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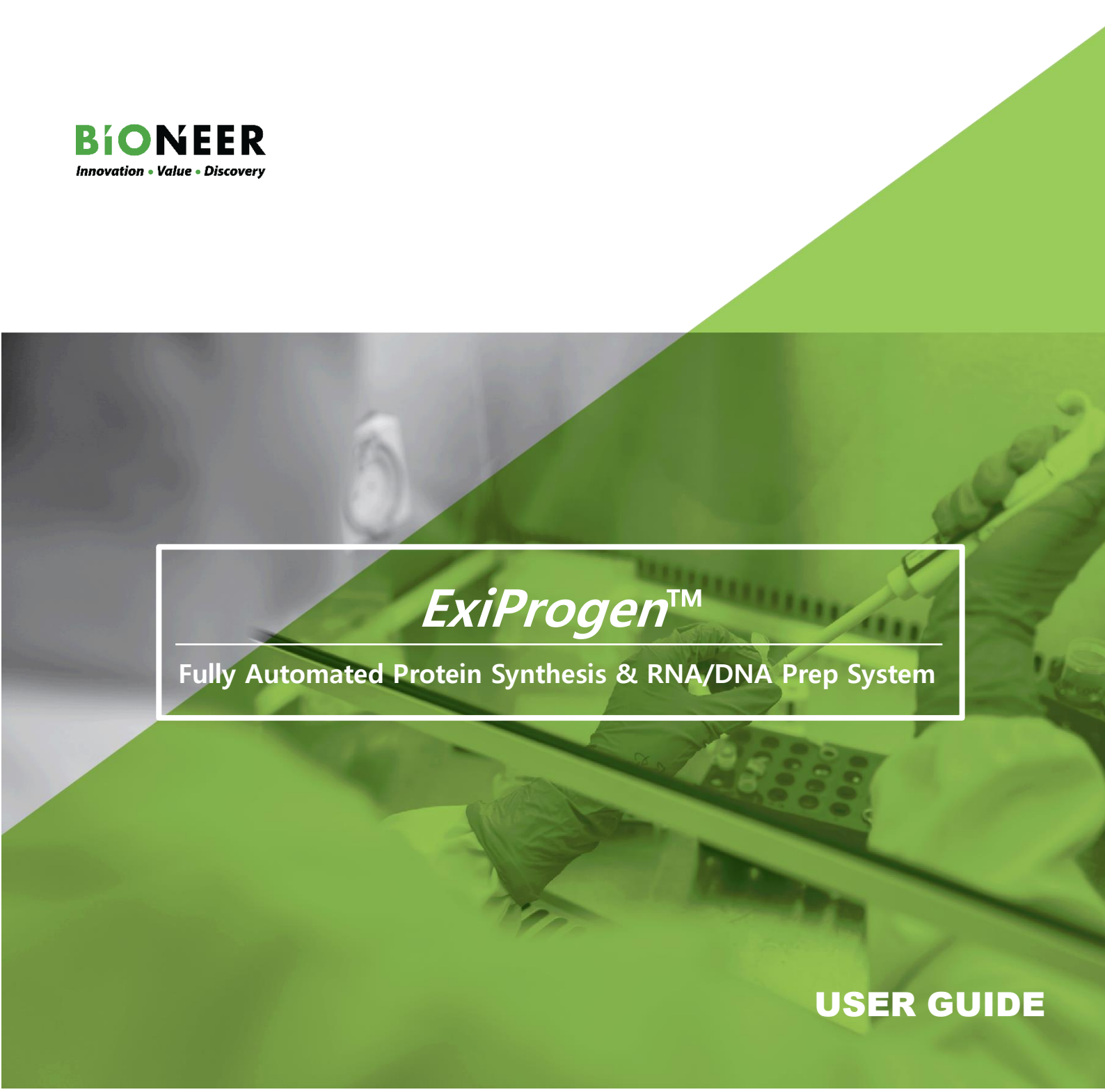

# ExiProgen™

## Fully Automated Protein Synthesis & RNA/DNA Prep System

**USER GUIDE**

REF A-5041

SGS C US 710219

Version 2.0 (2024-04-25)

For Research Use Only. Not for Use in Diagnostic Procedures.

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## U.S. and Canadian Safety Standards

Standard for Electrical equipment for measurement, control and laboratory use; Part1: General Requirements,
UL 61010-1, 2nd Ed, Rev., October 28, 2008&CAN/CSA-C22. 2 No. 61010-1-04(R2009)
Part 2: Particular Requirements for Automatic and Semi-Automatic Laboratory Equipment for Analysis and Other Purposes,
CAN/CSA-C22. 2 No. 61010-2-081:04
Part 2-010: Particular Requirements for Laboratory Equipment for the Heating of Materials
CAN/CSA-C22.2 NO. 61010-2-010-04

EN 61010-1:2010
Safety requirements for electrical equipment for measurement, control, and laboratory use
- Part 1: General requirements

EN 61010-2-081:2002
Safety requirements for electrical equipment for measurement, control and laboratory use
- Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes

EN 61010-2-010:2003
Safety requirements for electrical equipment for measurement, control and laboratory use
- Part 2-010: Particular requirements for laboratory equipment for the heating of Materials

EN 61326-1:2013
Electrical equipment for measurement, control and laboratory use - EMC requirements
- Part 1:General requirements

EN 61326-2-6:2013
Electrical equipment for measurement, control and laboratory use - EMC requirements
- Part 2-6: Particular requirements - In vitro diagnostic (IVD) medical equipment

Read the entire contents of this User Guide before operating the instrument.

## INTENDED PURPOSE

*ExiProgen*™ is an automated instrument that synthesizes proteins from DNA and extracts nucleic acids (DNA, RNA) from such diverse sources of human or animals as bacteria, blood, tissues, and plants. For research use only. Not for use in diagnostic procedures.

### Principle

#### Protein Synthesis and Purification

Protein synthesis using *ExiProgen*™ is carried out using its compatible *ExiProgen*™ Protein Synthesis Kit Series. *ExiProgen*™ performs protein expression using Cell-free Protein Synthesis system, and affinity purification using Ni-NTA magnetic beads, both in a fully-automated way. After adding a target gene to the template DNA sample and running the instrument, the protein is expressed in 3 hours with the help of Cell-free Protein Expression reagent. The expressed protein is then collected using Ni-NTA magnetic bead, and is purified using a reagent to yield a final high-purity target proteins.

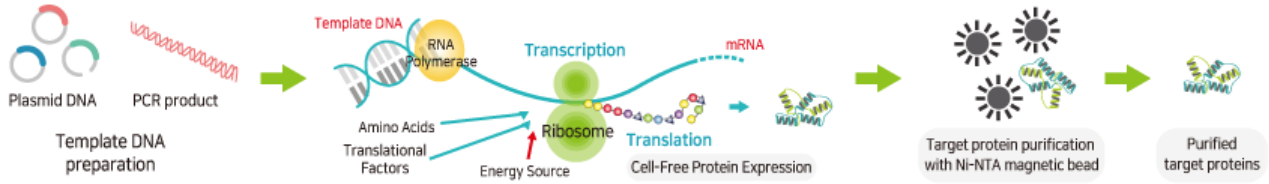



Figure 1. Protein Synthesis and Purification process

#### Nucleic acid Extraction

*ExiProgen*™ DNA/RNA Kit consists of reagents and silica magnetic beads optimized for efficient nucleic acid extraction from various samples. The nucleic acid eluted from the sample is collected by a silica magnetic bead, washed with a washing solution and extracted with a high purity nucleic acid.

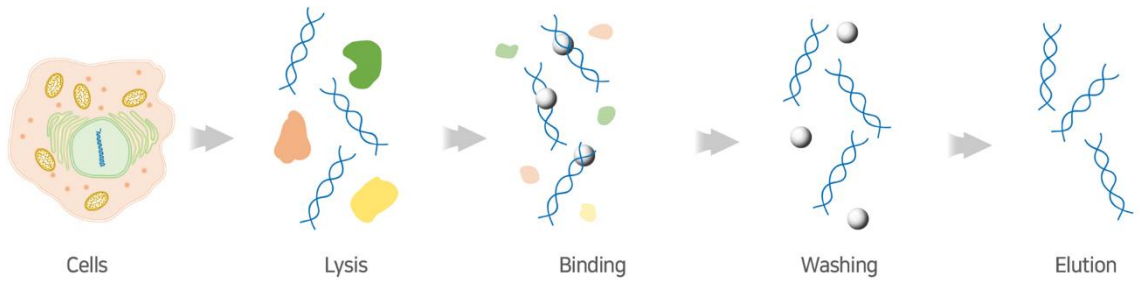



Figure 2. Nucleic acid Extraction process

# PRODUCT INFORMATION

## Product Description

*ExiProgen*™ is an instrument that automatically synthesizes protein from DNA. This product performs In-vitro transcription and translation automatically when loaded with DNA coding a protein and a protein synthesis kit. By purifying this protein through affinity chromatography method, more than 90% pure protein can be obtained within 6 hours and up to 16 species can be produced at one time. In addition, highly expressed affinity tagged proteins can be purified in cell lines with high purity.

## Product Advantages

- Built-in optimized nucleic acid and protein synthesis protocol
- Low-temperature maintenance for preventing protein denaturation
- High-purity nucleic acid extraction and protein purification
- Prevention of contamination
- Automatic UV sterilization
- Easy to use

## Product Specifications

| Physical Specifications | |
|---|---|
| Dimensions (W x D x H) | 32 cm x 53.5 cm x 50 cm<br>(12.6 in x 21.06 in x 19.69 in) |
| Weight | 27 kg (59.53 lbs) |
| Power (Voltage/Frequency) | **Adapter:** AC Input: 100-240VAC, 2.3-0.8A, 50/60Hz, DC Output: 24VDC, 7.5A<br>**Instrument:** DC Input: 24VDC, 7.5A |
| **Environmental Specifications** | |
| Operation temperature range | 15 – 35 ℃ |
| Operation humidity range | 20 – 80 % (relative humidity, no-condensation) |
| **Operating Specifications** | |
| Operating System | Stand alone |
| Networking | TCP/IP protocol |
| User Interface Display | 320 x 240 touch screen TFT LCD |
| Capacity | Maximum of 16 samples/run |
| Heating block temperature | 40 – 90 ℃ |

## Product Components

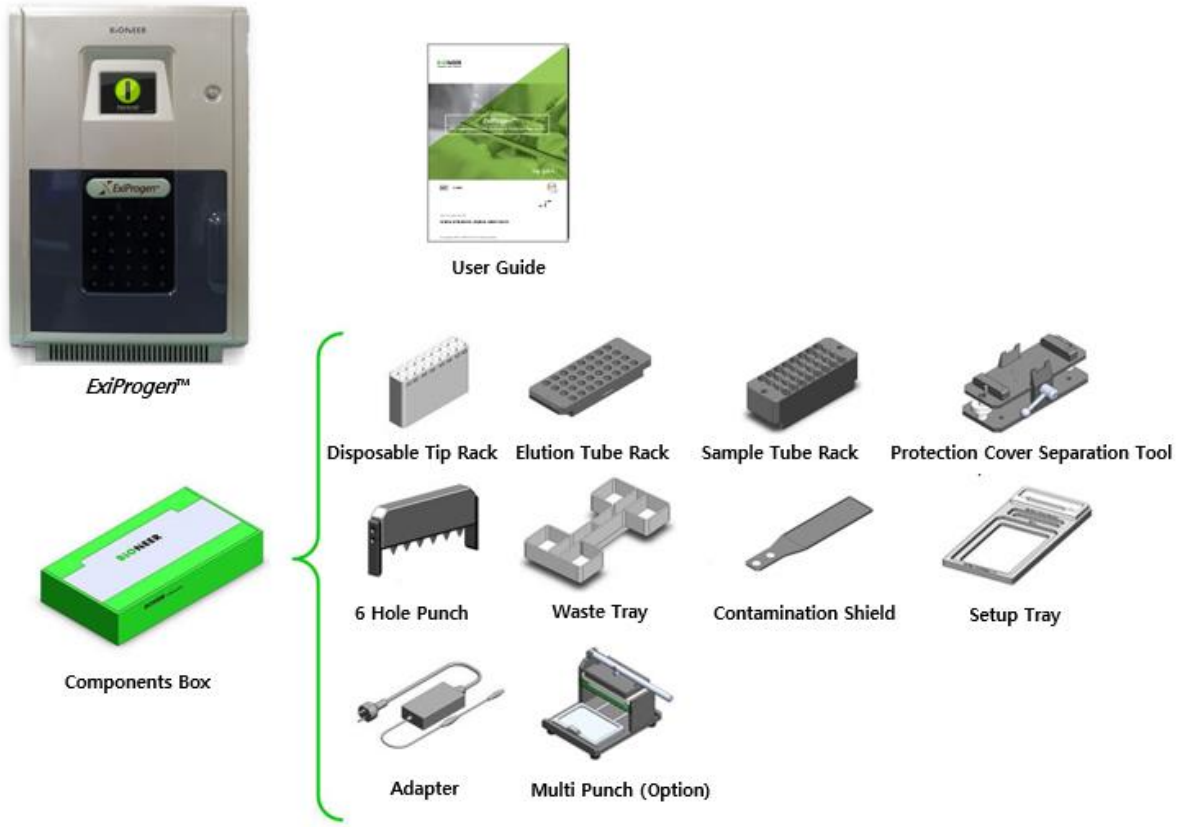



Figure 3. Product components

Table 1. Product components

| No. | Components | Cat. No. | Qty |
|---|---|---|---|
| 1 | *ExiProgen*™ | A-5041 | 1 ea |
| 2 | User Guide | - | 1 ea |
| 3 | Disposable Tip Rack | A-5041-A3 | 1 ea |
| 4 | Elution Tube Rack | A-5041-A4 | 1 ea |
| 5 | Reaction Block (For Protein synthesis) | A-5041-A5 | 1 ea |
| 6 | Protection Cover Separation Tool | A-5041-A12 | 1 ea |
| 7 | 6 Hole Punch | A-5041-A7 | 1 ea |
| 8 | Waste Tray | A-5041-A6 | 1 ea |
| 9 | Contamination Shield (For Nucleic Acid Extraction) | A-5041-A10 | 1 ea |
| 10 | Setup Tray | A-5041-A2 | 1 ea |
| 11 | Adapter | A-5041-A9 | 1 ea |
| 12 | Multi Punch (Option) | A-5041-A1 | - |

## Functional Description – Hardware

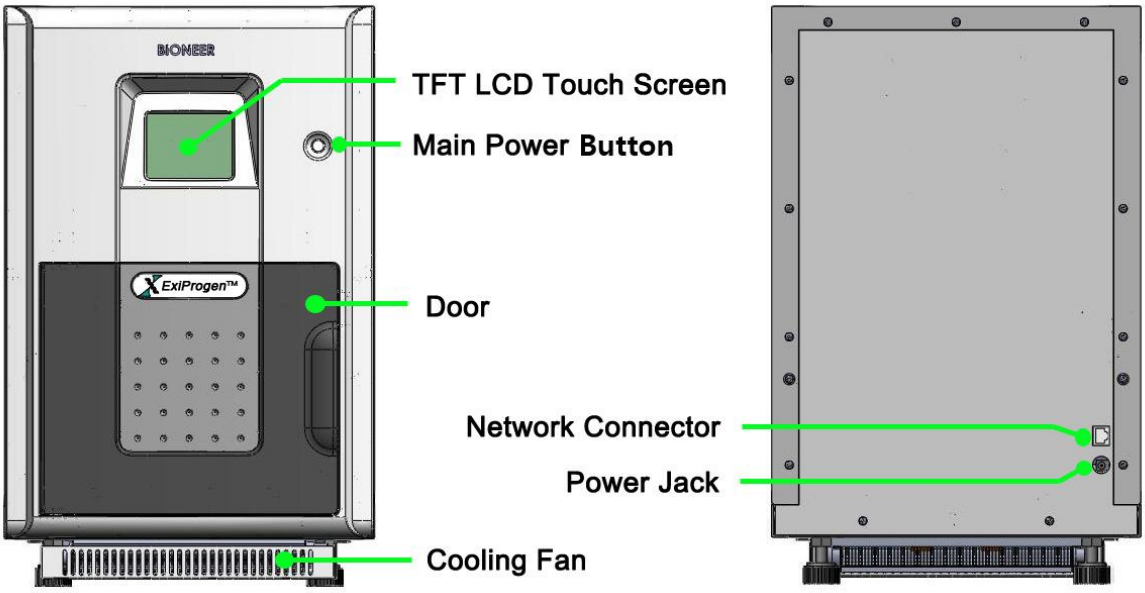



Figure 4. Product View – Front (Left), Rear (Right)

Table 2. Description of product features

| No. | Part Name | Description |
|---|---|---|
| 1 | TFT LCD Touch Screen | Displays user interface |
| 2 | Main Power Button | On: Starts or resumes operation from standby mode<br>Off: Initiates the standby mode |
| 3 | Door | Provides access to interior of the instrument and ensures that internal components are not accessible when the instrument is in operation |
| 4 | Cooling Fan | Maintains a low temperature |
| 5 | Network Connector | Connect between the PC, network hub, and *ExiProgen*™ |
| 6 | Power Jack | Power to the instrument |

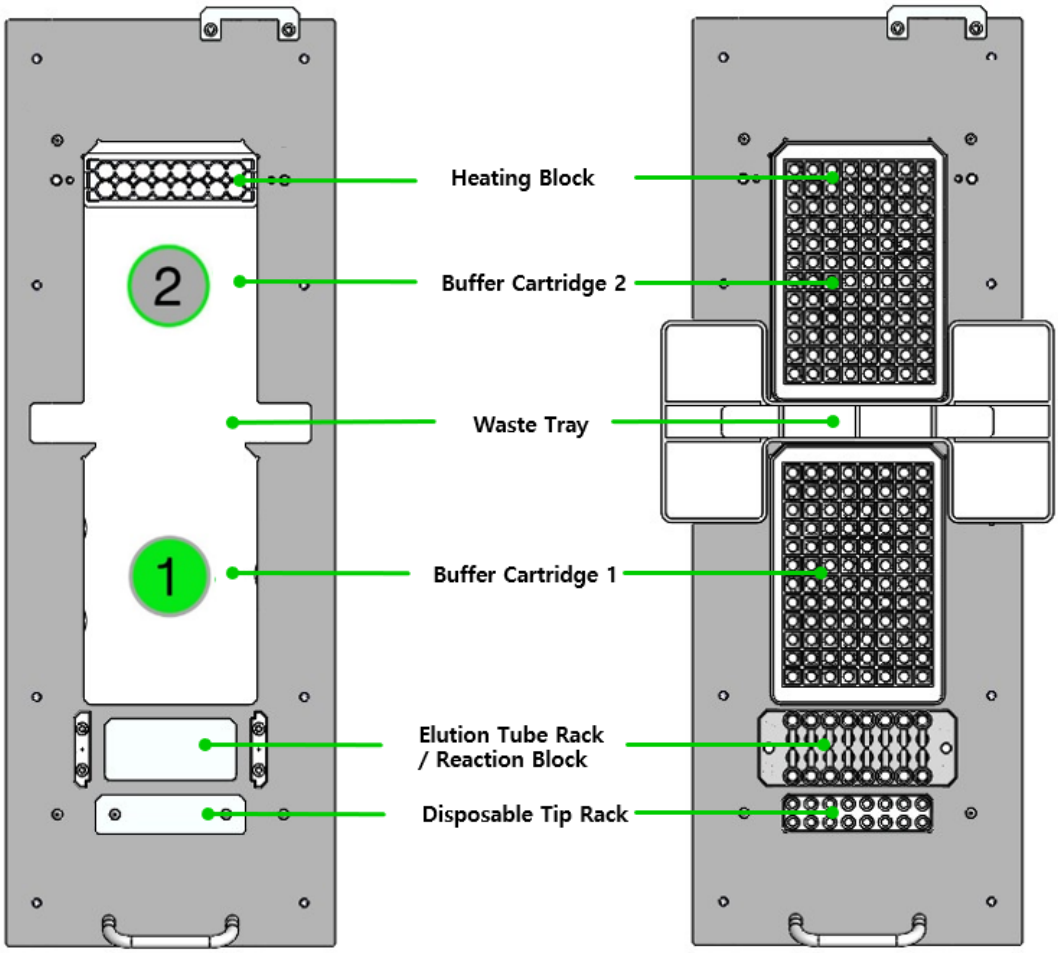



Figure 5. Base plate

Table 3. Description of Base plate

| No. | Part Name | Description |
|---|---|---|
| 1 | Heating Block | Location of Heat block |
| 2 | Buffer Cartridge 2 | Location for placement of Buffer Cartridge 2 |
| 3 | Waste Tray | Location for placement of Waste Rack |
| 4 | Buffer Cartridge 1 | Location for placement of Buffer Cartridge 1 |
| 5 | Elution Tube Rack / Reaction Block | Location for placement of Elution Tube Rack or Reaction Block |
| 6 | Disposable Tip Rack | Location for placement of Disposable Tip Rack |

## Functional Description – Software

### Main menu (MENU)

1) Once the initialization has completed successfully, the LCD touch-screen will display the MENU as shown below.
2) Please contact Bioneer Customer Service or your local sales representative if the initialization progress bar does not change for over 5 minutes during initialization or if the MENU screen does not appear after initialization.


Figure 6. Main menu

Table 4. Description of Main menu

| No. | Icon | Description |
|---|---|---|
| 1 |  | Network Connection<br>➢ This icon allows you to determine if the *ExiProgen*™ is connected to the PC. If the icon is present, it means that the instrument is co nnected to the PC via network. |
| 2 |  | Cooling Fan Operation<br>➢ The Cooling Fan icon allows you to determine the status of the cooling fan. 'STORE OFF' means that the cooling fan is not operating, and 'STORE ON' means that the cooling fan is currently running.<br>➢ In order to keep the diagnostic kits refrigerated, you must press this icon on the LCD touch-screen. |
| 3 |  | Installation of Contamination shield<br>➢ This icon is to determine the status of the syringe block for setting the contamination shield. |
| 4 |  | Power<br>➢ This icon is to be pressed when power rebooting the instrument. |

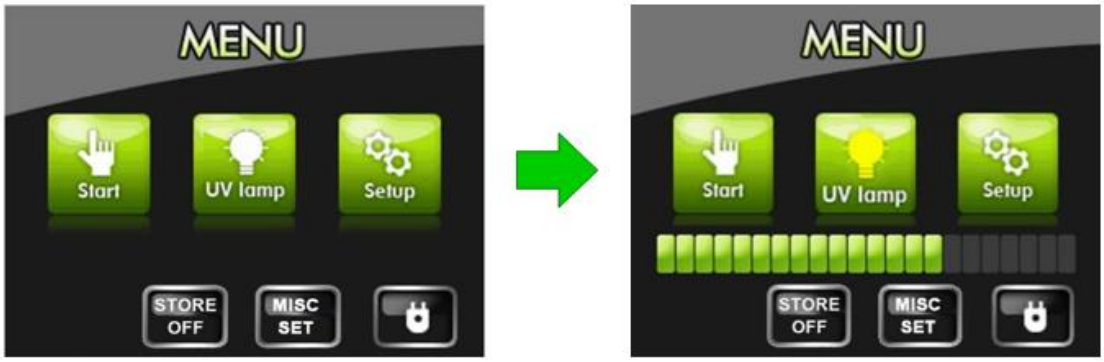
### 1) PREP SETUP


MENU Screen PREP SETUP Screen

Figure 7. PREP SETUP

- Selecting '**Start**' from the Main Menu will bring up the '**PREP SETUP**' screen where you can enter the three-digit code for the extraction and sample source type.
- Refer to the Kit's user guide to select the three-digit code applicable to your desired nucleic acid and sample source type.

### 2) UV Sterilization (UV lamp)




MENU Screen UV Sterilization Screen

Figure 8. UV sterilization

- Use the built-in UV-lamp to sterilize the internal cavity of the instrument.
- Press the '**UV lamp**' icon to initiate the UV sterilization process. The icon will turn yellow as UV sterilization proceeds.
- The sterilization runs for 15 minutes. The progress can be tracked through the progress bar displayed on the bottom portion of the LCD touch-screen. To cancel the sterilization process, press the 'UV lamp' button again.

3) System Setup menu (SETUP)


MENU Screen SETUP Screen

Figure 9. SETUP menu

Table 5. Description of SETUP menu

| No. | Icon | Description |
|---|---|---|
| 1 |   | User registration menu<br>➢ You may create new accounts through this menu. |
| 2 |   | System configuration menu<br>➢ Allows you to restrict non-registered users from accessing features such as UV sterilization and system preferences. |
| 3 |   | History<br>➢ Enabled by selecting the user login option.<br>➢ Allows you to audit up to 99 most recent runs by displaying information such as user ID, operation record and the instrument status (successful, cancelled) of a particular run. |
| 4 |   | SELF TEST<br>➢ This icon is for testing each motor initialization and heater block Temperature. |
| 5 |   | TIP OUT<br>➢ This icon is for removing the Disposable Tips from the instrument Syringe Block. Pressing this icon will release the tips immediately. |

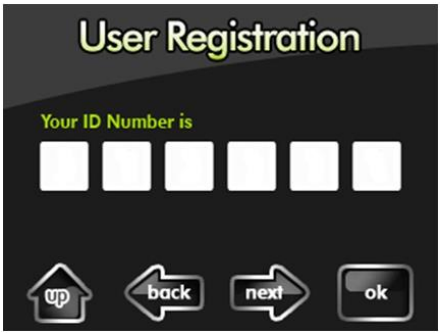
## Registering a New User

*ExiProgen*™ provides a user login option restricting the use of the instrument to registered users only. Enabling the user login option will limit non-user access to the instrument. Do not forget your user ID if you have enabled the user login option.


1. Press the '**Setup**' button to access the SETUP menu.


2. Press the '**User**' button to access the User Registration menu.


3. Enter a 6-digit user ID using the keypad on the LCD touch screen and press 'Enter' to save the ID.
   - **Delete**: Delete last number entered.
   - **Clear**: Delete all numbers entered.
   - **Enter**: Save the numbers entered.




4. Verify the user ID and press '**ok**' to complete the registration.
   - If the login option is enabled, non-registered use will have limited access to the instrument.
   - Do not forget your user ID.

**NOTE**

Up to 50 users can be registered. You can manage non-used user IDs using the administrator menu.

## Viewing Run History

If the login option is enabled, the user ID, process type and run status of each run is saved. Up to 99 most recent runs are saved in memory.


1. Press the '**Setup**' button to access the SETUP menu.


2. Press the '**History**' button to view the instrument run history.


3. The run history contains the following parameters
   - **No.**: Indicates the order of use. The most recently used user information is listed at the top.
   - **User ID**: The 6-digit user ID.
   - **Work**: An abbreviation of sample source and protocol type selected for that run.
   - **Status**: Instrument report on whether nucleic acid extraction was successfully completed (OK), stopped during the run (Abort), or cancelled by the user (Canceled).

## Managing the Login Mode

The instrument provides a login mode for restricting non-registered use. Without a user ID, you would have limited access to instrument functions. Do not forget your user ID.


1. Press the '**Setup**' button to access the Setup menu.


2. Press the '**Config**' button to access the System Setup menu.


3. Press the '**User**' button to enable login mode.
   - If the login mode is enabled, a popup prompt (**User Mode ON**) appears and the user icon will turn blue.
   - Press the '**User**' button again to disable user login mode. A popup prompt (**User Mode OFF**) appears and the user icon will turn white.


**NOTE**

Entering an invalid user ID three consecutive times with user login mode enabled will shut down the system. Press the '**Power**' icon on the LCD touch-screen to restart.

## Managing the Automatic UV-Sterilization Mode

The instrument provides an automatic UV-Sterilization mode to sterilize the instrument after every DNA/ RNA extraction run.


1. Press the '**Setup**' button to access the SETUP menu.


2. Press the '**Config**' button to access the System Setup menu.


3. Press the '**UV lamp**' button to enable automatic UV sterilization.
   - If automatic UV-sterilization is enabled, a popup prompt (**UV Mode ON**) appears and the UV lamp icon will turn yellow.
   - Press the '**UV lamp**' button again to disable the mode. A popup prompt (**UV Mode OFF**) appears and the UV Lamp icon will turn white.

## Configuring the System

Only the one user with a registered administrator ID is able to configure the system. Do not forget the administrator ID.


1. Press the '**Config**' Button from the System Setup menu to access the System Config menu.



Calibrates the screen position


Manages user IDs as well as administrator ID


Accessible only by authorized engineers


2. **Screen**: Calibrates the screen position
   - Calibrate the screen position relative to touching.
   - Press and hold the **circle** at the upper left corner with a blunt tool for 2 seconds.
   - Press and hold the **circle** at the bottom right corner with a blunt tool for 2 seconds.

**NOTE**
Factory (A/S menu): Only authorized service engineers may access this menu to service the instrument.

## Administrator Management


1. Press the '**Admin**' button from the System Config menu to access the Admin Access menu.


2. Enter the 6-digit administrator ID using the keypad on the LCD touch-screen.

3. Press the '**Enter**' button.


4. The Admin Menu screen includes an option to delete user IDs or change the administrator ID
   - Select '**User list delete** (1)' to delete unused IDs.
   - Select '**Administrator password change** (2)' to change the factory default administrator ID.


5. **User list delete menu (User List)**
   - **Registered User**: Displays the number of registered users.
   - Select the user ID you wish to delete and press '**ok**' to confirm deletion.
   - Use the '**back**' or '**next**' buttons to navigate the pages.


6. Administrator ID change menu
   - Enter a new 6-digit administrator ID using the keypad in the middle of LCD touch-screen and press '**Enter**' button to save.


7. Press the '**ok**' button to save new administrator ID after verifying the new administrator ID.
   - You may now use the new administrator ID to delete user IDs or setup and configure the system.
   - Do not forget new administrator ID.

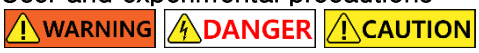
## WARNINGS AND PRECAUTIONS

Before use, please read the warnings and precautions for safety to ensure proper use. The precautions indicated here contain important information regarding safety and must be observed as they are intended to prevent accidents or danger by using the product safely and correctly. In this user guide, the degree of danger in the event of mishandling is classified into the following three grades. “Warnings and Precautions for Safety” are classified into seven categories: “Danger”, “Warning”, “Caution”, “Electrical Hazard”, and “High Temperature Warning”, and their meanings are as follows.

| | |
|---|---|
|  | Ignoring this sign and mishandling the instrument may cause death or serious injury. |
|  | Ignoring this sign and mishandling the instrument may cause death or serious injury due to an electric shock. |
|  | Ignoring this sign and mishandling the instrument may cause the possibility of death or serious injury. |
|  | Ignoring this sign and mishandling can result in death or serious injury due to high temperatures. |
|  | Ignoring this sign and mishandling may result in death or serious injury due to fire. |
|  | Ignoring this sign and mishandling the instrument may cause personal injury or property damage. |
|  | Ignoring this sign and mishandling can result in biohazard exposure and lead to infection |

### Use and Care

#### User and experimental precautions



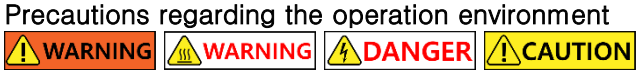
1) Make sure that the power supply (100–240V, ~50/60Hz) is correctly connected to the power adapter and, the power adapter is correctly connected to the instrument. Incorrect connection of the power adapter and the power supply can result in instrument damage or failure to turn on.
2) This instrument is intended for nucleic acid extraction and protein expression/purification. Please use the instrument for these purposes only.
3) The instrument may stop if the LCD panel is touched while the instrument is connected to a PC via LAN cable and operating.
4) Do not turn the PC off or disconnect the LAN cable connected to the PC to the instrument. Data communication error can result in instrument malfunction and can affect the results of your experiment.
5) Please install the instrument on a flat and level surface.
6) Do not operate the instrument with wet hands as this may result in electric shock or instrument malfunction. Please touch the power adapter cable with dry hands.
7) If the instrument is stopped either from operator error including improper component insertion or manually halting the instrument during normal operation, you must re-initialize the instrument before pulling out the Base Plate. Pulling out the Base Plate without prior initialization can lead to instrument damage from movement interferences such as the Heating Block or other components stopped in motion. If Buffer Cartridges are inserted into the Base Plate, please reinitialize the instrument or pull out the Buffer Cartridges to make sure the Heating Block is not in the way of normal Base Plate movement.

8) Avoid placing objects in front and rear of the instrument, as fan blockage may reduce the efficiency of the Cooling Block performance.
9) Avoid any obstruction or foreign material in front of the lower-front side Cooling Fan mesh. Foreign objects can hinder normal Cooling Fan operation, and it may lead overheating of parts or cause fire.

### Precautions regarding the electrical environment


1) If the power cable is loose, do not use the instrument. Power cable overheating may result in shock or fire.
2) Do not operate multiple instruments out of a single wall outlet. The load may cause overheating and may lead to fire.
3) When plugging or unplugging the power cable from a wall outlet, make sure your hands are completely dry. Wet or moist hands may cause electric shock.
4) A convenient and safe power cable should be available. The power cable provided by our company should be used.
5) Socket outlets should be at least 1.5 m from a sink or wash basin.
6) Power cable should not be repaired with insulating tape. Water can still get inside.
7) If you use other power cable, it should be adequate for the electrical capacity for the *ExiProgen*™ (250V, 16A, 0.75mm$^2$, VDE).
8) Plugs should match the socket outlets.
9) Unplug the power cable from the *ExiProgen*™ when not in operation for a long period of time to prevent the possibility of fire by overheating.
10) The Adapter provided by our company must be used(FSP GROUP INC. AC Input: 100-240VAC, 2.3~0.8A, 50/60Hz, DC Output: 24VDC, 7.5A, Pin1,2: +, Pin3, 4: -, UL).
11) *ExiProgen*™ is equipped with a 3-conductor AC power cable that, when connected to an appropriate AC power outlet, grounds (earths) the instrument. To preserve this protection feature, do not operate the instrument from an AC power outlet that has no ground (earth) connection.

### Precautions regarding the operation environment




1) Avoid placing objects in front and rear of the instrument.
2) Avoid installing the instrument in a dusty environment. Excessive dust may cause malfunction or damage to the instrument.
3) Avoid operating the instrument near heat sources. This can cause fire.
4) Avoid operating the instrument near sources of water or damp locations. This can cause electrical shock, fire or instrument malfunction.
5) Do not install near sources of flammable or corrosive gas. In a case of a gas leak, do not touch the power plug. Open the window and ventilate the area. Sparks from the power plug can cause fire and/or explosions.
6) Do not disassemble or modify the instrument in any way. This can result in fire, electrical shock or malfunction, and also voids the manufacturer's warranty.

### Precautions regarding the instrument installation


1) Do not install the instrument in a location exposed to direct sunlight.
2) Install the instrument on a flat and solid surface that does not move.

3) While installing the instrument, make sure at least 15 cm separate the instrument from the nearest wall.
4) Take cautions not to damage the cooling fan mesh (located on the front-bottom) while installing.

### Precautions regarding instrument operation

DANGER CAUTION

1) Dust off the power cable and connect to the instrument firmly and securely. Incomplete electrical contacts may cause fire.
2) Operate the instrument within ambient temperature range of 15℃~35℃. Excessive exposure to heat will negatively affect the instrument and the experiment results.
3) Operate the instrument within the recommended humidity range (20~80%, no condensation). Humid conditions may cause corrosion or malfunction.
4) Do not place any object directly next to or behind the instrument. The instrument may malfunction.
5) This instrument contains precisely machined parts. Do not drop and handle with care. Improper handling of the instrument may compromise performance and cause safety hazards.
6) While the instrument is not in use for a long period of time, turn the instrument off and unplug from the wall outlet.
7) Take caution not to damage the cooling fan mesh located on the lower-front of the instrument. If the mesh is damaged and the Cooling Fan does not work, the Cooling Fan motor and cooling element may overheat and cause fire.
8) The instrument automatically turns off the UV lamp and stops operation when the instrument door is open. However, in case this safety measure fails, do NOT expose your eyes or skin to direct UV light.

### Precautions regarding usage and maintenance

WARNING DANGER CAUTION

1) This product should only be used for nucleic acid extraction, protein expression/purification and automatic aliquoting. Do not use the instrument for any other purpose other than explicitly stated in the user guide.
2) You must use the supplied components and tubes.
3) Do not modify or delete instrument-related information installed within the instrument.
4) Do not use a sharp object to operate the LCD screen.
5) The instrument UV lamp will only operate if the door is completely shut. Make sure the door sensor is free of any material or obstruction.
6) Do not use powerful detergents or solvents to clean the outside of the instrument. This may cause discoloration of the instrument. If such chemicals are spilled on the instrument, immediately clean with a soft cloth.
7) Do not keep the instrument in highly humid environment. Moisture Damage is classified as water damage and is not covered by the manufacturer's warranty. Also, an instrument with moisture damage may not be repairable.
8) Disassembly and/or modification of the instrument voids the manufacturer's warranty and a service request may be refused.
9) Do not unplug the power adapter from the instrument while the instrument is in use. This may cause damage to the instrument.
10) If a burning smell is detected or the instrument seems to be excessively hot during operation, immediately stop using the instrument and call your service representative.
11) Do not drop or impact the instrument. This causes direct instrument damage and will void the manufacturer's warranty.
12) Always verify that the Heating Block is in initial position before pulling out the Base Plate. If the Base Plate is pulled out while the Heating Block is not in its initial position, the interference in

movement can cause Heating Block and other internal component damage and lead to instrument malfunction. Since installed Buffer Cartridges obscure the view, re-initialize the instrument or take out the Buffer Cartridges and visually inspect the position of the Heating Block before pulling out the Base Plate.

13) Take caution not to damage the cooling fan mesh located on the lower-front side of the instrument. If the mesh is damaged and the Cooling Fan does not work, the Cooling Fan motor and cooling element may overheat the instrument and cause fire.
14) When there is liquid in the Waste Tray in the instrument, take extra caution to push-in or pull-out the base plate so the liquid does NOT overflow on the surface of the instrument inside. If happens, it may damage the instrument or cause the electrocution.

### Precautions UV Lamp


1) Do not expose your eyes and skin to the UV light. The instrument is programmed to turn off the UV lamp when the door is opened, but exposure of your eyes or skin to the UV light can cause serious damage.
2) Ensure no foreign matter interferes with door closure or the door sensor.
3) The instrument is programmed to run 15 minutes of sterilization for user safety.

### Precautions regarding moving and lifting instrument


1) The instrument is to be moved and positioned only by the personnel or vendor specified in the applicable site preparation guide. If you decide to lift or move the instrument after it has been installed, do not attempt to lift or move the instrument without the assistance of others, the use of appropriate moving instrument, and proper lifting techniques.
2) Improper lifting can cause painful and permanent back injury. Depending on the weight, moving or lifting an instrument may require two or more persons.

### Precautions regarding biological and chemical hazard safety


1) Biological samples such as tissues, body fluids, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective eyewear, clothing, and gloves.
2) Before handling any chemicals, refer to the Material Safety Data Sheet(MSDS) provided by the manufacturer, and observe all relevant precautions.
3) Always determine what chemicals have been used in the instrument before changing reagents or instrument components. Wear appropriate eyewear, protective clothing, and gloves when working on the instrument.
4) Read and understand the Material Safety Data Sheets(MSDS) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
5) Minimize contact with chemicals. Wear appropriate personal protective instrument when handling chemicals (for example, safety glasses, gloves, or protective clothing).

## Precautions regarding waste liquid

This instrument is used with a special kit that contains large amounts of chlorine compounds for the purpose of extracting a nucleic acid. Furthermore, the nucleic acids extracted through this instrument have a shelf life about their sequence information. So, the residual nucleic acid can give a bad effect to the performance of the instrument. Minimizing this kind of risk, it is strongly recommended to follow the appropriate procedures for the prevention and progression themselves after referring the below.

**NOTE**

- Power off the *ExiProgen*™, then remove the adapter.
- Allow the instrument to cool until the heater & magnetic block and elution block reach room temperature.

## Precautions immediately after using the Instrument

**CAUTION**

- Always wear protective glasses and gloves when servicing the instrument.
- After using the instrument, the liquid remains in the cartridge, so avoid sudden movements or dropping of the used cartridge.

**WARNING**

During instrument operation, the temperature of the heater & magnetic block can be as high as 100 ℃, and the temperature of the heater block can be as high as 50 ℃. Before performing the procedure, keep hands away until the heater & magnetic block and elution block reach room temperature.

1) If you operate the base plate rapidly, the overflow of waste reagent will contaminate inside of the instrument, so that the false positives will appear from the next experiment.
2) The waste is corrosive to stainless steel and other metals because the waste contains large amount of chlorine compounds.
3) Accidental happening an overflow, request A/S to clean it because the disassembly of the base plate is required to remove the inside pollution in it.

## Cleaning liquid for the interior and exterior of the instrument

1) To clean the interior and exterior of the instrument, use distilled water (DW), 70% ethanol, and nucleic acid decomposition solution (5% Nitric acid, 1% sodium hypochlorite (bleach), or DNA zap).

## Cleaning a contaminated instrument

**CAUTION**

If the instrument is contaminated, appropriate measures must be taken immediately to prevent the accumulation of contamination and damage to the instrument.

1) If a waste solution did not go into the base plate, clean it using a paper towel treated with nucleic acid digestion solution. After that, clean it again using a wet a paper towel with DW, dry it using a dry paper towel, and sterilize the inside of instrument with UV lamp immediately.

2) If the waste went into the base plate, you have to request A/S to clean it because the disassembly of the base plate is required.

### Waste disposal

**⚠CAUTION** 
If sample or liquid waste comes into contact with skin, wash immediately with soap and water and consult a physician.

1) Liquid waste and used consumables must be disposed properly according to the waste local regulations.
2) Wear appropriate eyewear, clothing, and gloves when handling reagent and Waste Tray.

# INSTALLATION

This instrument is designed for indoor use and must meet the following standards with adequate installation space. Unpacking and installation are all available only by our engineers or agency staff trained in this company.

### Necessary items

A box cutter, scissors, gloves, etc.

### Checklist upon delivery

Upon receiving the instrument, please check the following.

- Product label: The labels must be intact and allow identification of the product (product name, cat. No., etc.).
- Packing condition: The packaging must not be damaged to such an extent that it affects the product inside the packaging.
- Components: Components are included by checking the list in the user guide.

If there are any abnormalities with the items mentioned above, contact BIONEER Customer Service with a detailed description of the issue.

## Checking the installation requirements

Before installing the instrument, ensure that the following conditions are met:

- Instrument must be installed at room temperature. In the case of overseas delivery, it is installed after 24 hours after opening the packaging box.
- Keep the instrument out of direct sunlight.
- Install the instrument in a location with a temperature between 15 ℃ and 35 ℃, and a humidity between 20 % and 80 % (non-condensing).
- Do not install the instrument in a dusty area or close to fire hazards such as electric heaters.
- Keep the instrument away from splashing water or high humidity areas.
- Do not install the instrument in locations where inflammable or corrosive gases are generated.
- Place the instrument on a flat, stable surface that can support its weight.
- Leave at least 15 cm of clearance between the instrument and the wall.

**⚠CAUTION**

If the instrument is damaged, take pictures of the damaged part and state, the damaged part, and contact this company or our distributor to get proper action.

## Unpacking

**⚠CAUTION**
Save the packing materials and box in case you need to ship the instrument to Bioneer for service.

1. Follow the instructions below to safely unpack the instrument.

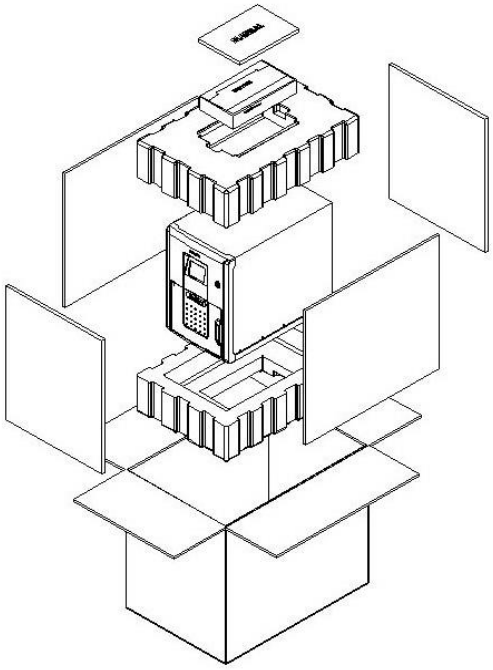


Figure 10. Exploded view of the packing box

a) Cut the straps securing the instrument box.
b) Cut the tape securing the top flaps of the instrument crate, then open the flaps.
c) Remove the *ExiProgen*™ components from the instrument and set them aside.
d) Lift and remove the cover from the instrument crate.
e) Remove the packing material from the *ExiProgen*™, then inspect the instrument for shipping damage.

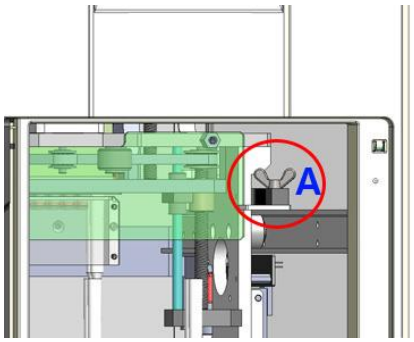
2. Move the *ExiProgen*™ to the desired installation site. Follow these guidelines for lifting and moving:
   - Make sure that you have a secure, comfortable grip.
   - Keep your spine in a neutral position.
   - Bend at the knees and lift with your legs.
   - Do not lift and twist your torso at the same time.

3. Open the bag containing the *ExiProgen*™ components, then verify that it contains:
   - Refer to Table 1. Product components

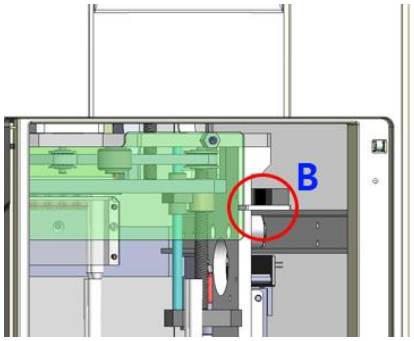
## Removing the Transportation Lock

**⚠CAUTION**

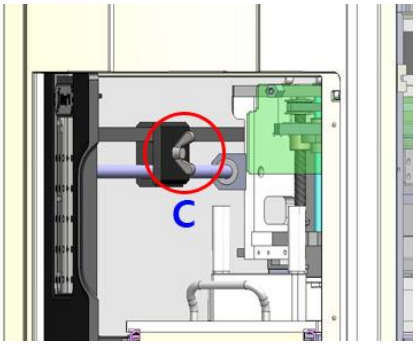
This product is shipped with a Transportation Lock attached to protect the syringe block inside during shipment. Before using this product, it is essential to remove the Transportation Lock as follows.



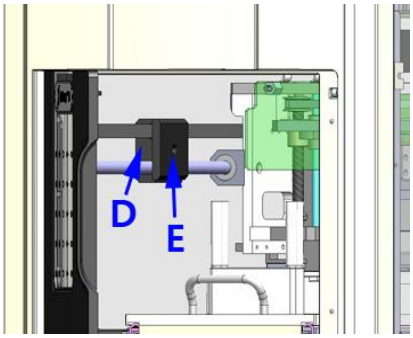

1. Open the door and remove the **Screw (A)** from the rail.




2. Remove the **Holding plate (B)** from the rail and the Syringe Block.

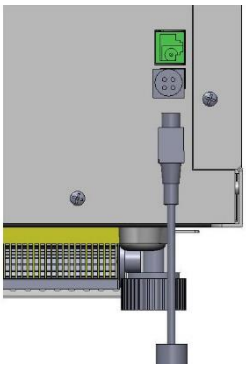



3. Remove the **Screw (C)** from the locking block which immobilizes the belt.




4. Separate the **Holding block (D, E)** from the belt and remove it.

## Power ON

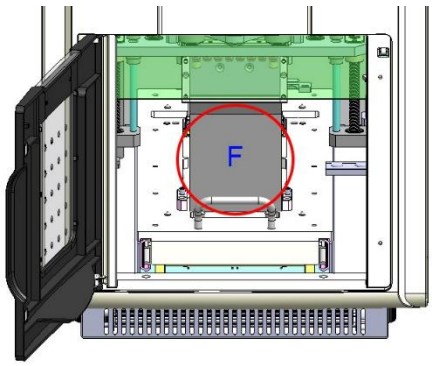


1. Connect the power cable to the rear of the instrument.


2. Turn on the instrument. A power button will display on the LCD touch screen to indicate normal power on.


3. Press the power button on the LCD screen to initialize the instrument. A progress bar on the lower portion of the LCD touch-screen will indicate initialization progress.

4. The main screen (with its pictures) will be appeared when the initialization is done.




5. Open the door and remove the **Sponge block (F)** from the Base plate after initialization.

**⚠CAUTION**

If the instrument does not operate or initialization is not completed even after removing the fixture and installing the product and connecting the power, stop operating immediately and contact the head office or the relevant dealer.

# OPERATION

**⚠CAUTION**
Do not manually move internal instrument components when the instrument is on. It will damage the instrument, and it may void the warranty.

## Protein Synthesis and Purification

### Before Starting

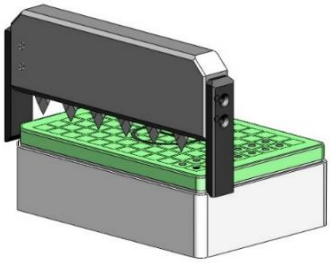

1. Press **'STORE OFF'** on the LCD to turn the cooling block on. 'STORE OFF' will be changed to 'STORE ON', and the Cooling Block maintains the Elution Tube Rack at a low temperature to keep the *E.coli* extract refrigerated.

### Sample Preparation

**NOTE**
- Buffer cartridge and *E.coli* extract are included in the kit. For detailed instructions, please refer to the kit's user guide.
- Before making holes in Buffer Cartridges ① and ② using a hole punch, shake well from side to side to ensure that each reagent and bead are located at the bottom of the plate.

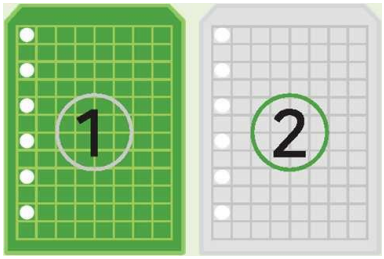
## A. Batch Mode

- Kit: *ExiProgen*™ EC1 Protein Synthesis Kit (K-7300 – K-7302)

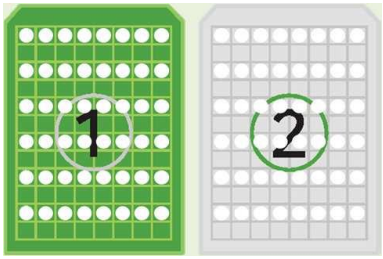


1. Punch holes in the sealing films of Cartridge ① and ② using 6 Hole Punch according to the number of samples.

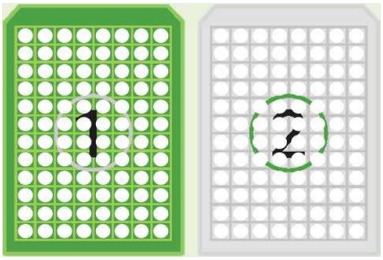
> **NOTE**
> Refer to the left pictures and punch holes depending on the required number of samples.




Ex) Sample 1

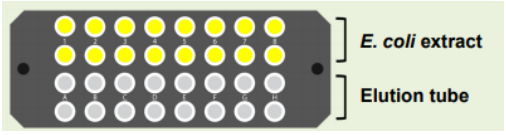



Ex) Sample 8



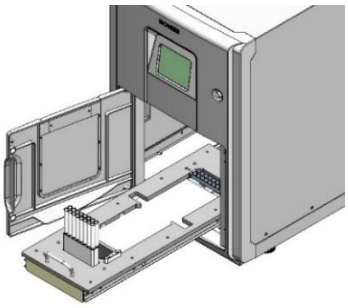

Ex) Sample 16


2. Add template DNA to 'Sample Loading Well' in Buffer Cartridge ②




3. Place the E. coli extract and Elution tube on the Elution Tube Rack.

> **NOTE**
> Rows in number: E. coli extract,
> Rows in alphabet: Elution tube

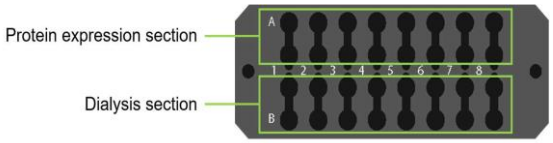


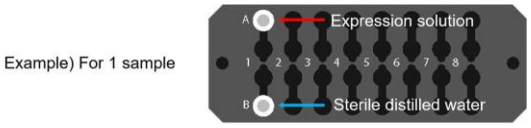
4. Open the door of instrument and pull out the Base Plate.

5. Place 'Elution Tube Rack', 'Disposable Tip Rack', 'Buffer Cartridges', and 'Waste Tray' in the respective locations on the base plate according to the CHECK LIST

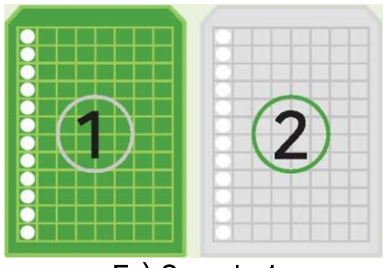
## B. Stepwise Mode

- Kit: *ExiProgen*™ EC1-Maxi Protein Synthesis Kit (K-7310), *ExiProgen*™ EC1-TF Protein Synthesis Kit (K-7320), *ExiProgen*™ EC2 Protein Synthesis Kit (K-7330)

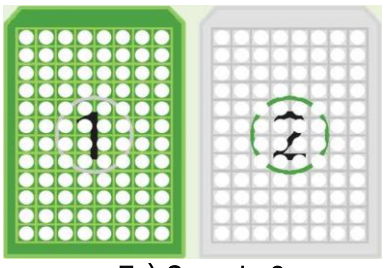



1. Prepare the Reaction Block and take out twice as many Dialysis tube as the number of samples.
2. After washing and removing moisture from the Dialysis tubes, insert them into the Reaction Block.
3. Fill the tube in row B of the Reaction block with 500 µl f sterile distilled water.
4. Add each protein expression solution prepared above into the tubes in row A of the Reaction block.
5. Punch holes in the sealing films of Cartridge ① and ② using 6 Hole Punch according to the number of samples.



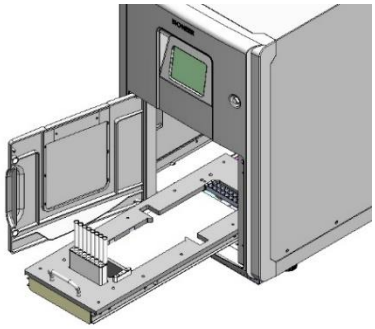

Ex) Sample 1




Ex) Sample 8

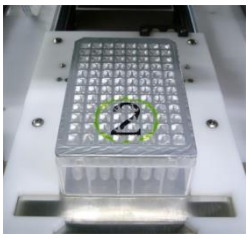
**NOTE**

Unlike when using the batch mode kit, all rows in each column must be drilled as shown in the picture on the left.

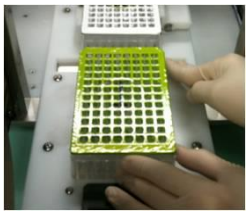


6. Open the door of instrument and pull out the Base Plate.
7. Place 'Elution Tube Rack', 'Disposable Tip Rack', 'Buffer Cartridges', and 'Waste Tray' in the respective locations on the base plate according to the CHECK LIST

## CHECK LIST of Setup Procedure

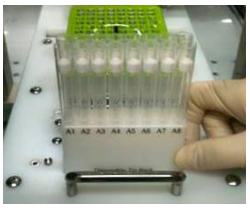


1. Insert Buffer Cartridge ② on the Base plate.
   - ➢ Make sure that the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction.

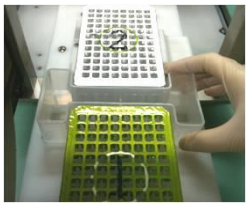


2. Insert Buffer Cartridge ① on the Base plate.
   - ➢ Make that sure the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction.

3. Place the Elution tube rack (the Batch mode) or the Reaction Block (the Stepwise mode) on the Base plate.
   - ➢ Make sure that the direction and location of the Elution tube rack is correct.

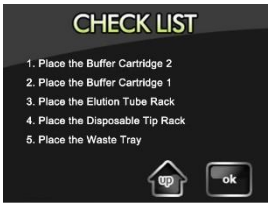


4. Place the Disposable tip rack on the Base plate.
   - ➢ Make sure that the direction and location of the Disposable tip rack is correct.



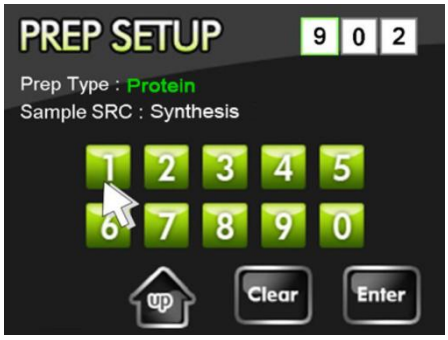
5. Place the Waste tray into the gap between Buffer Cartridges ① and ②.

6. Push the Base Plate in completely until it fits into its original position by ‘clicking’, and close the door.
   - ➢ Press the ‘ok’ button to complete.



## Running the Protein Synthesis

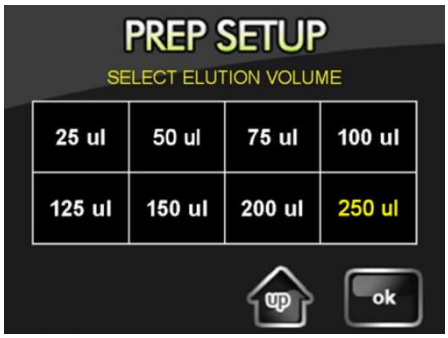

1. Press the 'START' button to access the PREP SETUP screen.




2. Referring to the code list of purchased kit's user guide, input the three-digit code applicable to your desired protein.

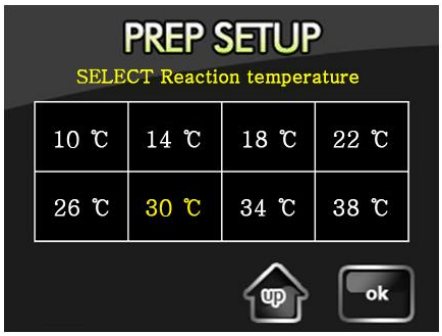
3. Verify the 'Prep Type' and 'Sample SRC' of the three-digit code you have entered.

4. Press the 'Enter' button to access the 'elution volume' selection menu.




5. Select the desired volume of protein-elution solution, between 25 µl and 250 µl, from 'Select Elution Volume' of the LCD touch-screen.

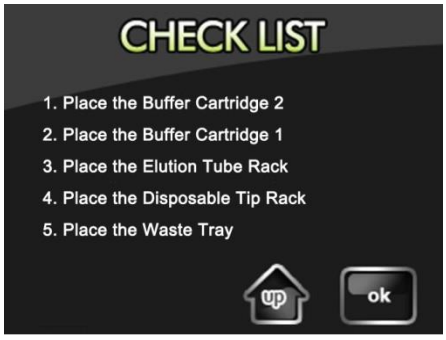
6. After selecting the desired 'elution volume' press 'ok'. to complete PREP SETUP.




7. Select the desired temperature during protein synthesis, from 'Select Reaction Temperature' of the screen. Generally, 30°C is appropriate for the most of proteins.

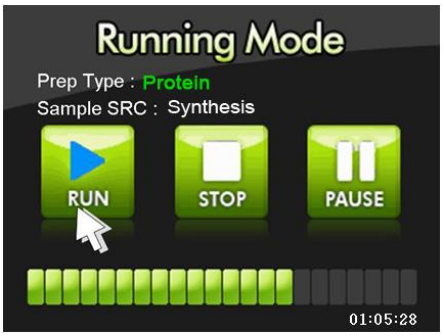
> **NOTE**
> This selection is not applied to the Batch mode.

8. After selecting the desired 'reaction temperature' press 'ok' to complete PREP SETUP.



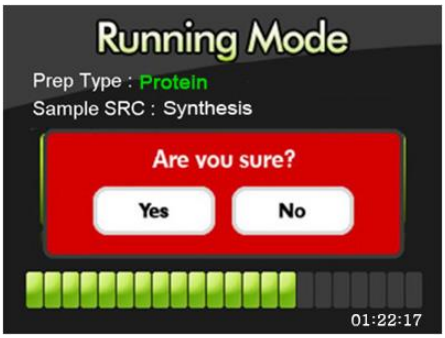

9. Following the check list, make sure that every components inside the instrument are placed correctly.

10. Click 'ok'.

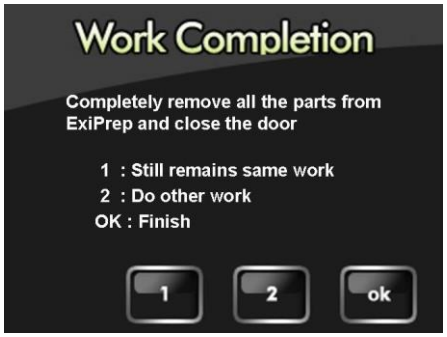



11. Check the name of the prep type and sample source type on the Running Mode screen, then press the '**RUN**' button.

> **NOTE**
> Progress of the expression/purification run can be checked through the progress bar on the lower portion of the LCD touch-screen.




12. You may press the '**STOP**' button during the run, if you want to terminate the protein expression/purification.
    - Select the "YES" or "NO" button in the pop-up window.
    - You may select '**PAUSE**' to temporarily stop the run and '**RUN**' to resume.




13. After the protocol run is complete, pull out the Base Plate and remove the Elution tubes, Buffer Cartridges and all racks from the Base Plate. After removing all the components, push the Base Plate back in completely and close the door.

14. You are given three options at this point:
    - **Still remains same work:** Repeat the current protocol.
    - **Do other work:** Perform another work under the different protocol.
    - **Finish:** Finish and exit.


15. If the automatic UV-sterilization option is enabled, a popup screen will appear warning you not to open the door as UV sterilization will be in progress.

16. Press the '**START**' button to initiate sterilization.
    - Select '**SKIP**' if you wish to skip sterilization.

17. The sterilization process takes 15 minutes. Progress can be checked through the progress bar.

18. Press the 'Store On' button to turn the Cooling Block and cooling fan off.

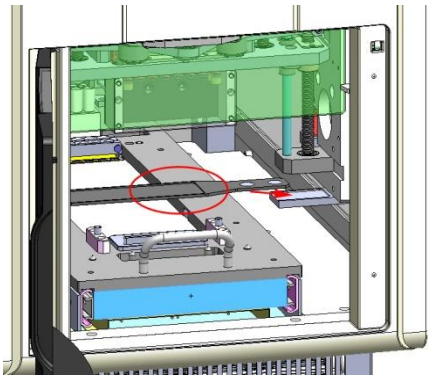
## Nucleic acid Extraction

### Contamination Shield installation

**⚠CAUTION**
This process must be performed before components are installed on the base plate. Otherwise, malfunction of the instrument may result in failure.


1. From the **'Menu'** screen, click **'MISC SET'**.
   - ➢ This will bring the Syringe block to the front of the instrument for Contamination shield attachment.

**⚠CAUTION**
In order to use contamination shield, it must be installed correctly.



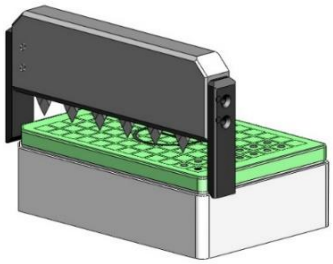
2. Place the contamination shield on the lower-right side of the Syringe block.
   - ➢ Contamination shield has a magnet which means if you place on the upside-down right, it will stick to the holding bar.


3. From the 'Menu' screen, click **'MISC SET'**. The base plate moves back to the initialization position (inside the instrument).

## Sample Preparation

**NOTE**

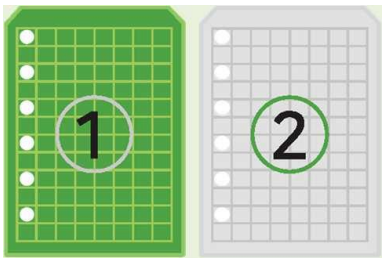
- The 'Buffer Cartridge', 'Disposable Tip' and 'Elution Tube' are supplied in the DNA/RNA Extraction kit. For detailed instructions, please refer to the kit's user guide.
- Before making holes in Buffer Cartridges ① and ② using a hole punch, shake well from side to side to ensure that each reagent and bead are located at the bottom of the plate.



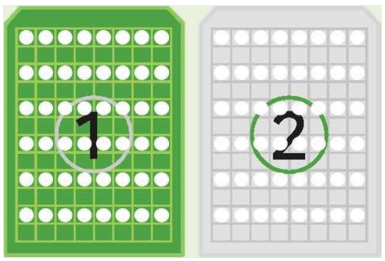
1. Punch holes in the sealing films of Cartridge ① and ② using 6 Hole Punch according to the number of samples.

**NOTE**

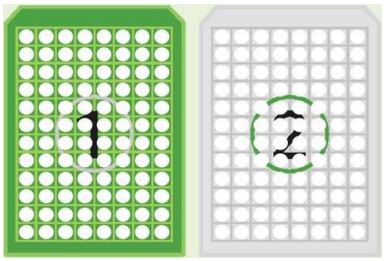
Refer to the left pictures and punch holes depending on the required number of samples.



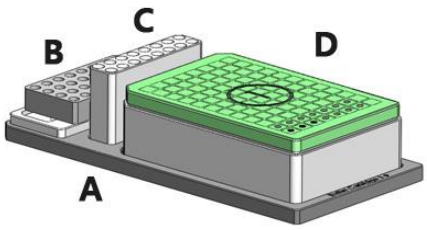

Ex) Sample 1




Ex) Sample 8

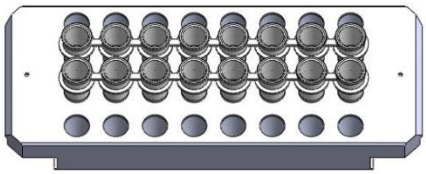



Ex) Sample 16




2. Place **'Setup Tray (A)'** on a **flat** surfaced desk.

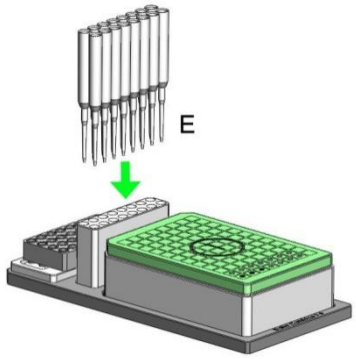
3. On the Setup tray, put on the '**Buffer Cartridge ① (D)**', '**Elution Tube Rack (B)**, '**Disposable Tip Rack (C)**'.



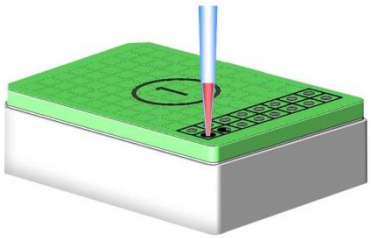
4. Insert the **Elution Tubes** into rows 2 and 3 of the Elution Tube Rack according to the number of samples to be extracted.

**NOTE**

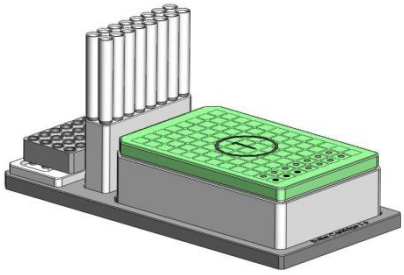
- When extracting DNA/RNA, use the middle two rows of positions 2 and 3 in the elution tube rack, and place the tubes according to the number of samples.
- If necessary, it can be cut and used according to the sample quantity.



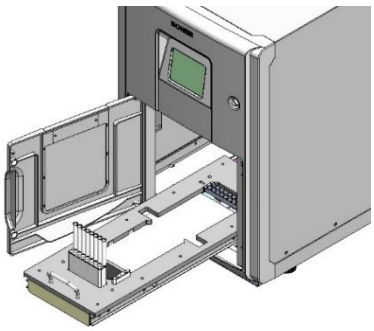

5. Place the number of **Disposable Tip (E)** for the elution onto the Disposable tip rack.



6. Load Insert the sample into **'Sample Loading Well'** of Buffer Cartridge ① carefully.



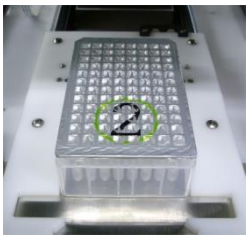
7. Complete the preparation for DNA/RNA extraction.



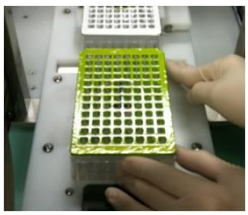
8. Open the door of instrument and pull out the Base Plate.

9. Place 'Elution Tube Rack', 'Disposable Tip Rack', 'Buffer Cartridges', and 'Waste Tray' in the respective locations on the base plate according to the **CHECK LIST**

## CHECK LIST of Setup Procedure

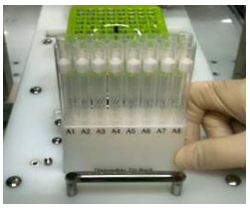


1. Insert Buffer Cartridge ② on the Base plate.
   - ➢ Make sure that the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction.

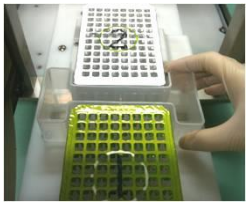


2. Insert Buffer Cartridge ① on the Base plate.
   - ➢ Make that sure the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction.

3. Place the Elution tube rack on the Base plate.
   - ➢ Make sure that the direction and location of the Elution tube rack is correct.

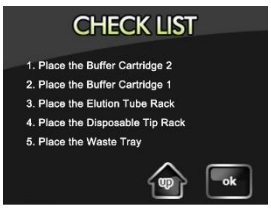


4. Place the Disposable tip rack on the Base plate.
   - ➢ Make sure that the direction and location of the Disposable tip rack is correct.



5. Place the Waste tray into the gap between Buffer Cartridges ① and ②.

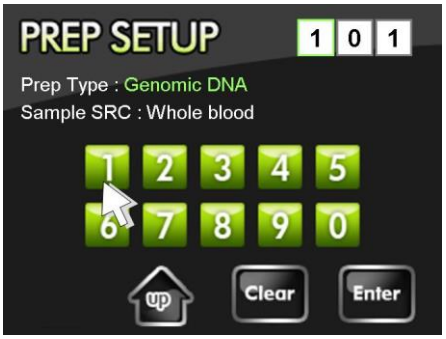
6. Push the Base Plate in completely until it fits into its original position by ‘clicking’, and close the door.
   - ➢ Press the ‘ok’ button to complete.



## Running the Nucleic acid Extraction


1. Press the **'Store Off'** button to turn the Cooling Block and cooling fan on. The Cooling Block maintains the Elution Tube Rack at a low temperature to keep the eluted nucleic acid-diagnostic kit mix refrigerated.

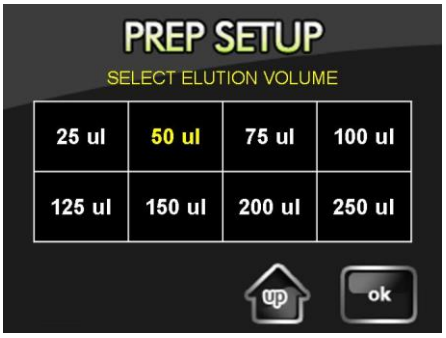

2. Press the '**START**' button to access the PREP SETUP screen.




3. Referring to the code list of purchased Kit's user guide, input the three-digit code applicable to your desired nucleic acid and sample source type.

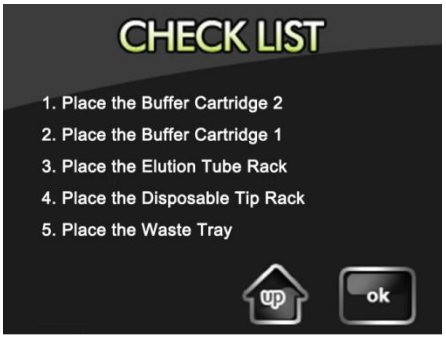
4. Verify the **'Prep Type'** and **'Sample SRC'** of the three-digit code you have entered.

5. Press the **'Enter'** button to access the '**elution volume**' selection menu.



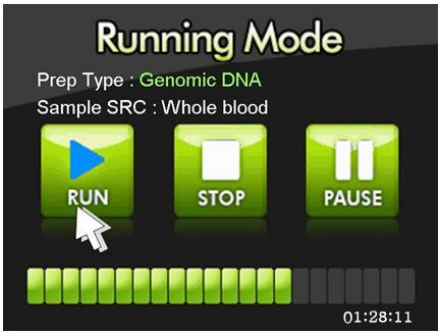

6. Select the desired 'elution volume' from the LCD touch-screen.

7. After selecting the desired 'elution volume' press **'ok'** to complete PREP SETUP.

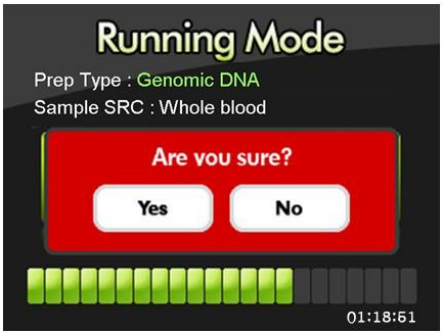



8. Open the instrument door and pull out the Base Plate.

9. Place all racks and Buffer Cartridges in their respective locations on the Base Plate according to the **CHECK LIST** on the LCD touch-screen.

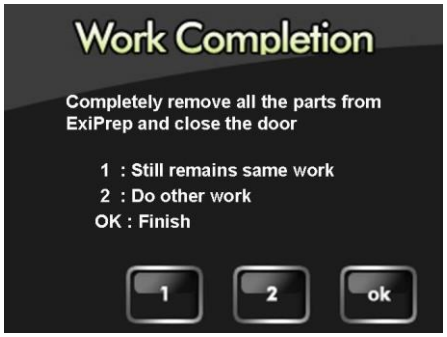



10. Verify the name of the target nucleic acid type and sample source type on the Running Mode screen, and press the '**RUN**' button.
    - Progress of the extraction run can be checked through the progress bar on the lower portion of the LCD touch-screen.




11. You may press the '**STOP**' button during the run to terminate the extraction.
    - If you press '**STOP**' during an extraction run, a popup prompt asking you whether you are sure ('Are you sure?') will appear. Select **'Yes'** to terminate the run, or **'No'** to cancel the stop and to proceed with the extraction run.

12. You may select **'PAUSE'** to temporarily stop the run and '**RUN**' to resume.




13. After the protocol run is complete, pull out the Base Plate and remove the Elution tubes, Buffer Cartridges and all racks from the Base Plate. After removing all components, push the Base Plate back in completely and close the door.

14. You are given three options at this point:
    - **Still remains same work:** Repeat the current protocol.
    - **Do other work:** Perform another work under the different protocol.
    - **Finish:** Finish and exit.


15. If the automatic UV-sterilization option is enabled, a popup prompt will appear warning you not to open the door as UV sterilization is in progress.

16. Press the '**START**' button to initiate sterilization
    - Select '**SKIP**' if you wish to pass sterilization.

17. The sterilization process takes 5 minutes. Progress can be checked through the progress bar.

18. Remove the contamination shield.

19. Press the 'Store On' button to turn the Cooling Block and cooling fan off.

## How to use the Protection Cover Separation Tool

**⚠CAUTION**

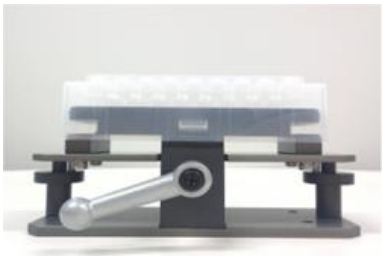
- The handle on the front of the Protection Cover Separation Tool is fixed in the right direction. Before use, as shown in the figure, turn the handle half-turn to the left and adjust it so that Elution Tube Rack can be installed.
- If the handle on the front of the Protection Cover Separation Tool is loose, turn it all the way to the right as in the initial state and use it according to the above procedure.

1. After nucleic acid extraction is complete, remove the Elution Tube Rack.

2. Remove the Protection Cover by following the instructions on how to use the Protection Cover Separation Tool.

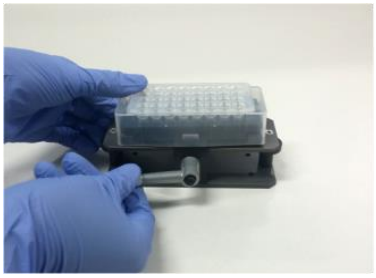
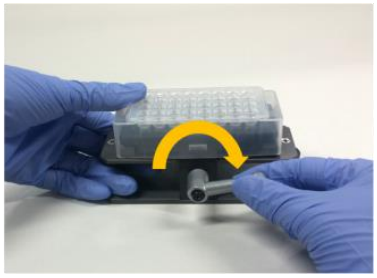
1) Take out Elution Tube Rack from the instrument and place it on top of Protection Cover Separation Tool.

**NOTE**
When placing Elution Tube Rack on Protection Cover Separation Tool, the lever must be facing left-hand side.

2) Firmly hold down Protection Cover and Separation Tool with one hand. Rotate the lever in a clockwise 180° with the other hand.

**NOTE**
Rotate the lever until Elution Tube Rack is firmly fixed to Protection Cover Separation Tool.

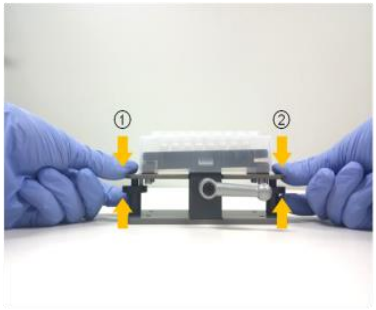



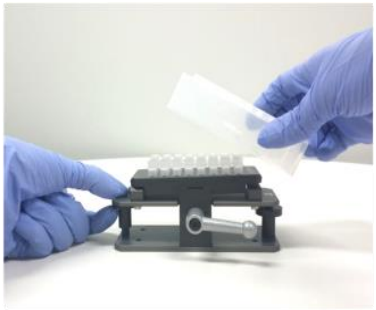
3) After the Elution Tube Rack is fully fixed, Press down both sides of Separation Tool as shown in

the picture below. This action will push Protection Cover upwards so that Elution Tube Rack can be removed with ease.

**NOTE**

Hold down Protection Cover with one hand. Then press down each side of Separation Tool consecutively to prevent any liquid from splashing.



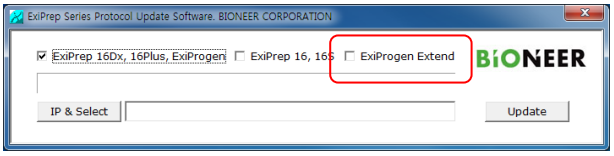
# MAINTENANCE

## Updating software

Updating software may improve instrument functionality and install up-to-date protocols for nucleic acid extraction.

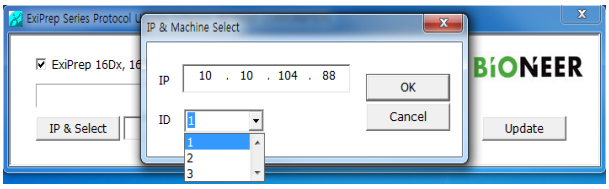
**NOTE**
This program is NOT included with the instrument. If you want to the program, please request it to us. The program can be delivered to you through email as an attachment.

(1) Connect the *ExiProgen*™ to your computer using a **cross-type LAN cable (sold separately)**.
(2) Start the installation of the downloaded program below.
- The default IP address for the *ExiProgen*™ is 10. 10. 104. 88.

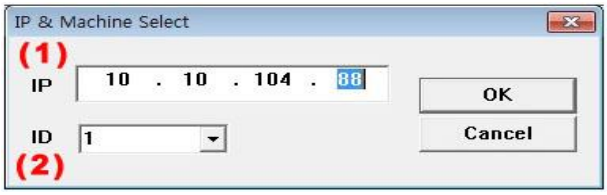



1. Execute the program.

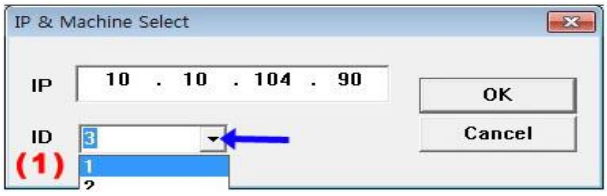
2. Select the instrument type (*ExiProgen*™) to update the protocol on top of the window.



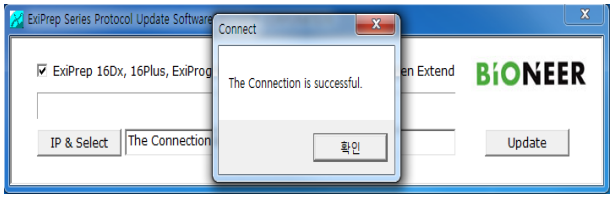

3. When you click the 'IP & Select' button at the bottom left, a new window 'IP & Machine Select' appear with two boxes: IP and ID.




4. There are two ways of connecting to the instrument network.
   - Directly enter the IP address into the IP box (1) and select the instrument ID (2). For example, if the IP address is '10.10.104.88', select ID '1' and click 'OK'.

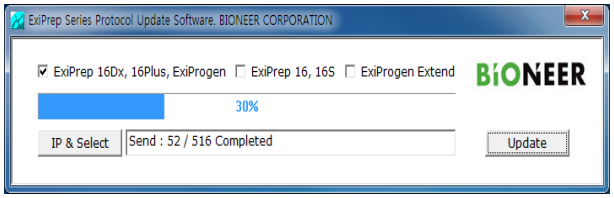



5. Clicking on the small down arrow (blue arrow) will enable you to select several instrument IDs with corresponding IP addresses. Click 'OK' to finish connecting to the instrument.

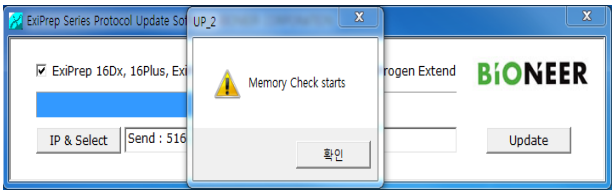



6. If the connection succeeds, the 'Connect Succeeded' prompt will be displayed.

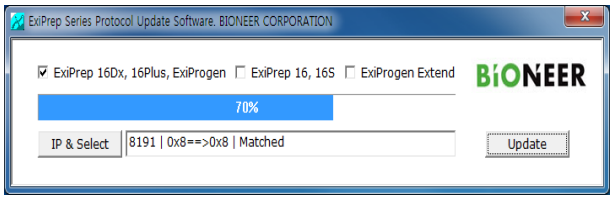

7. If the connection fails, the 'connect fail' prompt will be displayed. In this case, reboot the instrument and network hub, and verify that the network cable is connected correctly. Also verify the PC network settings including the IP address.



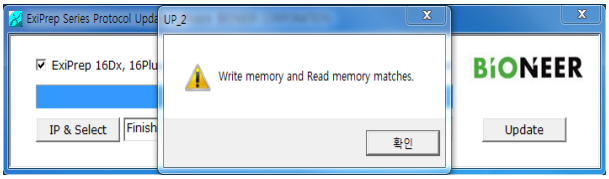

8. After the connection is completed, click the 'Update' button on the right side. Wait until the progress bar is full.
   - ➢ If the connection stops progressing, restart the update process from step 1.



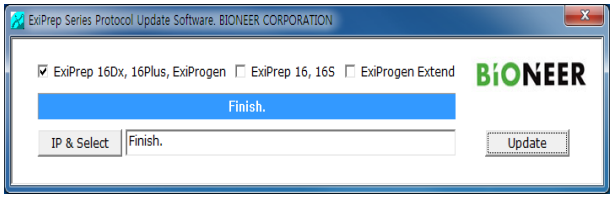

9. Once the connection process is done, 'Memory Check starts' window will pop up and click `OK`.
   - ➢ If the connection stops progressing, restart the update process from step 1.




10. Once 'Memory Check' starts, the progress status bar will be displayed.




11. When the Memory Check finishes the progress, 'Write and Read memory check results to matches' window will pop up, press 'OK' button.




12. If you get the 'Finish' message on the progress bar, all the update process.

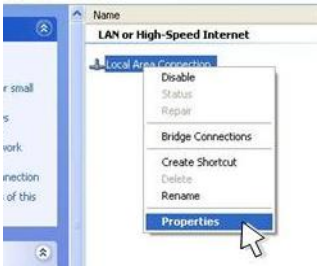
13. Disconnect the LAN cable from the computer and the instrument.

14. Reboot the instrument and reconnect the LAN cable.

**NOTE**

The IP address may change depending on the installation site and PC.

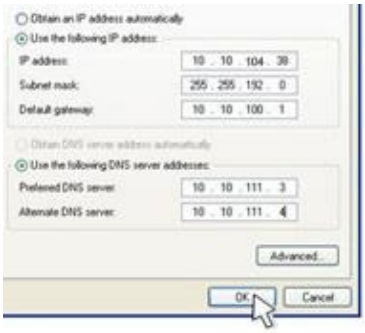
※ If the PC fails to connect to the instrument, try the following steps.




1. Select **'Local Area Connection'** from the control panel.
2. Right-click the connection and select **'Properties'**.


3. Select **'Internet Protocol (TCP/IP)'**.


4. Select **'Use the following IP address'**.




5. Enter the **IP address, subnet mask, Default gateway and DNS server address** information below:
   IP address: 10. 10. 104. 38
   Subnet mask: 255. 255. 192. 0
   Default gateway: 10. 10. 100. 1
   Preferred DNS server: 10. 10. 111. 3
   (Alternate DNS server: 10. 10. 111. 4)
6. Click the **'OK'** button commit the network changes.

## Moving of the instrument

When moving the instrument to another location, do not move it arbitrarily, contact our technical support department or your distributor.

1. Remove all cartridges and contamination shield.
2. Disconnect the power cable.
3. Install the transportation lock. Refer to the INSTALLATION section of this User Guide for additional information regarding the transportation lock. Close the door of the instrument.
4. Using proper lifting technique, have at least 2 people to lift the instrument and place it on a cart if one is available.
5. Move the instrument to the new location.
6. Remove the transportation lock.
7. Reconnect the power cable.

## Instrument Disposal

BIONEER only accepts decontaminated instruments for safety reasons. After decontaminating the instrument, complete the “Certificate of Decontamination” and contact BIONEER Technical Support for return information.

## TROUBLESHOOTING

This section describes the problems that may occur when the instrument is in use and the corresponding actions that should be taken. If the action listed does not solve the problem, or if the problem is not listed below, contact BIONEER Technical Support.

| Problem | Action |
|---|---|
| The Power is not on | 1. Make sure the power connector is connected.<br>2. Check if the system is connected to the adapter.<br>3. Check if the system power is pushed.<br>4. If everything above has been followed but the power is not on, contact After Service. |
| The Power is on but the system cannot initiate | 1. Press the power button to block the power.<br>2. Check if the power was turned off abnormally.<br>3. When the system power was shut off abnormally, check if there are any residues in tips and/or components in the system.<br>4. Remove any residues that may distract operating the system.<br>5. Manually move the syringe block of the interior desktop in the center.<br>6. Turn the power on and check whether the system is initiating.<br>7. Request for After Service. |
| LCD Screen is not on | 1. It may be interior problem of the system, call for the After Service. |
| The system does not operate even RUN button is pressed | 1. Check if the retainer bracket for transport has been removed.<br>2. Check if it is normally initialized when powering up.<br>3. Check if there are foreign objects or components that may hinder the operation.<br>4. Check if components are properly installed and attached.<br>5. Check if there is any other button is operating on the LCD screen.<br>6. Contact your local dealer for repair. |
| The system is running but does not operate correctly | 1. Check if the base plate is placed correctly.<br>2. Check if there are remaining residues or any obstacles that may interrupt operating the system.<br>3. Check if all the components are inserted correctly.<br>4. Request for After Service. |
| The front door does not close | 1. Check if the base plate is placed correctly.<br>2. After holding the door to open and when releasing the door to be closed, check if the door is closed automatically by the spring.<br>3. Request for After Service. |

| Problem | Action |
|---|---|
| The base plate does not slide in completely | 1. Check if there are any obstacles or residues that may interrupt moving the base plate.<br>2. Check if all the components are inserted correctly.<br>3. Request for After Service. |
| The system is not working even if the door is closed | 1. Check if base plate is located in the correct.<br>2. Check if the pair of magnets attached to the door is correctly attached.<br>3. Check if the switch installed at the end of the base plate slide rail is damaged when base plate is pulled out.<br>4. Request for After Service. |
| The base plate does not slide out completely | 1. Check inside of the system if there are any obstacles or residues that may interrupt moving the base plate.<br>2. Check the front of the system if there are any obstacles or residues that may interrupt moving the base plate.<br>3. Request for After Service. |
| The components are not being able insert | 1. Check if all the components are located in the right position.<br>2. Check if there are any residues in each component and the rack.<br>3. Check if any components and the rack's lock pins are bent or damaged.<br>4. Request for After Service. |
| During the operation, the syringe block does not pin down the tips | 1. Check if the door is completely closed.<br>2. Check if the tip and the tip rack is inserted correctly.<br>3. While inserting the tips, check if any residues or components are stuck.<br>4. Check if 'Stop' or 'Pause' button is pressed.<br>5. Check if the provided tips are inserted.<br>6. Check if the tip is bent or damaged.<br>7. Request for After Service. |
| Syringe Block is correctly equipped with the tips, but it doesn't move | 1. Make sure the front door is closed.<br>2. When the block is being moved, check if any residues or components are stuck.<br>3. Check if the cartridge is inserted correctly.<br>4. Check if 'Stop' or 'Pause' button is pressed.<br>5. Request for After Service. |
| It stops while operating | 1. Check if the power supplied into the system.<br>2. Check if the Power switch has been pressed.<br>3. In the lower part of LCD screen, check if there is a delay in the blue progress bar.<br>4. Check if you have pressed 'Pause" by mistake.<br>5. Request for After Service. |

| Problem | Action |
|---|---|
| The System is running but there is an error | 1. Check if wrong protocol has been used.<br>2. Check if there is an error in the motor while operating during the movement of syringe block due to residues or components being stuck.<br>3. Check if it is operating after rerunning the same program.<br>4. Request for After Service. |
| The system is working but it does not do the elution | 1. Check if Elution rack and tubes are inserted appropriately.<br>2. Check if the tips are inserted completely.<br>3. Check if the end of the tip is clogged.<br>4. Check if sample is inserted into the cartridge.<br>5. Check if there is any leakage in the syringe block.<br>6. Request for After Service. |
| There is a leakage in the syringe block | 1. Stop using the well that were being used and request of after service. |
| The liquid is dripping in the bottom of the system | 1. Check if the rack and the waste tray and other components are inserted in the right position.<br>2. Check if there is a leakage in the syringe block.<br>3. Request for After Service. |
| The heater is not working | 1. Check if the rack and the waste tray and other components are inserted in the right position.<br>2. Check if any solution is dripped in the base plate during the usage.<br>3. Request for After Service. |
| There is a burning smell in the system | 1. Disconnect the power and unplug the power connector immediately.<br>2. Request for After Service. |
| UV Lamp does not work | 1. Check if the door is closed completely.<br>2. Request for After Service. |
| The Sample Block does not maintain a cold temperature | 1. Inspect the power supply.<br>2. Verify the Sample Block status through the LCD screen or PC software.<br>3. Request for After Service. |
| Protocol dose not update | 1. Check if the computer and the instrument are connected with LAN cable.<br>2. Restart the computer and instrument.<br>3. Update protocol.<br>4. Re-update protocol. |

# TECHNICAL SUPPORT

## Request for Repair

1. Before requesting a repair, please read “Troubleshooting” in this User Guide.
2. If the problem is not resolved, record any irregularities with the instrument and fill out the Service Request Form (Appendix B).
3. Please send the completed Service Request Form to our technical support department at (instrument-support@bioneer.com).

## Sending the instrument for service

1. First, please inform your local distributor or us about the service you need.
2. Remove the source of contamination from the instrument.

**⚠CAUTION**

If the interior or exterior of the instrument is contaminated by biohazardous materials, clean it with a commercially available decontaminant. Service may not be possible if contaminants in the instrument are not removed.

3. Ensure that the instrument is completely decontaminated. (Appendix A).
4. Pack the instrument using the packaging box provided when purchasing the instrument. Please do not send the power cables and other components.
5. Send the instrument to your local distributor or us, or hand it over to a sales representative.
6. Repair of the instrument will take approximately 1 to 3 weeks depending on the condition.

**NOTE**

If you do not submit the completed Service Request Form, the instrument repair may be delayed as it will be responded to in the order received.

## Notice

Report all serious incidents regarding the instrument to the manufacture.

## ORDERING INFORMATION

### Instrument

| Cat. No. | Product |
|---|---|
| A-5041 | *ExiProgen*™ |

### Components

| Cat. No. | Product |
|---|---|
| A-5041-A | Components Set for *ExiProgen*™ (A2,3,4,5,6,7,10) |
| A-5041-A1 | Multi Puncher (option) |
| A-5041-A2 | Setup Tray |
| A-5041-A3 | Disposable Tip Rack |
| A-5041-A4 | Elution Tube Rack |
| A-5041-A5 | Reaction Block (For Protein synthesis) |
| A-5041-A6 | Waste Tray |
| A-5041-A7 | Hole Puncher (6-hole) |
| A-5041-A9 | AC Adapter for *ExiProgen*™, *ExiPrep*™16 Dx |
| A-5041-A10 | Contamination Shield |
| A-5041-A12 | Protection Cover Separation Tool |

### Proteins Synthesis Kit and Nucleic acid Extraction Kit

| Cat. No. | Product |
|---|---|
| K-7300 | *ExiProgen*™ EC Protein Synthesis Kit |
| K-7310 | *ExiProgen*™ EC-Maxi Protein Synthesis Kit |
| K-7320 | *ExiProgen*™ EC-Tagfree Protein Synthesis Kit |
| K-4271 | *ExiPrep*™ Plus Viral DNA/ RNA Kit |
| K-4244 | *ExiPrep*™ Plus Plant total RNA Kit |
| K-4221 | *ExiPrep*™ Plus Blood Genomic DNA Kit |

### Related Product

| Cat. No. | Product |
|---|---|
| A-2065-1 | *ExiCycler*™ V5 96 |
| A-5150 | *ExiPrep*™48 Dx |
| A-5250 | *ExiPrep*™96 Lite |

**NOTE**
For more information, please visit our website(www.bioneer.com).

# LEGAL INFORMATION

## Usage and Compatibility

*ExiProgen*™ is an automated instrument that synthesizes proteins from DNA and extracts nucleic acids (DNA, RNA) from such diverse sources of human or animals as bacteria, blood, tissues, and plants.

## Warranty and Liability

Bioneer Corp. guarantees the quality of the product during the warranty period. Products found to be defective within the warranty period will be repaired or exchanged free of charge. However, the user must check whether the product is defective without delay when the product is delivered, and if a defect or lack of quantity is found, it must be notified immediately.

The following cases are not attributable to Bioneer, and therefore not covered under warranty, and the costs required for repair or exchange must be borne by the user: Malfunction caused by the user's carelessness and by not following the instructions in this User Guide, failure or damage caused by repairs performed by an entity other than Bioneer or a repair shop designated by Bioneer, normal wear and tear, or any defect caused by a natural disaster.

## Trademark

*ExiProgen*™ is a trademark of Bioneer. The registered names, trademarks, etc. used in this User Guide are protected by law even if not indicated separately.

## Change

Bioneer holds all copyrights to this User Guide. Information on product specifications and services in this User Guide may be changed at any time without notice due to changes in government laws and guidelines, Bioneer's internal policies, or technical product improvements.

## Inquiries

For solutions to technical problems related to the quality and use of this product, please contact Bioneer Technical Support (instrument-support@bioneer.com) with the relevant analysis information or related test data.

## WARRANTY

All products manufactured and produced by Bioneer undergo rigorous quality control and inspection in compliance with ISO13485 regulations prior to shipment.

1. Warranty periods
   - Components (consumables): 3 months
   - Retention period of repair parts: 5 years from the discontinuation date of the model
   - Period of maintenance service: 5 years from the discontinuation date of the model

2. Warranty details
   - In the case of repair due to defects in our products within the warranty period, we provide free A/S in accordance with our quality guarantee terms and conditions and consumer damage compensation regulations.
   - All components are consumables (based on the condition of the packaged official product).
   - Actual expenses may be charged even within the warranty period in the following cases, and in unavoidable cases, A/S may not be possible even for a fee.
     - ➢ In case of malfunction due to negligence in use, impact, carelessness, or submersion
     - ➢ If the product is disassembled or modified for other purposes
     - ➢ In case of breakdown due to natural disasters such as fire, earthquake, flood, etc.
     - ➢ If the product was repaired by an entity other than our company
     - ➢ In the event that a product is not covered by the warranty or a service request falls outside the scope of the warranty.

   - Matters not specifically stated in this clause shall be governed by Bioneer's A/S and customer support principles and internal regulations, and other matters shall be reviewed and processed with consideration for the user's convenience.
   - The cost incurred during after-sales service is determined according to the standards of after-sales service for each item in our internal regulations. For further information on repair costs, please contact us.

3. Product exchange details
   - Product exchange is carried out only when there is a valid reason to exchange the product based on the Fair Trade Act, consumer damage compensation regulations, and the authoritative interpretation of the consumer protection rights for the same or similar cases, and only 1:1 exchange with the same model is possible (No refund is available).
   - Product to be exchanged: Product with the same symptoms within the warranty period and has a history of checking A/S more than three times

4. One moment! Before place a request service
   - When the product does not operate normally, please first see the "TROUBLESHOOTING" page in the User Guide.
   - If the problem is not resolved, please contact us in the following ways:
     - ➢ Customer Support Hotline: ☎ +82-42-939-6333
     - ➢ Technical Support Email: instrument-support@bioneer.com

## KEY TO SYMBOLS

| | |
|---|---|
| SN | Serial number |
| UDI | Unique device identifier |
|  | Consult instructions for use |
|  | Temperature limits |
|  | Humidity limits |
|  | **Do not discard as unclassified waste.**<br>To minimize the effect of electric or electronic instruments on the environment, follow the regulations on proper disposal of such items.<br>**European Union customers**<br>Call your local Europe office for Bioneer instruments pick-up and recycling. |
|  | Manufacturer |
|  | Date of Manufacture |
| REF | Catalog number |
| DANGER | Ignoring this sign and mishandling will result in death or serious injury |
| DANGER | Ignoring this sign and mishandling, will result in death or serious injury due to electric shock. |
| WARNING | Ignoring this sign and mishandling may result in death or serious injury. |
| WARNING | Ignoring this sign and mishandling may result in death or serious injury due to heat. |
| WARNING | Ignoring this sign and mishandling may result in death or serious injury due to fire. |
| CAUTION | Ignoring this sign and mishandling may result in minor injury or property damage. |
|  | Do not turn off the application during operation. It will affect the result. |
|  | Do not run any other applications during operation. It will cause malfunction or affect the result. |

| | |
|---|---|
|  | Keep a safe distance from the moving parts of the instrument. Moving parts may cause injuries. |
|  | Biohazard Exposure may cause infection. |
| NOTE | Indicates relevant or helpful information about an instrument, however does not affect instrument operation. |
|  | Keep away from sunlight |
|  | Indicates the On position of the main power switch. |
|  | Indicates the Off position of the main power switch. |
|  | Indicates the on/off position of the main power switch. |
|  | Indicates ground terminal for the main protective ground of the instrument. |
|  | Indicates a terminal that receives or supplies alternating current or voltage. |
|  | Indicates a terminal that receives or supplies direct current or voltage. |

## APPENDIX A: Certificate of Decontamination

# Certificate of Decontamination

The instrument must be decontaminated or disinfected before returning for service or disposal. This must be performed for the safety of the customer and the manufacturer.

| | | | | | |
|---|---|---|---|---|---|
| Instrument | *ExiProgen*™ | Catalog No. | A-5041 | Serial No. | |
| Customer | Institution / Department | | | | |
| | Address | | | | |
| | Contact Person | | | | |
| | Phone | | Fax | | |
| | E-mail | | | | |

**Method of decontamination**

Dampen a lint-free cloth with70% ethanol or nucleic acid degrading solution and clean all parts of the instrument that can be contaminated, including the components, the surface, etc. Then, wipe again with a cloth dampened with deionized water immediately.
Repeat as many times as needed depending on the degree of contamination.

**Additional fees may be charged for the decontamination procedure before service if it has not been performed or this certificate is not provided. Check the following contents.**

☐ The product for service or return is not contaminated by toxic, carcinogenic, radioactive, or any other harmful material.
☐ The decontamination procedure was performed for service or return and it will not be harmful to the handler of the instrument.

**Have you used any materials listed below? (Check all that apply)**

☐ Chemical materials ☐ Biological materials ☐ Radioactive materials

**Additional Information (if any)**

**Procedure taken for decontamination**

**Date** _____ **Name/signature** _____

If any radioactive material was used, a signature of the radiation safety manager is needed to certify the removal of radioactive contamination.

**Date** _____ **Name/signature** _____

## APPENDIX B: Service Request Form

| Service Request Form | | | |
|---|---|---|---|
| Product | *ExiProgen*™ | | |
| Catalog No. | A-5041 | Serial No. | |
| Date of Request | | | |
| Date of Purchase | | | |
| Problem | Date | | |
| | Part | | |
| | Description | | |
| | Additional Information (if needed) | | |
| Customer | Name of Institution | | |
| | Address | | |
| | Department | | |
| | Contact Information | Name | |
| | | Phone | Fax |
| | | E-mail | |

## APPENDIX C: *ExiProgen*™ Maintenance Log

| Month/Year | | | | | | | | | | | | | | | | | Operator | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serial No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Days / Description | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **Before Operation** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean worktable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean waste tray | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean elution tube rack | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean hole puncher | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check cooling fan operation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean setup tray | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean disposable tip rack | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean contamination shield | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **After Operation** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check Self-test function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clean base plate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check UV light | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check exterior damages | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check cooling fan cover damages | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Annually / As needed** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check base plate movement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check internal instrument contamination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check syringe leakage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check heating block temperature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check home position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Check grease of each motor shaft and moving parts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Required Materials: Distilled Water, 70% Ethanol, 1% Bleach (or 2% Acetic Acid), Nucleic Acid Degradation Solution, Swab, Lint-Free Cloth/Paper Towel, Powder-Free Disposable Gloves

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BIONEER Corporation

| | |
|---|---|
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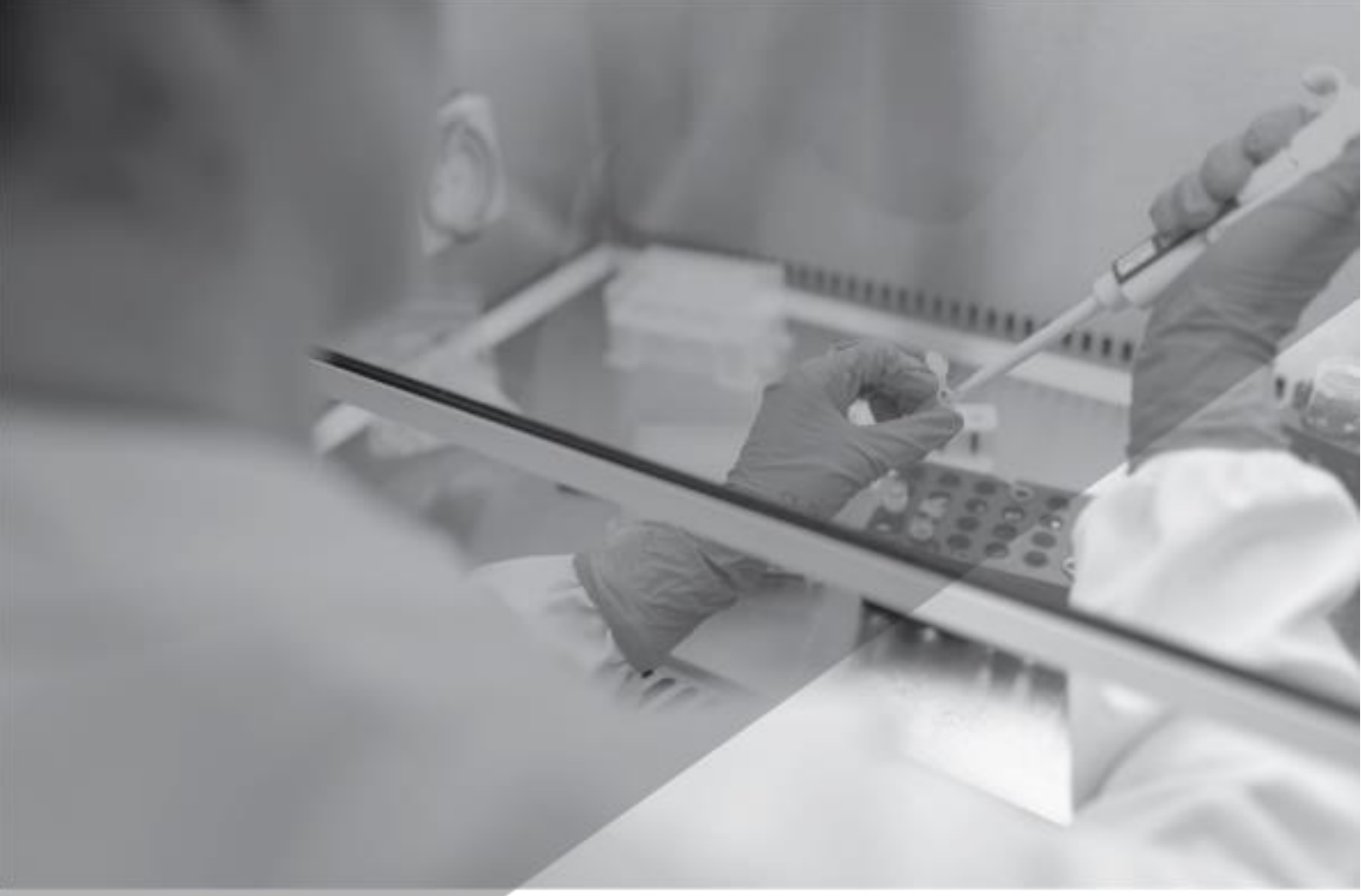
| Telephone | +82-42-939-6333 |
| Fax | +82-42-939-6444 |
| E-mail | sales@bioneer.com |
| Website | www.bioneer.com |


*Information about our headquarters and branches can be found in the Customer Support section of our website.*



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