of each length of tubing to a cooling core port.
3	Attach the free ends of each length of tubing to the circulator bath ports; one to the inlet and the other to the outlet.
4	Secure the connections with the hose clamps.

Install the upper buffer chamber core

CAUTION
Circulate only water or 50/50 water/ethylene glycol through the heat exchanger. Never use anti-freeze or any organic solvent in the heat exchanger.

Step	Action
1	Steady the lower chamber with one hand and then hold the core with the other hand.
2	Position the lower chamber on the positioning tabs.
3	Press down, listening for the core to snap into place. (Alternatively, depress both release tabs at either side, position the core on the positioning tabs, press into place, and release the tabs. Check that the core is secure.)
4	To remove the core, depress both release tabs and lift.



Step	Action

Part	Description
1	Handle
2	Release tabs (2)
3	Coolant port (2)

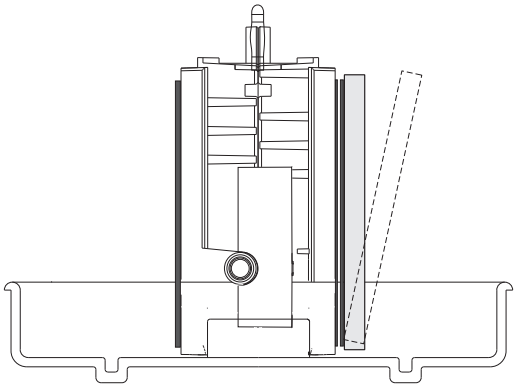
5.2 Assembly

Place the gel sandwich in the SE 250/260 Mighty Small II

WARNING

Acrylamide is a neurotoxin. Always wear gloves and observe all laboratory safety procedures.

Step	Action
1	Rinse away the gel overlay with distilled water and drain any excess water.
2	If installing a self-cast or precast 10 × 8 cm gel sandwich, orient the sandwich so that the notched plate faces the gasket, notches at the top. Set the bottom of the sandwich on the supporting ledges in the bottom of the lower chamber and center the plate so that the gasket seals both sides.



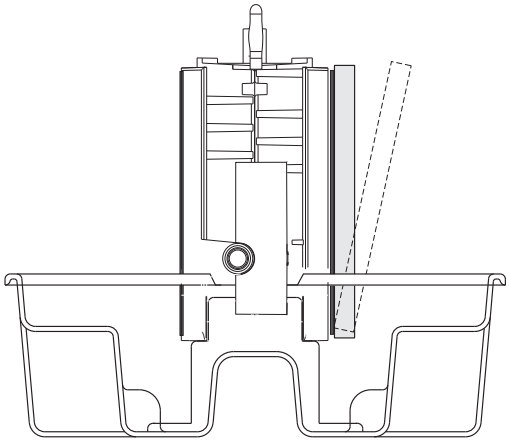
Place the gel sandwich in the SE 250/260 Mighty Small II

WARNING

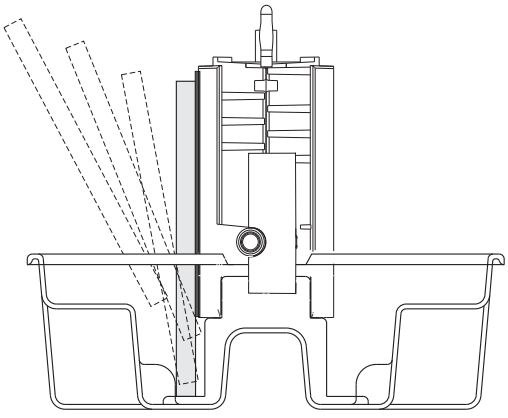
Acrylamide is a neurotoxin. Always wear gloves and observe all laboratory safety procedures.

Step	Action
1	Rinse away the overlay with distilled water and drain any excess water.

Step	Action
2	If installing a self-cast or precast 10 × 8 cm gel sandwich, align the bottom of the plate with the bottom of the core (see figure below). The bottom of the notched plate must cover the silicone rubber gasket. The 10 × 8 cm gel sandwich fits flush with the bottom of the upper buffer chamber core.



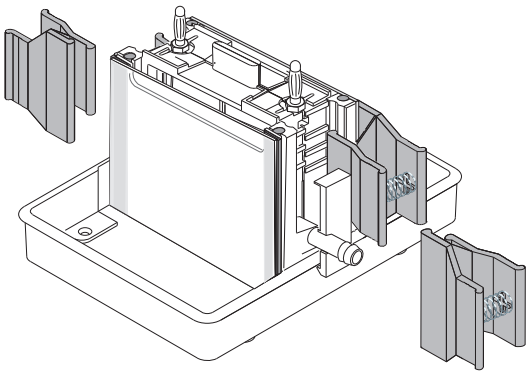
If installing a self-cast or precast 10 × 10.5 cm gel sandwich, orient the sandwich so that the notched plate faces the gasket, notches at the top. Set the bottom of the sandwich on the supporting ledges in the bottom of the lower chamber and center the plate so that the gasket seals both sides (see figure below). The 10 × 10.5 cm gel sandwich fits against the bottom of the lower buffer chamber.



Clamp the sandwich in place

Note: *Cooling is optional. If desired, attach tubing to ports on both sides of the core before attaching gel sandwiches. Circulate coolant. See* *Optional cooling, on page 22**.*

Step	Action
1	Lightly press the sandwich against the gasket and secure it to the core with one spring clamp on each side.



2	Position the jaw so that the shorter rounded jaw edge fits into the core groove and the longer edge sits on the glass plate.
3	Slide the clamps down to the stop. ***Note:*** *Proper positioning is important to achieve a seal and to minimize glass breakage.*
4	Repeat step 1-3 for the second sandwich, or, if running only one gel, clamp a plain glass plate on the unused side of the core to prevent a possible short circuit with the unused electrode. Do not fill this chamber with buffer if no gel sandwich is in place.

Sample preparation and loading

If applicable, cast the stacking gel in the unit.

Calculate the stacking gel monomer solution volume: measure the distance, in cm, from the top of the resolving gel to the notch in the alumina plate. (This should be at least 2 cm—more if the sample depth in the well is unusually high.) Multiply this distance by the gel width (8.3 cm) and the gel thickness (cm). This product is the required volume in ml.

If wells are already in place, start at with preparing the sample.

To prepare the wells, follow these steps:

Step	Action
1	De-aerate the stacking gel monomer solution.
2	Add catalyst and initiator to the stacking gel monomer solution and then pour.
3	Use a pipette to deliver the solution into one corner of the plate, taking care not to trap any bubbles.
4	Insert a comb (at a slight angle to prevent trapping air) into the sandwich, allowing the comb sides to rest on the spacers.
5	Overlay each gel with a thin layer of water-saturated n-butanol, water, or diluted gel buffer to prevent gel exposure to oxygen. Slowly deliver the overlay solution from a glass syringe fitted with a 22-gauge needle. Apply the solution near the spacer at the side of the sandwich and allow it to flow across the surface unaided.
6	Allow a minimum of one hour for the gel to polymerize.

To prepare the sample, follow these steps:

Step	Action
1	Increase liquid sample density with 10% glycerol or sucrose.
2	Add a tracking dye.
3	For SDS protein gels, use 2× treatment buffer to denature both liquid and dry samples in a test tube. To liquid protein solutions, add an equal volume of 2× buffer. To dry protein samples, add equal volumes of buffer and ddH_2O to achieve the desired concentration.
4	Heat the tube in boiling water for 90 seconds, then chill it in ice until ready to use. Treated samples can be stored at -40°C to -80°C for future runs.

To load samples, follow these steps:

Step	Action
1	To aid in loading samples, wet the well-locating decal and apply it to the front of the glass plate so that the appropriate edge outlines the sample wells. ***Note:*** *The side wells for standards of a preparative comb correspond to the outer-most wells formed by the 10-well comb.*
2	Fill the sample wells and each upper buffer chamber that will be used with running buffer. One upper buffer chamber holds approximately 75 mL.
3	Load the sample into the wells using a fine-tipped microsyringe. The width of the wells depends on the number of wells per comb.For the volume required to fill to 1mm well depth, see the table below.

Volume of sample (µL) per 1 mm depth			
No. of wells	Comb thickness (mm)		
	0.75	1.0	1.5
5	9.5	12.7	19.1
9		5.8	
10	3.6	4.8	7.2
15	2.2	2.9	4.4
18		2.9	

Final assembly

CAUTION
Devices must only be operated with a certified power supply capable of limiting the voltage and current to specified ratings.

Step	Action
1	Fill the lower buffer chamber with running buffer. The SE 250/260 Mighty Small II holds about 250 mL. Make sure that the lower electrode (running along the bottom of the the upper buffer chamber core) is completely submerged.

Step	Action
	Note: *If using precast gels, check that the lower gel/buffer contact surface is exposed (the colored plastic tape must be removed).*
2	Place the safety lid on the unit.
3	Plug the color-coded leads into the jacks of an approved power supply. The red lead plugs into the red output jack, and the black lead plugs into the black output jack.
4	Optional cooling: Begin circulating cold water or a chilled 50/50 water/ethylene glycol solution.

5.3 Electrophoresis run

Running the gel

Gels may be run at either constant current or constant voltage. A constant current setting is traditionally used with a discontinuous buffer system so that the rate of electrophoretic migration remains unchanged throughout the run. Under these conditions, voltage increases as the run proceeds. A lower current setting is recommended for higher resolution. Precast gels are run under the same current and voltage conditions as self-cast gels.

It takes about one hour to run two 7 cm × 0.75 mm Laemmli gels at 40 mA (20 mA per gel, constant current). Check band progress after 5 minutes, and again after half an hour, keeping an eye on the position of the tracking dye. The run is complete when the tracking dye reaches the bottom of the gel. Watch the buffer level in the upper buffer chamber and, if necessary, replenish it before it falls below the level of the notched plate. A small volume of buffer may leak past a chipped plate or nicked gasket, or it may wick out through the gel.

NOTICE

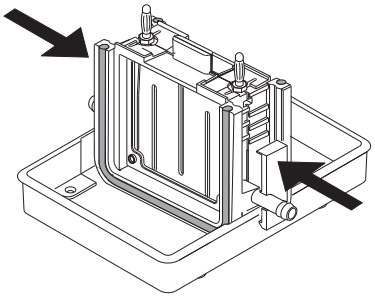
After initial monitoring, do not leave the unit unattended for more than 45 min before checking the progress of the bands and the buffer level.

After the run

WARNING

Always disconnect the high voltage leads from the power supply before removing the lid from the unit.

Step	Action
1	Once the tracking dye reaches the bottom of the gel, turn off the power supply, disconnect the leads, and remove the safety lid as described in *Disassemble a fully assembled unit, on page 22*
2	If coolant is circulating, stop the flow and disconnect the fittings or tubing.

Step	Action
3	Remove the core assembly with gels attached by squeezing the release tabs and lift out the core assembly. 
4	Pour out the buffer by inverting the core assembly, then remove both clamps, and lift away gel sandwich(es) from the upper buffer chamber core.
5	Gently loosen and then slide away both spacers.
6	Slip an extra spacer or a Wonder Wedge into the bottom edge (to prevent breaking the ears of the notched plates) and separate the plates. The gel usually adheres to the alumina plate.
7	Carefully lift the gel from the plate and lay it into a tray of stain or fixative.

6 Maintenance

About this chapter

This chapter provides information to enable users and service personnel to clean and maintain the product.

Precautions

WARNING

Decontaminate before maintenance. To avoid personnel being exposed to potentially hazardous substances, make sure that the SE 250/260 Mighty Small II is properly decontaminated and sanitized before maintenance or service.

WARNING

Only spare parts and accessories that are approved or supplied by Cytiva may be used for maintaining or servicing the product.

WARNING

Disconnect power. Always disconnect power from the instrument before performing any maintenance task.

General procedures

Immediately after each use, rinse the unit with water and then rinse thoroughly with distilled water. Do not use organic solvents, abrasives, strong cleaning solutions, or strong acids or bases to clean the chambers. Handle the upper buffer chamber core with care to prevent damage to the banana plugs. Allow to air dry.

Clean glass and alumina plates and spacers with a dilute solution of a laboratory cleanser, then rinse thoroughly with tap and distilled water. Glass plates can also be treated with (but not stored in) acid cleaning solutions. Do not autoclave or heat any part above 45°C.

Cleaning before planned maintenance/service

To ensure the protection and safety of service personnel, all equipment and work areas must be clean and free of any hazardous contaminants before a Service Engineer starts maintenance work.

Please complete the checklist in the *On Site Service Health and Safety Declaration Form* or the *Health and Safety Declaration Form for Product Return or Servicing*, depending on whether the instrument is going to be serviced on site or returned for service, respectively.

Health and safety declaration forms

Health and safety declaration forms are available for copying or printing in the *Reference information* chapter of this manual, or on digital media supplied with the user documentation.

7 Troubleshooting

About this chapter

This chapter provides information to assist users and service personnel to identify and correct problems that may occur when operating the product.

If the suggested actions in this guide do not solve the problem, or if the problem is not covered by this guide, contact your Cytiva representative for advice.

Safety precautions

CAUTION

Circulate only water or 50/50 water/ethylene glycol through the heat exchanger. Never use anti-freeze or any organic solvent in the heat exchanger.

CAUTION

Never introduce anti-freeze or any organic solvent into any part of the instrument. Organic solvents will cause irreparable damage to the instrument.

Potential problems

Error description	Corrective action
Smile effect on the buffer front	To reduce the running temperature: • Circulate coolant through the upper buffer chamber core. • Prechill the buffer. • Decrease the current or voltage setting. (10 mA per 0.75 mm gel, 15 mA per 1.5 mm thick gel.) • Run the gel in the cold room.
Protein streaks vertically	Centrifuge or filter sample before loading to remove particulates. Dialyze or desalt the sample.

Error description	Corrective action
Unusually slow (or fast) run	To increase or decrease the migration rate, adjust the voltage or current by 25% to 50%. Adjust the solutions: • Check recipes, gel concentrations, solutions, and dilutions. (For instance, do not use Tris-HCl instead of Tris.) • If the required pH of a solution is exceeded, do not back-titrate. Prepare a fresh buffer. • Dispose of older acrylamide solutions and use only stock of the highest quality. • Only use freshly deionized urea.
Bands are skewed or distorted	Check gel preparation and polymerization. De-gas the stacking gel solution and avoid trapping air bubbles under the comb teeth. Overlay the running gel with water-saturated n-butanol before polymerization begins to avoid forming an uneven gel surface. Check sample preparation. Dialyze or desalt the sample. Centrifuge or filter sample before loading to remove particulates.
Stained sample collects	Near the buffer front: • Protein is not sufficiently restricted by the resolving gel; increase the %T. Near the top of the gel when the buffer front has reached the bottom: • The gel pore size is too small. Decrease the %T of the resolving gel. • The protein has precipitated. Heat the sample at a lower temperature (70°C or less) for 1–2 minutes.

Error description	Corrective action
Poor band resolution	Use only the highest quality reagents. Conduct the separation at a lower current or voltage setting. Dialyze or desalt the sample. Reduce the sample volume or concentration. Only use freshly deionized urea. Improve dissociation of subunits by heating sample in SDS sample buffer 1–2 minutes at 100°C. Add more mercaptoethanol or dithiothreitol; check sample treatment. Only use gels that were recently prepared. Check pH values of the separating and stacking gel solutions. Do not back-titrate buffers. Sample preparation: • Heat samples for no more than 1–2 minutes at 100°C. Store on ice after heating. • Store sample on ice before it is denatured. • Add protease inhibitors if necessary to prevent proteolytic degradation of sample. • Store samples to be frozen in aliquots to prevent repeated freezing and thawing. (Store at -40% to -80%.)
Bromophenol blue does not sharpen into a concentrated zone in the stacking gel	Pour a taller stacking gel. (For best results, allow a stacking gel height of 2.5 times the height of the sample in the well.) Dispose of outdated acrylamide solutions and use only the highest grade of acrylamide. When preparing samples, avoid using solutions with a high sodium or potassium concentration.

8 Reference information

About this chapter

This chapter lists the technical specifications of the SE 250/260 Mighty Small II. The chapter also includes ordering information, and the Health and Safety Declaration form for service.

In this chapter

8.1 Specifications

Parameter	Specification
Gel plate size	10 × 8 cm
Approximate gel size	8 × 7 cm
Maximum power	12 W
Maximum voltage	500 V
Maximum current	500 mA
Maximum gel temperature	45°C
Environmental operating conditions	Indoor use: 4°C to 40°C Humidity up to 80% Altitude up to 2000 m
Installation category	II
Pollution degree	2
Dimensions (W × H × D)	16.5 × 16 × 16 cm (6.5 × 6.3 × 6.3 in.)
Weight	2.7 kg

8.2 Recycling information

Introduction

This section contains information about the decommissioning of the product.

Decontamination

The product must be decontaminated before decommissioning. All local regulations must be followed with regard to scrapping of the equipment.

Disposal of the product

When taking the product out of service, the different materials must be separated and recycled according to national and local environmental regulations.

Disposal of electrical components

Waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. Contact an authorized representative of the manufacturer for information concerning the decommissioning of the equipment.

8.3 Regulatory information

Introduction

This section lists the regulations and standards that apply to the SE 250/260 Mighty Small II.

In this section

8.3.1 Contact information

Contact information for support

To find local contact information for support and sending troubleshooting reports, visit *cytiva.com/contact*.

Manufacturing information

The table below summarizes the required manufacturing information.

Requirement	Information
Name and address of manufacturer	Cytiva Sweden AB Björkgatan 30 SE 751 84 Uppsala Sweden
Telephone number of manufacturer	+ 46 771 400 600

8.3.2 European Union and European Economic Area

Introduction

This section describes regulatory information for the European Union and European Economic Area that applies to the equipment.

Conformity with EU Directives

See the EU Declaration of Conformity for the directives and regulations that apply for the CE marking.

If not included with the product, a copy of the EU Declaration of Conformity is available on request.

CE marking

The CE marking and the corresponding EU Declaration of Conformity is valid for the instrument when it is:

- used according to the *Operating Instructions* or user manuals, and
- used in the same state as it was delivered, except for alterations described in the *Operating Instructions* or user manuals.

8.3.3 Eurasian Economic Union
Евразийский экономический союз

This section describes the information that applies to the product in the Eurasian Economic Union (the Russian Federation, the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, and the Kyrgyz Republic).

Introduction

This section provides information in accordance with the requirements of the Technical Regulations of the Customs Union and (or) the Eurasian Economic Union.

Введение

В данном разделе приведена информация согласно требованиям Технических регламентов Таможенного союза и (или) Евразийского экономического союза.

Manufacturer and importer information

The following table provides summary information about the manufacturer and importer, in accordance with the requirements of the Technical Regulations of the Customs Union and (or) the Eurasian Economic Union.

Requirement	Information
Name, address and telephone number of manufacturer	See *Manufacturing information*
Importer and/or company for obtaining information about importer	Cytiva RUS LLC 109004, Moscow internal city area Tagansky municipal district Stanislavsky str., 21, building 3, premises I, office 57 Russian Federation Telephone: +7 499 609 15 50 E-mail: *rucis@cytiva.com*

Информация о производителе и импортере

В следующей таблице приводится сводная информация о производителе и импортере, согласно требованиям Технических регламентов Таможенного союза и (или) Евразийского экономического союза.

Требование	Информация
Наименование, адрес и номер телефона производителя	См. *Информацию об изготовлении*
Импортер и/или лицо для получения информации об импортере	ООО "Цитива РУС" 109004, город Москва вн.тер.г. муниципальный округ Таганский улица Станиславского, дом 21, строение 3, помещение I, комната 57 Российская Федерация Телефон: +7 499 609 15 50 Адрес электронной почты: *rucis@cytiva.com*

Description of symbol on the system label
Описание обозначения на этикетке системы

This Eurasian compliance mark indicates that the product is approved for use on the markets of the Member States of the Customs Union of the Eurasian Economic Union

Данный знак о Евразийском соответствии указывает, что изделие одобрено для использования на рынках государств-членов Таможенного союза Евразийского экономического союза

8.3.4 Declaration of Hazardous Substances (DoHS)

This section describes the information that applies to the product in China.

根据 SJ/T11364-2014《电子电气产品有害物质限制使用标识要求》特提供如下有关污染控制方面的信息。

The following product pollution control information is provided according to SJ/T11364-2014 Marking for Restriction of Hazardous Substances caused by electrical and electronic products.

电子信息产品污染控制标志说明
Explanation of Pollution Control Label

该标志表明本产品不含有超过中国标准 GB/T 26572《电子信息产品中有毒有害物质的限量要求》中限量的有毒有害物质,报废后可以进行回收处理,不能随意丢弃。

This symbol indicates that this electrical and electronic product does not contain any hazardous substances above the maximum concentration value established by the Chinese standard GB/T 26572 , and can be recycled after being discarded, and should not be casually discarded.

有害物质的名称及含量
Name and Concentration of Hazardous Substances

产品中有害物质的名称及含量
Table of Hazardous Substances' Name and Concentration

部件名称 Component name	有害物质 Hazardous substance					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
80614745	0	0	0	0	0	0
80614935	0	0	0	0	0	0

0: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

- 此表所列数据为发布时所能获得的最佳信息.

0: Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

X: Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572

- Data listed in the table represents best information available at the time of publication.

8.4 Ordering information

For product codes and information about how to order, please see

cytiva.com

8.5 Health and Safety Declaration Form

On site service

cytiva

On Site Service Health & Safety Declaration Form

Service Ticket #:	

To make the mutual protection and safety of Cytiva service personnel and our customers, all equipment and work areas must be clean and free of any hazardous contaminants before a Service Engineer starts a repair. To avoid delays in the servicing of your equipment, complete this checklist and present it to the Service Engineer upon arrival. Equipment and/or work areas not sufficiently cleaned, accessible and safe for an engineer may lead to delays in servicing the equipment and could be subject to additional charges.

Yes	No	Review the actions below and answer "Yes" or "No". Provide explanation for any "No" answers in box below.
○	○	**Instrument has been cleaned of hazardous substances**. Rinse tubing or piping, wipe down scanner surfaces, or otherwise make sure removal of any dangerous residue. Make sure the area around the instrument is clean. If radioactivity has been used, perform a wipe test or other suitable survey.
○	○	**Adequate space and clearance is provided to allow safe access** for instrument service, repair or installation. In some cases this may require customer to move equipment from normal operating location prior to Cytiva arrival.
○	○	**Consumables, such as columns or gels, have been removed or isolated from the instrument and from any area that may impede access to the instrument.**
○	○	**All buffer / waste vessels are labeled. Excess containers have been removed from the area to provide access.**
Provide explanation for any "No" answers here:		

Equipment type / Product No:		Serial No:	

I hereby confirm that the equipment specified above has been cleaned to remove any hazardous substances and that the area has been made safe and accessible.

Name:		Company or institution:	
Position or job title:		Date (YYYY/MM/DD):	
Signed:			

For local office contact information, visit cytiva.com/contact.
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Product return or servicing

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Health & Safety Declaration Form for Product Return or Servicing

Return authorization number:		*and/or* **Service Ticket/Request:**	

To make sure the mutual protection and safety of Cytiva personnel, our customers, transportation personnel and our environment, all equipment must be clean and free of any hazardous contaminants before shipping to Cytiva. To avoid delays in the processing of your equipment, complete this checklist and include it with your return.

1. Note that items will NOT be accepted for servicing or return without this form
2. Equipment which is not sufficiently cleaned prior to return to Cytiva may lead to delays in servicing the equipment and could be subject to additional charges
3. Visible contamination will be assumed hazardous and additional cleaning and decontamination charges will be applied

Yes	No	Specify if the equipment has been in contact with any of the following:	
◯	◯	Radioactivity (specify)	
◯	◯	Infectious or hazardous biological substances (specify)	
◯	◯	Other Hazardous Chemicals (specify)	

Equipment must be decontaminated prior to service / return. Provide a telephone number where Cytiva can contact you for additional information concerning the system / equipment.

Telephone No:		
Liquid and/or gas in equipment is:	☐	**Water**
	☐	**Ethanol**
	☐	**None, empty**
	☐	**Argon, Helium, Nitrogen**
	☐	**Liquid Nitrogen**
	Other, specify	

Equipment type / Product No:		**Serial No:**	

I hereby confirm that the equipment specified above has been cleaned to remove any hazardous substances and that the area has been made safe and accessible.

Name:		**Company or institution:**	
Position or job title:		**Date (YYYY/MM/DD)**	
Signed:			

For local office contact information, visit cytiva.com/contact.
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To receive a return authorization number or service number, call local technical support or customer service.

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