Instruction Manual

Compact size gel electrophoresis system
built-in power supply

WSE-1030/1040

CompactPAGE Neo

1st Edition
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SupportingLifeResearch

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Introduction

Thank you for purchasing ATTO Corporation's compact size gel electrophoresis system built-in power supply, "WSE-1030/1040 CompactPAGE Neo". This instruction manual is delivered to you together with the system so that you can make full use of it. Not only those of you using this system for the first time, but also those of you having used before, should read this document carefully to understand contents. If you use this system for the first time, please read this document from beginning in serial order. In addition, this document contains information related to maintenance and guarantees as well as how to use. Please keep it handy all the time to make its full use.

If you have any questions on your purchased products or the instruction manual, please feel free to contact us. (Please refer to the back cover.)

About this manual

Before using the product, please read this document carefully. After reading it, please be sure to keep it for your future reference. When you relocate this system, be sure to attach this document to it.

If there is any defect in this document such as misplaced or missing pages, or if this document is lost or stained, we will replace it with a new one. Please take a moment to contact the distributor you purchased the product from or our company's customer service department (please refer to the back cover). At that time, please inform us of your product name and type. This document was created with our most careful attention: however, should you find any queries, errors or omissions, please inform our company's customer service department (please refer to the back cover).

Safety precautions

To use this system safely, it must operate it properly. Do not use this product until you read this document carefully and understand the content sufficiently. Precautions on usage and safety described in this document are applied to the use of this system only for the specified purpose of use. Do not use this system for any purpose or by any method other than described here. If you use this system for any purpose or by any method other than described in this manual, you will be held responsible for any necessary safety measures as operator.

If you operate the system for the first time, you need to be given instructions from an experienced operator with proper knowledge, and to understand its principle and method. Not only people operating this system for the first time but also people having ever used it after receiving professional education should keep this instruction manual handy to make its effective use. In order to prevent electric shock caused by the system or any damage to the system, please understand and follow the correct operation method shown in this manual.

If you have questions or concerns related to the principle, maintenance or inspection, feel free to contact our company (please refer to the back cover).

Safety symbol

To use this system safely and maintain the safe status, the following symbols are indicated in the instruction manual and on the system's main unit. Please note the meaning of each symbol and observe each item.

Symbol	Description
	This symbol indicates emergent danger, such as death or heavy injury caused by ignoring the symbol and mishandling the system.
	This symbol indicates possibility of danger, such as death or injury, caused by ignoring the symbol and mishandling the system.
	This symbol indicates possible occurrence of property damage caused by ignoring the symbol and mishandling the system.
	This symbol indicates prohibition.
	This symbol indicates an important matter.
	This symbol indicates a tip to the operation.

Operation precautions

There are precautions for preventing fire, electric shock and other accident or failure. Read and understand the information well, and be sure to observe it.

⚠Danger

Power supply connection 	Do not use a deformed or corroded electrode terminal, AC adapter, power cable whose insulation coating is peeled off, or damaged power cable. Do not connect any power supply other than the one attached to this system. Before operating this system, check and confirm there is no damage to it. Otherwise, it may catch fire or cause electric shock due to loose connection. If there is any damage, stop using this system and connect our company (please refer to the back cover). After use, be sure to turn off the power switch and disconnect AC adaptor from outlet. When disconnecting AC adaptor from outlet, be sure to turn off the power switch and disconnect it by holding the AC adaptor instead of pulling cable.
No wet hand 	When handling this system, keep your hands dry. Do not touch AC adaptor or connection terminal with wet hands. If you do, electric shock or failure may be caused. If power supply part or AC adaptor gets wet, do not use it. If you do, electric shock or failure may be caused. If wetted, stop using it and contact our company (please refer to the back cover),
Main unit 	Do not put any foreign object into this system. If you do, electric shock or failure may be caused. If the external surface of this system gets wet, do not use it. If you do, electric shock or failure may be caused. When using it, wipe moisture off the surface and dry it.
Maintenance 	If an error occurs or if there seems to be an error or failure while this system is being used, stop using it immediately. If you find any defect at the time of inspection, do not use this system. If you do, electric shock or failure may be caused. While this system is in use, check if there is any error, such as abnormal sound or smoking, and see if any liquid leakage by regular visual inspection. If you find an error, failure or defect, stop using it and contact our company (please refer to the back cover).
Reagent 	Deleterious substance, hazardous materials and material having a carcinogen may be used for making buffer, staining, decoloring and another reaction. Do not touch them directly with human body. It may cause death accident or body injury, like burns. In use of chemicals, read carefully the precaution of chemical and protect human body with gloves and masks.

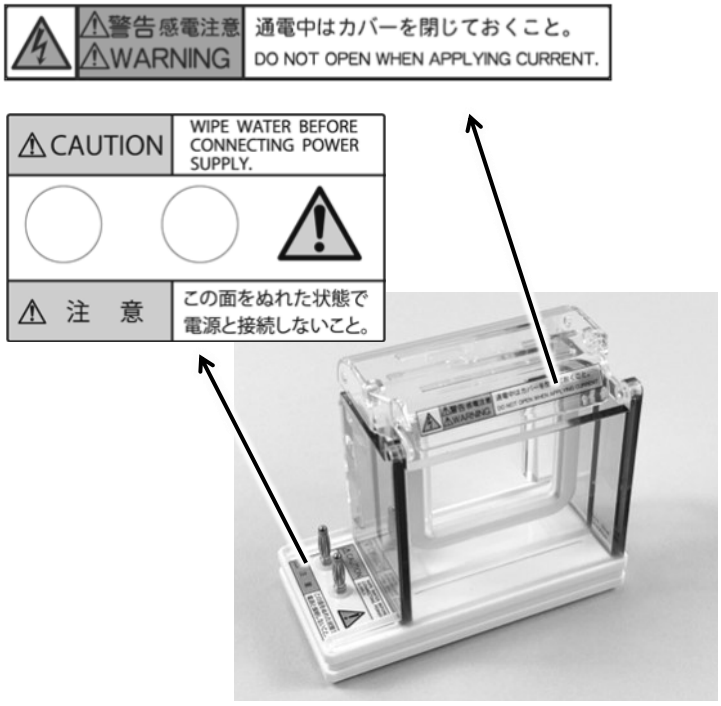
⚠Warning

Installation location 	Do not install the system on an unstable table, tilted place or a heavily vibration place. Install it on an laboratory table with horizontal, stable and solid surface. Otherwise, electric shock due to falling or liquid leakage may be caused. Do not put any object on this system. If you do, electric shock due to falling may be caused.
Main unit 	This is not of explosion-proof structure. Install it at the place where there is no exposure to fire or combustible gas. When taking this system out of a low-temperature room for use, take measures against dew condensation before moving it. If condensation is seen, dry it completely. Otherwise, electric shock or failure may be caused.
Transfer 	While this system is in operation, do not touch any parts other than operating panel, nor move it. Also, electric cords may get entangled and the system may fall. When moving this system, be sure to turn off the power switch, disconnect AC adaptor and removing cables.
Transport 	When carrying the device, be sure to hold it firmly in your hands to avoid dropping it and causing injury or damage to the device.
Maintenance 	When you execute maintenance or cleaning, be sure to turn off the power switch and disconnect AC adaptor. To maintain good performance and safety of this product, please ask us for periodical maintenance, inspection and calibration (please refer to the back cover).
No disassembly 	Do not disassemble or modify this system. Do not remove external cover. Interior adjustment or repair of this product should be made by our engineers. If adjustment or repair needs to be done, please ask us for it (please refer to the back cover). Our company will not accept any responsibility for any accident or failure caused by disassembly or modification done by yourself.
Stickers 	Do not peel off the warning stickers. They indicates a dangerous section of this system. If it is peeled off or cannot be read due to stain, please contact us (please refer to the back cover).
AC adaptor 	Do not use the power supply part and AC adaptor of this system for any other purpose. If you do, failure or accident may be caused. We will not accept responsibility for any accident or failure caused by using the power supply and AC adapter of this system for any other than this system. If this system is used outside Japan, prepare the conversion adapter complying with the standards of the country where you use it. If an AC adapter other than the one included with the product is used, it may cause malfunction or output problems, damage to the device (power supply unit), deterioration or damage to the AC adapter, or fire. If you have any questions, please contact us or our sales agent (please refer to the back cover).

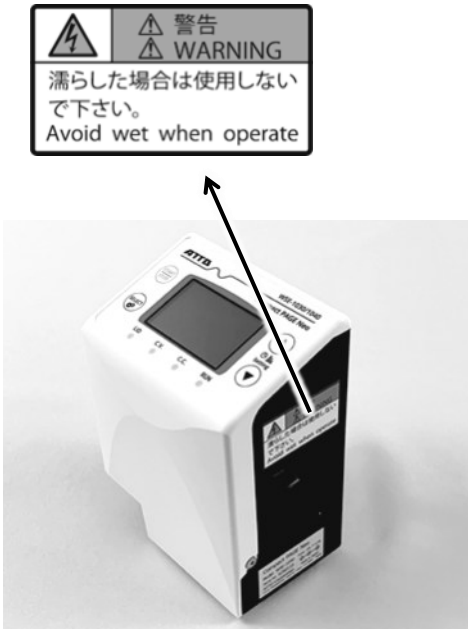
⚠Caution

Stickers	The name plate sticker shows important information for maintenance and management of the product. Do not peel it off. The label for safety precaution and instruction is attached to this system as following images. Do not peel it off or make it dirty.

Warning label (Chamber：safety cover and electrode plug)



Warning label (Power supply)



Notices

Application	This system is physical and chemical equipment for research. It is not medical equipment. Therefore, it cannot be used for medical practices, such as care-related judgement or treatment effect checking.
Export	Export of certain services or cargos is controlled by the foreign exchange law and the government decree or ministerial ordinance of foreign trade control law of Japan. The product is subject to such regulations. Even if the product is not pertinent to the government decree, it is necessary to submit the document to the customs office to that effect. If the product is pertinent, it is necessary to obtain the export license from the Ministry of Economy, Trade and Industry and submit the license to the customs office. When you export our company's product, please contact the distributor or our company's customer department in advance (please refer to the back cover).
Trademarks/ Copyright	Reprint or copy of a part or whole of the instruction manual would require the permission of the copyright. The specification of the product and the contents of the instruction manual may be changed without prior notice.

1 Overview

1.1 Purpose

WSE-1030/1040 CompactPAGE Neo is an equipment built-in power supply to electrophorese protein and nucleic acid with compact size polyacrylamide gel (60x60x1.0 or 0.75mm).

1.2 Principle

This system distributes power from the dedicated electrophoresis power supply to the plate-type polyacrylamide gel set on the electrophoresis tank via buffer in both upper and lower tanks. A sample added to the sample groove at the upper edge of the gel moves to the opposite electrode of its charge when the power is distributed. The components within the sample are separated by difference of movement for a set period of time.

2. Inspection when unpacking

2.1. Inspection at unpacking

When you receive the product, please check that the main unit and accessories are correctly packed and that there is no damage. If you find any defect or damage, please contact the distributor you purchased the product from or our company immediately (please check the back cover). Please check when unpacking within one week after receiving the product. If more than one week has passed, the warranty for damage or missing items may not be available.

2.2. Product configuration

This product consists of the main unit and accessories.

Main unit

Model		WSE-1030	WSE-1030W
Product No.		2322252	2322254
Main unit	**Electrophoresis chamber**	1	1
	Plate holder	1	1
	Power supply for CompactPAGE Neo	1	1
Accessories	**AC adapter**	1	1
	Instruction manual	1	1
	Gel cast	none	WSE-1091 Compact Gel Cast

Model		WSE-1040	WSE-1040W
Product No.		2322272	2322274
Main unit	**Electrophoresis chamber**	1	1
	Plate holder	2	2
	Power supply for CompactPAGE Neo	1	1
Accessories	**AC adapter**	1	1
	Instruction manual	1	1
	Gel cast	none	WSE-1092 Multi Compact Gel Cast

Gel cast

The WSE-1030W comes with Compact Gel Cast (WSE-1091), and the WSE-1040W comes with Multi Compact Gel Cast (WSE-1092).

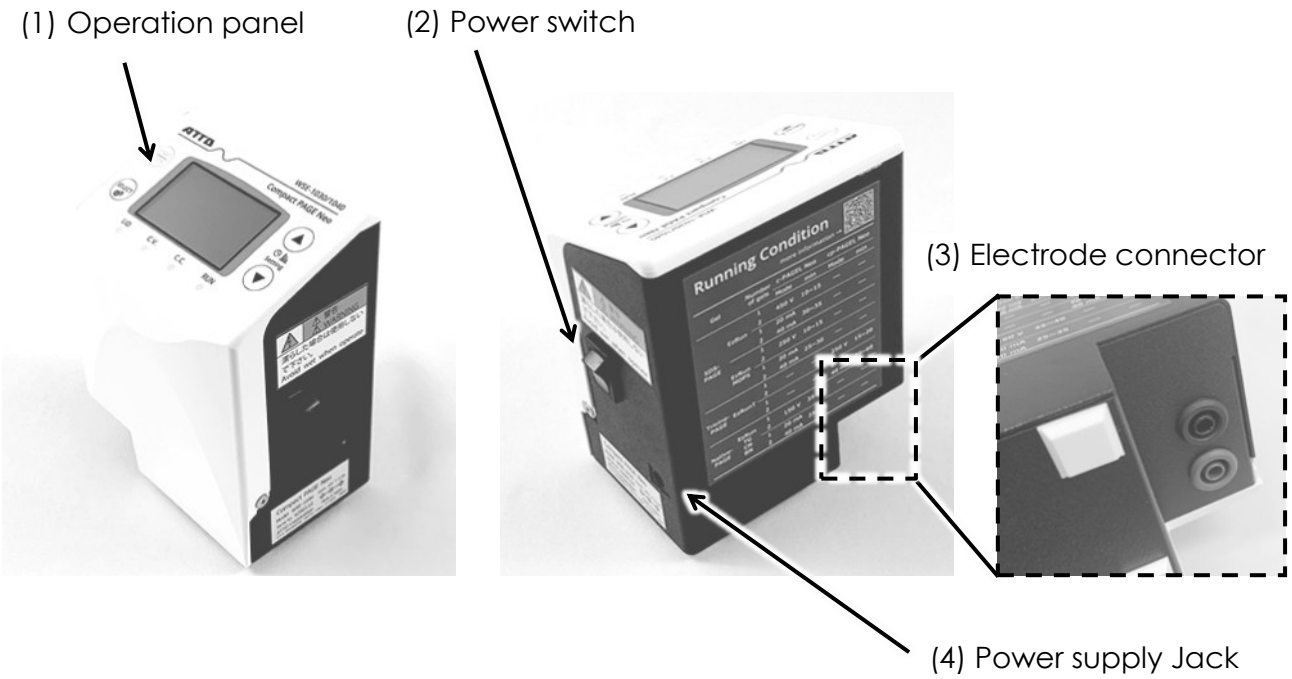
Product name		Compact Gel Cast	Multi Compact Gel Cast
Model		WSE-1091	WSE-1092
Product No.		2393682	2393684
Main unit	**Main unit of gel cast**	1	1
	Plate with packing	1	1
Acces-sories	**Plate set (CAB-10、CB-00)**	1	2
	Smiling-less compact comb (CP10-12)	1	2
	Divider plate	none	6
	Dummy plate	none	1
	Silicon plate(22×71 mm)	none	2
	Silicon plate(22×80 mm)	none	1
	Instruction manual	1	1

Material

Electrophoresis chamber	Acrylic, Silicon
Plate holder	Polycarbonate
Safety cover	Polycarbonate
Power supply case	Aluminum
AC adapter	ABS
Gel cast	Acrylic, Stainless steel, Silicon

3. Part name and the function

3.1 Power supply



(1) Operation panel

You can select the output mode, set the running time and operate for start and stop. The output status and running time are displayed during electrophoresis.

(2) Power switch

Press the top side to turn the power on.
Press the bottom side to turn the power off.
When the power is on, the output mode and running time settings screen are displayed on the operation panel display.

(3) Electrode connector

Set the power supply to predetermined position on the electrophoresis chamber. The power supply and the electrode connector are connected, and electrical power can be supplied.

(4) Power supply jack

Connect AC adaptor (24V DC/2.5A) attached to this system to the jack.

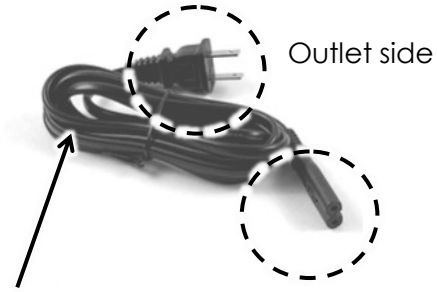
Step function
This function combines the output modes of S1 and S2.
When you set the output mode and the running time for S1 and S2 respectively, the two outputs will be continuously energized.

Memory function
The set output mode and running time are memorized.
When the power is turned on, the previously set output mode and running time are displayed.

Output limit function
The voltage value during electrophoresis under constant current condition rises according to the change in electrical resistance occurring in the electrified parts such as the gel and buffer solution.
When the voltage exceeds 500 V (the maximum voltage of this device) while running under constant current condition, the device automatically switches from constant current output to constant voltage output of 500 V.

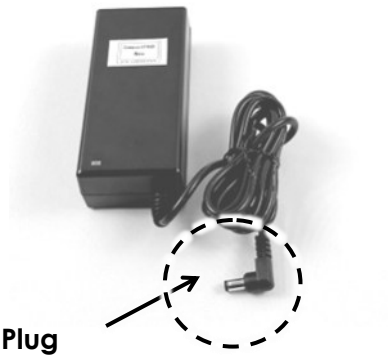
Slow start function
When constant voltage (C.V.) mode is selected, this function automatically performs electrophoresis at a low voltage for 30 seconds immediately after the start of electrophoresis. If you want to perform additional runs after the set time of electrophoresis has finished, you can turn off the slow start function. (Please refer to page 53)

3.2 AC adapter (24V / 2.5A)



Power plug

Insert it into the outlet



DC Plug

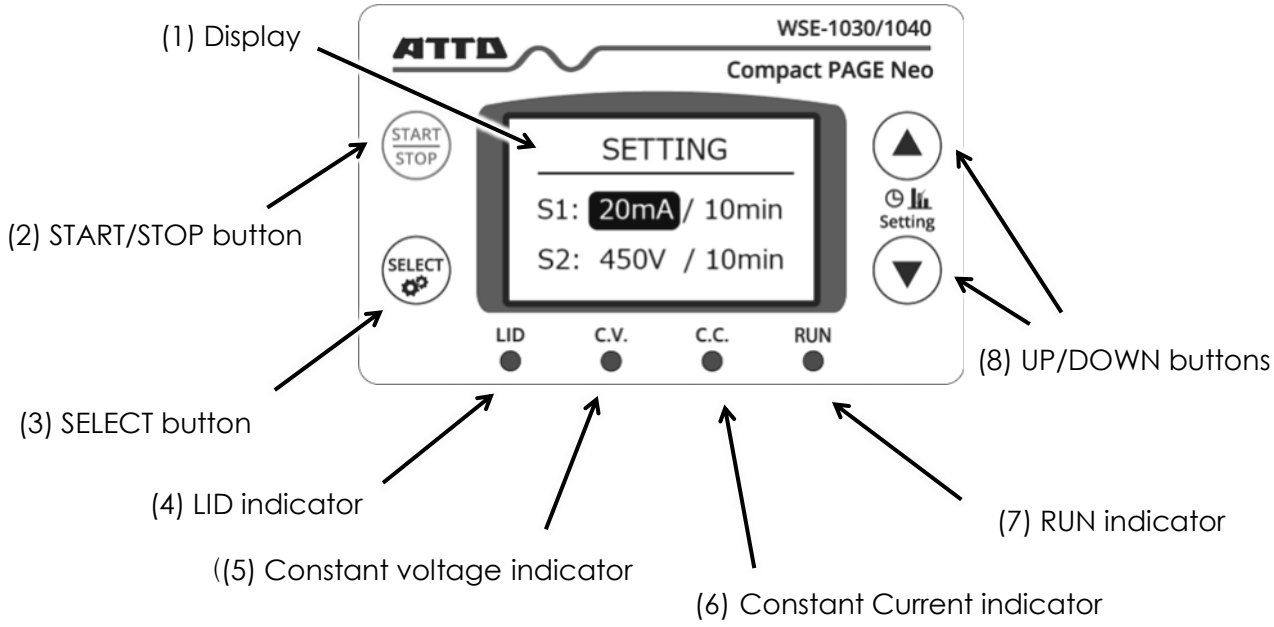
Insert into the inlet on the side of the power supply.

* This product cannot be used with any AC adapter other than the one included with the Compact PAGE Neo.

⚠Warning

Do not use any AC adapter other than one attached to this device.
If an AC adapter other than the one attached is used, it may result in malfunction or output failure of the power supply, damage to the AC adapter, or fire.
Be sure to use the AC adapter that attached to this device.

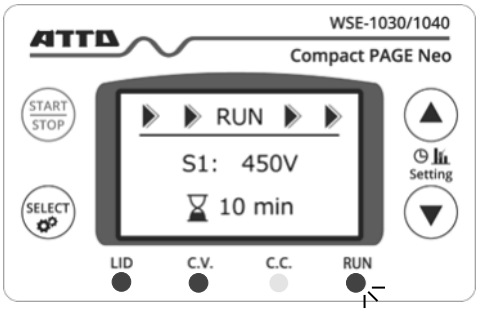
3.3 Operation panel



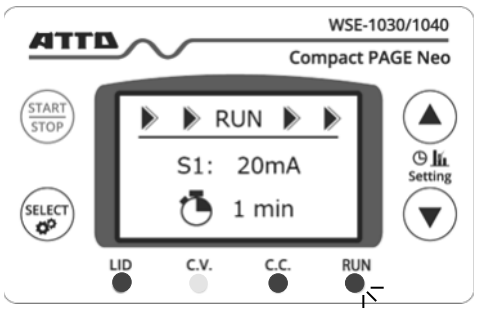
(1) Display

The output mode and running time settings are displayed.
While running, the set output mode and running time are displayed. The running time is displayed on count-down basis, and an hourglass is displayed next to the time.
When the timer is off, the running time is displayed on count-up basis, and a stop-watch is displayed next to the time.

Screen when timer is set to on
An hourglass will appear next to the time



Screen when timer is set to off
A stopwatch will appear next to the time



When electrophoresis stop, the end screen will be displayed.
If an error is detected, the type of error and how to resolve it will be displayed.

(2) START/STOP button

Press the button to start electrophoresis.
Press the button during running to stop electrophoresis.

(3) SELECT button

Press the button to move the cursor to the output mode or the running time you want to set.
Press the button during running to be displayed the set output mode and running time.

(4) LID indicator (blue LED lamp)

This indicator lights up when the safety cover of the electrophoresis chamber is closed.
This indicator lights off when the safety cover of the electrophoresis chamber is opened.

(5) Constant voltage indicator (yellow LED lamp)

When 450 V, 250 V, or 150 V output mode is set, this indicator lights up during running.

(6) Constant current indicator (red LED lamp)

When 40 mA, 20 mA, or 10 mA output mode is set, this indicator lights up during running.

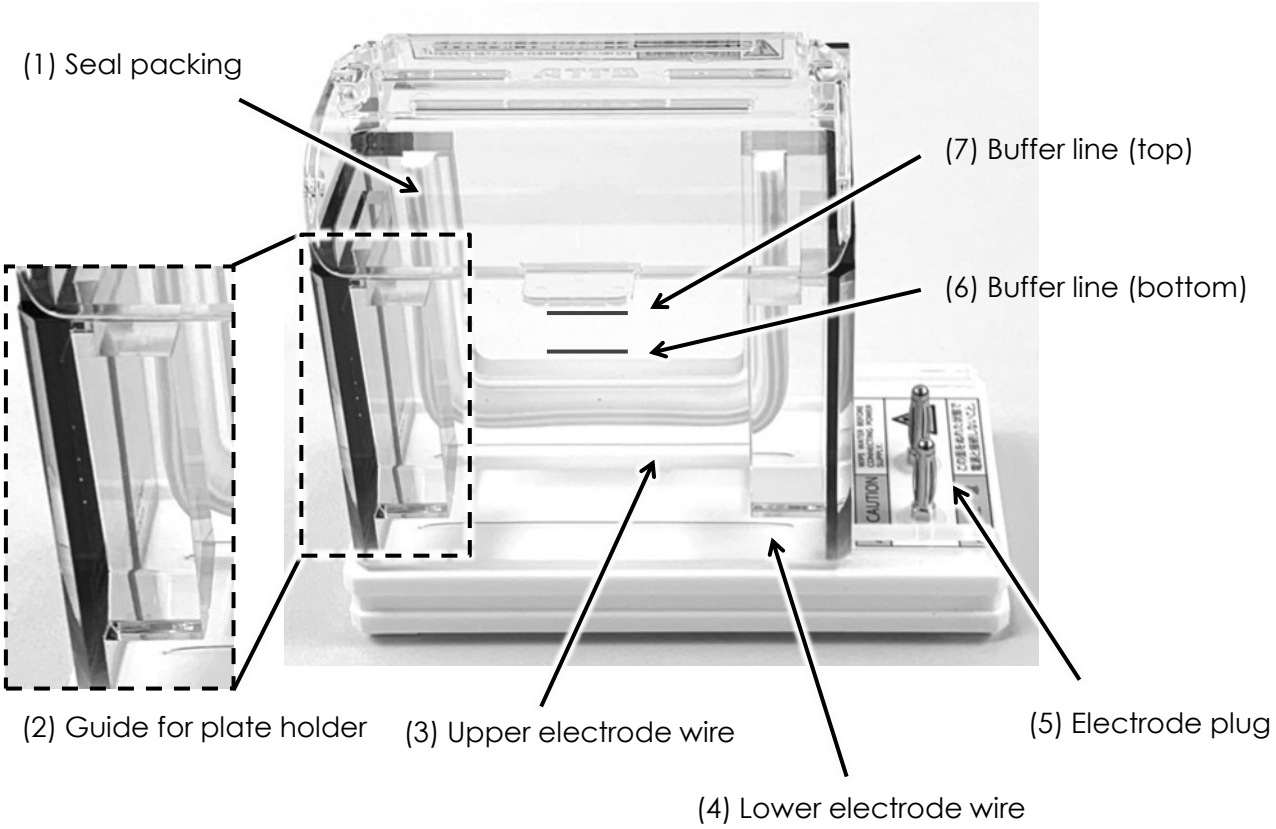
(7) RUN indicator (green LED lamp)

This indicator blinks during running.

(8) UP/DOWN button

The buttons are for setting the output mode and running time.
The output modes are explained on page 48.
The running time ranges from 1 to 90 minutes (if you have selected constant current mode, you can set it to "HOLD" to turn off the timer).

3.4 Electrophoresis chamber



(1) Seal packing

It retains the upper buffer by contacting with the gel plate.

(2) Guide for plate holder

This is guide for setting the plate holder.

(3) Upper electrode wire

This is negative(-) electrode wire.

(4) Lower electrode wire

This is positive(+) electrode wire.

(5) Electrode plug

Connects to the electrode connector of the power supply.

(6) Buffer line (bottom)

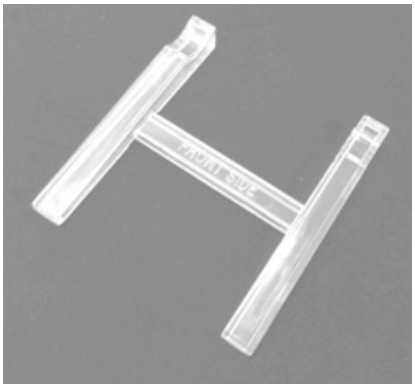
Before setting the gel plate in the electrophoresis chamber, pour the running buffer to the lower chamber.
This line indicates the amount of running buffer needed.

(7) Buffer line (top)

After applying sample to wells, pour the running buffer to the lower chamber.
This line indicates the amount of running buffer needed.

Plate holder

For holding and fixing the gel plate to the electrophoresis chamber.



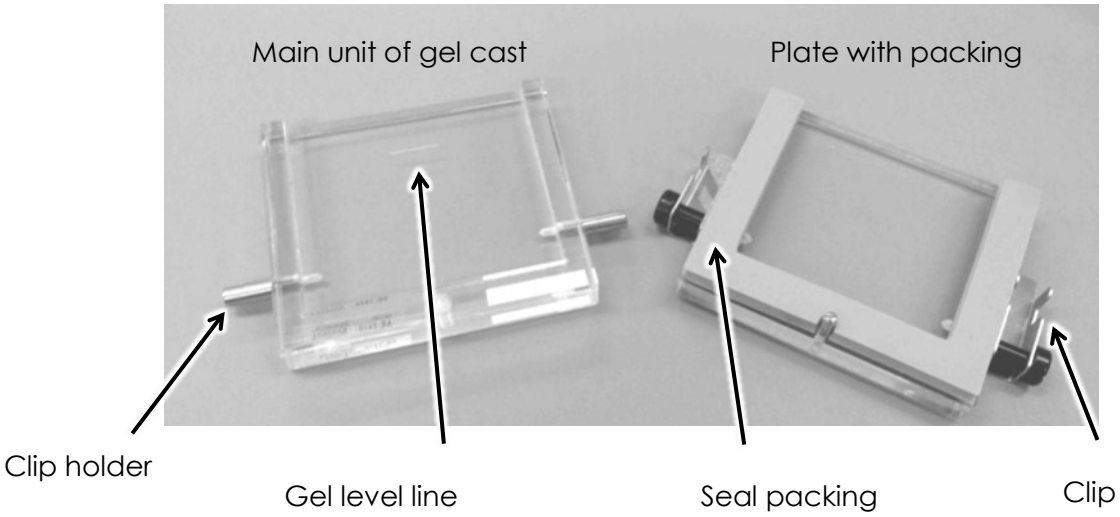
3.5 Gel cast (WSE-1091/1092)

This is an accessory for WSE-1030W or WSE-1040W, and it consists of the following. If you are using a conventional gel cast, please refer to the instruction manual for AE-7310 / WSE-1090.

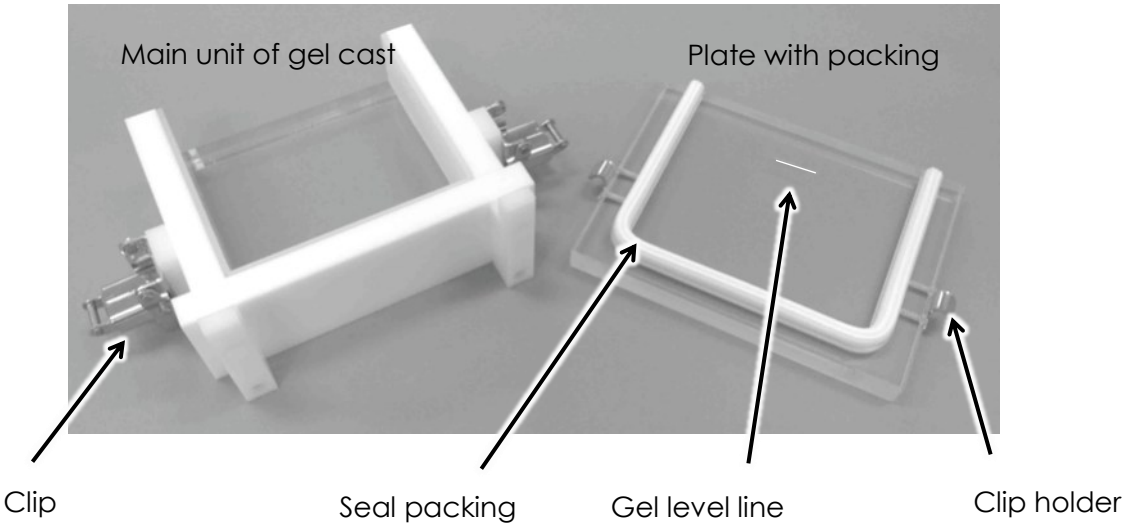
1. Main unit of gel cast

This equipment is indicated to make compact size gel by yourself. WSE-1091 is attached to WSE-1030W to cast 1 gel. WSE-1092 is attached to WSE-1040W to cast 2 gels as standard (If you add 2 sets of plates, 4 gels can be cast by WSE-1092). If you use comb for 2D (Option) with WSE-1091 or WSE-1092, 2D gel for 2D electrophoresis can be cast.

WSE-1091 Compact Gel Cast (Attached to WSE-1030W)



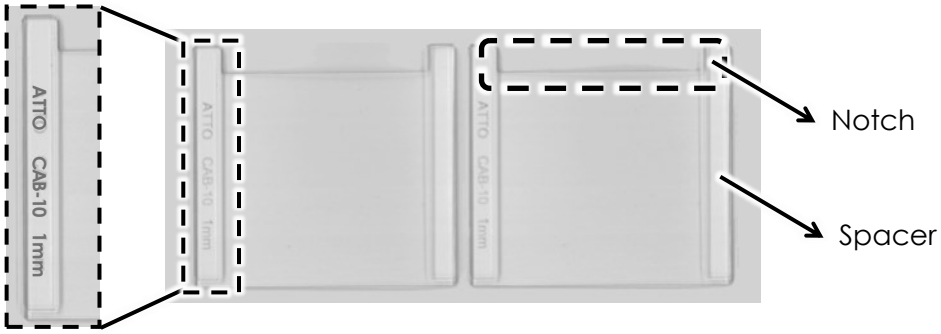
WSE-1092 Multi Compact Gel Cast (Attached to WSE-1040W)



2. CAB-10　Notched plate (glass)

Stack the notched plate and plain plate so the spacer faces to inside, and cast a gel between both plates. The spacer is engraved with "ATTO CAB-10 1mm".
* CAB-075 Notched plate (gel thickness is 0.75 mm) does not have any engravings.

(WSE-1091: 1 piece, WSE-1092: 2 pieces)



3. CB-00　Plain plate (glass)

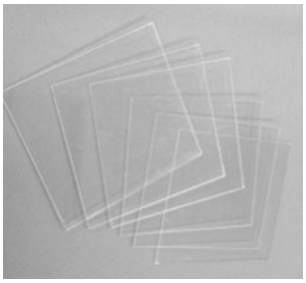
Stack the notched plate and plain plate so that spacer faces to inside, and cast a gel between both plates.

(WSE-1091: 1 piece, WSE-1092: 2 pieces)

4. Divider plate (polycarbonate)

Place the divider plate between main unit and 1 pair of the glass plates, or 1 pair of the glass plates and another pair. The plate prevents from casting excess gel to allow easy takeout.

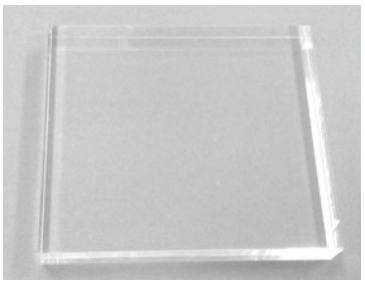
(WSE-1091: None, WSE-1092: 6)



5. Dummy plate (thickness 10 mm, acrylic)

The dummy plate is used to replace unnecessary space when to cast 2 gels. The plate is not used when to cast 4 gels.

(WSE-1091: None, WSE-1092: 1)



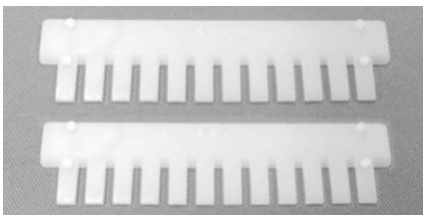
6. CP10-12 Smiling-less compact comb (light blue, polypropylene)

This is 12-well comb to make wells to gel.

* A comb for 15 samples (CP10-15, purple) is sold separately (Please check page 68).

* White (CP075-12) or green (CP075-15) comb cannot be used as they have different thicknesses.

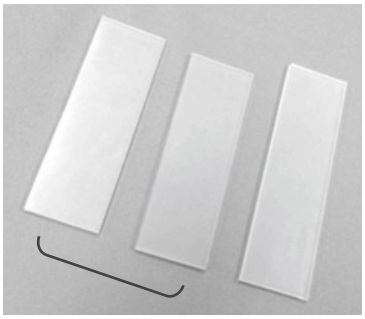
(WSE-1091: 1 piece, WSE-1092: 2 pieces)



light blue

7. Silicone plate (silicon)

The silicon plates are set on the bottom and side of WSE-1092 Multi Compact Gel Cast. There are two types of silicon plates, the width is the same but the length is different. There is one 22 x 80 mm plate and two 22 x 71 mm plates.



For sides
22 x 71 mm

For bottom
22 x 80 mm

4. Preparation

4.1 Operating environment

Please use this system in the following environment.

Location	Inside a room only
Ambient temperature/Relative humidity	4-40°C • 5-70% RH (No dew condensation)

⚠Warning

Do not install the product in combustible gas atmosphere. It is not of explosion-proof structure, so the product may cause explosion or fire. Install it in an environment that does not contact combustible gas.

Do not install the product in corrosive gas environment. This is because it can cause corrosion of conductor inside this product or contact failure of connector, which may lead to malfunction, failure.

Do not install the product in environment with much dust or dirt. Dust or dirt may get attached to the product, which can cause electric shock, fire or failure.

⚠Caution

Do not use the product at a place where there is strong magnetic field or electric field around, or a place where there is much waveform strain of input power supply or noise. Malfunction may be caused.

Do not install the product where it is exposed to direct sunlight, where temperature suddenly changes, or where humidity is high. If dew condensation occurs, do not use this product. This system cannot be used outdoors. It is designed so that safety and performance can be ensured under the environmental conditions; ambient temperature 4°C-40°C, relative humidity 5%-70%(No dew condensation)

4.2 Preparation for peripheral system and consumables

Precast gel

This is compact size precast polyacrylamide gel..

c-PAGEL Neo (5-20%, 7.5%, 10%, 12.5%, 15%)
cp-PAGEL Neo (16.5%)

Shaker

This system is for staining and destaining gels.

WSC-2400 Seesaw Shaker atto

Blotting System

This system is used for Western blotting.

WSE-4025 Horize Blot 2M
WSE-4115 Powered Blot Ace
WSE-4050 Clear Blot P Plus Membrane (65 x 65 mm)
CB-06A Absorbent Paper (Filter Paper) (65 x 65 mm)
WSE-4056 QBlot kit C (Transfer Pack)

4.3 Preparation of reagents

Prepare reagents stated in the below:

If you are using it as the second dimension of 2D electrophoresis, please also refer to the instruction manual for the isoelectric point electrophoresis system "DiscRun Ace (WSE-1510)" and prepare the reagents.

If you are performing Tricine PAGE, please refer to the instruction manual for cp-PAGEL Neo or the Shagger method (H Schägger, Tricine-SDS-PAGE, Nature Protoc. 2006;1(1):16-22.).

Reagents used for protein electrophoresis and detectionn

1. Polyacrylamide gel electrophoresis

Reagent name	CAS No.
Acrylamide (for electrophoresis)*	79-16-1
N,N'-methylenebisacrylamide (for electrophoresis)*	110-26-9
Tris (Tris hydroxymethyl aminomethane)(for bio chemistry)	77-86-1
SDS (Sodium dodecyl sulfate)(for bio chemistry)**	151-21-3
Hydrochloric acid (special grade)	7647-01-0
Ammonium persulfate*	7727-54-0
TEMED(N,N,N',N'-tetramethyl ethylene diamine) (for electrophoresis)*	110-18-9
Glycine (special grade)	56-40-6
Glycerin (special grade)	56-81-5
DTT (Dithiothreitol)**	3483-12-3
BPB (Bromophenol blue)	115-39-9

* Not necessary when c-PAGEL Neo is used

** Not necessary for Native PAGE

2. CBB (Coomassie Brilliant Blue) staining

Reagent name	CAS No.
Acetic acid (special grade)	64-19-7
Methanol (special grade)	67-56-1
CBB (Coomassie brilliant blue) R-250 or G-250 (for electrophoresis)	R-250：6104-59-2
	G-250：6104-58-1

Reagents used for DNA electrophoresis and detection

1. Polyacrylamide gel electrophoresis

Reagent name	CAS No.
Acrylamide (for electrophoresis)*	79-16-1
N,N'-methylenebisacrylamide (for electrophoresis)*	110-26-9
Tris (Tris hydroxymethyl aminomethane)(for bio chemistry)	77-86-1
Ammonium persulfate*	7727-54-0
TEMED(N,N,N',N'-tetramethyl ethylene diamine) (for electrophoresis)*	110-18-9
Boric acid (special grade)	10043-35-3
EDTA • 2NA(Ethylenediaminetetraacetic acid/Disodium)	6381-92-6
BPB (Bromophenol blue)	115-39-9
Sucrose (special grade)	57-50-1

* Not necessary when c-PAGEL Neo is used

2. Ethidium bromide staining

Reagent name	CAS No.
Ethidium bromide	1239-45-8

Our company provides pre-prepared reagents (stated in the below).
Please use them in accordance with application.
For details of products, please contact our company (Please refer to the back cover).

Applications		Code No.	Model	Product name
Gel buffer for PAGE	Electrophoresis gel buffer for SDS-PAGE	2332328	WSE-7150	EzGel Sep
	Electrophoresis stacking gel buffer for SDS-PAGE	2332329	WSE-7155	EzGel Stack
	Electrophoresis separating gel buffer for SDS-PAGE	2332327	WSE-7310	EzGel Ace
Protien extraction	RIPA lysis buffer for protein extraction	2332336	WSE-7420	EzRIPA Lysis kit
	Subcellular fraction/extraction kit (for organelle)	2332337	WSE-7421	EzSubcell Extract
	Subcellular fraction/extraction kit (for nucleus/mitochondria)	2332338	WSE-7422	EzSubcell Fraction
	Lysis Buffer for E. coli and Yeast protein extraction	2332339	WSE-7423	EzBactYeastCrusher
	Lysis Buffer for native protein extraction	2332319	WSE-7424	EzProteoLysis Native
Wash buffer	Phosphate buffered saline	2332380	WSE-7430	EzPBS(-)
Sample preparation	Sample preparing solution for SDS-PAGE	2332330	AE-1430	EzApply
	Sample preparation/fluorescent labeling kit	2332333	WSE-7010	EzLabel FluoroNeo
	Loading dye for DNA	2332394	WSE-7040	EzApply DNA
	Sample preparing solution for Native PAGE	2332317	WSE-7011	EzApply Native

Applications		Code No.	Model	Product name
Molecular Weight Marker	Protein molecular weight marker for SDS-PAGE	2332341	WSE-7015	EzStandard II
	Protein molecular weight marker for Native PAGE	2332344	WSE-7016	EzStandard Native
	Prestained protein ladder marker for SDS-PAGE/Western blotting	2332346	WSE-7020	EzProtein Ladder
	Prestained protein ladder marker for Western blotting	2332355	WSE-7023	EzProtein Ladder WB
	Low protein molecular weight marker for SDS-PAGE	2332348	WSE-7025	EzStandard LMW
	High protein molecular weight marker for SDS-PAGE	2332343	WSE-7035	EzStandard HMW
Electrode Buffer	Electrode buffer for SDS-PAGE	2332310	AE-1410	EzRun
	Electrode buffer for Tricine PAGE	2332325	AE-1415	EzRunT
	Tris-Boric acid electrode buffer	2332392	WSE-7051	EzRunTBE
	Tris-Glycine electrode buffer for Native PAGE	2332323	WSE-7055	EzRunTG
	MOPS electrode buffer for SDS-PAGE	2332326	WSE-7065	EzRunMOPS
	Electrode buffer for High-Resolution -Clear-Native PAGE	2332313	WSE-7056	EzRun ClearNative
	Electrode buffer for Blue-Native PAGE	2332315	WSE-7057	EzRun BlueNative
Gel Staining Reagent	CBB staining reagent for protein detection (acetic acid and alcohol free)	2332370	AE-1340	EzStainAQua
	Reverse staining kit for protein detection	2332350	AE-1310	EzStainReverse
	Silver staining kit for protein and DNA detection	2332360	AE-1360	EzStainSilver
	Fluorescent dye for DNA detection	2332395	WSE-7130	EzFluoroStainDNA

Various solutions for protein electrophoresis

Prepare solutions stated in the below:

- In general, Acrylamide/Bis mixed solution whose crosslinking rate is 19:1, 29:1, 29.2:0.8 or 37.5:1 is used depending on the area of fractionation molecular weight range. The area of fractionation molecular weight range spreads to low molecular side if the crosslinking rate is high. On the other hand, the area spreads to high molecular side if the crosslinking is low. Prepare the solution depending on intended fraction range. An example of 29.2:0.8 solution is described in the below.
- When using c-PAGEL Neo, 30% acrylamide/bis solution, stacking and separating gel buffer, and 10% APS solution are not necessary.
- If you are performing Tricine PAGE, please refer to the method based on the Shagger method (H Schägger, Tricine-SDS-PAGE, Nature Protoc. 2006;1(1):16-22.).When using cp-PAGEL Neo (the precast gel for Tricine PAGE), please follow the protocol in the instruction manual of cp-PAGEL Neo.

1. Various solutions required for handmade gel

⚠Warning

Monomer of acrylamide used in the gel solution is neurotoxic.
When handling it, be sure to protect your body with gloves and a lab coat.

Solution	Reagent • Capacity ( ) indicates final concentration
30% Acrylamide/Bis solution (Crosslinking rate 29.2 : 0.8) * Storable at 4°C for 1 month * Not necessary when c-PAGEL Neo is used	Acrylamide 29.2 g N,N'-methylene bisacrylamide 0.8 g] (30%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 100 mL total.
Stacking gel buffer(4x) * Storable at 4°C for 1 month * Not necessary when c-PAGEL Neo is used	Tris 18.2 g(1.5M) SDS * 0.4 g(0.4%) Dissolve the above reagents with distilled water, adjust it to pH8.8 with hydrochloric acid and dilute in measuring cylinder to 100 mL total.
Separating gel buffer(4x) * Storable at 4°C for 1 month * Not necessary when c-PAGEL Neo is used	Tris 6.1 g(0.5 M) SDS * 0.4 g(0.4%) Dissolve the above reagents with distilled water, adjust it to pH6.8 with hydrochloric acid and dilute in measuring cylinder to 100 mL total.
10% APS solution * Storable at 4°C for 1 week * Not necessary when c-PAGEL Neo is used	Ammonium persulfate 0.1 g (10%) Dissolve it with 1.0 mL distilled water. The activity of the 10% APS solution decreases over time, so prepare it immediately before use.

* If you are performing Native PAGE, remove SDS from all solutions (reagents marked with * in the table above).

2. Various solutions required for electrophoresis and gel staining

Solution	Reagent • Capacity ( ) indicates final concentration
SDS-PAGE electrode buffer(1x) * Laemmli method * Storable at room temperature for 2 months * Not necessary when EzRun(AE-1410)is used	Tris 1.5 g(25 mM) Glycine 7.2 g(192 mM) SDS * 0.5 g(0.1%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 500 mL total.
Sample buffer(5x) * Storable at 4°C for 2 weeks * Not necessary when EzApply(AE-1430)is used	1M Tris-Hydrochloric acid buffer pH6.8 2.5 mL(250 mM) SDS * 0.8 g(8%) DTT * 0.15 g(100mM) Glycerin 4.0 mL(40%) 1% BPB solution 1 mL(0.1%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 10 mL total.
CBB staining solution * Storable at room temperature for 1 month * Not necessary when EzStainAQua(AE-1340)is used	Methanol 300 mL(30%) Acetic acid 100 mL(10%) CBB R-250 or G-250 1.0 g(0.1%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 1L total.
Destaining solution * Storable at room temperature for 1 month * Not necessary when EzStainAQua(AE-1340)is used	Methanol 300 mL(30%) Acetic acid 100 mL(10%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 1L total.

* If you are performing Native PAGE, remove SDS and DTT from all solutions (reagents marked with * in the table above).

Various solutions for DNA electrophoresis

Prepare solutions stated in the below:

When using c-PAGEL Neo, 30% acrylamide/bis solution, TBE gel buffer, and 10% APS solution are not necessary.

In addition, when using c-PAGEL Neo, use EzRun TG (WSE-7055) as the electrode buffer instead of TBE electrode buffer.

⚠Warning

For electrophoresis, deleterious, dangerous or carcinogenic material may be used for preparation of buffer, staining or destaining operation. Do not allow it direct contact to human body. If you do, fatal accident or body injury, like burn, may be caused. When using chemicals, read the manual attached to reagent and protect your body with gloves and a mask.

Solution	Reagent • Capacity ( ) indicates final concentration
30% Acrylamide/Bis solution (Crosslinking rate 29.2 : 0.8) * Storable at 4°C for 1 month * Not necessary when c-PAGEL Neo is used	Acrylamide 29.2 g N,N'-methylene bisacrylamide 0.8 g (30%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 100 mL total.
TBE gel buffer(5x Stock solution) * Storable at 4°C for 1 month * Not necessary when c-PAGEL Neo is used	Tris 5.4 g(445 mM) Boric acid 2.8 g(445 mM) EDTA • 2NA 0.37 g(10 mM) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 100mL total. Otherwise, dilute EzRun TBE (WSE-7051) 2 times.
10% APS solution * Storable at 4°C for 1 week * Not necessary when c-PAGEL Neo is used	Ammonium persulfate 0.1 g (10%) Dissolve it with 1.0 mL distilled water. The activity of the 10% APS solution decreases over time, so prepare it immediately before use.
TBE electrode buffer(1x) * Storable at room temperature for 2 months * Not necessary when c-PAGEL Neo is used	Tris 10.8 g(89 mM) Boric acid 5.5 g(89 mM) EDTA • 2NA 0.74 g(2 mM) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 1L total. Otherwise, dilute EzRun TBE (WSE-7051) 10 times
Loading dye * Storable at 4°C for 2 months * Not necessary when EzApply DNA(WSE-7040)is used	1% BPB solution 4 mL(0.4%) Sucrose 6.0 g(60%) Dissolve the above reagents with distilled water and dilute in measuring cylinder to 10 mL total.
Ethidium bromide solution (Stock solution) * Storable at 4°C for 2 months * Not necessary when EzFluoroStain DNA (WSE-7130)is used	Ethidium bromide 50 mg(0.05%) Dissolve the above reagent with 100 mL of 1xTBE buffer.
Ethidium bromide staining solution * Storable at 4°C for 2 months * Not necessary when EzFluoroStain DNA (WSE-7130)is used	Dilute the ethidium bromide solution 100 times with 1xTBE buffer.

Below is an example of the most common sample preparation method. There are various methods for sample preparation depending on type or purpose of separation. Try to find the best ways for your purpose by referring to literatures and other documents.

Protein Sample Preparation Methods

(1) Dissolving the sample

Prepare the sample using sample buffer (described on page 26).
If dry sample is used, dissolve it with sample buffer and make total amount be 1-2mg/mL.
In the case of sample with low water content such as tissue, add sample buffer to it for homogenizing.

(2) Heating process

Seal the lid of tube tightly and heat it at 95°C for 5 -10 minutes.

(3) Centrifugal separation

Centrifuge at 15,000 rpm for 10 minutes.
Use the supernatant removed fat layer from the surface as the sample.

If sample is used to electrophorese without removing insoluble matter or fat, vertical stripes may appear in the electrophoresis pattern.

When using AE-1430 EzApply

Liquid sample： mix it with EzApply in the ratio of 1:1.
Solid sample：add proper quantity of EzApply diluted 2 times to it for homogenizing.
Then, prepare the sample following steps (2) and (3) above.

When using WSE-7011 EzApply Native

Proteins are solubilized and extracted under conditions that do not denature proteins (solutions that do not contain detergents such as SDS and reducing agents such as DTT) such as with EzProteoLysis Native (WSE-7424). This is the sample solution.
Add 1/10 the amount of EzApply Native to it and mix well (e.g., add 1µL of EzApply Native to 9µL of sample solution).
No heating is required, and after mixing, the solution can be used as is for electrophoresis.
Prepared samples cannot be stored, so prepare only the amount required for the experiment immediately before use.

DNA sample preparation methods

Add 1/10 the amount of loading dye (described on page 28) to the DNA sample solution and mix well.
After mixing, the solution can be used as is for electrophoresis.

Keep salt concentrations of sample as consistent as possible. If salt concentrations are not same among samples, electrophoresis pattern is disturbed. High salt concentration sample (e.g. H buffer of restriction enzyme.), in particular, affects the band pattern of neighboring lane or electrophoresis speed. In the case of high salt concentration, carry out the ethanol precipitation to dissolve it in buffer so that the salt concentration becomes same as that of other samples

4.4 Assembly of the Gel Cast

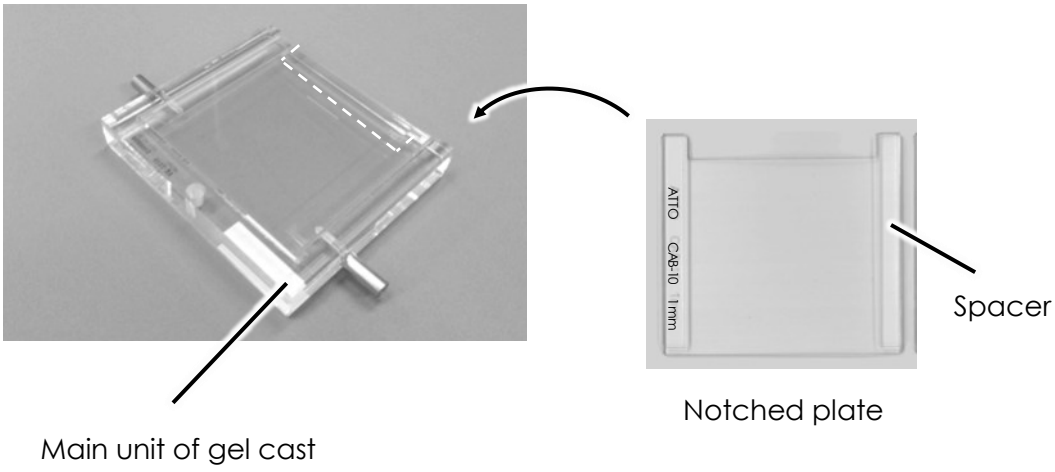
If the precast gel is used, the following steps are not necessary.
Please also refer to the instruction manual for the gel cast.

WSE-1091/1092 Instruction manual

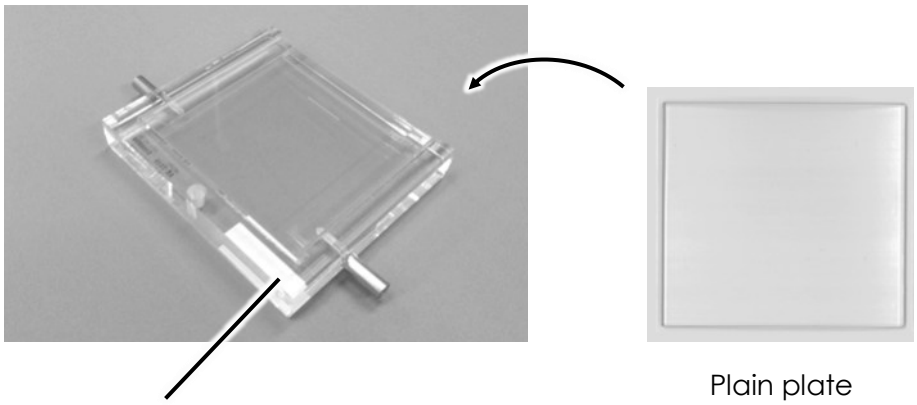
If you operate without wearing clean gloves, the equipment, solution etc. may be contaminated and it may cause incorrect test result.
Always wear clean lab gloves on both hands.
If the glass plate is dirty, air bubbles are generated easily during when applying gel solution. Wash and dry it, and then wipe off any dirt on the surface with alcohol.
Do not fix gel cast by clips except when making a gel. If you do, an elasticity of the seal packing is lost and it may cause leakage when making a gel.

WSE-1091 Compact Gel Cast

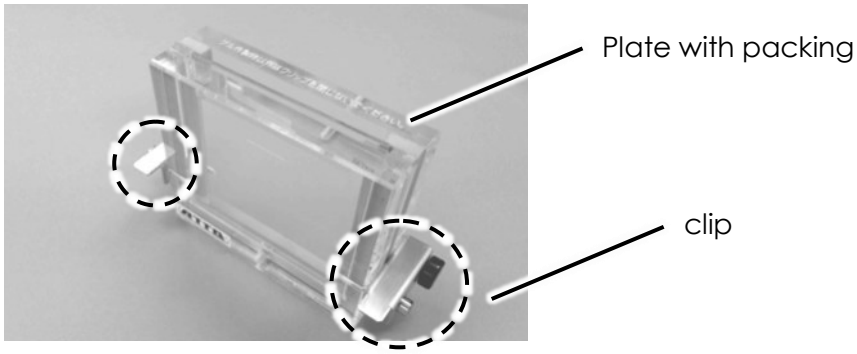
(1) Set one notched plate (a plate with a notch) into the main unit with the spacers facing up.



(2) Set one plain plate on top of step (1).
* Confirm the left and right sides of the notched and plain plates do not get out of position. If plates are not set correctly, start over from step (1).



(3) Set the plates with packing on top of main unit and fix the glass plates by clips and clip holders.

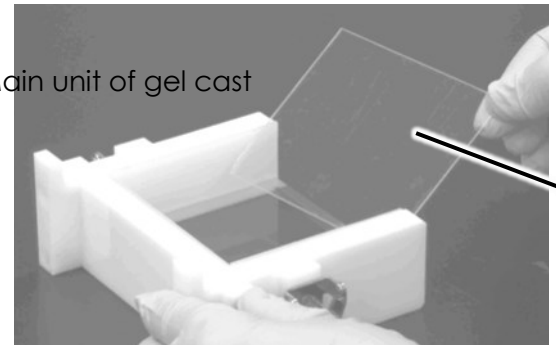


WSE-1092 Multi Compact Gel Cast

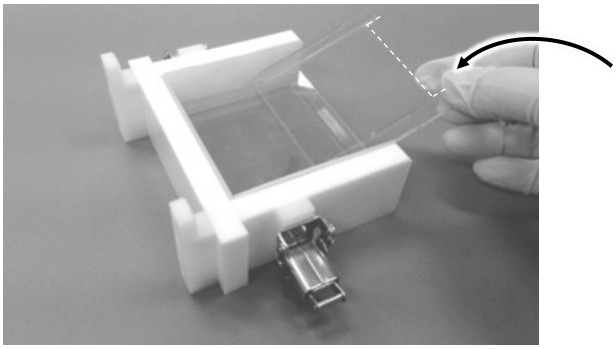
WSE-1092 is to cast 2 gels as standard. If you add 2 sets of plates, 4 gels can be cast by WSE-1092.

(1) Set the silicone plates to the main unit.
* Set one 22 x 80 mm silicone plate on the bottom and two 22 x 71 mm silicone plates on the each side.

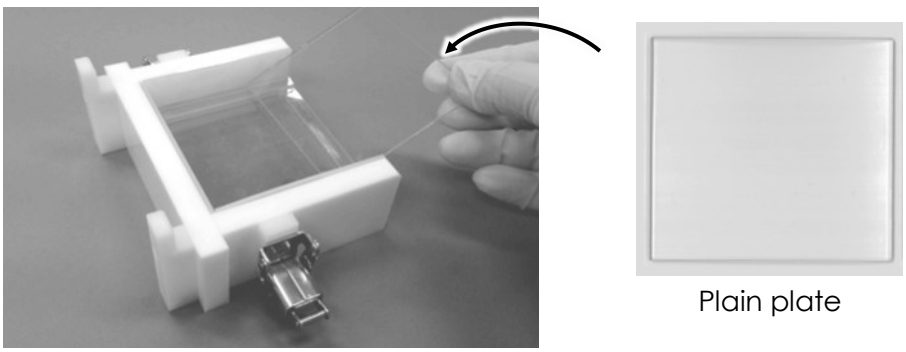
(2) Set the first divider plate inside the main unit.



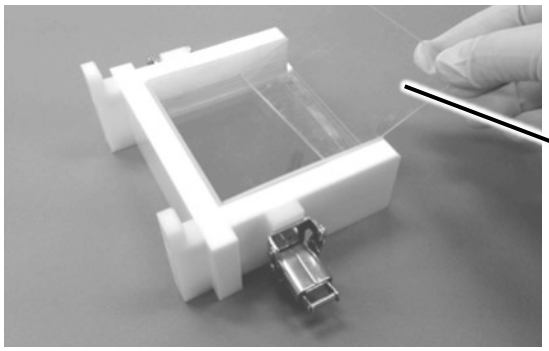
(3) Set one notched plate (a plate with a notch) into the main unit of step (2) with the spacers side facing up.
* Do not use the notched plates (CAB-075) that does not have any engravings.



(4) Set one plain plate on top of step (3).



(5) Set the second divider plate on top of step (4).



(6) Set one notched plate and one plain plate on top of step (5) (same as steps (3) and (4)).

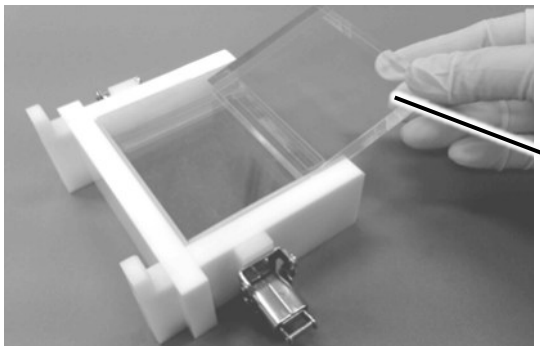
(7) Set the third divider plate on top of step (6).

If you are making two gels, please refer to (A) below.
If you are making four gels, please refer to (B) below.

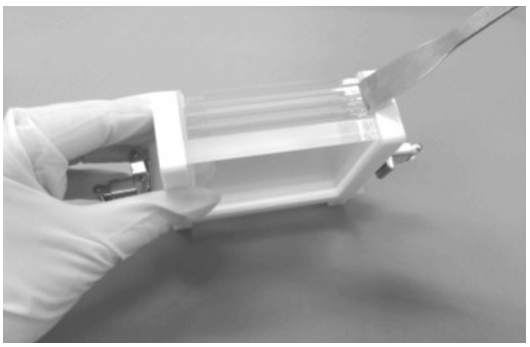
(A) When making two gels

(8) Set the fourth divider plate on top of step (7).

(9) Set the dummy plate on top of step (8).



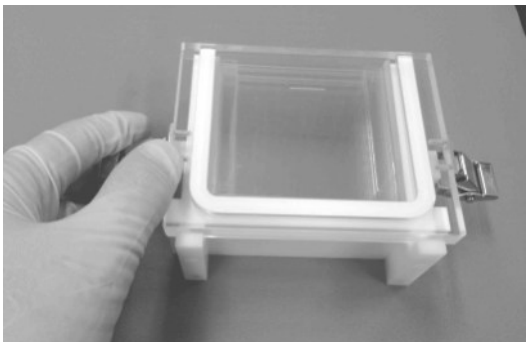
(10) Confirm all plates are touching to the bottom of the main unit, and that there is no misalignment on the left and right sides.

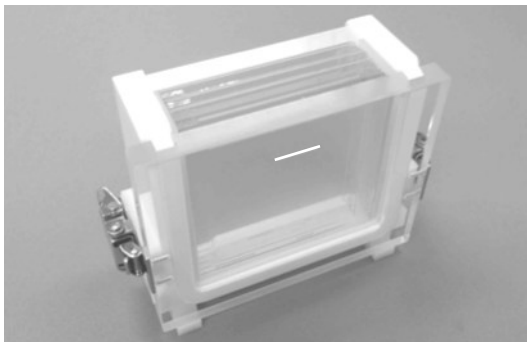


If it gets out of position, reset plates or use a tool whose tip is flat like a spatula for setting.

(11) Set the plate with packing.

(12) Fix plates by clips and clip holders uniformly.





(B) When making four gels

(8) Set one notched plate and one plain plate on top of step (7) (same as steps (3) and (4)).

(9) Set the fourth divider plate on top of step (8).

(10) Set one notched plate and one plain plate on top of step (9) (same as steps (3) and (4)).

(11) Confirm all plates are touching to the bottom of the main unit.

(12) Finally, set the fifth divider plate and then the plate with packing.

(13) Fix plates by clips and clip holders uniformly.

Stand the gel cast upright and confirm the notched and plain plates cohere well. If there is a gap, excess gel may form and affect electrophoresis. Reconfirm the notched, plain and divider plates are set correctly. If a gap is not eliminated, set a divider plate additionally.

4.5 Gel casting

If the precast gel is used, the following steps are not necessary.
The gel is cast with WSE-1091 or WSE-1092, the setup of which is described in Section 4.4 above.
This chapter explains how to cast gel with WSE-1092. Even if you use WSE-1091, the process is same.

⚠Warning

Monomer of acrylamide used in the gel solution is neurotoxic.
When handling it, be sure to protect your body with gloves and a lab coat.

Gel concentration and fractionation molecular weight range

Gel concentration	fractionation molecular weight range	
	Protein	Nucleic acid
5%	80 - 400 KDa	80 - 500bp
7.5%	40 - 200 KDa	70 - 400bp
10%	20 - 130 KDa	50 - 300bp
12.5%	14 -80 KDa	40 - 200bp
15%	10 - 60 KDa	25 - 150bp

How to cast gels for protein

Please select a gel concentration depending on the molecular weight of sample (Refer to Page 36).

If you are performing Native PAGE, the charge state of the sample considerably affects the mobility, so it is not possible to select a gel concentration based on the molecular weight of sample only. Select it based on preliminary experiment. Also, remove SDS and DTT from all solutions.

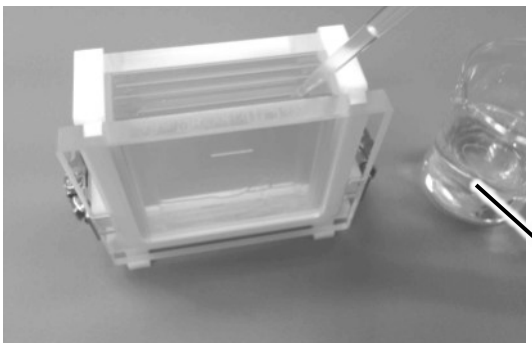
	Separating gel						**Stacking gel**
	5%	**7.5%**	**10%**	**12.5%**	**15%**	**20%**	**4.5%**
Distilled water	11.6	10.0	8.4	6.6	5.0	1.6	9.6
30% Acrylamide/Bis solution	3.4	5.0	6.6	8.4	10.0	13.4	2.4
Separating gel buffer (4x)	5.0	5.0	5.0	5.0	5.0	5.0	-
Stacking gel buffer(4x)	-	-	-	-	-	-	4
10% APS* solution	0.15	0.15	0.1	0.1	0.1	0.1	0.1
TEMED	0.01	0.01	0.01	0.01	0.01	0.01	0.005

Volume required for two compact gels (unit: mL)
*Ammonium persulfate

(1) Gently mix distilled water, 30% acrylamide/bis solution, and separating gel buffer (4x) by referring to the composition table above.
* Please do not mix vigorously as the separating gel buffer (4x) contains SDS.

(2) Just before the polymerization reaction, add 10% APS solution and TEMED and mix gently.
*Polymerization starts after TEMED is added. Mix it evenly, and then pour the solution quickly.

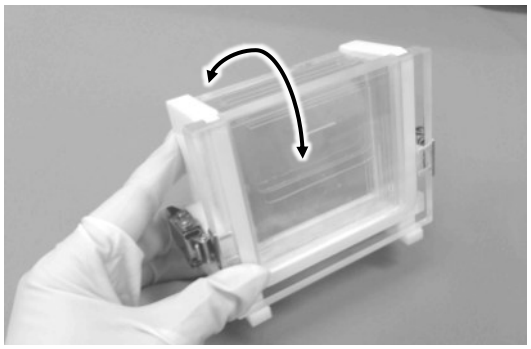
(3) Gently pour the separating gel solution into the gel cast from the notched part.



If poured vigorously, uneven polymerization may occur.
Do not put air bubbles in.

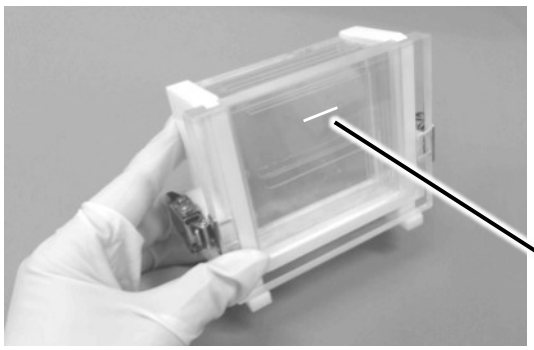
Separating gel solution

(4) When about 1/3 of the separating gel solution is poured, tilt the gel cast to back and forth or right and left for spreading the solution on the whole.



If there are air bubbles at the bottom edge of the plates, tilt the main unit to remove them.

(5) Pour the separating gel solution up to the gel level line on the plate with packing.
When casting gel for 2D electrophoresis, pour the separating gel solution up to the level that is 3mm lower from the notched edge of the notched plate.

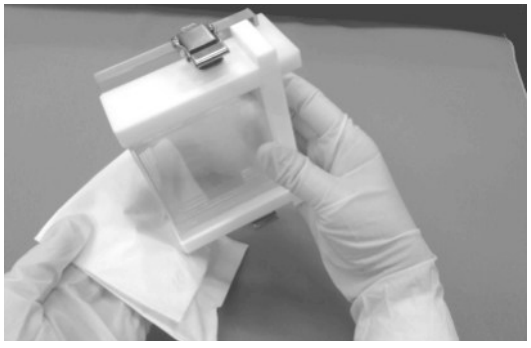


Tilt main unit and so on for adjusting each line to be same level.

(6) Slowly put distilled water on the each separating gel solution up to the height which is higher than 2-3mm from the surface of gel solution and keep it still for more than 30min to let polymerization happen.
<u>* If poured amount of distilled water is different, the distance of the separating gel will not be uniform.</u>

Polymerization is difficult to occur at low temperatures (below 20°C).
The polymerization speed changes depending on temperature.
To keep reproducibility of the electrophoresis pattern, always polymerize gels at a constant temperature.

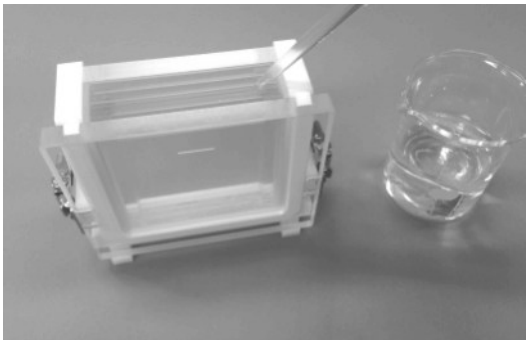
(7) After polymerization is completed, dispose the distilled water.



hold the main unit gently for preventing plates from slipping out and tilt it to dispose distilled water.

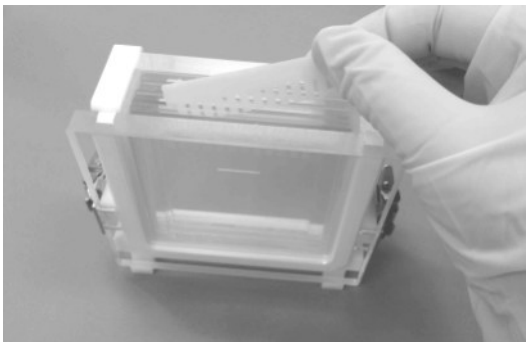
(8) Prepare the stacking gel solution by referring to the composition table on page 37.

(9) Pour the stacking gel solution up to the top of the plates.



When making a gel using WSE-1091, pour the stacking gel solution up to same height of the notched part.

(10) Firmly insert the sample comb until the stoppers touch the notch of plate. When using a 2D flat comb, put the comb on the notch of plate.



Be careful not to attach air bubbles to the teeth of comb. Otherwise, the well will not be formed properly.

Smiling-less compact comb

Color :12 wells → light blue, 15 wells → purple

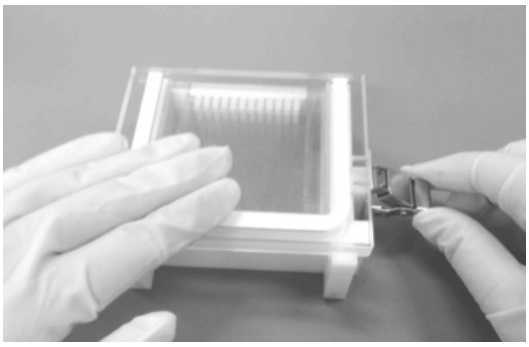
*White (CP075-12) or green (CP075-15) combs cannot be used as they have different thicknesses.

Compact flat comb for 2-DE

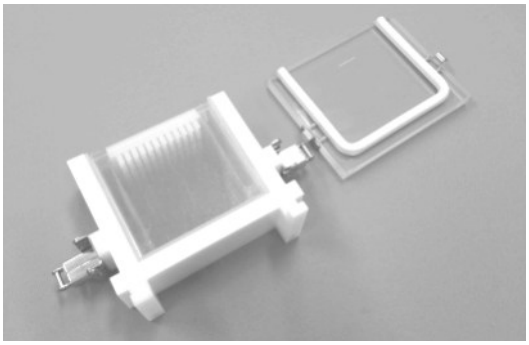
There is a notch on the top.

(11) Leave in the state of step (10) for at least 30 minutes to polymerize.

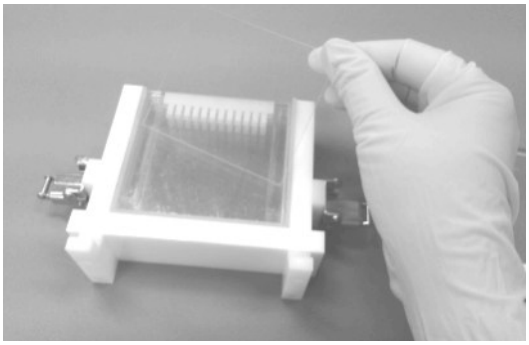
(12) After polymerization is completed, place the main unit down and unlock the left and right clips.



(13) Remove the plate with packing.



(14) Remove the glass plates and divider plates, and take gels out from the main unit one by one.



Immediately wash off any acrylamide solution on the plates which is non-polymerized with distilled water.
Remove any excess gel around the comb using a spatula or similar.
If the gel is not used for electrophoresis soon, wrap it in plastic wrap or similar to prevent it from drying out.

How to cast gels for DNA

Please select a gel concentration depending on the molecular weight of sample (Refer to Page 36).
A stacking gel is not necessary when performing electrophoresis for DNA.

	5%	6%	7.5%	8%	10%	12.5%	15%
Distilled water	12.66	12.0	10.1	10.66	9.34	7.66	6.0
30% Acrylamide/Bis solution	3.34	4.0	5.0	5.34	6.66	8.34	10.0
TBE gel buffer (5x)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10% APS* solution	0.15	0.15	0.15	0.15	0.15	0.15	0.15
TEMED	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

Volume required for two compact gels (unit: mL)
*Ammonium persulfate

(1) Gently mix distilled water, 30% acrylamide/bis solution, and TBE gel buffer (5x) by referring to the composition table above.

(2) Just before the polymerization reaction, add 10% APS solution and TEMED and mix gently.
* Polymerization starts after TEMED is added. Mix it evenly, and then pour the solution quickly.
* If the gel does not polymerize easily, increase the amount of 10% APS solution and TEMED by 10% each.

(3) Gently pour the gel solution into the gel cast from the notched part.
* If poured vigorously, uneven polymerization may occur. Do not put air bubbles in.

(4) Pour the gel solution up to the top of the plates.
* When making a gel using WSE-1091, pour the gel solution up to same height of the notched part.

(5) Firmly insert the sample comb until the stoppers touch the notched of plate.

(6) Wrap the gel cast in plastic wrap or similar to block out air.

Be careful not to attach air bubbles to the teeth of comb.
Otherwise, the well will not be formed properly.

(7) Leave in the state of step (6) for at least 30 minutes to polymerize.

(8) After polymerization is completed, place the main unit down and unlock the left and right clips

(9) Remove the plate with packing.

(10) Remove the glass plates and divider plates, and take gels out from the main unit one by one.

5. Operation

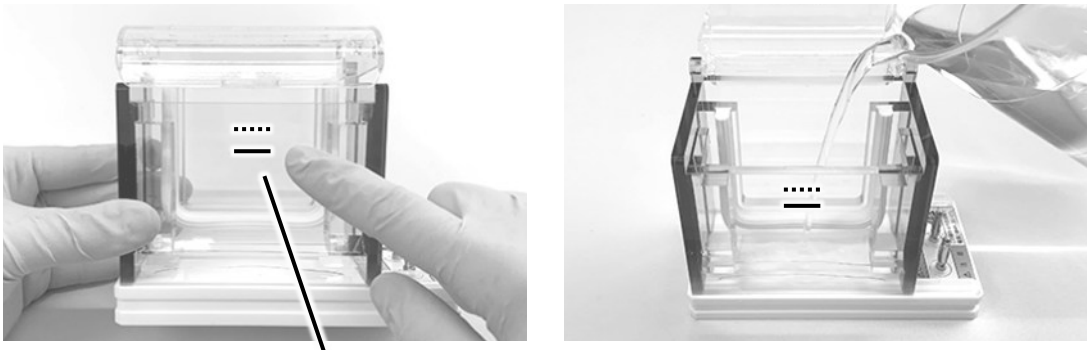
Before use, make sure that the power supply is not connected to the electrophoresis chamber.
If the DC plug of the AC adapter is connected to the power supply, unplug it from the power supply.

⚠Warning Before pull out DC plug, be sure that AC adaptor is disconnected.
Accident like electric shock and injury may be caused.

5.1 Setting the electrophoresis chamber, gel, and power supply

(1) Open the safety cover.

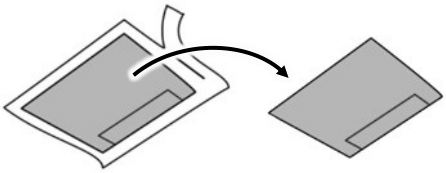
(2) Pour the running buffer up to the buffer line (bottom) into the lower chamber. The amount of buffer is almost 200 mL.
<u>* When running one gel with the WSE-1040, pour the running buffer to either the left or right side.</u>



(3) Prepare a gel.

<u>Precast gel</u>

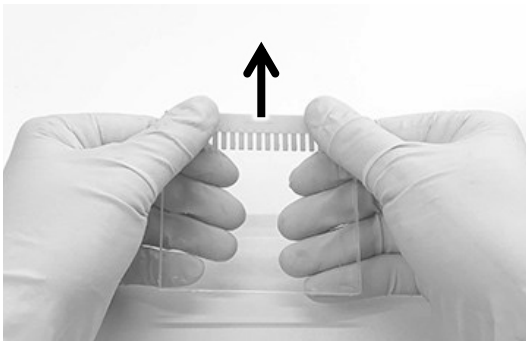
Cut open the packaging and take out the gel plate. Please note that the gel may peel off from the glass plate if the gel is forcefully pulled out .

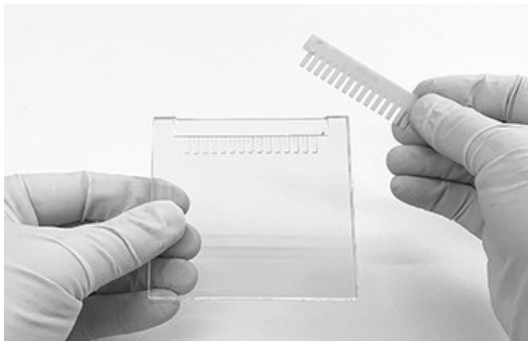


<u>Handmade gel</u>

When using handmade gel, take gels out from the gel cast one by one.

(4) Slowly pull the comb up in the direction of the arrow shown below.
* If it is pulled up too quickly, the wells may be damaged.

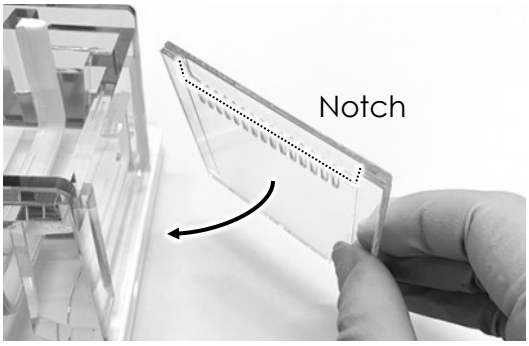


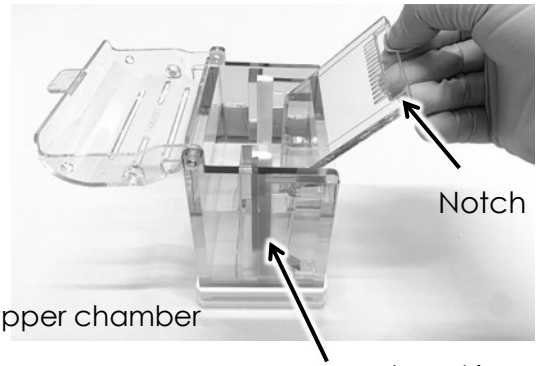


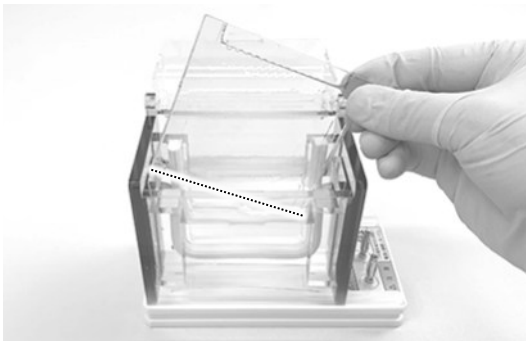
(5) Wash the wells with a small amount of distilled water or the running buffer to remove unpolymerized acrylamide.

If there is bits of gel or salt on the surface of the grass plates, wipe it off.
If the contact area with the seal packing of the upper chamber is dirty, it may cause the running buffer to leak.

(6) Set the gel plate so that the notched part of the plate faces to the upper chamber (seal packing side).

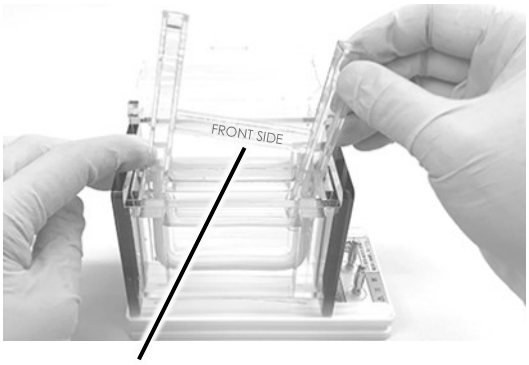






Incline it diagonally to set for preventing air bubbles from entering to the bottom of gel.

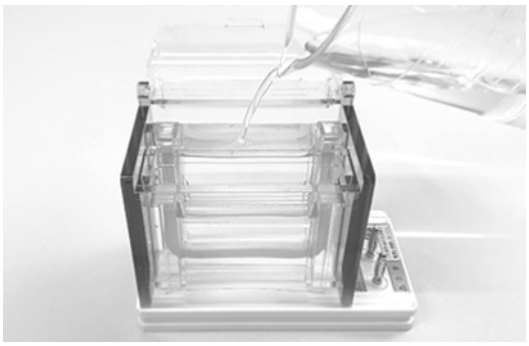
(7) Set the plate holder so that the word "FRONT SIDE" is facing forward, and fix the gel.
<u>* If you wet the plate holder with distilled water beforehand, it will be easier to set it in place.</u>



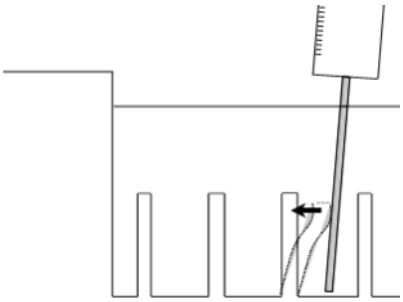
FRONT SIDE

Set the plate holder with equal force to right and left so that the tips of it reach to the bottom of chamber. If the plate holder is set unevenly, the running buffer may be caused to leak.

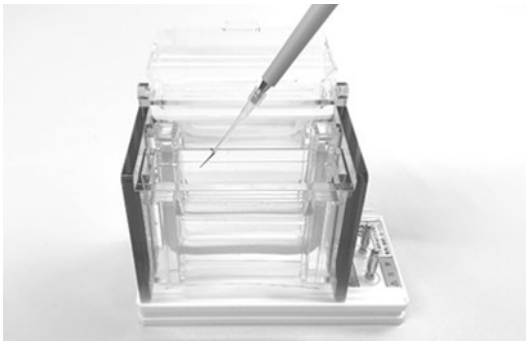
(8) Pour the running buffer into the upper chamber.
Pour it up to height lower than 2 to 3mm from the top of the gel plates.
The amount of buffer is almost 25 to 30 mL.
Make sure the wells are completely submerged in the running buffer.



(9) Apply the processed sample solution to the wells using a micropipette (with a narrow tip which can be inserted between the glass plates).

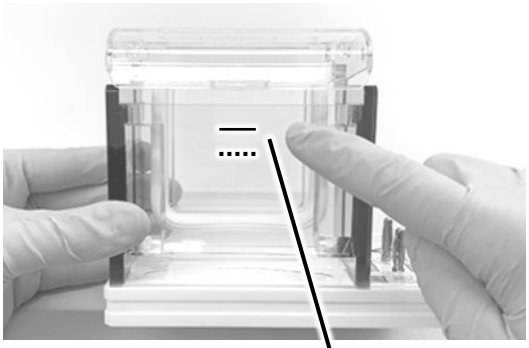


If there are air bubbles in the well, remove them by pipetting, etc. If the well is not standing upright, push the side of the gel with the needle of syringe and set it up vertically.

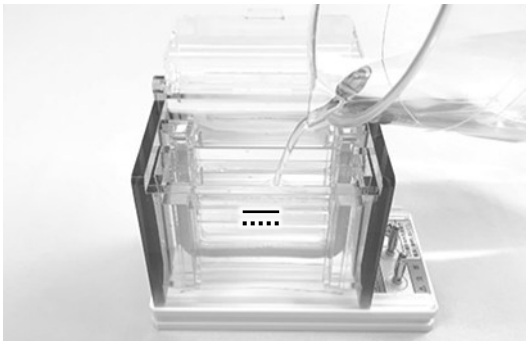


To get a clean pattern, do not drop a sample solution from the upper part of the well, inject the sample solution slowly along the gel that forms the well,

(10) Pour the running buffer up to the buffer line (top) into the lower chamber. The amount of buffer is almost 15 to 20 mL.

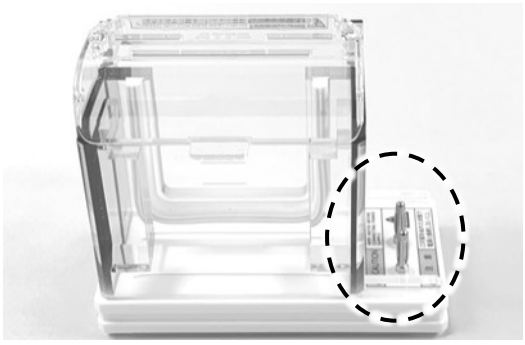


Buffer Line (top)



(11) Close the safety cover.

(12) Make sure the connection of the power supply is not wet.

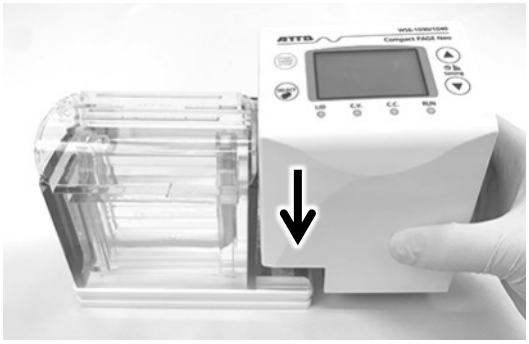


⚠Warning

Do not connect the power supply in a wet state.
It may cause electric shock.

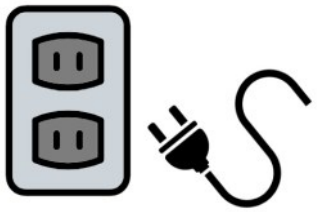
(13) Make sure the power switch on the side of the power supply is turned OFF.

(14) Set the power supply to the right of the electrophoresis chamber. Insert the electrode connector of the power supply to the electrode plug of the electrophoresis chamber firmly.



(15) Insert the DC plug of the AC adapter to the power supply jack on the side of the power supply.

(16) Connect the plug of the AC adapter to an outlet.

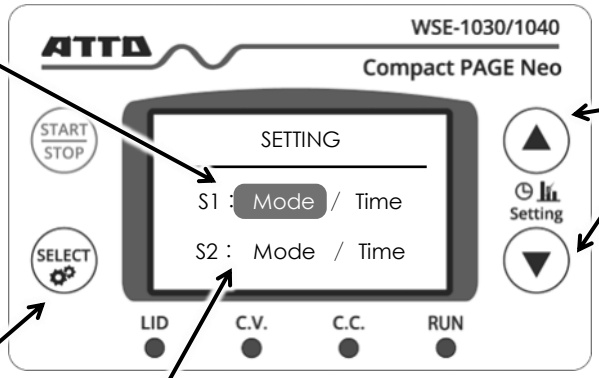


⚠Warning

Do not use any AC adapter other than one attached to this device.
If you do so, it may cause defective operation or trouble of the power supply, damage to the AC adapter, or fire.

5.2 Setting the electrophoresis conditions

Cursor
The text will be inverted.
The selection will blink.

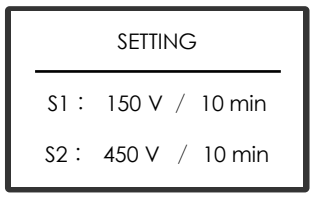


UP/DOWN button
Select the output mode.
Set the running time.

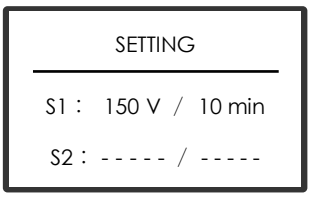
SELECT button
Move the cursor.

Condition setting screen
Displays the output mode and running time for step 1 (S1) and step 2 (S2).

Screen when setting step 1 and 2



Screen when setting step 1 only



Output mode and running time

There are six output modes:

Constant Voltage (C.V.) mode			Constant Current (C.C.) mode		
150 V	250 V	450 V	10 mA	20 mA	40 mA

- The constant voltage (C.V.) mode has a slow start function (outputs 100V for the first 30 seconds, then electrophoresis at the set voltage).
- For WSE-1040 (twin type), when constant current (C.C.) mode is selected, the current value per gel varies depending on the number of gels.
- Please refer to the table on the next page to set the output mode and running time appropriate for a kind of sample, gel, and running buffer.

Conditions		SDS-PAGE			Tricine PAGE	Native PAGE	DNA PAGE	
		Standard		High molecular weight				
Precast gel		c-PAGEL Neo	c-PAGEL Neo	c-PAGEL Neo	cp-PAGEL Neo	c-PAGEL Neo	c-PAGEL Neo	-
Handmade gel		EzGel Ace Laemmli *	EzGel Ace Laemmli *	EzGel Ace Laemmli *	Shagger **	EzGel Ace	-	TBE gel
Running buffer		Ez Run	EzRun MOPS	Ez Run	Ez Run T	EzRun TG EzRun Clear Native EzRun Blue Native	EzRun TG	EzRun TBE
C.V. Mode	**150 V**	○ 40 - 50 min	○ 20 - 30 min	○ 40 - 50 min	○ 30 - 40 min	◎ 35 - 40 min	◎ 35 - 45 min	◎ 35 - 45 min
	250(Standard)	◎ 20 - 30 min	◎ 10 - 15 min	◎ 20 - 30 min	◎ 15 - 20 min	○ 25 - 35 min	-	-
	450 V (High speed)	○ 10 - 15 min	○ 5 - 10 min	○ 10 - 15 min	-	-	-	-
C.C. Mode (1 gel)	**10 mA**	-	-	○ 60 - 70 min	-	-	○ 60 - 70 min	◎ 60 - 70 min
	20 mA (Standard)	○ 30 - 35 min	○ 25 - 30 min	◎ 30 - 35 min	○ 50 - 60 min	◎ 25 - 35 min	◎ 30 - 40 min	○ 30 - 40 min
	40 mA (Standard)	○ 15 - 20 min	○ 12 - 15 min	-	◎ 25 - 30 min	○ 15 - 20 min	-	-
C.C. Mode (2 gels)	**10 mA**	-	-	-	-	-	-	-
	20 mA (Standard)	-	-	○ 60 - 70 min	-	-	○ 60 - 70 min	◎ 60 - 70 min
	40 mA (Standard)	○ 30 - 35 min	○ 25 - 30 min	◎ 30 - 35 min	○ 50 - 60 min	◎ 25 - 35 min	◎ 30 - 40 min	○ 30 - 40 min

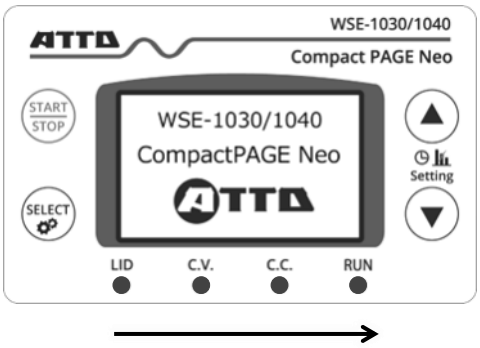
The running time is as a guide.

*Gel is casted by the Laemmli method can only be used under conditions of 150 V, 10 mA/gel, or 20 mA/gel.

*Gel is casted by the Shagger method can only be used under conditions of 150 V, 10 mA/gel, or 20 mA/gel.

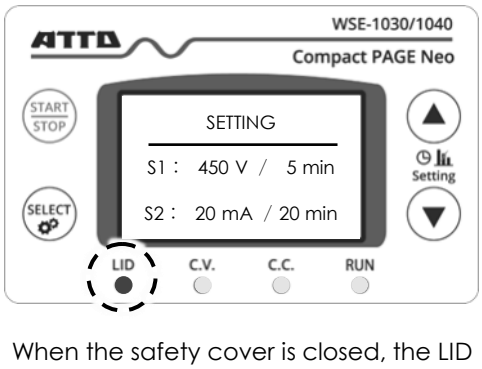
(1) Press the power switch on the power supply upwards to turn it on.
After the start screen, the condition setting screen will be displayed.
The previous setting condition is shown on the display by memory function
<u>* If electrophoresis will be run under the previous setting conditions, there is not need to set the electrophoresis conditions again.</u>

<u>Start screen</u>



The LED lamps light up in order from the left.

<u>Condition setting screen</u>



When the safety cover is closed, the LID indicator (blue LED lamp) lights up.
Other LED lamps light off.

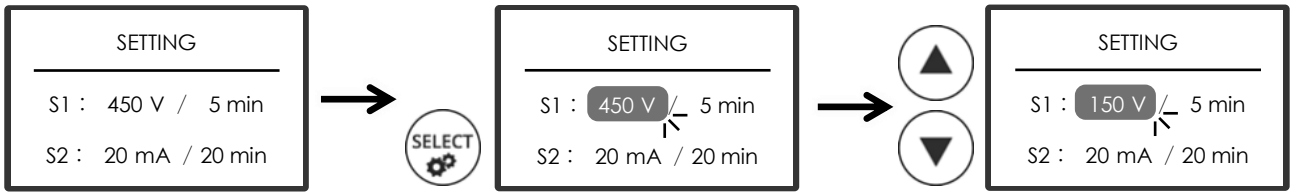
(2) Press the SELECT button to display the cursor on the output mode of S1.

(3) Press the UP or DOWN button to select the output mode of S1.
The mode will change in the following order: 10 mA ↔ 20 mA ↔ 40 mA ↔ 150 V ↔ 250 V ↔ 450 V ↔ 10 mA ↔...

(4) Press the SELECT button to move the cursor on the running time of S1.

(5) Press the UP or DOWN button to set the running time of S1.
<u>* Press and hold the button, the numbers will change faster.</u>

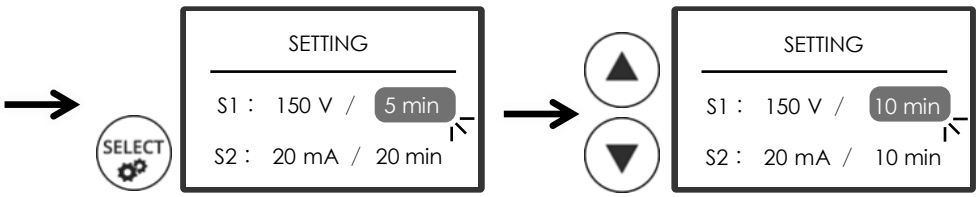
The cursor blinks during the operation.



(1) Display of the previous conditions

(2) Display the cursor

(3) Select the output mode of S1



(4) Move the cursor

(5) Set the running time of S1

Step 2 (S2) is set

* If step 2 is not required, please refer to the next page.

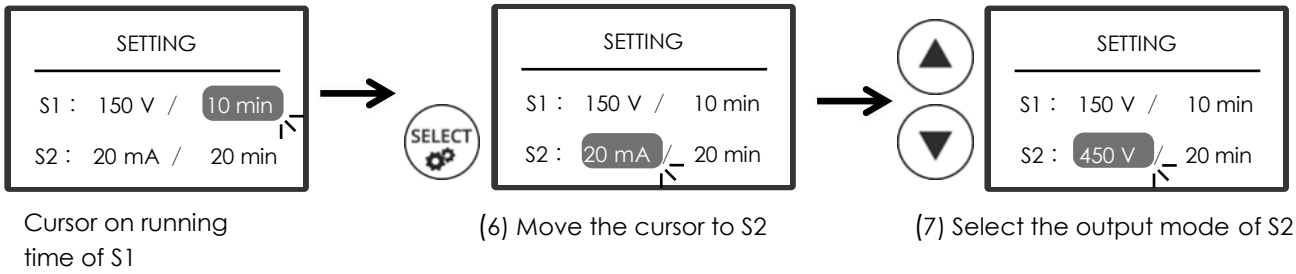
(6) Press the SELECT button to move the cursor to the output mode of S2.

(7) Press the UP or DOWN button to select the output mode of S2.

(8) Press the SELECT button to move the cursor to the running time of S2.

(9) Press the UP or DOWN button to set the running time for S2.
* Press and hold the button, the numbers will change faster.

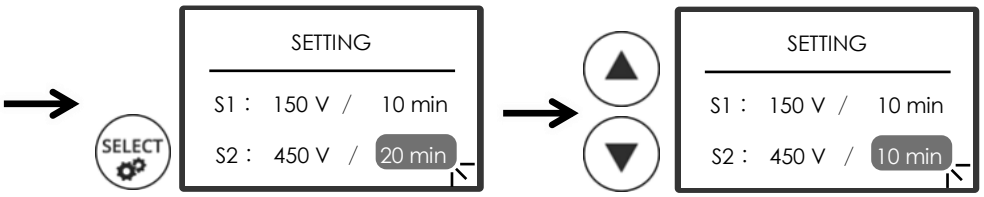
The cursor blinks during the operation.



Cursor on running time of S1

(6) Move the cursor to S2

(7) Select the output mode of S2

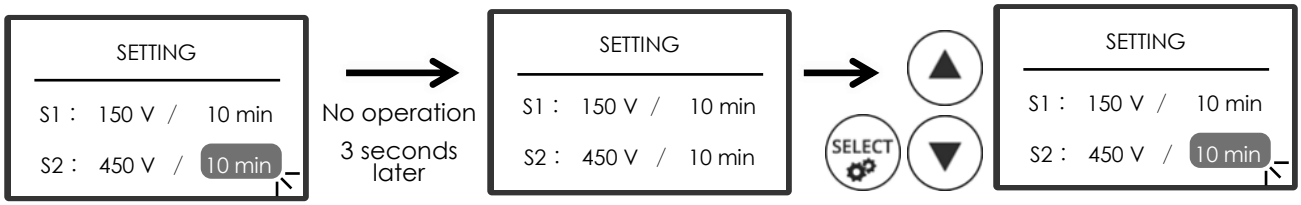


(8) Move the cursor

(9) Set the running time for S2

The cursor blinks during operation. If no operation is performed for 3 seconds or more, the cursor will disappear and the setting will be confirmed.

To reset the setting, press the SELECT, UP or DOWN button and the cursor will reappear.



The setting is confirmed

The cursor reappears

Step 2 (S2) is not set

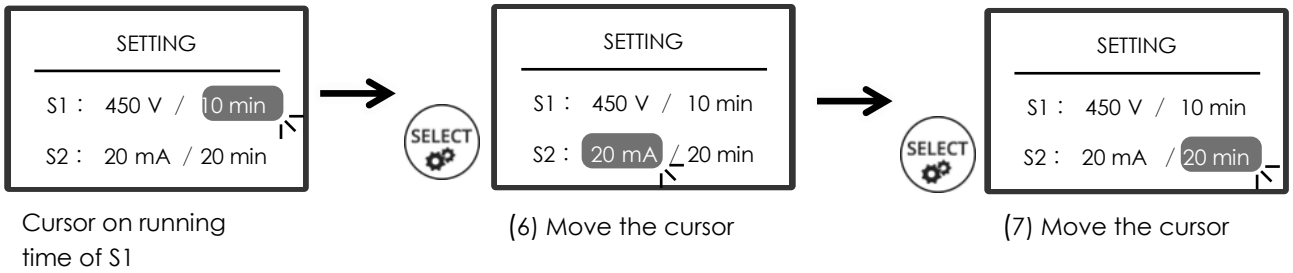
(6) Press the SELECT button to move the cursor to the output mode of S2.

(7) Press the SELECT button again to move the cursor to the running time of S2.

(8) Press the DOWN button to set the running time to"0 min".

(9) After a few seconds, the display of the output mode and running time of S2 will be changed to "- - -".

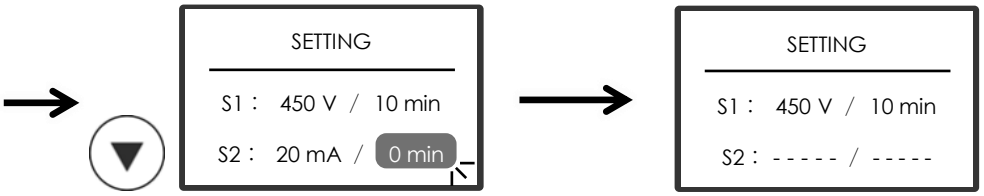
The cursor blinks during the operation.



Cursor on running time of S1

(6) Move the cursor

(7) Move the cursor

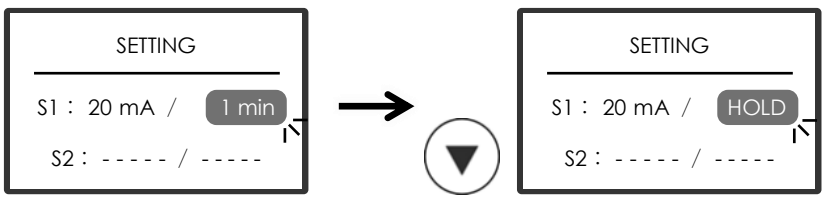


(8) Set the running time of S2 to "0 min".

(9) The display of S2 will be changed to "- - -".

The timer is set to off

Timer-free function is possible only in constant current mode (10mA, 20mA, or 40mA).
Press the DOWN button to set the running time to "HOLD" .
When the timer is set to off, the output continues for up to 999 minutes until the electrophoresis is stopped with the START/STOP button. The elapsed time is displayed on count-up basis.



Set the running time to "HOLD".

Turn off the slow start function

The constant voltage modes (150 V, 250 V and 450 V) have the slow start function that automatically performs electrophoresis at a low voltage for 30 seconds immediately after starting electrophoresis.
If the slow start function is turned off, electrophoresis will start at the output of the selected mode immediately after starting electrophoresis.

the cursor to the output mode of S1 and press and hold the SELECT button, an asterisk (*) will appear to the left of S1 (see the figure below). Press and hold the SELECT button again, the asterisk (*) will disappear and the slow start function will be turned ON.

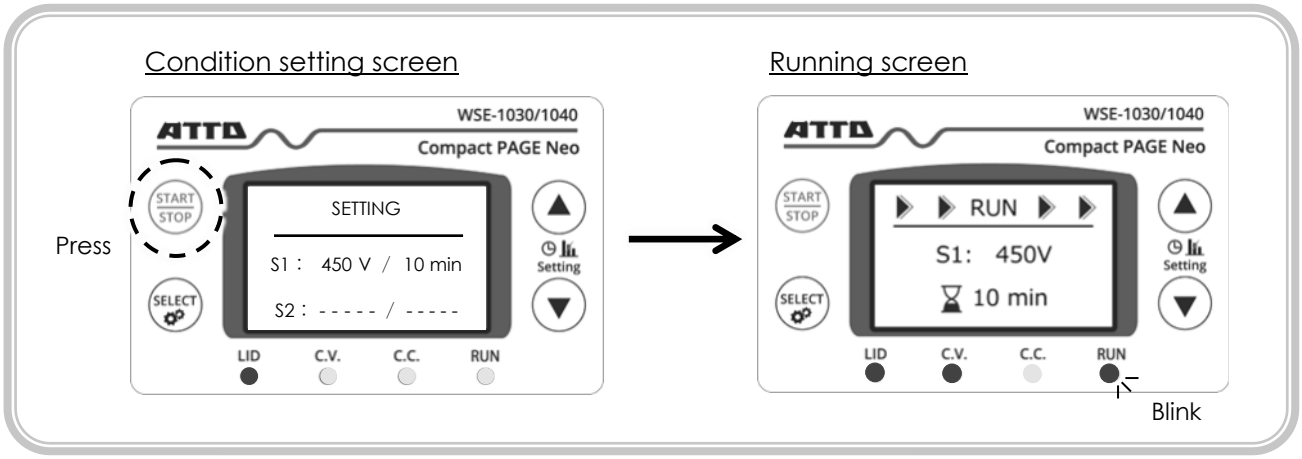
Press and hold

an asterisk (*) will appear to the left of S1

The slow start function OFF setting is applied only once. When the electrophoresis ends or the power is turned off, the slow start function OFF setting is reset and the slow start function returns to the ON setting.

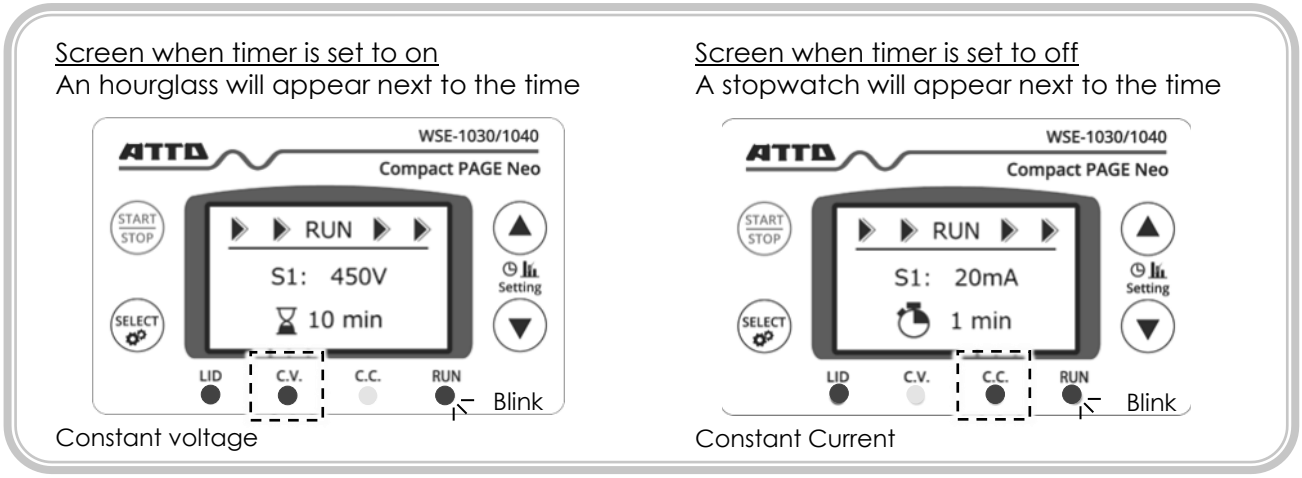
5.3 Starting electrophoresis

After setting the conditions, press the START/STOP button to start electrophoresis.

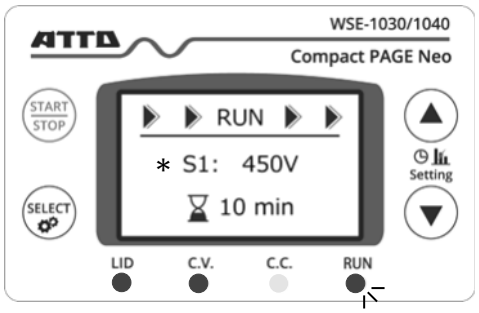


Running screen

- The display is shown "RUN" and the running condition (S1 or S2).
  The running time is displayed in minutes on count-down basis (in seconds when there is 1 minute left), and an hourglass is displayed next to the time. When the timer is set to off, the running time is displayed in minutes on count-up basis, and a stopwatch is displayed next to the time.
- The RUN indicator (green LED lamp) will blink.
  Depending on the running conditions, either the constant voltage indicator (yellow LED lamp) or the constant current indicator (red LED lamp) will light up.
- During running, the LID indicator (blue LED lamp) will light up to indicate that the safety cover is closed.
  If the safety cover is opened during running, "PAUSE" will be displayed and the electrophoresis will stop. When the safety cover is closed, the electrophoresis will restart.

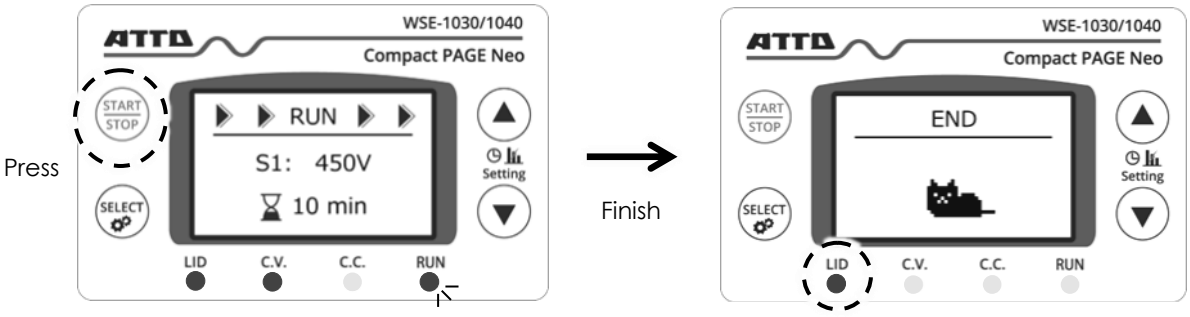


- If the slow start function is set to OFF, an asterisk will appear to the left of S1.



- When you press the SELECT button during running, the condition you have set will be displayed.
  The condition setting screen will be displayed while the SELECT button is pressed.
  After 3 seconds have passed since you released the SELECT button, the display will automatically return to the running screen.

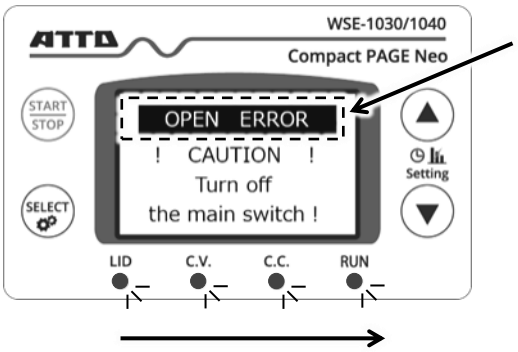
- When you press the START/STOP button during running, the electrophoresis will stop and the end screen will be displayed.



When the safety cover is closed, the LID indicator (blue LED lamp) lights up.
Other LED lamps light off.

Error screens

- If an error is detected, the power will be stopped supplying.
  The display will show as shown below.
- If any error occurs, an alarm will go off and all LED lamps will blink quickly. Turn off the power switch and unplug the AC adapter from the outlet.
- Under electrophoretic conditions where a low current flows, open errors may occur.



The type of error detected is displayed.

(1) OPEN ERROR

(2) SHORT ERROR

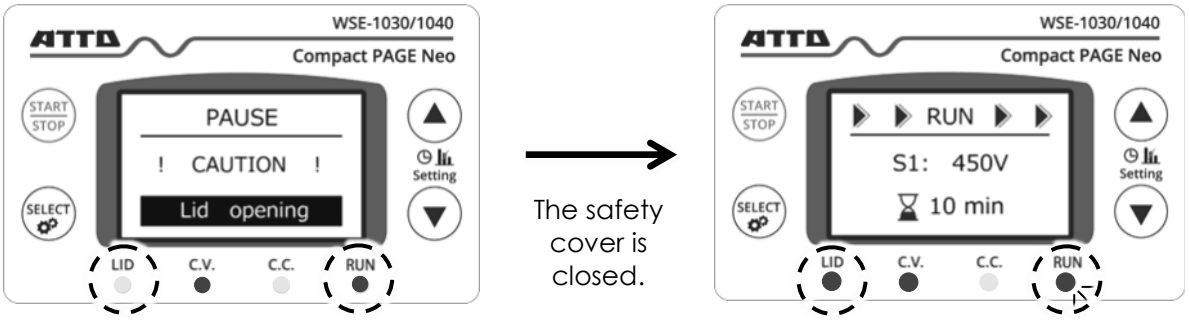
(3) POWER ERROR

(4) WRONG ADAPTER: AC adapter is abnormal.

The LED lamps blink quickly in order from the left

Safety cover detection

- If the safety cover is opened during running, the LID indicator (blue LED lamp) will light off and the RUN indicator (green LED lamp) will stop blinking and light up.
  The display will show as shown below left.
- Although the power will be stopped supplying while the safety cover is opened, do not directly touch the gel and the running buffer in the electrophoresis chamber.
  When the safety cover is closed, the power will be restored supplying.



The LID indicator (blue LED lamp) lights off.
The RUN indicator (green LED lamp) lights up.

The LID indicator (blue LED lamp) lights up.
The RUN indicator (green LED lamp) blinks.

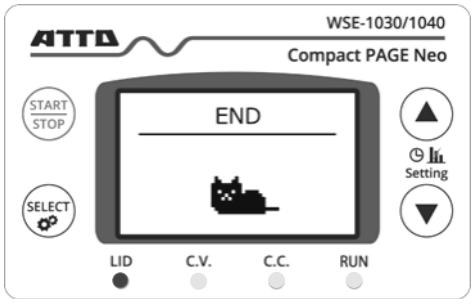
- Refer to "Troubleshooting" (Page 61) for solving a problem.

5.4 Stopping electrophoresis

(1) If set time is over, electrophoresis will automatically stop, the end screen will be displayed, and an alarm will go off .
<u>* If the timer is set to off, pressing the START/STOP button during running will stop electrophoresis, the end screen will be displayed, and an alarm will go off.</u>

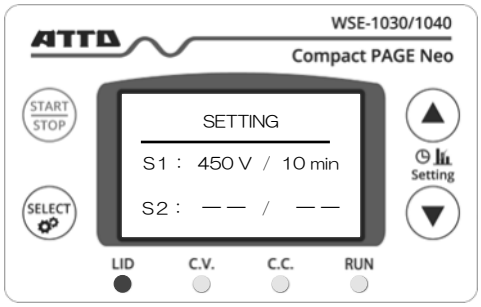
(2) Press the START/STOP button, SELECT button, or UP/DOWN button to return to the condition setting screen.

<u>End screen</u>



Press any button

<u>Condition setting screen</u>



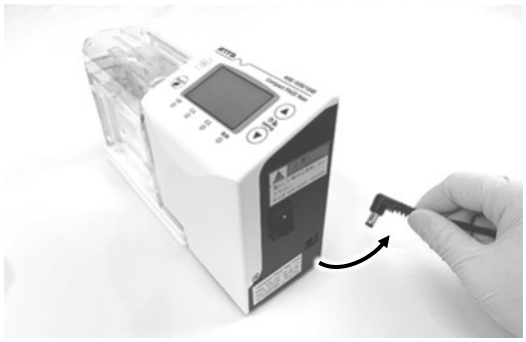
Only the LID indicator (blue LED lamp) lights up.
Other LED lamps light off.

(3) Press the power switch on the power supply downwards to turn it off.

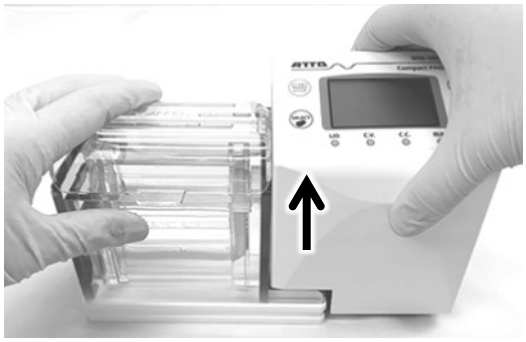
(4) Make sure the display and all LED lamps light off.

(5) Disconnect the plug of the AC adapter to an outlet.
<u>* Do not keep the plug connecting to an outlet.</u>

(6) Pull the DC plug of the AC adapter from the power supply jack on the side of the power supply.

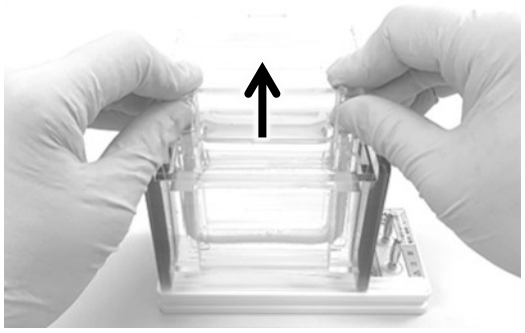


(7) Keep holding the electrophoresis chamber, remove the power supply.

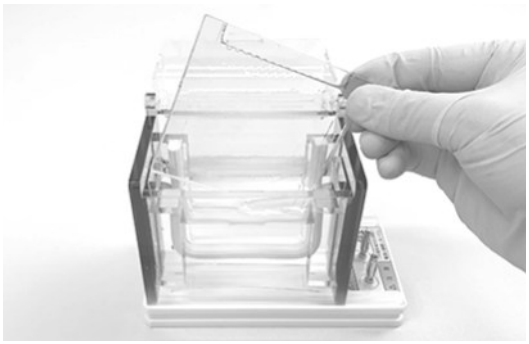


(8) Open the safety cover.

(9) Gently pull the plate holder upwards.



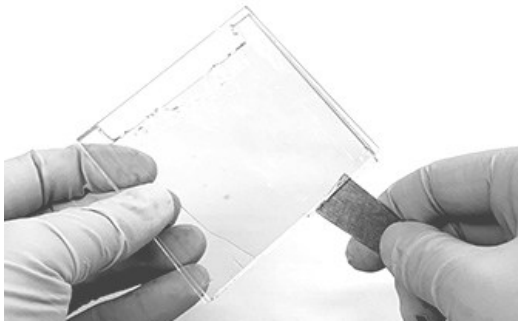
(10) Remove the gel plate from the electrophoresis chamber.



5.5 Detection

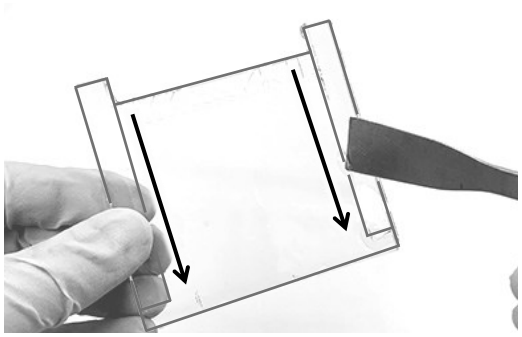
(1) Hold the notched plate (a plate with a notch) facing down in your hand.

(2) Insert a tool whose tip is flat like a spatula between the glass plates and gently move it up and down to remove the plain plate on top.



Insert a spatula near the center of the bottom edge.
Inserting it in a corner may cause the glass plates to break .

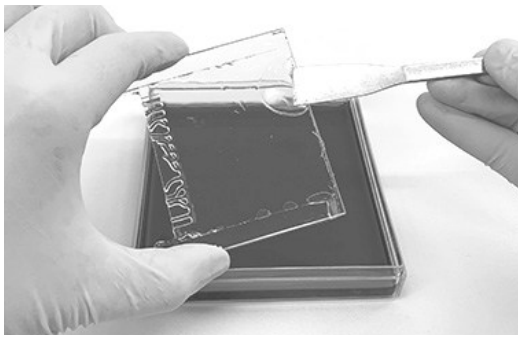
(3) Wet a spatula or scalpel with staining solution etc., and slowly make an incision between the gel and the spacer.



The gel is stuck to the spacer. Be careful not to tear the gel.

(4) Place the gel side down on a tray containing staining solution.

(5) Insert a spatula between the gel and the notched plate and gently peel off the gel.



Keeping the spatula is wet prevents the gel from sticking and tearing.

Stain for protein

- AE-1340　EzStain AQua (acetic acid and alcohol free CBB staining solution)

  (1) After electrophoresis, soak the gel in EzStain AQua and stain it at room temperature with shaking for 3 hours to overnight.
  (2) Drain the staining solution and destain the gel with distilled water.

  For detailed instructions on how to use, please refer to the product's instruction manual.

- CBB staining

  (1) After electrophoresis, soak the gel in CBB staining solution and shake it for 60 minutes to overnight.
  (2) Drain the staining solution, pour the destaining solution, and shake the gel for 60 minutes to overnight.

- Other staining methods

  For other staining methods such as silver staining, negative staining, and fluorescent staining, please follow the protocols in the each instruction manuals.

Stain for DNA

- WSE-7130 EzFluoroStain DNA (Fluorescent dye for DNA detection)

  (1) Dilute EzFluoroStain DNA 10,000 times with 1x TBE buffer.
  (2) After electrophoresis, soak the gel in the solution of step (1) and shake it for 10 to 30 minutes in the dark.
  (3) Remove the gel and expose it to a illuminator (UV or fluorescent).

  For detailed instructions on how to use, please refer to the product's instruction manual.

- Ethidium bromide staining

⚠Warning

Ethidium bromide is a carcinogen, so be sure to wear gloves and a lab coat when handling it and avoid touching it directly. Follow a protocol provided by your facilities to dispose waste fluid.
Do not use the UV transilluminator until you have thoroughly read the instruction manual and understood it. It may cause damage to the eyes and skin. When using the UV transilluminator, protect your body with protective glasses, a face shield, and gloves.

(1) After electrophoresis, soak the gel in ethidium bromide staining solution and shake it for 20 to 30 minutes.
(2) Dispose the staining solution, pour 1x TBE buffer, and shake the gel for 5 to 20 minutes.
(3) Remove the gel and expose it to UV transilluminator.

- Other staining methods

  For other staining methods such as silver staining, please follow the protocols in the each instruction manuals.

5.6 Cleaning and Safekeeping the system

Cleaning the equipment

When cleaning the electrophoresis chamber, glass plates, etc., there is a risk of injury or damage to the equipment due to falling.
Hold them firmly with both hands.

- After use, clean the electrophoresis chamber, plate holder, glass plate and comb (handmade gels only) with a soft sponge soaked in neutral detergent to remove bits of gel. After cleaning, dry them naturally.
  Do not let it touch with organic solvent such as acetone and alcohol, nor dry it at high temperature. It may cause crack, deformation or decoloring.
- Clean the gel cast, divider plate and dummy plate as same as above and dry them naturally.
- Do not use a steel wool or a test tube brush for washing.
  The electrophoresis chamber or the gel cast may be damaged and visibility during electrophoresis is reduced.
- Be careful not to cut the platinum wire in the electrophoresis chamber while cleaning.
- Power supply cannot be cleaned in water.
- Dispose of the glass plate of precast gels (c-PAGEL Neo、cp-PAGEL Neo).
  We cannot guarantee the performance of reuse products.

Safekeeping the system

- Do not store in direct sunlight, high temperatures, or where it may be exposed to corrosive gases.
- Do not fix the gel cast by clips except when making a gel. If you do, an elasticity of the seal packing is lost and it may cause leakage when making a gel.
- Do not store the glass plates in the gel cast or electrophoresis chamber.
  The seal packing will deteriorate and cause leak of buffer.

6 Troubleshooting

Symptom	Cause	Solution
A gel does not polymerize	Preparative procedure of gel solution is not correct.	Prepare the gel solution again. If the gel still does not polymerize, prepare the various solutions for gel preparation again.
	10% APS solution is old.	10% APS solution should be used as soon as it is prepared. When it is stored, keep temperature at 4°C and use it up within 1week.
	Room temperature or temperature of gel solution is low.	It is difficult to undergo polymerization if room temperature is below 20°C. Try it at the higher temperature (till about 25°C).
	Others	Increase the amount of 10% APS solution and TEMED by 10% each.
There are air bubbles in gel.	The glass plate or comb is dirty	Clean the glass plates and comb immediately after use, and store them to avoid dust. Also, do not touch gel contact surface of glass plates and comb with bare hands.
A gel is marked with a line.	Polymerization speed is uneven.	If the glass plates or comb is dirty, there is temperature difference between the glass plates, comb and gel solution, or Insufficient mixing of the gel solution after adding 10% APS solution and TEMED, polymerization speed may be uneven. Take out each solution for gel casting from a refrigerator and bring it back to room temperature. Check to bring it back to, then mix each solution.
Shape of a well is odd.	Non-polymerized acrylamide in a well polymerizes after a comb is removed.	Remove comb just before use a gel. After removing, wash wells with running buffer or pure water.
A well is broken off when comb is removed.	A comb sticks on a gel too much.	For polymerizing a gel easily, gel solution may be removed air. In this case, it tends to break off wells easily. So, omit this step.
Buffer leaks from upper chamber.	A plate holder is set insufficiently.	Make sure that the "FRONT SIDE" on the plate holder is facing you. Thrust it down in accordance with a guide of supporting gel set of the electrophoresis chamber.
	Plates are dirty.	Clean used plates and remove bits of gel before it is dried. After gel casting, wipe off gel solution, dusts and so on with wet waste cloth if it adheres to surface of plates.
	Running buffer is poured into upper chamber too much.	By capillary, buffer may flow to lower chamber from the connection part of the upper side of plates and seal packing. Pour upper buffer into height under 2-3mm from the top of glass plates.

Symptom	Cause	Solution
Buffer leaks from upper chamber.	There is thin film between spacer of plate and another plate.	There is space between notched plate and plain plate owing to deteriorated seal packing of gel cast and it may cause this trouble. Stop using it and contact your distributor or our company (Please refer to the back cover).
	A small amount of liquid leaks.	In the case of buffer containing SDS, it may leak about 1-2mL in overnight-24 hours. There is no problem with electrophoresis.
	Seal packing is damaged.	If seal packing is broken or peeled off from the chamber, it needs to repair. Stop using and contact your distributor or our company (Please refer to the back cover).
Sample solution does not sink down into well.	Well is dirty or attached to gel.	Clean well with running buffer and micropipette or syringe. Even though dust or gel fragment cannot be removed, use syringe needle etc..
	Specific weight of sample solution is low.	Amount of glycerin or saccharose in the solution may be insufficient. Add sufficient quantity to it.
Run time/ band position is different from the usual. one	Output setting is incorrect.	Confirm the output mode. For WSE-1040 (twin type), when constant current (C.C.) mode is selected, the current value per gel varies depending on the number of gels. If the output mode is set to 40 mA, one gel will be run at 40 mA/gel, and two gels will be run at 20 mA/gel.
	Composition or concentration of buffer or gel is incorrect.	If it is incorrect, remake them.
	Separating or Stacking gel buffer pH is incorrect. (In the case of electrophoresis of protein)	Adjust pH value to the below. Separating gel buffer：pH 6.8 Stacking gel buffer：pH 8.8
	Running buffer is reused.	Do not reuse running buffer.
	Old gel is used.	In the case of precast gel, use it within expiration date for use. In the case of handmade gel, use it within the day to cast gel as much as possible. If handmade gel is not used within the day, keep it at 4°C and use it on the next day. The gel is deteriorated little by little so plasticity decreases.
	Polymerization degree of gel is incorrect.	If the amount of 10% APS solution or TEMED is changed, polymerization degree is also changed. We recommend you to always refer to method and quantity indicated in this manual for casting gel. Also room temperature at the time of polymerization and difference of solution temperature affect polymerization degree. If it is not different so much, there is little effect on migration. However, if gel polymerizes at about 25°C, plasticity increases.

Symptom	Cause	Solution
Run time/ band position is different from the usual. one	Others	Running speed is affected by salt concentration of ample solution, temperature of running buffer/surrounding and conditions in the above. It needs to follow the each condition for maximize plasticity.
When a gel is stained, there is unnatural straight lines in the lane.	Sample solution or wells includes dust and insoluble element.	Centrifuge sample solution to remove insoluble element. Clean wells with electrode buffer.
Electrophoresis pattern widens toward end.	The side of gel is supplied too much electricity.	If gel is peeled from plate, the problem may occur easily. Prevent plates from getting out of proper position and dividing. Do not use old handmade gel or precast gel whose expiration date for use runs out because these ones are peeled off easily.
Pattern gets distorted between lanes (smiling etc.).	The quantity of buffer is not enough.	Gel homeothermy is improved by immersing plates in lower buffer. Put the amount indicated in this book to the lower chamber.
	Buffer capacity is degraded.	Remake running buffer.
	Salt concentration of sample solution is different among lanes.	Salt concentration of sample solution affects migration speed. Arrange the concentration as much as possible by desalinizing, concentrating, diluting (ethanol precipitation in the case of nucleic acid) and so on. Pay attention it when including restriction enzyme buffer [the concentration is different between types] or in the case of dilution series.
	There are air bubbles in the lower side of gel.	If air bubbles are small and few, they affect pattern hardly. If air bubbles are large, they may affect it.
Display does not work even though main switch is ON.	Power supply or AC adapter is out of order.	Be sure that dedicated AC adapter is connected to power supply unit correctly and power plug is inserted in outlet. If the problem is not solved, it may be damaged. Contact your distributor or our company (Please refer to the back cover).
Display shows error and output stops.	Power supply detects abnormality.	Refer to Page 65.

Main causes of errors and solutions

Errors	Cause	Solution
OPEN ERROR	Power supply part is not inserted to electrode plug well.	Be sure power supply is inserted well.
	The amount of buffer is insufficient.	Refer to this manual and pour the adequate amount of buffer into the chamber. Set gel plates correctly in accordance with this manual. If the amount of buffer decreases even though the adequate amount is poured, it may leak to lower chamber. Refer to "Troubleshooting" (Page 62) .
	Platinum wire is cut.	Stop using the system immediately and contact your distributor or our company (Please refer to the back cover).
	Others	Under electrophoretic conditions where a low current flows, open errors may occur.
SHORT ERROR	Upper buffer leaks.	If the damage or slackness of seal packing cause leakage, it needs to be exchanged. Please contact your distributor or our company (Please refer to the back cover).
	Electrode plug is wet.	Wipe off water attached to the plug.
	The interior of power supply is wet.	Stop using the system immediately and contact your distributor or our company (Please refer to the back cover).
POWER ERROR	The circuit of power supply may be broken.	Stop using the system immediately and contact your distributor or our company (Please refer to the back cover).
WRONG ADAPTER	The dedicated AC adapter is not used.	Do not use any AC adapter other than that one attached to this device. If an AC adapter other than the one attached is used, it may result in malfunction or output failure of the power supply, damage to the AC adapter, or fire.
Lid opening	The safety cover is open while running.	Although the power will be stopped supplying while the safety cover is opened, do not directly touch the gel or running buffer in the electrophoresis chamber.

7 Maintenance

7.1 Cleaning

Power supply

When the surface gets dirty, wipe gently by soft cloth with neutral detergent diluted in water. If dust covers electrode connector, remove it carefully to avoid damaging the connector.

⚠Warning When you clean main unit, disconnect AC adaptor and turn off power switch. It may cause accident such as electric shock and injury.

AC adapter

When the surface gets dirty, wipe gently by soft cloth with neutral detergent diluted in water. Do not use until it is dried sufficiently.

⚠Warning When you clean AC adapter, disconnect it from outlet. It may cause accident such as electric shock and injury.

Electrophoresis chamber and parts

Refer to "Cleaning & Keeping the equipment" (Page61) for cleaning the electrophoresis chamber, plate holder. glass plates and comb.

7.2 Inspection

When the equipment is used after safekeeping, read this manual at the same time to inspect it. If there is an abnormality, do not use it and contact your distributor or our company.

Power supply

Confirm there is no damage, deformation or electrode connector corrosion by visual observation.

⚠Warning When you inspect power supply part, disconnect AC adapter and turn off power switch.
It may cause accident such as electric shock and injury.

AC adapter

Confirm there is no damage, deformation, or insulation layer is not peeled off and damaged by visual observation

⚠Warning When you inspect AC adapter, disconnect it from outlet.
It may cause accident such as electric shock and injury.

Electrophoresis chamber

Set a plain plate in the chamber, pour pure water into the upper chamber and confirm water does not leak. Confirm there is no deformation, wobble and corrosion with electrode plug of upper chamber by visual observation and operation connecting dedicated power supply without AC adapter.

⚠Warning When you inspect the chamber with connecting dedicated power supply, disconnect AC adapter and turn off power switch.
It may cause accident such as electric shock and injury.

Gel casting kit

If seal packing of Multi Compact Gel Cast (WSE-1092) comes off or is distorted, reset it as straight. Also if there is a horizontal ripple at the lower curve part, straighten it. Confirm seal packing of Compact Gel Cast (WSE-1091) comes off or there is no ripple. Follow "Assembly of the Gel Cast" (Page 31) for assembling the gel cast, and put pure water till 0.5-1cm from upper end and keep it for about a hour for confirming there is no leakage.

7.3 Consumables

The following products are consumables. Replace it depending on the situation. If you need one not described in following list, contact your distributor or our company.

Code No.	Product name
2322251	Plate Holder for WSE-1010/25/30/40 (2/pk)
2393690	CP-10 plate set(CAB-10/CB-00) (1set)
2393689	AC adapter for WSE-1030/40(24 V 2.5 A) (1ea)
2393691	CAB-10 Notched Glass Plates (2/pk)
2393637	CB-00 Plain Glass Plates (2/pk)
2393695	CP10-12 Smiling-less compact comb (2/pk)
2393697	CP10-15 Smiling-less compact comb (2/pk)
2394065	Compact flat comb for 2-DE (2/pk)
2394060	Dummy Plate (1ea)
2394062	Divider Plate (3/pk)

7.4 Warranty

ATTO Corporation warrants all its products subject to the terms and conditions set forth below.

1. This warranty covers all new products that are sold by ATTO Corporation (hereinafter called ATTO).
2. Expendable items are not covered by this agreement.
3. Claims under this warranty are limited to defects in material and workmanship of the products.
4. Malfunction and/or damage due to neglect, abuse, operation or repair contrary to specifications and/or instructions presented by ATTO are not warranted.
5. ATTO shall not be liable to consequential damage, labor, loss or expense directly or indirectly arising from use of the products.
6. Damage due to transit is not covered by this warranty.
7. The warranty period is one (1) calendar year from a date when the products are shipped from ATTO to an original purchaser.
8. This warranty period is not applied to any defect that is reported to ATTO later than one (1) calendar month from a date od warranty termination.
9. ATTO shall supply parts to replace faulty parts of defective products under this warranty, free of charge.
10. ATTO shall repair defective products under this warranty, which cannot be repaired at field, free of charge.
11. ATTO shall replace defective products under warranty, which cannot be repaired, free of charge.
12. Freight charges for return and replacement shipments under this warranty are shared by ATTO and a purchaser, that is one way by either party and another way by another party.
13. Warranty period of repaired products and replacement products or parts is three (3) calendar months from a date when the said products or parts are shipped from ATTO, or a remaining them of an original warranty period of the defective products, whichever lasts longer.
14. Return of the products for credit or refund is not accepted unless otherwise agreed in writing by ATTO.

8 Specification

Product name		CompactPAGE Neo	
Model		WSE-1030	WSE-1030W
Plate size		76 mm (W) × 4-5 mm (D) × 70 mm (H)	
Gel size		60 mm (W) × 0.75 or 1.0 mm (D) × 60 mm (H)	
Compatible gels		c-PAGEL Neo, cp-PAGEL Neo, handmade gel (compact size)	
Available number of sheets for simultaneous electrophoresis		1sheet	
Comb		None	12-well, 1.0mm (CP10-12)
Electrophoresis gel isothermal method		Two-sided constant temperature by using upper and lower buffer solution	
Amount of running buffer		245 mL/chamber (Upper chamber:135 mL, Lower chamber:110 mL)	
Electrode		Upper chamber: negative (-), Lower chamber: positive (+)	
Power supply	Output mode	Constant voltage (C.V.) mode/ Constant current (C.C.) mode 150 V, 250 V, 450 V / 10 mA, 20 mA, 40 mA ∗With step function (combines two output modes) *Constant voltage mode with slow start function	
	Max power	50 W	
	Setting	Start and stop electrophoresis with the START/STOP button Select the output mode and set the running time with the SELECT or UP/DOWN buttons	
	Display	LCD：Output mode, running time LED：blue, red, yellow, green (Light up or blink during running, blink when an error occurs)	
	Timer	1 - 90 min countdown timer display On "HOLD" setting, timer is set to off and elapsed time is displayed	
	Alarm	When output stops/When time is up/When an error is detected	
	Power Consumption	56 W	
AC adapter		Input：AC 100 - 240 V、50 Hz / 60 Hz Output：24 V / 2.5 A	
Safety measures		Magnetic sensor in power supply detects opening and closing of safety cover Power supply safety function (open error/short error, automatic output stop)	
Dimensions/Weight (Main unit)		204 mm (W) × 70 mm (D) × 130 mm (H), 0.63 kg When power supply part is attached, excluding protrusion and AC adapter	
Dimensions/Weight (AC adapter)		110.5 mm (W) × 51 mm (D) × 32.5 mm (H),0.36 kg (Code included)	
components	Main unit	Electrophoresis chamber, Power supply unit	
	Accessories	AC adapter	
	Others	Instruction manual	Gel Cast(WSE-1091) Instruction manual

Product name		CompactPAGE Neo	
Model		WSE-1040	WSE-1040W
Plate size		76 mm (W) × 4-5 mm (D) × 70 mm (H)	
Gel size		60 mm (W) × 0.75 or 1.0 mm (D) × 60 mm (H)	
Compatible gels		c-PAGEL Neo, cp-PAGEL Neo, handmade gel (compact size)	
Available number of sheets for simultaneous electrophoresis		1 -2 sheets	
Comb		None	12-well, 1.0mm (CP10-12)
Electrophoresis gel isothermal method		Two-sided constant temperature by using upper and lower buffer solution	
Amount of running buffer		245 mL/chamber (Upper chamber:135 mL, Lower chamber:110 mL)	
Electrode		Upper chamber: negative (-), Lower chamber: positive (+)	
Power supply	Output mode	Constant voltage (C.V.) mode/ Constant current (C.C.) mode 150 V, 250 V, 450 V / 10 mA, 20 mA, 40 mA *With step function (combines two output modes) *Constant voltage mode with slow start function	
	Max power	50 W	
	Setting	Start and stop electrophoresis with the START/STOP button Select the output mode and set the running time with the SELECT or UP/DOWN buttons	
	Display	LCD：Output mode, running time LED：blue, red, yellow, green (Light up or blink during running, blink when an error occurs)	
	Timer	1 - 90 min countdown timer display On "HOLD" setting, timer is set to off and elapsed time is displayed	
	Alarm	When output stops/When time is up/When an error is detected	
	Power Consumption	56 W	
AC adapter		Input：AC 100 - 240 V、50 Hz / 60 Hz Output：24 V / 2.5 A	
Safety measures		Magnetic sensor in power supply detects opening and closing of safety cover Power supply safety function (open error/short error, automatic output stop)	
Dimensions/Weight (Main unit)		302 mm (W) × 70 mm (D) × 130 mm (H), 0.94 kg When power supply part is attached, excluding protrusion and AC adapter	
Dimensions/Weight (AC adapter)		110.5 mm (W) × 51 mm (D) × 32.5 mm (H),0.36 kg (Code included)	
components	Main unit	Electrophoresis chamber, Power supply unit	
	Accessories	AC adapter	
	Others	Instruction manual	Gel Cast(WSE-1092) Instruction manual

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